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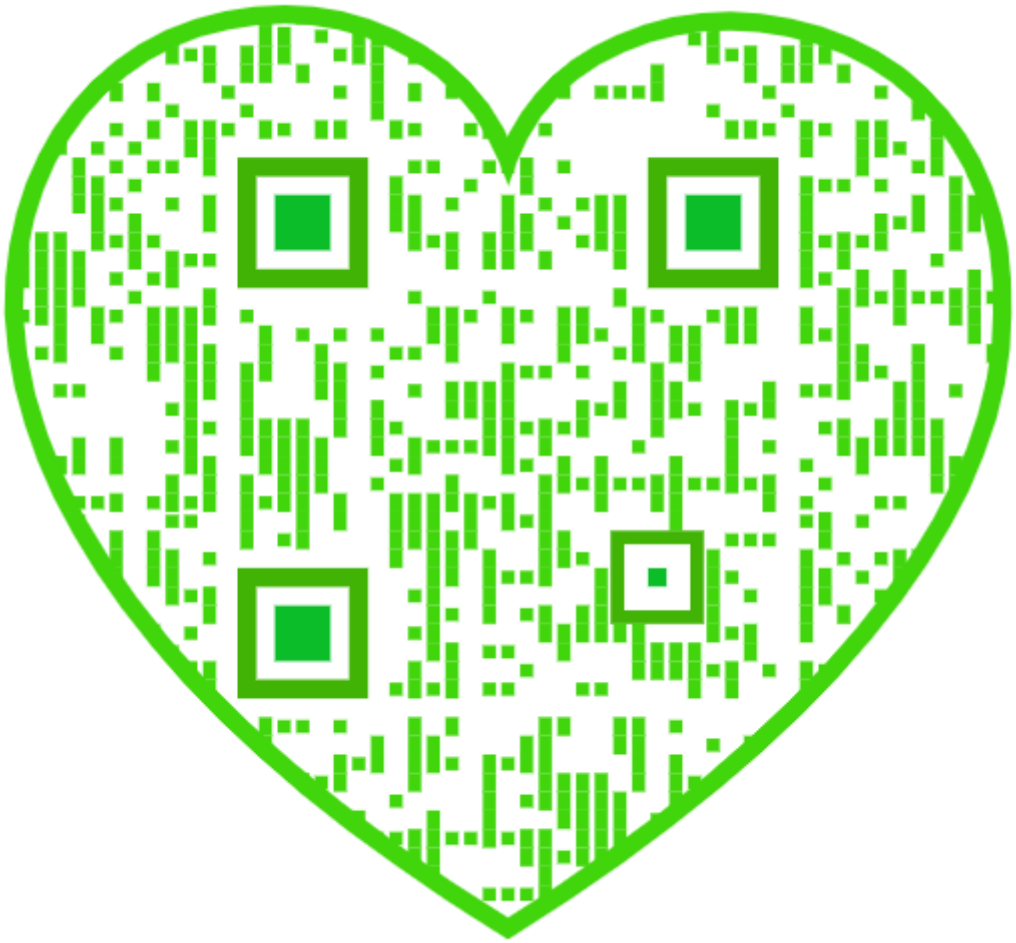

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COAL AGE

With Which is Consolidated The Colliery Engineer

DEVOTED TO COAL MINING AND COAL MERCHANDISING

EXTRACTION METHODS, EQUIPMENT AND MINING NEWS
MARKET REPORTS, PRICES AND STATISTICS
OF THE COAL INDUSTRY

ISSUED WEEKLY

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COAL AGE

With Which is Consolidated
The Colliery Engineer

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July—December, 1920

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COAL AGE

The Weekly Journal of the Coal and Coke Industries

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This Is the House That Jack Built

WITH the forward-moving precision of the childhood rhyme, Government supervision of the coal industry is progressing. After six months' duration fixed prices were removed April 1, on the assumption that the after-effects of the strike were past and that the coal business should be allowed to go forward on a normal basis. Business would have proceeded normally had it not been for the curtailment in production resulting from the strike on the railroads beginning early that month. Through control of the railroads the Interstate Commerce Commission has been, and is still, engaged in trying to set aright the coal situation. First an order was issued directing eastward thousands of coal cars which had strayed west of the Mississippi during the coal strike last winter. Then came the order directing the carriers to give the mines at least 50-per cent car supply before permitting cars to be given for other uses, and also prohibiting the loading of automobiles in open-top cars. The situation in the Northwest next engaged the attention of the commission, and shipments of bituminous coal to Lake Erie for transshipment to the Northwest were pooled.

New England, believing that a serious shortage existed, begged for and obtained an order giving preference and priority to shipments destined for coastwise movement to that section. At the same time the commission made the 50-per cent order a 100-per cent mandate, directing that for thirty days open-top cars should be used for coal until all requirements were met. Now other sections of the country, notably New York, are coming forward, claiming preference.

Each order requires another to correct, or attempt to correct, the situation it inevitably produces as a byproduct of its main purpose. Each priority demands another to protect the next in line. Just as all the coastwise coal cannot be sent to New England even for a short time, no matter what her need, without crippling New York, so New England and New York cannot have all the coal without hurting New Jersey.

Priorities do not create coal; they simply pyramid trouble. Do not be deceived in the least—we now have a coal shortage. It can be shown by statistics that production is now sufficient for actual current consumption and exports *if evenly distributed*, that production from Jan. 1 or from April 1 has been greater this year than last, that conditions are on the mend, and that after all there is reason to believe that sufficient coal to protect the country can be produced before snow flies. The difficulty with this line of reasoning is that there is no quantitative measure of a coal shortage that can take into account the psychology of this situation. More bituminous coal is needed at once—the more the better—because every consumer is in a panic about his supply. No amount of reasoning will induce him to go out of the market until conditions get better and prices go down. The shortage is from 75 to 90 per cent imaginary, but imagination is a powerful thing. Will anyone challenge the statement that many who are eagerly seeking coal at any price already have a normal stock on hand, but have been scared by the cries of shortage?

But why, it is asked, if production is now at a rate sufficient to care for actual current consumption, are railroads confiscating coal, public utilities threatening to shut down and factories closed for want of coal? Because the production is not being distributed in accordance with requirements, but in accord with price paid. The same situation prevailed from June, 1917, to April 1, 1918. The two situations are parallel in almost every respect. The country was at war then and is now; then with Germany, today with the after-effects of that war. Prices upset distribution in 1917, and the Fuel Administrator thought we were short 50,000,000 tons of bituminous coal, whereas careful estimates show that we lacked only some 10,000,000 tons to fill actual needs the country over.

The measures that have so far been taken to relieve the situation, excepting only the order giving absolute preference to coal in the distribution of open-top cars, are but patch-work, certain only to heap trouble on trouble. The season is young. Do not wait until next spring to handle the situation as it may have to be handled. Profit by the sad experience of 1917 and the winter which followed. The Car Service Commission of the American Railway Association has arranged liaison with the railroads, but liaison is insufficient and incomplete unless the coal industry itself is tied in. Dr. Garfield solved the dstribution problem when he took the coal industry into partnership, after the two had worked at cross purposes for six months.

The coal industry has as much brains today as in 1918 and more experience; it is just as patriotic as during the war. Let the public—through the Government—the railroads and the coal industry re-establish the triumvirate of leadership and quickly decide whether it be better to temporize for a few months or go the limit at once, in order that our coal troubles may be over by fall, instead of just beginning.

The New England Order

SERVICE Order No. 6 of the Interstate Commerce Commission purposes to limit exports of bituminous coal by vessel to the extent necessary to provide New England and other sections on the Atlantic seaboard with necessary coal. The language of the order is not clear—the technical details by which New England is to have priority and preference in coal dumped at tidewater piers are not generally understood and are far from clearly expressed. Some time will be required to

develop the methods by which the interested railroads will set about the actual application of what is the plain purpose of those who framed the order. In the meantime speculation is rife as to whether the purpose can and will be achieved.

Plainly the order is an effort to give New England more coal by water. It has no other aim. The original request was for the absolute embargoing of export movement, to which all official Washington turned a deaf ear. We understand the order to say that a shipper of coal may bill his car of coal to any inland customer he chooses or he may bill it to a tidewater pool. No preference is ordered in the supply of cars or in the transportation of the car of coal as between a consignee, say, in Michigan, a railroad for fuel, a Lake pool or a tidewater pool. But once having the car as a credit in a tidewater pool the order, in spirit if not in letter, provides that that coal shall not be dumped into a boat for export destination if a New England or other coastwise consumer offers a boat in which to load the coal. Service Order No. 6 does not read thus in so many words and the order may not have been so drawn as to withstand the scrutiny of lawyers, but we believe that in a short time it will operate as we have outlined.

The order is not popular among tidewater shippers. It probably appeals to them as an unwarranted interference with their business. Some would rather not produce coal than be *forced* to ship it to New England. It seems to us inevitable, however, that the order will do that for which it is proposed. The greater part of the coal that can be either shipped coastwise or as export reaches tide at Baltimore and Hampton Roads. Shippers on the Baltimore & Ohio and Western Maryland railroads with an outlet at Baltimore have little opportunity to ship West and have limited facilities for reaching inland consumers.

Tidewater is the logical outlet for a considerable portion of the production originating on these two roads. The fields in southern West Virginia have outlets both East and West but it is not unusual for the Western outlets to become choked and to be embargoed. Witness the experience of last winter during the strike, when to maintain the full operation of the non-union mines in these fields it was necessary to dump thousands of cars at Hampton Roads because they could not be transported West and were not required in inland Eastern markets.

It follows that unless the operators deliberately and perhaps illegally curtail production, some minimum quantity of coal must be consigned to tidewater from West Virginia fields, and New England is certain to have first call on this coal at tidewater piers. Mr. J. J. Storrow, whose address is Boston, Mass., must depend upon his privilege of being able to put his boats alongside the piers with preference and priority for coal to coax the owner of the coal to come to terms, for he must buy the coal before he can have it.

Exports will not be seriously affected after Order No. 6 has been in operation for a few weeks, principally for the reason that, barring further labor trouble on the railroads, production will increase and so far this year the capacity of the coal dumping piers has not been reached. There is one advantage in the method the Government has taken to get coal to New England—the responsibility of taking care of the fuel supply of a very important section of our country has been placed impartially on the industry as a whole and not left to the few.

Miners' Indifference Retards Production

IT IS easy to blame the railroads for all the shortage in supply of coal, but it is evident from reports coming from the mines that some improvement could be effected were the coal diggers more inclined to do their part. It daily happens in every field that there are cars left over at the end of the day and it nearly always happens that cars are left over on Saturday night—cars that, if loaded, could travel far on their way before Monday night. This condition arises from the fact that the miners know full well that there will be each day and week only so many cars to fill and that if these cars are not loaded today they will still be on hand to load the next day.

Not until each and every car has been loaded the day it is placed can the miners and operators place full responsibility on the carriers. True, not in the first week every mine began following this practice, nor even in the second week, would there be an increase in car supply, but if continued for a few weeks the turn-around on cars would begin to make itself felt in a better car supply. It is car days we are short of now, and a car day lost at the mines because the miner has a headache and does not feel like going to work or because it is Saturday afternoon and he would like to lay off means lost production.

It is useless to argue that what can be put off until tomorrow need not be done today. Why should not the miner feel some measure of national responsibility in this time of coal shortage and do his part by working hard the few days that the shortage of cars permits him to labor? Speed up the turn around; get some action at the mines by telling your men what they are doing by loafing any day or part of a day that there is an empty car behind the tipple.

A Question of Ownership

FEW are the central-station plants which are owned by a capitalist, who is primarily a coal operator, or by a subsidiary of a company organized with mine operation in view. Coal operators and mine-operating companies have too frequently failed to visualize their opportunities and too rarely entered a field which quite naturally belongs to them.

Coal operators leave the organization of power plants to central-station men, who open up new mines at once or some time later, and so add unnecessarily to the number of operations, and by their steady work upset the balance of the field. One would expect that the operator would see the advantage to himself in continuous operation and build a central-station plant for the supply of local operators and industrial plants, rather than leave the opportunity to others.

There seems to be a likelihood that there will soon be central-station plants the country over. They might as well belong to the coal operator as to a member of the electrical industry. They might as well be supplied with impure coal and slack from mines now existing as with the whole coal of mines opened especially for that purpose.

Survey Study of Stocks Nearly Completed

The study being made by the Geological Survey and the Bituminous Coal Commission of stocks and requirements of coal is nearing completion and a preliminary survey of the situation will be published in a few days.

Railroad Strike Breaks Out Again

During the past week switchmen and other railroad men have been on strike in the East, after it was thought that the men were going to stay at work until the Wage Board makes its award. The strike has tied up the Harrisburg, Baltimore, and Hagerstown gateways and seriously interfered with freight movement for nearly a week.

Coal Rates to St. Louis Upheld

The Interstate Commerce Commission has dismissed the application of the St. Louis Chamber of Commerce that St. Louis and East St. Louis be regarded as a common terminal with respect to the freight rates on coal from Indiana and Illinois. The commission held that the 20c. additional rate for the transfer of coal across the Missippi River to St. Louis was not unreasonable.

Gas Association Protests Coal Exports

The American Gas Association filed with Attorney General Palmer, June 18, a protest against the heavy exportations of coal. Part of the protest reads: "The association appeals to you to exercise whatever authority may be vested in your office to bring about an immediate reduction in the volume of coal now being exported beyond the limits of the United States and its possessions. A similar appeal has been made to the President by formal resolution which fully explains the urgency of the situation from the standpoint of gas companies endeavoring to maintain an indispensable service to 45,000,000 people in the United States."

Canadian Roads Revoke Freight Prepayment on Coal

Canadian railroads have yielded to the protest against prepayment of American coal shipped into the Dominion and no longer will require prepayment of that portion of the charges between the border and destination. The American railroads are still requiring prepayment of their portion of the charges on the ground that there is no practical way of collecting their portion of the charges in American money at Canadian destination points. The American carriers suggest that they will be glad to discuss the matter with all those concerned in case the Interstate Commerce Commission cares to call a conference for that purpose. Steps to secure such a conference are being undertaken by George H. Cushing, the managing director of the American Wholesale Coal Association. It is hoped to have present at the conference a representative of the British Embassy and of the Canadian Mission in Washington.

Commerce Bodies Favor Anti-Strike Laws

Two proposals dealing with the right of employees of public service orporations to strike were submitted June 9 by the U. S. Chamber of Commerce to a vote of commercial organizations comprising its membership. The two recommendations were that strikes by employees of all public service corporations performing service essential to the lives, health, well being and comfort of the people should be explicitly prohibited by law, and that suitable tribunals should be created by law to adjudicate differences between such employees and their employers, the decisions to be final and binding on both parties.

NEWS BRIEFS

Terse Items Chronicling Events of Interest to the Industry

France Receives German Coal

On June 14 the Reparations Commission announced in Paris that up to May 30 German deliveries of coal to France under the treaty of Versailles amounted to 4,686,000 tons.

Steamship Line Acquires Coal Acreage

Victor S. Fox and associates, who recently purchased control of the Consolidated Maritime Lines, have organized the Crystal Coal Corporation, which has acquired a substantial coal acreage in Virginia so that a steady fuel supply may be obtained for the tonnage of the Maritime Lines. The new organization is incorporated under the laws of Delaware.

The Maritime Lines, organized about a year ago, purchased a 200,000-ton fleet of vessels from the Shipping Board and is negotiating for the purchase of additional tonnage. It has a contract with Italian interests for 2,000,000 tons of coal.

Mine Managers' Varied Interests

An editorial notice in the present issue calls attention to the varied interests of the mine manager, on whom rests the burden of creating new communities and establishing not only the mining but almost all other activities. Mining towns bear the impress of their originators and are good or bad according to the mental and moral plan on which they are conceived. The issue of Oct. 7, a Safety and Welfare Number, will emphasize the human engineering that every mining community needs.

Would End World's Coal Need

Affirming that America, Germany, England, France and Belgium in 1919 produced 210,000,000 tons less than in 1913, Otto Hue, at the International Economic Conference, at Frankfort-am-Main in May advocated an international coal conference at which all nations would be represented and all would have equal rights.

P. B. Noyes Leaves Coblenz

Pierepont B. Noyes, American observer on the Rhineland High Commission, left Coblenz on June 20 for England. He expects to sail for the United States July 14. Mr. Noyes was adviser on conservation matters to Dr. Garfield when the latter was U. S. Fuel Administrator.

Federal Trade Commission Issues Cost Report for March

The Federal Trade Commission has just issued its third monthly cost report, covering operations in March. The report shows a slight decrease in cost of production—9 cents per ton—due to better running time at the mines in March compared with February.

Appropriations by Congress Reach Nearly Five Billions

Chairman Good, of the House Appropriations Committee, on June 14 issued an end of the session statement of appropriations and expenditures, showing that expenditures authorized for the fiscal year opening July 1 aggregate nearly $5,000,000,000. Total regular, permanent annual and miscellaneous appropriations and deficiency appropriations aggregates $4,859,890,827.30. Mr. Good also made public a revised statement furnished by the Secretary in which it was estimated that receipts for the fiscal year 1920 would be $7,691,157,196, and estimated expenditures during that period would be $12,008,048,051.

John E. Lloyd

President of the National Retail Coal Merchants' Association

JOHN E. LLOYD, president of the National Retail Coal Merchants' Association, has been connected with the coal and lumber trade for about twenty years. He was born in Germantown in 1878, and since his graduation from Haverford College in 1900, has been affiliated with the William M. Lloyd Co., of Philadelphia, of which he is president. This company was organized by Mr. Lloyd's father, the late William M. Lloyd, in 1868.

Mr. Lloyd also is president of the Philadelphia Coal Exchange and is a member of the Lumbermen's Exchange, Chamber of Commerce and Builders' Exchange of Philadelphia. He is vice-president of the Braganza Lumber Co., vice-president of the Branford Lumber Co., both of Jacksonville, Fla.; first vice-president of the National Retail Lumber Dealers' Association; ex-president of the Sales Managers' Association of Philadelphia, and president of the Philadelphia Society for Promoting Agriculture, one of the oldest societies of its kind in existence.

During the World War at the request of the Quartermaster's Department, the retail lumber yards in the Eastern district formed an emergency bureau to assist the Government in the purchase and distribution of lumber from large stocks in the Eastern retail yards. Mr. Lloyd was elected chairman of this emergency committee and in that capacity moved to Washington early in 1917.

Through their national organization Mr. Lloyd also represented the retail coal merchants of the country, acting as resident vice-president until February, 1919. During that period he spent most of his time in the Washington office of the National Retail Coal Merchants' Association and rendered valuable service not only to the retailers but to the Fuel Administration and the public.

Mr. Lloyd's qualities of leadership were strikingly demonstrated during the recent teamsters' strike in Philadelphia, when he drove a truck, without protection, and delivered coal from early morning until late at night. When the peril of this undertaking was called to his attention he replied that he wouldn't ask his men to do something he was not willing to undertake.

He has a host of friends in the coal and lumber business and is held in unusually high regard and esteem by his employees. At present he is deeply interested in the open-shop activities of the Chamber of Commerce, being a staunch supporter of this movement.

Mr. Lloyd is a member of the Union League, Markham Club and Church Club, Philadelphia; Merion Cricket Club, Haverford, Pa.; St. Nicholas Club, New York; Manufacturers' Club, Charlotte, S. C.; Cape Fear Club, Wilmington, N. C.; West Chester Golf and Country Club and the Tedyffrin Club.

His home is Valley Brook Farm, Downingtown, Pa., where he devotes much of his attention to the raising of pure bred Jersey cattle and other forms of farm activities.

MAIN-SHAFT TIPPLE WITH ITS HOIST HOUSE AND CONCRETE-BASE WALL
This tipple has four loading tracks, two picking tables and loading booms. The hoisting is done in skips, thus lessening the dead weight lifted per ton of coal, lowering the necessary hoisting speed and even, it is said, saving the coal from disintegration. Note the permanence of the hoist house, which is of brick and covered with asbestos shingles

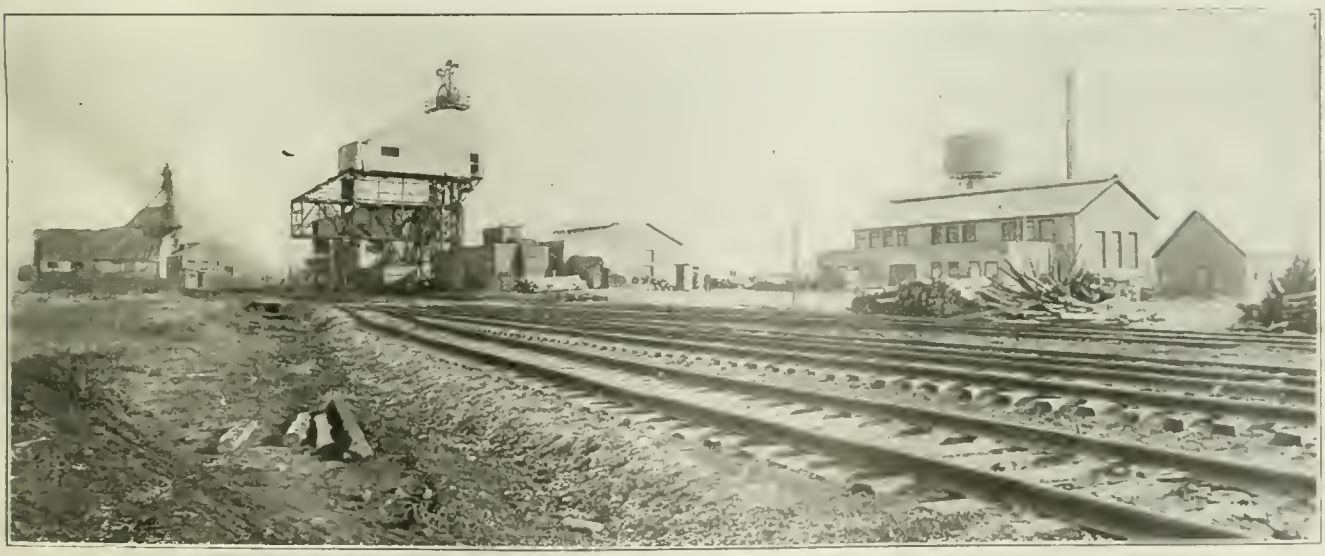
How the Valier Shaft Mine Was Quickly Developed for Large Daily Output—II

Hoist Can Raise 26 Tons Per Minute, Equal to 1,560 Tons Per Hour, and Has Actually Handled 1,058 Tons in That Period of Time — Alternating-Current Coal and Spring-Draft Mine Cars Are Among the Interesting Features

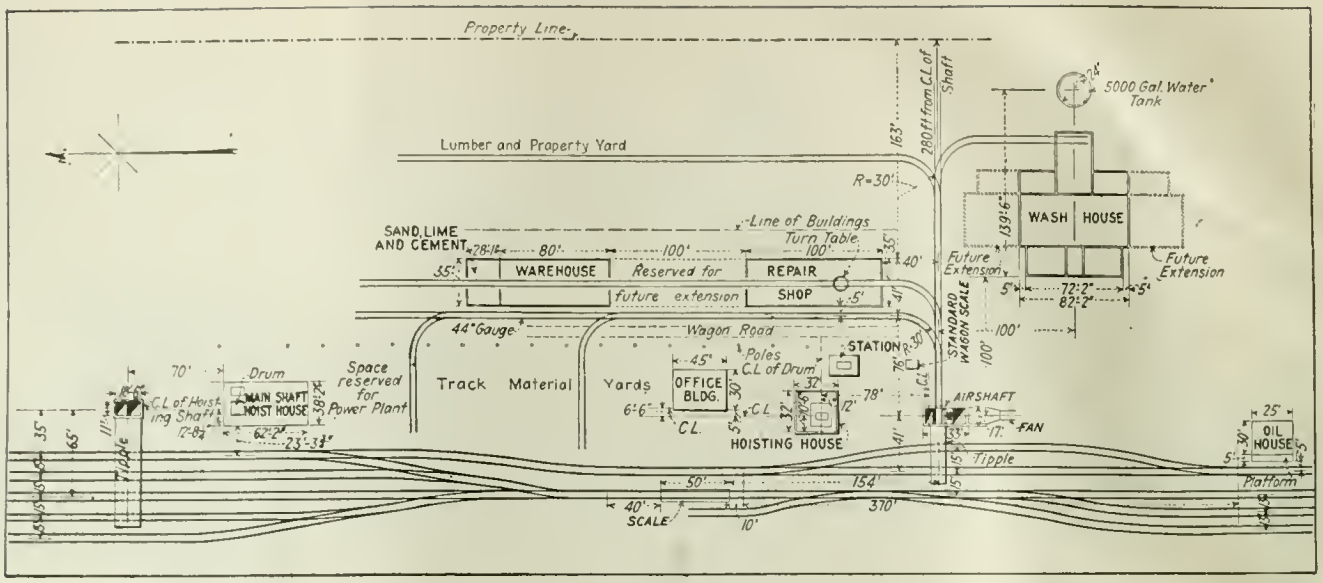
By Carl Scholz
Charlestown, W. Va.

LAST week's installment described the surface equipment at the Valier mine, Valier, Ill., and it is the function of this second article to briefly outline the underground operations first, describing, however, the hoisting equipment which acts as a link between the two and in this case has novel characteristics.

The airshaft hoist house contains a 9 x 7-ft. drum hoist driven by a 250-hp. 2,300-volt motor through herringbone gears. This machine is equipped with the necessary safety devices to automatically bring the hoist to a stop. The contactors and resistance for this machine are placed in the basement on account of the



GENERAL VIEW OF THE ENTIRE MINE PLANT
On the right is the washhouse, in the center the shop, the fan and the airshaft tipple and on the extreme left the main shaft

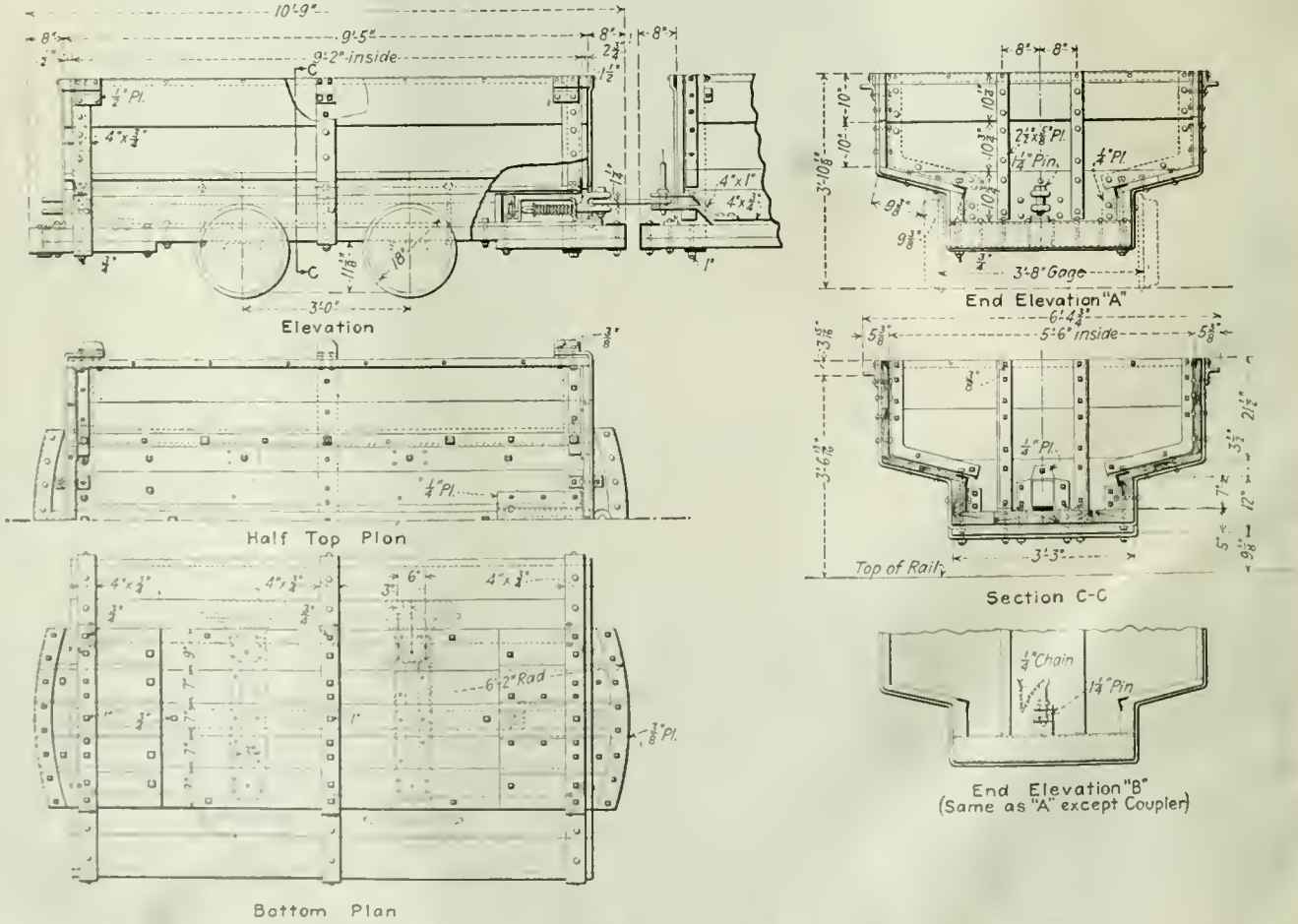


PLAN OF SURFACE BUILDINGS AT MINE SHOWING TRACK LAYOUT AROUND TIPPLES

The various buildings are grouped near the airshaft, for it is by this opening that the men descend and all material is delivered to the mine, the other shaft being occupied by skips which are suited only for hoisting coal. It will be noted that there is no power plant. Because of a lack of water it was judged best to buy power, but conditions may change and space is reserved for an engine and boilerhouse handy to the main hoist, to be used if the company changes its policy in this regard. Plenty of room is left between the railroad tracks so that there is ample room for moving between cars.

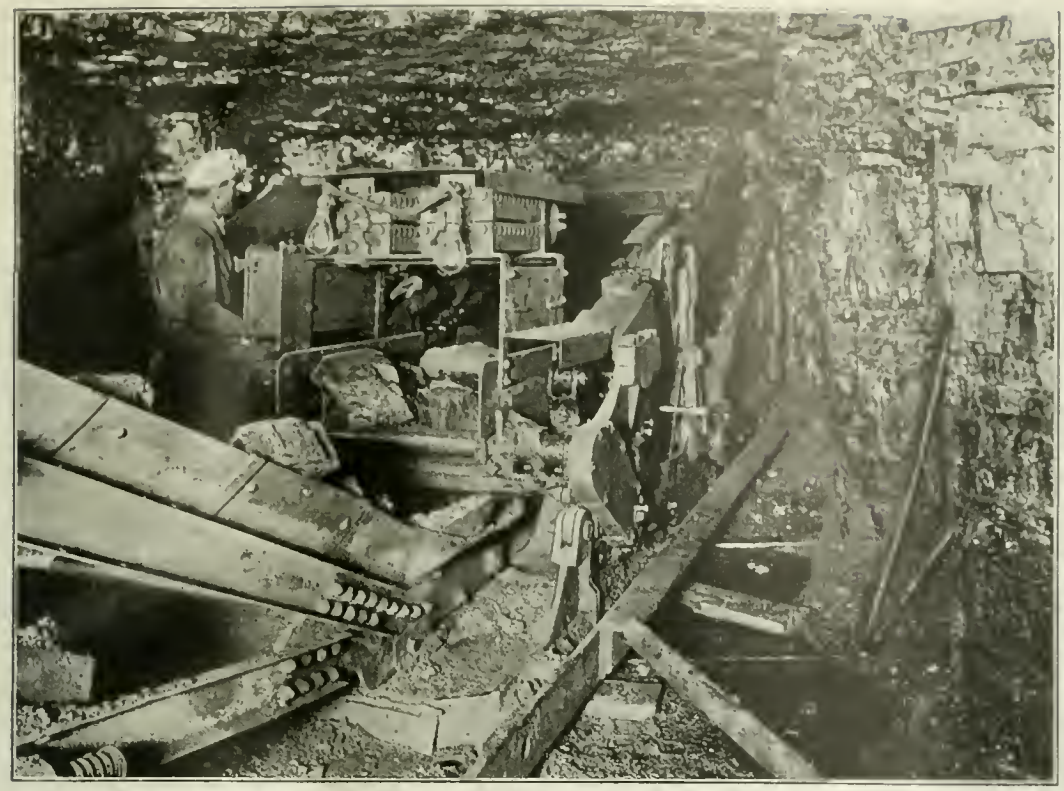
noise and heat generated by them. This house also contains the main switchboard and all distributing panels, since an engineer is on duty in this building continuously. Immediately behind the hoist house is the 2,000-kva. transformer station.

The main hoist house contains the motor-generator set and the hoist equipment, the latter consisting of one semi-automatic 1,350-hp. 55-r.p.m. 550-volt shunt-wound direct-current motor connected direct to a single cylindrical drum 9 ft. in diameter. The motor-generator set consists of a 1,000-kva. generator, an 1,100-hp. motor and a 31,000-lb. flywheel.



AN ALL-AROUND SAFETY-FIRST MINE CAR IS EMPLOYED AT THE VALIER MINE

Spring draft riggings, stiff couplings, large capacity and roller bearings are provided in the standard Valier mine car, but above all it is a safe car, for it will not spread coal dust along the roads through loose doors nor will it catch clothing nor be jerked violently like a car with a three-link coupling. Dispensing with two coupling links will add also to the life of the car.



Heading Machine

By using a machine which undercuts, shears, breaks down and loads the coal the Valier mine has made unusual speed in driving its entries, providing at the same time more solid walls and a more lasting roof. Powder shatters the ribs and roof and makes maintenance costs of permanent roadways heavy. By this machine 50 to 60 ft. of roadway have been driven in 24 hours.

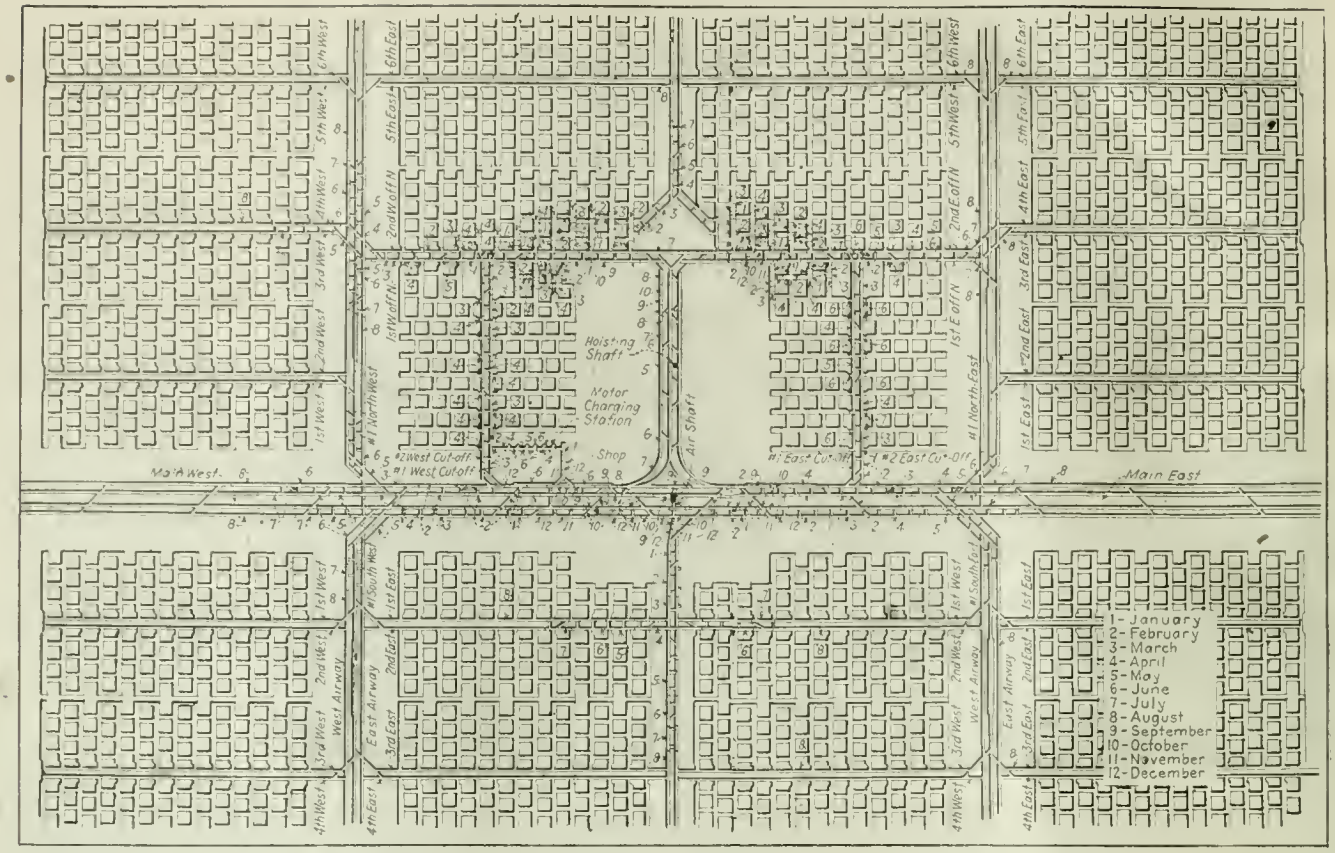
This hoist is capable of handling eighteen tons of coal in forty-two seconds, which includes the eight seconds allowed for the dumping of the coal. Under test the tipple has actually dumped 1,058 tons per hour. This machine can be operated either from the platform in the hoist house or from the bottom of the shaft. It has not only the regular automatic control and a switch in the shaft tower but it is also equipped with a solenoid brake. Every hoisting outfit is substantial.

Power for the mine is received at a potential of 33,000-volts in an outdoor station containing three 667-kva. transformers, protected by aluminum-cell lightning arresters. These step down the current to 2,300 volts, which is the working pressure for the larger motors on the surface and in the mine. The power for small motors and light is stepped down to 220 volts.

Power for underground use is taken in three single lead-covered conductors to a distributing board at the

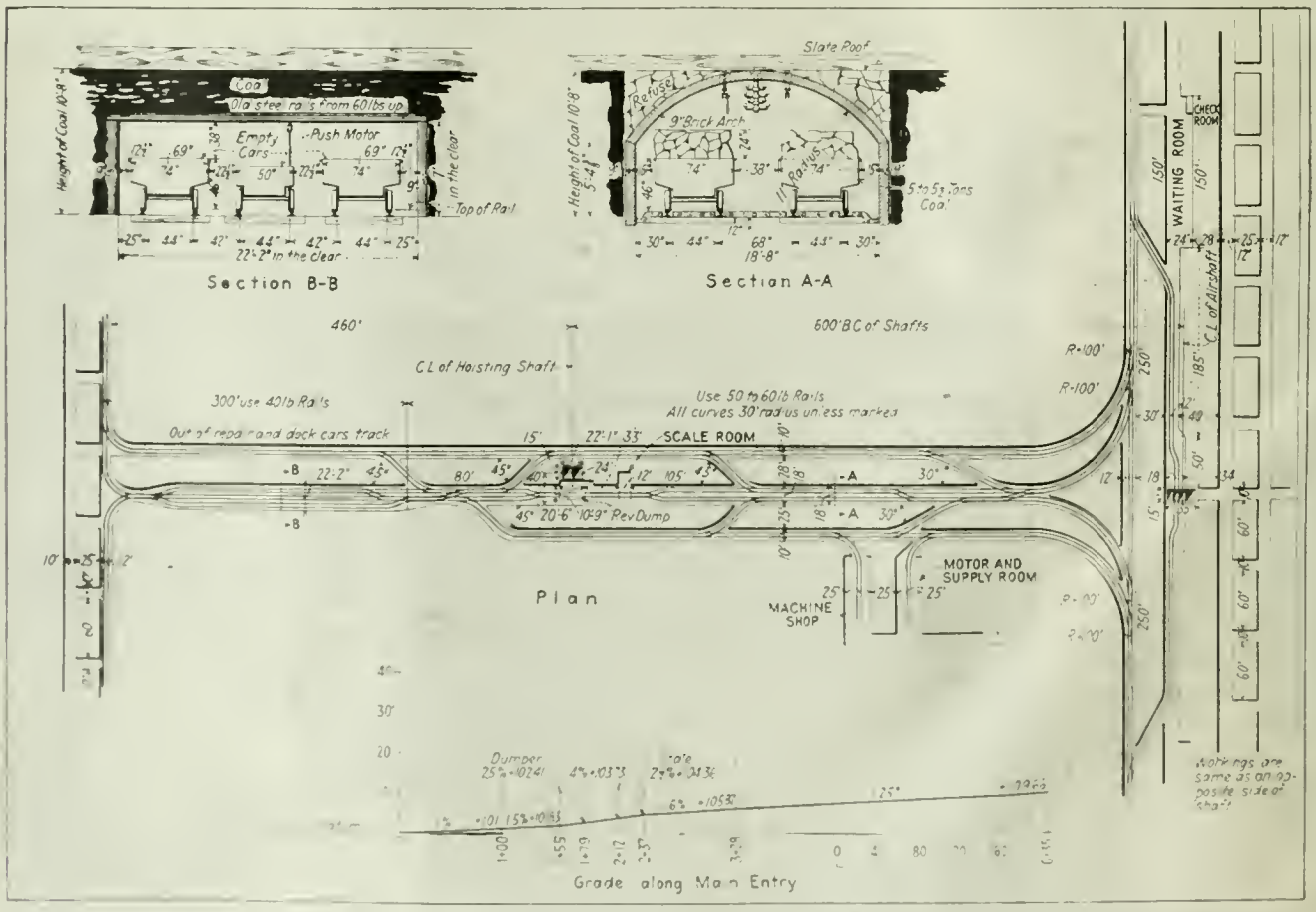
Bank at Valier

No mining village should be without a bank, not only to take in savings but as a symbol of thrift. Valier has a well-appointed institution. The depositor in the exact center of the illustration is no other than Carl Scholz, the author of this article.



PROGRESS MAP OF THE UNDERGROUND WORKINGS OF THE VALIER MINE

An attempt is here made to conserve the coal by withdrawing only 40 per cent on first mining. The rooms are 25 ft. wide and the pillars 60 ft. square, but the frequency and width of the crosscuts bring the extraction proportion up to the percentage mentioned, which is still large where over 620 ft. of cover has to be sustained, as Mr. Scholz would doubtless agree.



PLAN AND CROSS SECTIONS OF THE LANDING SHOWING WAITING ROOM, CHECK ROOM AND MACHINE SHOP

bottom of the shaft, and thence through armored cables buried in trenches it is distributed to the various substations or motor generators. Near the shaft bottom is a charging station for locomotive batteries where direct current is obtained from a 300-kva. motor-generator set that feeds into the trolleys. As the mine grows it is intended to put one motor-generator set in each quarter of the operation and feed direct current into the trolley lines at these points, thus obviating long feed wires.

Cutters Operated by Alternating Current

The mining machines are operated by alternating-current motors drawing their energy supply from substations, each consisting of three 25-kva. transformers and located on each panel. This system of distribution insures against drop in voltage and prevents accidents that might be involved in maintaining overhead conductors. During the early development period armored lead-covered cables may be somewhat more costly than would be the relatively unprotected direct-current wiring which would serve the same purpose, but with a mine of large extraction the increased cost of heavy wires or the drop in voltage, with its attendant troubles to direct-current motors, will in the end many times outweigh the apparent greater cost in the early stages. The best indication of this is that in this mine with a production of 600,000 tons of coal only one mining machine motor to date has needed any repairs.

The mine is equipped with 300 5½-ton cars fitted with roller-bearing wheels. The cars are built wide and low so as to require the least effort in loading. They are equipped with a one-spring draw bar. The motive power is supplied by locomotives which can be operated either by storage battery or trolley. Each of these has 100 A-8 Edison cells. This arrangement has proved quite satisfactory. When traveling on entries 250-volt current is drawn from the overhead trolley and the machines have a speed of five miles per hour. When going into the room on the battery the speed is automatically reduced to 3½ miles per hour. The combination feature makes it possible to reduce the battery capacity to a minimum.

For hauling on the main roads 15-ton locomotives are used. On the main entries the roadways are laid with a gage of 44 in., the rail weighing 56 lb. per yard and resting on standard wood ties. Thirty-pound rail on steel ties are employed on panel entries and in rooms. The tracks in the rooms are laid with four ties to a 30-ft. rail. The main-road track is bonded with copper bonds electrically welded.

The undercutting equipment consists of shortwall machines with 7-ft. cutter bars. In part the rapid development of this mine has been due to the use of two entry-driving machines that undercut, break down and load coal in one operation. In many instances 50 to 60 ft. of entry were driven with one machine in 24 hours. This feature was of special importance in the early stages of development, for it eliminated explosives, not only reducing the risk of gas explosion but also avoiding injury to the roof and ribs. On account of the overlying slate, which rapidly disintegrates when exposed to the atmosphere, it is important to leave some top coal in place, and for this the entry-driving machines can be made to provide. An inspection of the mine after two years of operation will convince anyone of the advantage secured by the shearing of the ribs and the elimination of blasting. Throughout the installation every precaution has been taken to safeguard the mine against explosions of gas and dust. These precautions include the adoption of alternating-current motors and the use of electric safety lamps.

Expect to Get 70 Per Cent of Panel Coal

The mine is laid out on the panel system. The shaft bottom, which lies parallel to the railroad tracks, is arched with brick and will have, when completed, a storage capacity on its two tracks of a hundred cars. The empty cars are stored on both sides of the shaft bottom. A four-entry system running east and west divides the mine into two sections. The breakthroughs between the two pairs of entries were made as few in number as possible in order to avoid leakage of air. The butt entries are driven on a three-entry plan, with a roadway in the center and air returns on each side. The panel entries contain fifteen 25-ft. rooms driven on 85 ft. centers. Breakthroughs are driven 50 ft. apart, thus leaving the pillars 60 ft. square. Each panel is

MAIN-SHAFT HOIST AND FLYWHEEL MOTOR-GENERATOR SET AT THE VALIER MINE

This hoist under test has raised 1,058 tons in the space of one hour. In the illustration will be noted: Switchboard and hoisting motor on the right, automatic brake control to the left of the engineer, the hoisting drum being behind him; on the extreme left the flywheel motor-generator set.

separated from the other by a 25-ft. pillar. By this method about 40 per cent of the coal is recovered as the workings advance, and it is expected that it will be possible to draw all the room pillars, thus securing an extraction of about 70 per cent from the panels. The exact method of extracting these pillars has, as yet, not been determined.

The coal company has laid off 120 acres adjoining the town of Valier into town lots, and built 25 miners' houses of ten different designs, ranging from three to six rooms. These are being sold to employees at cost. It is the policy of the company not to own or operate any stores and it encourages all its employees to own their own homes. Over two hundred houses have been built by outside interests and a considerable civic spirit is manifested by all the inhabitants. The town is lighted by electricity, and sidewalks, sewers and water supply are now being installed. The various designs of houses, including both frame and stucco construction, present an appearance not usually found in mining communities. The business section contains a number of attractive and well-stocked mercantile shops, and a bank that compares well with the financial institutions of larger municipalities.

Make Rapid Growth in Record Tonnages

About six hundred men are now daily employed at this mine and up to the first of April few idle days were experienced at this plant. It is because of the unceasing efforts and loyalty of all those connected with the company that this property has been developed so rapidly, with few minor injuries and no fatal accidents during the first thirty months of its existence. The increase in tonnage is perhaps best appreciated by noting the tonnages and dates set forth in the following tables:

Tonnage	Date When First Hoisted	Tonnage	Date When First Hoisted
500	Nov. 22, 1918	2,500	Oct. 28, 1919
1,000	Feb. 24, 1919	3,000	Jan. 29, 1920
1,500	May 27, 1919	3,500	May 1, 1920
2,000	Oct. 11, 1919	First coal hoisted	May 10, 1918

Coal Mining in Australia Shows Promise of Expansion

Output in Queensland Almost Normal Last Year Despite Shipping Strike—Extensive New Areas Being Developed at Bowen

COAL-MINING in Queensland, Australia, has of late shown signs of expansion, and there are indications that in this and succeeding years the output will be considerably increased. The value of last year's production was over £614,000 ($3,070,000), which is £42,000 ($210,000) more than that for the preceding year. It is true that the increase is in value only, the quantity produced being 931,630 tons as against 983,193 tons in 1918. Doubtless production would have been considerably larger had it not been for a strike which hung up nearly all the shipping on the Australian coast for eight months of the year and reduced to a minimum the demand for coal for bunkering, which at present is the main outlet for Queensland coal. The price of coal at the pit's mouth was 13s. 2.2d. per ton, the cost of this, like that of practically every other commodity having "gone up" during the year, the increase being 1s. 6d. per ton.

While Queensland has extensive coal measures widely separated over its vast territory, until a few years ago scarcely any was produced except at Ipswich, twenty-four miles from the capital, Brisbane, in the southern part of the state. While that district will remain the chief source of supply, measures in other parts of the state are now being exploited with more or less success. These localities include (besides Ipswich) the Howard field, a short distance to the north; Blair Athol, in the Central district; the Styx River, to the north of Rockhampton, some four hundred miles north of Brisbane; the Bowen coal field, over sixty miles from the port of Bowen, still further north; and Mount Mulligan, in the large mineral district lying inland from Cairns, about a thousand miles north of the capital.

Dawson River Coal Disappoints in Quality

Prospecting operations have been carried out on the Dawson River (inland from Rockhampton), where extensive measures exist, but the coal here has proved disappointing as to quality. The present (Labor) Government, in pursuance of its nationalization policy, has control of the coal operations at the Dawson River, Styx River and Bowen. It also owns a mine at Warra, on the Western Railway near Roma, but this has proved a financial failure and has been closed down.

At the Styx River the only shaft sunk struck good coal, but in such faulted country that work in the shaft last year was stopped. Prospecting by boring, however, has recently located, at a depth of about 700 ft., a seam 8 ft. 8 in. wide of coal apparently of good quality. This is in more settled country than the shaft, and right on the coastal railway which connects the field with Rockhampton and Brisbane, and will eventually connect it with the Northern ports. The distance from Rockhampton is eighty-three miles.

At the Bowen coal field the state is developing first-class and extensive coal areas, and a railway connecting the field with the port of Bowen is under construction. The Government has initiated extensive plans for establishing iron and steel works at Bowen, the chief reason for deciding on this site being the proximity of the Bowen coal. The iron and steel works are to cost something like £3,000,000 ($15,000,000). Supplies of iron ore for the works are to be drawn mainly, as far as Queensland is concerned, from Cloncurry, over five hundred miles by rail inland. The Government, however, has an option on a very large deposit of ore of better quality on an island in Yampi Sound, on the northwest coast of Western Australia, nearly two thousand miles by water from Bowen; and it is expected, should this island be bought, that steamers carrying the ore to Queensland will take Bowen coal to Western Australia as return loading.

Eye for Eye and Tooth for Tooth

THE United Mine Workers and other labor organizations met in Charleston on June 12 to nominate a third ticket for the election in West Virginia, naming as their candidate S. B. Montgomery, the labor candidate for the Republican nomination for Governor, who was defeated in the recent primary. As showing the temper of the mine workers in West Virginia, C. F. Keeney, president of district 17, in the course of a speech at the third party convention said that a situation had come about which made it necessary to take an eye for an eye and a tooth for a tooth. As miners continue to purchase arms this is taken to mean that what the miners cannot secure by union methods they will attempt to secure by force.

Details of Drafting Room

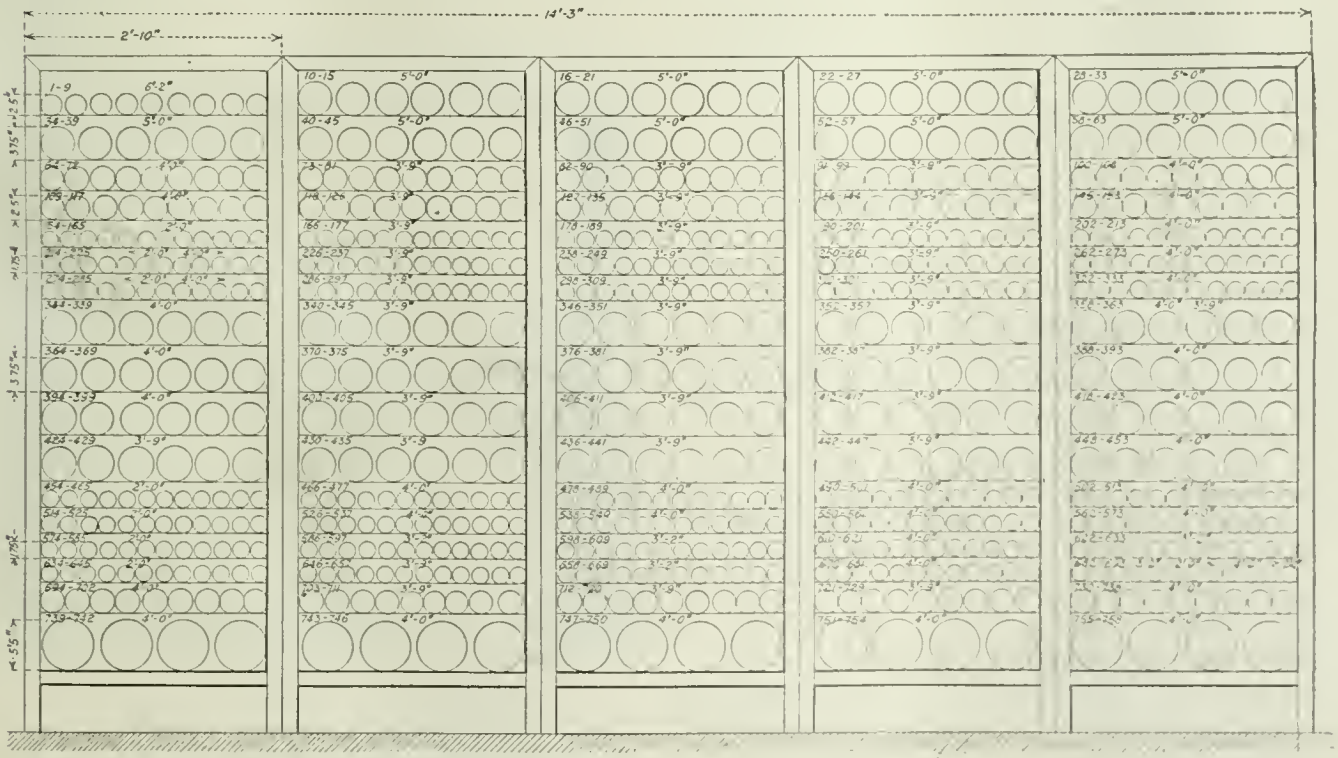
This room is well lighted and ventilated, the cork floor makes it easy for the men who have to stand on their feet and deadens all sound made by men walking.

Kingston Coal Co.'s Drafting Room and Map-Filing Vault

Cork Floors Save Fatigue and Reduce Noise — Flap Cover of Map Tubes Is Easily Opened but Proof Against Dust

NOTABLE among the many details of operation to which careful consideration have been given by the Kingston Coal Co., of Kingston, Pa., is the drafting room together with its vault and map-filing system. As will be noticed in the accompanying illustration, the drafting room is large, light and airy. Plenty of space is provided for the six tables now in use. In fact, should the necessity arise, there is sufficient room without overcrowding to install in all ten tables.

A row of four double windows extends down each side of the room, while one large window is placed at either end. Steam heat keeps the room at a comfortable temperature during the winter, while electric fans in summer tend to alleviate excessive heat. For night work sufficient artificial light is provided by means of adjustable drop lamps. As will be noted in the illustration, the floor is covered with large blocks of cork, thus relieving the strain on the draftsmen, who, being compelled to be on their feet throughout the day, naturally find the work tiring. The cork floor also deadens the noise made in moving about.



ARRANGEMENT OF MAPS IN FILING CASE CONTAINED IN THE VAULT

The offices of the Kingston Coal Co. are located near the station of the Delaware, Lackawanna & Western R.R. in the City of Kingston, and as a result dust and cinders enter the building in quantity. Dust settles over everything, tending to ruin or destroy the maps and drawings. Some method had to be devised to protect these records, for even when they were placed in the vault the dust would come through the open door and settle on them.

The vault itself is of the ordinary type of construction and is about 15 ft. square. It affords more than sufficient room for the accommodation of all the drawings up to date and it provides ample space for those which may have to be filed in the future. At present the filing case contains space for 758 individual drawings, provided only one drawing is filed in each compartment. This filing case is about 5 ft. high and 14 ft. 3 in. long and is built along the rear of the vault. Two-inch angle iron is used in the construction of the filing case. Six vertical bars divide this case into five equal divisions. Horizontal cross bars of ½-in. round iron are used to support the individual compartments.

Round tin tubes of various sizes and lengths are used as individual drawing containers. The opening of the tubes is made on a slant and is so arranged that the flap cover, which also is of tin, will always stay closed unless it is purposely held open. These flaps are made as nearly airtight as possible and thus the dust is prevented from entering the tubes and destroying the maps. Tubes of four different diameters as well as of six different lengths are provided, giving the following combinations of sizes:

Number	Diameter	Length	Number	Diameter	Length
81	2.5 in.	3 ft. 9 in.	55	5.5 in.	4 ft.
172	1.75 in.	4 ft.	54	3.75 in.	5 ft.
120	1.75 in.	3 ft. 9 in.	39	3.75 in.	4 ft.
53	1.75 in.	3 ft. 9 in.	81	3.75 in.	3 ft. 9 in.
75	1.75 in.	2 ft.	9	2.5 in.	6 ft. 2 in.
			54	2.5 in.	4 ft.

The above combinations can be varied to suit the conditions at the mine; the number of any size employed can be increased or decreased at will. Many other changes can be made to suit any conditions that arise.

Each of the tubes has a flat metal lug fastened to the bottom at the point where the horizontal rods come in contact with it. These lugs are used to hold the tubes in their proper place in the rack.

Now Even Mules Have Wash Houses

ANIMALS as well as men require proper working conditions and care. When compelled to work under unfavorable circumstances their efficiency soon decreases while with inadequate care they quickly lose their health and become a liability rather than an asset. Most coal companies realize that they must safeguard the welfare of their men but comparatively few give proper attention to their animals.

Among the companies that give adequate attention to the care of their livestock is the Kingston Coal Co., of Kingston, Pa. Both on the surface and underground a mule's work carries him through muddy places and as a result upon the completion of the day he is liable to be fairly caked with mud and dirt. Ordinarily no arrangements are provided whereby the mule may be cleaned and accordingly mud accumulates and in time may cause sores and disease. In order that these animals may keep their health the above-named company has provided wash houses for them both on the surface and underground.

MINE MULE BATH UNDERGROUND

All the mud and dust of a day's hard run is removed. The mule enjoys to bathe his feet and sides after his work is done as much as did our sandaled forbears to cleanse their feet after a long walk over a dusty road. A good bath is as great an essential for the mule as for his master.

Above ground the mule wash house consists of a brick building containing a concrete pit filled with water. The ends are sloped permitting the mules to enter, walk through and pass out. Sufficient time is allowed in the bath to remove all the day's filth. Underground the same sort of arrangements are made. The wash house is located near the stable so that the mules may be washed just before entering it for the night.

At first it was difficult to persuade the mules to use the wash houses, but as soon as they became accustomed to their regular ablution it was almost impossible to lead them past the wash houses as they wanted their bath and objected strenuously when it was denied them.

Underground not only are the mules bathed, but a further pleasure is provided for them. At the farther end of the stable a large space or kind of overgrown box stall is placed. This is big enough so that one or two mules can be turned in at one time. Soil has been brought from the surface and placed on the bottom of this stall giving a soft dirt floor.

MINE MULE WASHHOUSE ON SURFACE

A walkway along the side makes it easy to keep the mule in control when he shows too great a desire to continue his ablutions and to prevent his fellow mules from enjoying their share of the good things of life.

Six Tons of Ferric Hydrate Secured Daily From Water at a Connellsville Mine*

By Treating Mine Water with Finely Ground Lime, Ferric Hydrate Is Obtained for Use in the Desulphurization of Gas and as a Pigment for Paint — The Purified Water Is Used for Quenching Coke

By L. D. Tracy†
Pittsburgh, Pa.

ON AUG. 5 AND 6, 1918, and on March 26, 1919, I made an investigation of the mine-water neutralizing plant at the Calumet mine of the H. C. Frick Coke Co. This plant was built with the idea of developing a process for treating the mine water and making it suitable for use at the company's power plants and coke ovens. At the same time it was hoped that it would eventually be possible to produce a byproduct of such commercial value that it would place the plant on a self-sustaining basis.

Water is pumped from the mine through a borehole into one compartment of a settling tower. Thence it overflows to another compartment in the samer tower and passes to another tower, where the aforementioned skimming of the top is repeated. It is then mixed with powdered lime and passed through an aërating flume which gives the liquid an undulating motion. The precipitate is collected in a thickener and dried on a steam drum.

The Calumet mine is situated in Mt. Pleasant Township, Westmoreland County, Pa., on a spur from the southwest branch of the Pittsburgh division of the Pennsylvania R.R. It is about six miles southeast of Greensburg, the county seat of Westmoreland County.

The coal, which is of the Pittsburgh or Connellsville bed, lies at a depth of about 200 ft. and is brought to the surface by means of a shaft. The annual coal output of the mine averages 200,000 tons, all of which is made into coke, either at the mine or at byproduct ovens. Two hundred and sixty coke ovens are installed at the mine.

Water in Streams Now Highly Acidulous

The continued development of the coal fields of Pennsylvania and the increased use of electric power in the operation of the mines have brought the problem of an increased water supply for the plants to the attention of the coal operators. This is especially true in the Connellsville region, where large quantities of water are used in quenching coke at the ovens. Many of the streams receive the drainage from the mines; and as this water is highly acidulous and contains sulphur in various forms, some method of treatment is necessary to render it suitable for use.

With this end in view, the H. C. Frick Coke Co. about four years ago installed at its Calumet mine a plant for experimental purposes, in an endeavor to develop a process that would provide a maximum amount of suitable water at a minimum cost. From a purely technical point of view the result of these experiments has been encouraging. The company is now endeavoring to place the plant on a commercial basis.

Calumet mine is drained by three boreholes 8 or 10 in. in diameter and 215 ft. deep, situated possibly 500 ft. from the main shaft. At the foot of the boreholes are four wood-lined pumps. These consist of one 25 x 14 x 36-in. Lafayette, one 25 x 12 x 30-in., and two 20 x 12 x 36-in. Yough pumps. They deliver to the neutralizing plant an average of 1,000,000 gal. of mine water every twenty-four hours. An analysis of a sample of mine water as it comes from the boreholes and before it has received any chemical treatment is given in Table I, which follows.

TABLE I. ANALYSIS OF MINE WATER AT CALUMET PLANT

	Grains per U. S. Gallon	Pounds per 1,000 Gal.
Non-incrusting solids:		
Sodium carbonate (Na_2CO_3)	None	None
Sodium sulphate (Na_2SO_4)	8 5	1 2
Sodium chloride (NaCl)	0 9	0 1
Sodium nitrate ($NaNO_3$)	None	None
Incrusting solids:		
Silica (SiO_2)	3 8	0 5
Ferric oxide plus alumina ($Fe_2O_3 + Al_2O_3$)	26 6	3 8
Ferrous sulphate ($FeSO_4$)	5 5	0 8
Ferric sulphate ($Fe_2(SO_4)_3$)	59 3	8 2
Calcium sulphate ($CaSO_4$)	46 6	6 7
Magnesium sulphate ($MgSO_4$)	8 3	1 2
Free sulphuric acid (free H_2SO_4)	21 3	3 0
Total sulphuric trioxide as sulphuric acid (SO_3 as H_2SO_4)	165 7	22 3
Suspended matter	14 8	2 1

Two of the boreholes are located on the opposite side of the railroad track from the main plant. Over each of these concrete towers about eighteen feet high have been erected. Each tower is divided into two compartments, one of which acts as a standpipe into which the water is pumped from the mine below. When the water in this compartment reaches the top of the division wall, it overflows into the other compartment, from the bottom of which a drain leads to a tower between the two boreholes.

This tower is similar in arrangement to those erected over the boreholes, the water filling one compartment and overflowing into the second. From the effluent chamber a covered concrete drain leads under the tracks and terminates in the mixing chamber of the plant. The entire arrangement is somewhat similar to an inverted siphon. The towers and drain are shown in

*Abstract of an article, published by permission of the U. S. Bureau of Mines, to be presented before the Lake Superior meeting of the American Institute of Mining and Metallurgical Engineers, August, 1920, and entitled by the author "Mine-Water Neutralizing Plant at Calumet Mine."

†Coal mining engineer, U. S. Bureau of Mines.

Fig. 1, while the general arrangement of the installation is shown in Fig. 2. The plant is in continuous operation twenty-four hours per day; the average operating force, in addition to the superintendent, consists of eleven men.

The only material used in the process that is not furnished by the raw mine water is limestone. This is shipped in hopper cars direct from the quarries to the plant and delivered at the outside of the storage shed in the form of screenings that will pass through a ½-in. mesh. The amount of limestone used per day depends largely on the amount of free acid in the water. It is estimated that for every ton of ferric oxide ¾ ton of limestone is needed.

These limestone screenings are raised by means of a bucket conveyor to a storage bin having a capacity of from 80 to 100 tons. From that point they gravitate to a Lehigh-Fuller pulverizer, that crushes the material so that it will pass through a 200-mesh screen. From the pulverizer another conveyor carries the limestone to a bin, from which it drops into a screw conveyor, which feeds it to a vertically-inclined conveyor. This conveyor delivers to the mixing tank and drops the material into the raw mine water as it comes from the boreholes. By increasing or decreasing the speed of the electric motor driving the screw conveyor the amount of powdered limestone used is varied in accordance with the quantity of sulphuric acid in the water used.

Inverted Siphons Deliver Water to Mixing Tank

The water from the boreholes is delivered to the mixing tank by means of the inverted siphon arrangement already described. As the water enters the mixing tank the powdered limestone drops into it from the conveyor and is thoroughly mixed as the water passes over and under a series of baffles.

In general, the reactions of the limestone on the mine water are as follows: The powdered limestone ($CaCO_3$) neutralize the free sulphuric acid (H_2SO_4) present in the water, forming calcium sulphate ($CaSO_4$), water (H_2O), and carbon dioxide (CO_2). The basic ferric sulphate is more or less thrown out of solution, for it can only be so held while the water continues acid. If the free acid is just neutralized the precipitation is an almost true basic ferric sulphate.

After the free sulphuric acid is neutralized, if an excess of calcium carbonate ($CaCO_3$) is used, the ferric sulphate ($Fe_2(SO_4)_3$) is further acted upon, the results of this reaction being ferric hydrate ($Fe(OH)_3$) and calcium sulphate ($CaSO_4$). The calcium sulphate produced is held in solution and so does not get into the precipitate in quantities sufficient to injure it. The resulting precipitate is known as hydrated oxide of iron, and the substance is the byproduct which the plant is designed to produce.

Leading from the mixing tank to a Dorr thickener is a wooden flume, which is one of the essential parts of the entire process and the design of which is covered by patents. This flume is about 200 ft. in length and is carried on bents about 8 or 10 ft. high which are spaced approximately 10 ft. apart. The flume is composed of two wooden troughs, side by side, each trough being 3 ft. wide and 2 ft. deep. Baffles 2½ ft. apart alternately project from the bottom and the top. They impart to the current an undulating motion, which completes the mixing of the limestone and mine water commenced in the mixing tank. At the same time the motion thoroughly aërates the entire mixture. An arrangement is provided by which any of the pulverized limestone settling in the bottom of the flume may be flushed into a separate tank, and the water drained. Table II gives an analysis of the treated lime water.

TABLE II. ANALYSIS OF THE LIME WATER AFTER TREATMENT

	Grains per U. S. Gal.	Pounds per 1,000 Gal.
Non-incrusting solids:		
Sodium carbonate (Na_2CO_3)	None	None
Sodium sulphate (Na_2SO_4)	11.6	1.7
Sodium chloride ($NaCl$)	0.9	0.1
Sodium nitrate ($NaNO_3$)	None	None
Incrusting solids:		
Silica (SiO_2)	15.5	2.2
Ferric oxide plus alumina ($Fe_2O_3 + Al_2O_3$)	56.6	8.1
Ferrous sulphate ($FeSO_4$)	8.5	1.2
Ferric sulphate ($Fe_2(SO_4)_3$)	None	None
Calcium sulphate ($CaSO_4$)	131.2	18.8
Magnesium sulphate ($MgSO_4$)	17.4	2.5
Free sulphuric acid (free H_2SO_4)	0.5	0.1
Total sulphur trioxide as sulphuric acid (SO_3 as H_2SO_4)	172.6	24.7
Suspended matter	100.3	14.3

Suspended matter:	Per Cent
Silica (SiO_2)	7.6
Alumina (Al_2O_3)	4.6
Ferric oxide (Fe_2O_3)	41.3
Calcium oxide (CaO)	7.0
Magnesium oxide (MgO)	Trace
Sulphur trioxide (SO_3)	19.1
Water (H_2O)	12.4

The flume previously mentioned is built on a 1.5-per cent. grade from the mixing tank and terminates at the center of a Dorr thickener, 7 ft. deep at the outer edge and 12 ft. in the center. When the flume reaches the center of the thickener, it turns vertically downward so that the point of discharge is sufficiently below the surface to prevent agitation of the clarified water.

With a flow through the thickener of 1,000,000 gal. every 24 hr., its capacity allows a settling period of about 4 hr. During this time the ferric oxide held in suspension settles to the bottom, while the clarified water passes over the upper edges into collecting troughs, which carry it to a storage basin. From this basin the water is used if required.

A vertical shaft through the center of the thickener is driven by a worm gear connected to an electric motor. Fastened to the lower end of the shaft are four arms placed at right angles to each other; two are 35 ft. and the other two 16½ ft. long. These arms are parallel to the bottom of the thickener. On the lower side of each arm and running diagonally across it are riveted small steel angles that practically touch the bottom. These scrapers, as they are called, serve to concentrate the settled material at the center of the thickener. The arms revolve at a speed of one revolution every five minutes.

Sludge Is Sprayed Onto Heated Drum

A short distance from the Dorr thickener is a building known as the "drying shed." A small diaphragm pump here installed and connected to the underflow of the Dorr thickener is used to draw the ferric oxide, or "sludge," from the thickener and discharge it into a sump. From this sump a centrifugal pump lifts the sludge to an elevated tank outside of the drying shed, where it receives a further period of settling. At this stage of the process the sludge contains about 75 per cent of water and has the consistency of thick paint.

In the drying shed is a large dryer in the shape of a drum and manufactured by the F. J. Stokes Machine Co., of Philadelphia, Pa. This is heated by steam at a pressure of 30 lb. Just underneath the drum and parallel to its axis are two troughs, one of which is

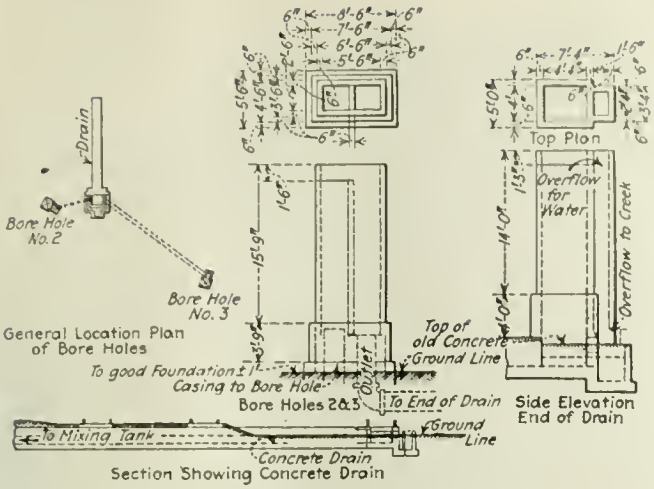


FIG. 1. PLAN OF CONCRETE SETTLING TOWERS AND DRAIN FOR CRUDE MINE WATER

Both the towers over the boreholes and the central tower are two-compartment affairs. By means of these towers the water is twice decanted, only the liquids and finest of solids being carried over. The left hand sectional elevation shows a borehole tower and that of the right hand the central tower, which is so designed that it will pass no more water to the plant than it can handle. The rest overflows to the creek.

connected by a line of pipe to the elevated secondary settling tank. At intervals of about twenty minutes a valve in this pipe line is opened and the trough filled. The sludge from this trough gravitates to a small centrifugal pump a few feet in front of the drier. This pump sends the sludge into the second trough with sufficient force to splash it against the hot outside surface of the drum. The water is evaporated by the heat as the drum slowly revolves, leaving the residue in the form of a fine powder, which is scraped from the drum by a long knife-edged steel bar. This powder is yellow in color and is conveyed by a mechanical loader to storage piles on the floor or into cars for shipment.

The plant, even at present, is of an experimental nature. Since the original installation the company has made many alterations in the mechanical details and operation tending toward greater economy and efficiency, although the fundamental process remains the same. The most important change was the elevation of the mixing tank and flume, whereby a gravity flow to the Dorr thickener was obtained, at the same time placing the additional head necessary upon the pumps in the mines.

TABLE III ANALYSIS OF THE FERRIC OXIDE PRODUCT

	Moisture Free Per Cent
Silica (SiO_2)	13 0
Titanium oxide (TiO_2)	0 3
Aluminum oxide (Al_2O_3)	10 3
Phosphorus pentoxide (P_2O_5)	1 0
Ferric oxide (Fe_2O_3)	37 1
Calcium oxide (CaO)	13 2
Magnesium oxide (MgO)	0 6
Potassium oxide (K_2O)	1 0
Sodium oxide (Na_2O)	0 7
Sulphur trioxide (SO_3)	11 6
Combined water (H_2O) above 105 deg. C	4 8
Carbon dioxide (CO_2)	6 4
Total	100 0

Improvements Obviate Acid's Effects

In the first design these pumps forced the water to the surface, where it flowed by gravity through the mixing tank and the flume to a sump at the base of the Dorr thickener, being raised from this sump into the thickener by a small centrifugal pump. If for any reason the conveyor feeding the pulverized limestone into the raw mine water ceased to operate, more or less of the untreated water found its way to this pump, with the result that the acid in the water rapidly attacked it and rendered it useless. To avoid this condition the concrete towers at the boreholes were constructed, the mixing tank and flume were elevated, and the work done by the small centrifugal pump was placed on the machines in the mine. As these pumps are wood-lined, the injurious effect of the mine water is reduced to a minimum.

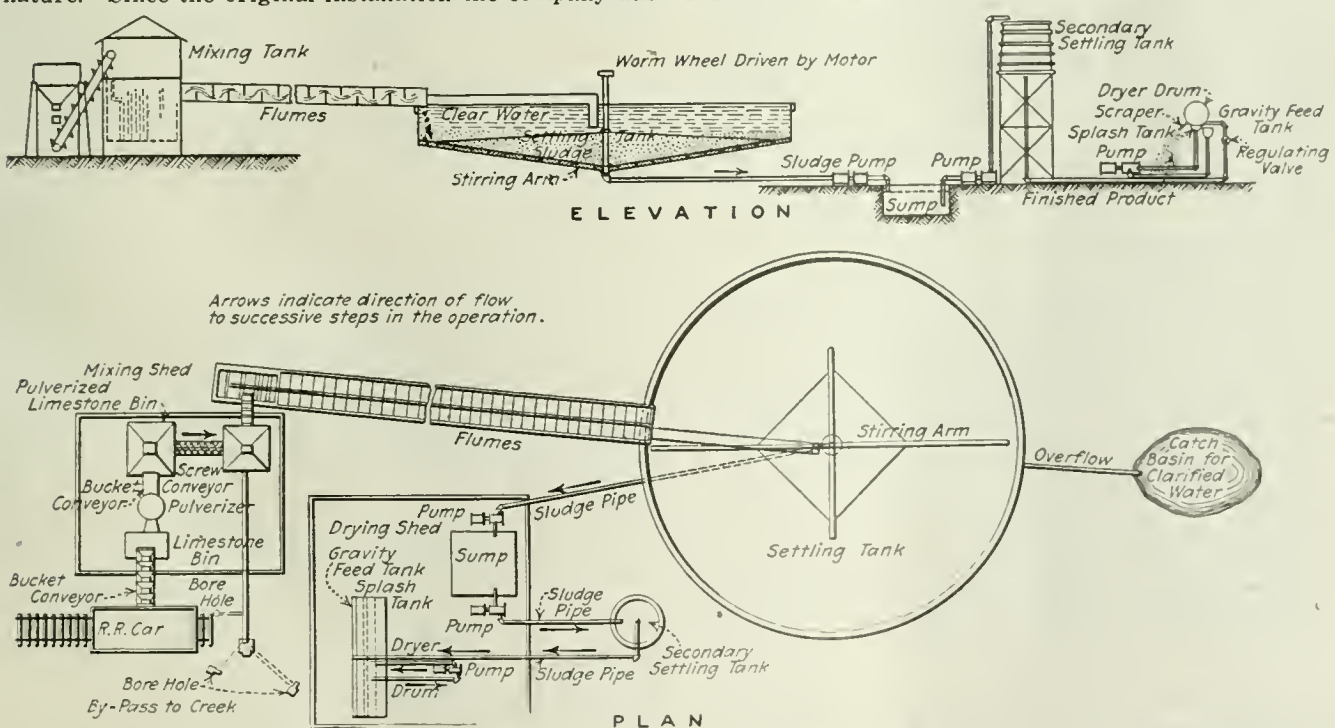


FIG. 2. PLAN AND DIAGRAMMATIC ELEVATION OF THE WATER-NEUTRALIZATION PLANT

The limestone—the only material in the process not furnished by the raw mine water—comes in on the railroad and the water by the way of the boreholes.

By distinct routes they reach the mixing tank and go together to the settling tank or thickener, where the clarified water is passed to a catch basin, and the ferric hydrate sludge, after a secondary settling, is sprayed on a steam drum. Thus dried the product is stored or shipped.

The principal byproduct of the neutralizing plant is the ferric oxide extracted from the mine water. As has been stated, many of the streams in this region contain a large amount of sulphur water, which if used for quenching coke at the ovens would undoubtedly discolor the product and increase its sulphur content, which, it is well known, must be kept as low as possible if the coke is to be used for blast-furnace purposes. The treatment described has the further possibility that with additional treatment, the water coming from the plant could be made suitable for use in steam boilers.

During extremely dry seasons, such for instance as the summer of 1918, the treated water from the Calumet plant has been of material assistance. By using it for quenching coke the company was able to conserve the fresh water stored in its reservoirs and employ it solely for domestic and power purposes. Even before the Calumet plant was constructed the mine water had been treated in a crude way, whenever it was necessary to use it for quenching coke.

The advantage that a plant such as that at Calumet may hold over a water-treating plant of the usual type lies in the fact that the former produces a byproduct having a potential commercial worth, while the sludge from the latter has, as far as I have been able to ascertain, little if any value. If this byproduct can be secured at a sufficiently low cost to meet competition from outside sources and the plant can be made to produce a revenue sufficient to pay the operating cost, the company will obtain an additional supply of water at little extra expense.

Product Had a Good Market During War

The plant at present is turning out six tons of ferric oxide per day. The amount of this byproduct depends entirely on the quantity of water pumped from the mine and the percentages of iron, in various forms, contained therein. During the war, when the importation of natural ferric oxide was impossible, a ready market was found for the manufactured article. Large shipments of this byproduct were made to companies manufacturing artificial gas, for use in removing the hydrogen sulphide present therein. The problem now presenting itself is to so perfect the operation of the neutralizing plant that, if possible, competition from European and domestic ferric oxide and iron borings can be successfully met.

Ferric oxide also is one of the chief ingredients in a number of the paints commonly used, and it is hoped that further experimentation will demonstrate it to be of considerable value to the agricultural interests of the country. This would furnish an additional market for this byproduct. The Calumet water-neutralizing plant, so far as I know, is the only one of its kind in this country that treats mine water in the manner described.

In connection with experimental work[1] conducted by the Bureau of Mines on the action of acid mine water on the insulation of electric conductors, the chemical laboratory collected and analyzed a number of mine waters. The acidity and composition of the waters from any mine vary considerably at different times. However, the analyses of the samples collected are tabulated here in order to give a general idea of the composition of such waters. The acidity of the waters tabulated varies considerably.

Mine water purification has been studied heretofore almost entirely with the view of preventing damage to pipes, pumps, and boilers. It has been practiced with a fair degree of success. The principal means of treating impure water used in boilers may be roughly classified as chemical, thermal and mechanical.

No Other Methods Produce Revenue

The first of these methods seeks, by so-called boiler compounds, either to free the water of mineral salts by precipitation or to remove the free acid by neutralization. The thermal treatment is, fundamentally, a boiling and condensing process and is commonly used when large amounts of carbonates of lime and magnesia are held in solution in water containing an excess of carbonic acid. By heating the water to the boiling point, the free acid is expelled and the salts precipitated. After sufficient time has elapsed to allow the precipitated salts to settle, the clear water may be pumped into the boiler. The third process is especially applicable to water holding in suspension fine particles of clay, sand or organic matter. The water is first run into large settling tanks, where the suspended matter is allowed to settle, and then put through a filter, which removes light organic material.

Often a combination of these methods has been found advantageous, and for securing a supply of pure water for boilers they have proved more or less satisfactory. The objections to them are that the cost of installing and operating suitable purification plants places an additional burden on the production cost at the mine and none of these plants reclaims any of the valuable elements held in either solution or suspension in the water.

The ideal plant would be one that sufficiently purified the water coming from the mine to permit it to be used for domestic or steam purposes and at the same time produced a byproduct of sufficient commercial value so that the revenue derived from its sale would at least partly pay for the cost of operation and make a return equivalent to the interest on the money invested therein. The Calumet plant is a long step toward such an ideal installation. A degree of purification is attained sufficiently high to allow the water to be used at the coke ovens and, with additional treatment, even in the boilers. At the same time about six tons per day of a marketable byproduct is produced.

Fertilizer a Possible Byproduct

The mine water contains some phosphorus and potassium, which might possibly be of value in the fertilization of soils. The water from mines other than from those producing coal could also be utilized as a source of byproduct.

The foregoing shows what may be accomplished when the treatment of mine water is studied with the idea of reclaiming valuable products as well as for obtaining a pure water supply. It would seem that in many cases a plant similar to the one at Calumet might prove to be an economical investment for a company whose surface water supply is in danger of being curtailed during dry weather.

In my opinion mine-water purification is worthy of investigation by any company that has before it the problem of the disposition of its mine drainage and the provision of an adequate water supply.

[1] H. H. Clark and L. C. Ilsley: Action of Acid Mine Water on the Insulation of Electric Conductors. U. S. Bureau of Mines *Tech. Paper* 58 (1913) 26 pp.

The Truth About Coal, and Not By a Coal Operator

Dr. Eaton Says Bituminous Industry Has to Combat a Public Opinion Made Hostile Because Uninformed or Misinformed

WRITING on "The Truth About the Coal Situation," in the current issue of *Leslie's Weekly*, Dr. Charles A. Eaton, its associate editor, urges that if the problems facing the soft coal industry were better understood by the public there would be a far different national attitude toward it. Dr. Eaton, who during the war was director of the National Service Section of the U. S. Shipping Board and is regarded as an authority on industrial problems, says that the soft-coal industry has been badly misrepresented before "a hostile and uninformed or misinformed public opinion which is ready to believe anything bad about the coal operators and nothing good." The writer dwells upon the serious shortage of coal cars as one of the difficult problems facing the soft-coal industry. In discussing prices of coal at the mines he says that "the rank and file of operators are not open to the charge of profiteering, nor have they made undue profits even during the war."

The article in part is as follows:

"Next to agriculture coal is the Nation's basic industry. What food is to the body coal is to the economic fabric of society. Along with these two stands transportation, constituting a three-fold foundation for the prosperity, progress and stability of all classes and sections alike.

Fortunate in Escaping National Disaster

"The coal industry is of vital importance to every one, but its condition has been, and still is, so chaotic that one wonders how we have managed to get as far as we have without serious national disaster.

"Roughly speaking there are about ten thousand bituminous coal mines and some seven thousand operators in our coal-producing areas. The country needs annually for normal use about five hundred million tons of bituminous coal. The mines now being operated have an annual capacity of 750 million tons."

Dr. Eaton points out that, with an annual value of $1,300,000,000 for the coal mined, the labor cost of producing it has been $741,000,000, and that this was increased by $200,000,000 under the recent wage advance of 27 per cent awarded by the Bituminous Coal Commission. He goes on to say:

"It needs always to be kept in mind that after coal leaves the mine there are the wholesaler and retailer who come in for a profit. And among these are some who do not hesitate to take all that the traffic will stand, but the rank and file of the operators are not open to the charge of profiteering, nor have they made undue profits even during the war.

"According to reports furnished by the National Coal Association, and which I have not seen contradicted, some four hundred operators in 1917 made profits of over 15 per cent upon their capitalization, while 6,600 operators made less than this. In that year the total output was sold for an average price of $2.26 per ton at the mine. Out of this all operating expenses, fixed charges and taxes had to be paid.

"In 1918 under Government regulation the average price at the mine was $2.61. According to Dr. Garfield this price left an average margin of only 46c. per ton, and of this 46c., 30c. was paid in Federal taxes.

"In the report of the Bituminous Coal Commission the tax returns to the Treasury of some 1,551 coal-mining concerns are tabulated for 1918. These companies produce about one-third of the total output, and they represent fairly the industry as a whole. In that year 337 of these 1,551 operators reported a loss. After deducting taxes the average per cent net income to invested capital in 1918 for the 1,214 companies reporting profits was less than 11 per cent, and for the entire 1,551 companies it was 9.72 per cent.

"Under our present system of taxation a business must earn at least 10 per cent in order to equal the income upon 4½ per cent government bonds. So that it would seem that these coal companies can hardly be justly accused of undue profiteering.

Industry Is One with Many Hazards

"Coal mining is a hazardous calling both for investors and workers. It is a seasonal occupation involving slack times alternating with extensive forced output. There is a continuous car shortage, which means shutting down work sometimes for twenty days out of thirty. Meanwhile in many mines water has to be pumped all the time whether coal is shipped or not. Slate caves in; sulphurous water destroys tools and tracks. Explosions and fires are a constant menace. As mining advances there is a growing depletion of resources and rapid depreciation of equipment.

"In view of these facts it is not surprising to learn that in 1915 the average return upon investment in the mining of bituminous coal was less than 1 per cent, while in 1913-1914 coal companies representing a capitalization of over 100 million dollars were in the hands of receivers.

"The operators have been without any means of reaching public opinion with the facts. And they face a hostile and uninformed or misinformed public opinion, which is ready to believe anything bad about the coal operators, and nothing good. There are certain radical changes necessary in order to place this basic industry upon a safe footing.

"First of all, the mines must have cars when they are needed, and as many as are needed, in order to distribute production over the whole year evenly. We must have a new national attitude toward the coal-mining industry. We must help the coal industry to escape from an intolerable car situation; from an unjust and ignorant public opinion; from autocratic, wasteful and destructive labor policies and practices; from a niggardly credit system; and from a destructive governmental attitude. Then we can have fair oversight and regulation by Government which will tend to make the industry more efficient; reduce costs and lower prices, while at the same time giving employer and employee a generous reward for hard and unpleasant work well done."

Ernest F. Heasley has just been placed in charge of the Huntington office of the Boone Coal Sales Co., that company having only recently opened the branch in Huntington, W. Va.

Masters in One Industry

Mine Managers and Engineers, Plant Regions, Are Pioneers of Civilization Perplexing Problems in Mechanical,

By R. Dawson Hall

MINE managers and mining engineers are masters, or novices, in many industries. It is frequently stated with much justice that the mining engineer must have a knowledge of all forms of engineering, for most mines are outposts of civilization. They are opened in places where there are few of the conveniences of life, often where there is no resident population, and consequently it is the function of the management to create and sustain the whole community life which must be initiated and developed if mining work is to be performed.

Thus railroads and bridges must be built, roads must be laid out and maintained, houses for individuals and for the community life must be built, stores must be erected, the selling of merchandise conducted, sanitary problems must be solved, schools must be constructed, water must be supplied, and there are countless other activities that fall to the engineer, in many of which byways of mining engineering he may be an adept, but is more likely to be an uninstructed novice.

Busied with his geological determinations, his surveys, his laying out of mines, his opening up of properties and his ventilation difficulties — that is, with the main and proper business of his craft — he has little time for the study of the problems just enunciated, especially as they are "byways from byways," for there are also his mechanical problems, his boiler houses, engine houses, hoisting equipment, electric transmission systems, compressed-air engines and air lines, pumps, fans, water-purification systems and many other mechanical features. There are his safety-engineering problems, the guarding of machinery, the avoidance of explosions of gas and dust, the design of the workings for the promotion of safety. Then again there are management and accounting difficulties. One lays down one's pen with a sense that to express all were but to weary all.

* * *

TO keep up, up, up with all these varied problems the engineer would need to take not only *Coal Age* for mining matters but *Power* as his mentor for his boiler and engine problems, the *Electrical World* for his electrical labors, *Safety Engineering* for his work in the interest of safety, *System* for his management and accounting difficulties, *Chemical and Metallurgical Engineering* for his booking in the progress of chemistry in relation to his business, *Engineering News-Record* to help him reach complete competence in civil engineering operations, the *National Builder* to assist him to plan and erect his towns and even one of the many dry-goods papers to aid him in scheming and controlling his stores.

All these papers he would like to peruse and even to subscribe to, but he has not the time. They are not written with a view to his essential problems. His specializing subordinates may and must take some one of them, but for his part he must make mining his main study and seek in some way to meet the others as best he can. Is he a master in these many industries? He most certainly is not; in most he is a novice only and in need of help.

—Novices in Many

ing Their Industry in Undeveloped —As Such They Have to Solve Many Civil and Sociological Engineering.

COAL AGE has sought to serve him in these varied lines, but the inertia of the industry somewhat hinders, for there are not a few who still feel that a coal paper should be only a coal paper and nothing more, that it should rigidly restrict its viewpoint to the mines, the mines, always the mines—"the practical problems of mining," as a large and somewhat confident majority still prefers to term them.

But it is the duty of a coal paper to meet all—not merely a few—of the problems of the mining manager, to direct attention and to develop not one phase or a few phases only but all that the modern mining man must meet. The art of mining must be seen whole. The entire industrial duty of the coal man should find balanced expression within its pages. The engineer's journal should light every professional duty that he has to meet. He must not go full illumined to his mining engineering duties and but dip-lighted to the others.

Hence the Equipment Number and the articles on equipment and hence also the Safety and Welfare Number and the articles on those two subjects. The number of smaller mines which cannot be furnished with specialists on a multitude of subjects and the fact that over all the final arbiter as to equipment and even as to its handling, in large and small mines alike, is the mine manager make it essential that *Coal Age* shall inform him regarding these byway duties as well as about those that form for him the justification of his title — mining engineer.

* * *

THE Bureau of Labor by one of its investigators has come to the conclusion that about 61 per cent of the 750,000 mine employees live in company houses. The estimate, if anything, is rather too low than too high, as any one acquainted with the industry will agree. For these employee-tenants must be often built not only dwellings but community houses, boarding houses, hotels, Y. M. C. A.'s, hospitals and churches. There must be in these prosperous times garages, sewerage systems and bathhouses. Some are providing even apparatus for communal laundries, collecting garbage, erecting dairies, constructing vegetable storage places and planting truck farms. First-aid equipment, rescue stations, dental clinics, dispensaries and other like provisions have followed. Some have nurses and instructors in hygiene, safety, English and mining. Some provide classes for women in needlework, house management and bookkeeping. Nor should playgrounds and club houses be overlooked. Community work has grown and is growing as the mines have been planted farther and farther from organized villages and have been filled with men who either never knew what community life was or practiced it on a lower scale.

Time was when the leader in industry strove merely to make industry big. Today he seeks also to render it benign. "Larger" has given way to "better." But for a new era we need an informed management. The mine builder must think in more than board measure; he must visualize something other than bolts or shingles. New materials and better methods are at hand. Are we using them? So much for housing. But there are divers other problems. Let those who have their solution send in their contributions to us early. Let the Safety, Welfare and National Safety Congress Number of Oct. 7 lead its predecessors in informative articles. All the contributions accepted will be paid for at regular space rates.

Changes That Experience Has Dictated in Details of Combination Locomotives*

Devices Were Introduced to Prevent an Excessive Rate of Charge During the Gassing Stage, to Make Impossible a Too Complete Discharge of the Batteries and to Avoid the Possibility of Discharging the Batteries into the Trolley Circuit

By John B. Hicks†
Jenkins, Ky.

After describing the type of locomotives in use at Jenkins, Ky., the writer relates difficulties which arose. Tight wedging of trays broke jars, their covers and trays also. The sealing compound melted until the heated gases were given an opportunity to escape. Trays became acid-soaked till proper spacing was provided. The boosting resistance and the shunt trip circuit breaker in the charging circuit were wrongly placed, the one being broken and the other neglected. Both were relocated, but motormen still neglected to use the circuit breaker and so an automatic contact within the meter was provided.

IN THE winter of 1915 the Consolidation Coal Co. decided to replace some of the live stock in the mines of its Elkhorn division with gathering locomotives. Up to this time the coal had been gathered by mules and cable-reel locomotives. Following this decision the question naturally arose as to what particular type of gathering locomotive should be purchased in order that the coal might be gathered most efficiently and at the lowest cost for maintenance.

Having the cable-reel locomotive already in service it was decided to purchase two combination trolley and storage-battery machines, so that a comparative test could be made between the several methods of gathering—namely, by mules, by reel locomotives and by combination locomotives.

Two combination machines were delivered and put into service in the summer of 1915. These locomotives were placed in different mines and on the hardest hauls. They replaced four mules and displaced one man in one of the mines and displaced two men in another mine. In the first instance a spike team was used on one of the hauls, which accounts for the displacing of only one man.

These two locomotives were tried out under practical mining conditions, and after several months of satisfactory service it became evident that the storage-battery locomotive would be a permanent part of the mine equipment. In fact the results were so thoroughly satisfactory that ten more combination locomotives were purchased in the late fall of 1915. These were delivered in February, 1916, and put into service at the different mines of the division.

Locomotives 6-Ton Two-Motor Machines

It might be well to describe this locomotive briefly: It has an outside frame, weighs six tons, has two motors; its length over all is about 14 ft.; its width over all is 5 ft.; its height above the rail to the top of the metal covers is 31 in.; the wheel base is 44 in.; the wheels are steel-tired; the track gage is 42 in.; the speed on trolley about 7 miles per hour; the speed on battery about 4 miles per hour; the draw-bar pull when on trolley is 2,500 lb. and on battery 1,100 lb.

The equipment on the locomotive consists of two 250-volt direct-current motors hung in tandem—these are operated in parallel at all times by current supplied from the trolley or battery circuits—one 56-cell lead battery; a controller and an ampere-hour meter, also a brake of the screw type. The 56-cell lead battery is assembled in six trays as follows: Two trays of fourteen cells each, one tray of ten cells, one tray of eight cells and two trays of five cells each.

The trays containing the fourteen, ten and eight cells are in the large battery compartment which overhangs the front truck. The 5-cell trays occupy two small compartments in the body of the locomotive opposite the commutator end of the motors, and all battery compartments have suitable asbestos-board covers about 3 in. above the tops of the intercell connectors.

Reverse Cylinder Governs Source of Power

The controller is so designed that the transfer from the trolley to the battery circuits or vice versa is secured through the operation of the reversing cylinder. This eliminates the transfer switch and simplifies the wiring on the locomotive. A saving in time is thus secured for the operator because he has only to manipulate the reversing cylinder when he desires to substitute trolley current for storage-battery current or vice versa.

In charging from the trolley while working it is necessary to have a fixed resistance (called a boosting resistance) of a predetermined capacity between the trolley circuit and the battery, with a shunt trip breaker in the charging circuit. This may be operated by hand or automatically opened by an auxiliary contact within the ampere-hour meter. Such an arrangement makes it possible to charge the battery when running on the trolley or while the locomotive is standing, as is often the case when it has to wait for loads or empties. The circuit for charging the battery is so wired that the cells in the locomotive can be energized either by the constant-current or constant-voltage method, both systems using the same shunt trip circuit breaker for opening the circuit when the battery is fully charged.

*First part of an article entitled "Use of Combination Battery and Trolley Mine Locomotives," read before the Kentucky Mining Institute, at Lexington, Ky., June 1, 1920.

†Assistant Superintendent, Power and Mechanical Department, Consolidation Coal Co.

At this point a contact is made by the meter which opens the trip breaker.

On the first combination locomotives the boosting resistance was wired with a short-circuiting switch that made it possible to cut out a part of the resistance. This did not prove satisfactory and it became necessary to take out this switch because of the injury done to the battery when it was given too high a rate of charge.

The ampere-hour meter is of the locomotive type, 100 amp., scale 200. Contacts are located at zero with two auxiliary contacts, one at the gassing point on the battery-charging circuit and the other at the low discharge for the battery. This meter shows the state of charge or discharge of the battery if kept in step with it; that is, after the equalizing charge has been given.

The meters on the first combination locomotives had the zero contact only. When the indicating hand on the ampere-hour meter returns to zero it signifies that the battery has been fully charged and at this point contact is made within the meter which opens the shunt trip circuit breaker in the charging circuit, thus stopping the charge of the battery.

Troubles During Experimental Period

It would be misleading to leave the impression that no trouble was experienced with the batteries and the locomotives in this period of development and experimentation. In the first group of locomotives placed in service the battery trays were secured in their compartments by means of wooden wedges, thin ends down. The slight weave of the locomotive caused these wedges to work downward and become tighter than was desired, thereby putting a heavy pressure on the trays. The repairmen would occasionally get the wedges in too tight, driving them down a little too far.

This also caused an undue stress on the trays when the weave occurred in the locomotive as it ran over uneven track. This weave, as above stated, is slight yet it resulted in split trays, cracked jars and covers. The wedges were removed from around the trays in all the locomotives after which the slight weave in the frames no longer caused the splitting of trays or the cracking of jars.

Present specifications require that the tops of the trays be $\frac{1}{4}$ in. below the tops of the jars and the trays so placed in the battery compartments that at the ends they clear the insulators on the sides of the battery compartments at least $\frac{1}{4}$ in. and not more than $\frac{1}{2}$ in. In the direction of motion of the locomotive about $\frac{1}{2}$ in. is allowed between the insulators on the ends of the battery compartments and the side of the trays. With this arrangement the pressure arising from the slight weave of the locomotive cannot be transferred to the trays.

Another difficulty encountered was that the sealing compound became heated unduly and would run down between the cover and wall of the jars, causing the cells to become leaky. This was a highly objectionable feature and injured both the cells and the trays. By watching this feature closely it was found that the sealing compound was being heated by the gases that arose from the battery when it was being given a boosting charge from the trolley. These gases and the heat from the battery were retained in the battery compartments because those compartments were tight and would not release them. This was corrected by raising the asbestos-board covers over the top of the battery between two and three inches and boring holes through the side frames of the locomotives into the battery compartments. This allowed the heat and gases to escape.

In the first combination locomotive purchased there was only a $\frac{1}{4}$-in. space between the trays, this being the thickness of the lifting iron. When, by reason of the overfilling of cells or the leaking of the covers, acid got on the top or sides of the trays, it was difficult to neutralize it. This was remedied by making such changes in the battery compartments as would allow vertical spacing strips about $\frac{3}{4}$ in. thick to be put in between the trays. Since these strips have been put in place no trays have become so acid-soaked that it has been necessary to remove them and it has been found that, barring accidents, the trays always last the full life of the battery.

Wrong Placing of Boosting Resistance

Likewise, in the early locomotives it was found that the boosting resistance was not properly placed, being in a position where it might be easily broken. This has been corrected by placing half of the resistance on the footplate of the locomotive beside the controller, and protecting it from injury by suitable covers.

Another difficulty arose in connection with the shunt trip circuit breaker in the charging circuit of the battery. The locomotives had been in service only a few months when it was discovered that this shunt trip breaker was mounted in an almost inaccessible place. It was necessary for the motorman to get up from his seat in order to reach it. As a result it was neglected, and the high rate of charge was too often continued, to the obvious disadvantage of the battery, long after the gassing point had been reached.

This was partly corrected by mounting the shunt trip breaker within easy reach of the motorman. This change did not entirely relieve the situation because the motorman would frequently be so busy as to forget to open the circuit breaker. The next attempt to overcome this difficulty was to make an agreement with the meter company to arrange a contact within the meter itself that would make and remain in contact up to zero on the full charge of the battery.

From this contact at the gassing point on the ampere-hour meter two leads are brought out of the meter case; one goes directly to the shunt trip circuit breaker in the charging circuit; the other is grounded through a special key snap switch. The repairman at the motor barn keeps the key for these switches.

Protection Against Excessive Discharge

As the locomotives are taken out of the barn the repairman turns the switch into the "On" position, which grounds the contact in the meter at this point. This causes the shunt trip breaker to open in the charging circuit, thus stopping the high rate of charge from continuing after the gassing point is reached. As the locomotives come into the motor barn at the end of the shift, the repairman turns this special switch into the "Off" position. This opens the ground connection, allowing the battery to become fully charged in the motor barn by the proper charging current. This contact in the ampere-hour meter and the special switch, where used as outlined above, protects the battery from

a too high rate of charge above the gassing point, provided the meter and the battery are kept in step.

It was found that it would be desirable to have some automatic device in the discharge circuit to prevent the battery from being repeatedly discharged to too low a point. It was then decided to place a shunt trip circuit breaker in the discharge circuit between the battery and the controller on the locomotive. This shunt trip circuit breaker was inclosed in a box, mounted on the locomotive in a convenient place, and so constructed that it could be locked or sealed. Positive instructions were given to all concerned that no one except the repairman should open this box, and he only when the shunt trip breaker in it was tripped. He should then close the shunt trip and lock or reseal the box.

Special Contact Operates Shunt Trip Breaker

The function of this shunt trip breaker is to prevent the discharge of the battery below a predetermined point. A special contact is provided within the ampere-hour meter to operate this shunt trip circuit breaker when the indicating hand on the meter makes contact at the point of maximum discharge. This prevents any further discharge of the battery, thereby making the locomotive inoperative from battery current until such time, as mentioned hitherto, when the repairman opens the box with his private key or breaks the seal and closes the shunt trip breaker.

This breaker is never tripped more than once by the same motorman, since it puts him to much inconvenience. If this breaker should be tripped while the locomotive is up in a room or a developing heading it would be necessary to have the machine pulled back to the trolley or the repairman sent in to close the shunt trip breaker just mentioned. Then it would be necessary to take the locomotive to the trolley, where the battery could be charged. After one such experience the motorman will watch the indicating hand closely when near the maximum-discharge contact.

Can Come Out If Trolley Wire Is Reached

By closing the breaker in the charging circuit it is possible to charge the battery as soon as the locomotive is pulled to the trolley. This enables the motorman to charge the battery while he is waiting for the repairman to come and close the breaker in the battery-discharge circuit, or while he takes the locomotive to the repairman at the motor barn. As a result only a minimum length of time is lost.

This shunt trip breaker in the battery-discharge circuit, if used as outlined above, prevents the battery from being too completely discharged, provided the meter and battery are kept in step. If this breaker is not used properly I am convinced that it should be left off the locomotive. By its proper use, however, the life of the battery is prolonged.

It was also found advisable to install an automatic switch on the locomotive between the battery and trolley circuits. This switch operates when the trolley voltage drops below a predetermined point, or when the line current in the trolley wire is entirely cut off. If it were not for this switch the battery instead of being fed would discharge its current into the trolley wire.

A safety feature is embodied in this special switch in that it "kills" the trolley head as soon as it leaves the trolley wire. When the trolley pole is buckled down this feature makes the formation of a short circuit impossible, whereas without it a short circuit would occur if the trolley pole came in contact with the metal cover or side frame of the locomotive. This provision also prevents the brakemen and others from receiving accidental shocks.

To further emphasize the efficiency of these switches, I might say that one of them was put on a locomotive for test in a remote section of the mine where power conditions were bad. The ampere-hour readings were recorded daily at the end of the shift, and it was found that the battery had a capacity of from twenty to thirty more ampere-hours at the end of the shift than it had when operated without the reclosing switch. Yet the machine handled in each case per shift within one or two of the same number of cars.

At some of the motor barns where there is no attendant, this switch has been used to protect the battery at night. It has been quite successful so far, though it is not as yet fully perfected. The manufacturer is working on it and in the near future expects to produce a switch that will give thorough satisfaction.

The combination storage-battery and trolley locomotives used in the Elkhorn division of the Consolidation Coal Co. were built according to the coal company's specifications and were so designed that the storage battery could be replaced with a cable reel if at any time the former proved unsatisfactory. In these locomotives the battery is intended to do only the work that the mules have hitherto done—placing empties and gathering coal from the rooms and development work. On the entries the locomotives takes its power from the trolley wire while at the same time the battery can be charged if necessary.

Close Co-operation in Development

In the effort to attain a perfect product experience in the practical operation and application of the previous types were considered, and each model was an improvement on its predecessor. This development of both locomotives and batteries was made possible only through the close co-operation of the battery and locomotive manufacturers.

Judging from the experience of the Consolidation Coal Co. in the Elkhorn division no question exists as to the success of the combination storage-battery and trolley locomotive. From time to time this company has added to its number of these machines until at present it has forty-seven and it has recently placed an additional order.

To give an idea of the faith now reposed in the storage batteries, I have seen the motormen, after failing to start a trip with current from the trolley wire, transfer to the battery in order to get started. After getting under way they transfer back to the trolley wire and deliver the trip to the parting or the tipple.

Miners Strike for Funeral Expenses of Victim of a Trolley Car

MARTIN STRENISKY, while off duty, was struck by a trolley car and crushed to death. As the companies have been paying $100 to every man killed in and around the operation when men are performing their regular duties, the mine workers employed at the mine at which Strenisky had been working, the Spring Mountain Colliery of the Lehigh Valley Coal Co., at Hazleton, went on strike, June 16, to compel payment in this case also.

Discussion by Readers

Edited by
James T. Beard

Utilizing the Exhaust Steam at Collieries

THAT the steam exhausted from the engines at a colliery represents an enormous waste and should be avoided cannot be denied. As yet, however, but little attention has been given to the utilizing of this waste steam. My attention was drawn forcibly to this question by reading the excellent article of Dever C. Ashmead, *Coal Age*, May 13, p. 983, describing the plans now being put into operation to utilize the exhaust steam of the engines at the plant of the Price-Pancoast Coal Co., Scranton, Pa.

It is high time that we should realize the wastefulness of permitting the exhaust steam from our power plants to go unharnessed. The old saying is, "It is not a question of how much a man earns, but how much does he save?" Increasing the production of our mines will be of little benefit if we allow fuel to be wasted in the generation of power. As in other industries so in the mining of coal every effort must be made to utilize the waste products.

Low-Pressure Steam Turbines Drive Generators

Improved types of boilers have, in a measure, enabled us to economize on the amount of fuel burned; but we seem to have forgotten or overlooked the fact that the exhaust steam of the engine can still be utilized to good purpose. To that end, the Price-Pancoast Coal Co., after a careful study of the situation, recently decided to install low-pressure turbines, which will be driven largely by the exhaust steam from the power plants at the collieries. These turbines, in turn, will be employed for the generation of electric current, which will greatly reduce the amount of electric power formerly purchased by the company in the operation of its plant.

At the present time, the use of low-pressure steam turbines for the generation of electric power is something new. If the plan proves successful at this up-to-date colliery the idea will, no doubt, be duplicated at other plants. This and other instances show that we have, in the past, neglected important features in power production at our mines.

Need to Economize in the Production of Power

Many power plants are now using the waste culm from the great culm banks that for so long a time have been an eyesore in the anthracite regions. Means have been found for burning this culm successfully under the boilers. But, ere long, the culm banks will be exhausted and this cheap source of fuel will be no more. When that occurs the consumption of fuel, at the power plants of collieries, will form an important item on the cost-sheet and reduce the production of the mine some 10 or 15 per cent.

Facing these facts, it is only wisdom to prepare for the time when it will be necessary to economize in the production of power for the operation of our mines. It will be argued that the increasing use of electricity will amply provide for this situation. But it must be remembered that much of this electrical power is dependent on the burning of fuel for the production of steam to operate the engine driving the generator.

The article of Mr. Ashmead draws attention to the loss due to the condensation of steam in the long transmission lines, at some of our anthracite collieries. Indeed, at many of these collieries, the steam lines are not protected as they should be and the resultant condensation is enormous, which represents another huge waste. In winter it is not unusual for an engine located 2,000 or 3,000 ft. from the steam plant to be rendered almost useless for the lack of sufficient steam pressure at the throttle. The steam gage at the boiler house may show a pressure of 110 lb. per square inch, which is reduced to 60 or 70 lb. at the engine house.

While it is generally conceded that it is better to build one large steam plant and conduct the steam by pipe lines to the different openings, for the purpose of driving hoisting engines, ventilating fans and other equipment, it is sometimes found more economical to operate two or more small plants located where the steam is to be used. We can but hope that this and every other effort made to utilize waste steam and economize on fuel in the production of power will be pushed to a successful issue. Richard Bowen.

Plains, Pa.

Firing and Caring For Steam Boilers

ECONOMY in steam-boiler practice can only be secured by proper firing and seeing that the boilers are thoroughly cleaned and kept in good condition. In addition to what has already been well said in reply to this question of firing and caring for boilers, which appeared in *Coal Age*, May 13, p. 1013, allow me to add a few words from my own experience.

As stated in the reply, it is of the first importance to use pure feedwater free from sulphates and carbonates that would form scale in the boiler. If scale is formed it is necessary that it be removed at regular frequent intervals, so that the flame and hot gases can readily transmit their heat to the water in the boiler.

Mention has also been made of blowing off a portion of the water, from time to time, for the purpose of removing the sediment from the bottom of the boiler. In my opinion this sediment should be blown out at least once every twenty-four hours, by opening the sludge or blowoff valve. The accumulation of sludge in the bottom of the boiler prevents the water from coming in direct contact with the bottom plates, which then become overheated and pitting of the plates results and there is danger of an explosion occurring.

Nothing is of more importance than a careful examination of the internal condition of a steam boiler. This must be done at regular intervals and all scale and sediment removed and the boiler washed out thoroughly. By

this means the life of the boiler will be extended and greater economy will be realized from its use. When a boiler is under steam the water level should be kept as constant as possible, usually a one-half to three-quarter glass is maintained. When blowing off the boiler, as mentioned, the glass should be lowered about one inch.

The most economical method of firing a boiler, in my experience, is obtained in the use of a mechanical stoker. The grate should be regulated to travel at a speed that will allow the coal to be entirely burned to ash by the time it has reached the back end of the furnace. In hand firing, my practice has been to spread the fresh coal lightly and evenly over the fire, taking care to keep the firedoors open as short a time as possible so as to prevent the inrush of cold air, which would chill the fire and cool the hot gases passing through the boiler tubes. At short intervals the live coals must be pushed back and the ashes and clinkers cleaned out. This should be done as often as conditions may require. The frequency with which a fire must be cleaned will depend on the purity of the coal and the degree to which the boiler has to be forced to raise the necessary amount of steam. It always pays to keep a clean fire. ANDREW O. BAIN.

McKeesport, Pa.

Lacing Belts

WITH the exception of one thing, I can fully indorse all that E. K. Black has said in his excellent article on the selection and treatment of belts, *Coal Age*, May 13, p. 980. I do not approve of his method of lacing.

Speaking of the proper grade of belt to choose Mr. Black says: "Small pulleys operated at high speed require a high quality of belt, because internal wear takes place between the various plies of fabric and even between the fibers in each ply, each time the belt rounds the pulleys."

What Follows the Poor Lacing of a Belt

If this is true, which it is without question, what will happen to the lacing that he recommends?

Either one of two things must take place. For instance, either the lacers on the pulley side of the belt will slacken and throw all of the pull on the outside strands, or the lacers must adjust themselves by slipping in the holes. Whichever takes place, the tendency will be to shorten the life of the lacers and cause trouble.

Again, some of the lacers may slip while others hold, which will throw an excessive strain on some of the strands and cause them to break or possibly tear the belt. The first cut shown in Mr. Black's article illustrates one style that he says is "a poorly laced belt," which is obviously true; and yet the method that he denounces I have found to give better satisfaction than his approved method illustrated in the same figure, if the work is properly done.

The style Mr. Black condemns is what is known as a "hinged lacing" and, as its name implies, it has a hinge or bending motion that keeps all of the strands at a uniform tension when passing over the pulleys, thereby avoiding any slipping through the holes with the consequent wearing of both the lacer and the belt.

In using this method of lacing, prepare the belt exactly as directed by Mr. Black; but, instead of carrying the lacer across the joint to the opposite hole, pass it through between the ends of the belt, each time always lacing from the same side of the belt, preferably from the pulley side, and taking pains to keep the lacer straight, free from twist and at the same tension.

If a very wide belt is to be laced it is better to begin at the middle and lace toward the edges, there being then less tendency to draw the belt out of alignment. When a belt lacer begins to show wear it is poor economy to try to patch it up: it is much better to replace the lacing with a new one than to take the chance of having it break under a load, which would cause much delay in operation and possibly damage the belt at the same time.

Kingston, Pa. A. L. PARRISH.

Why Should Miners Oppose Introduction of Mechanical Equipment?

WRITING of labor's opposition to labor-saving machinery, Floyd W. Parsons says, in the issue of the *Saturday Evening Post* for May 22: "They . . . know that the substitution of mechanical means for doing things has not only reduced the physical effort of labor but has actually created vastly more jobs and higher wages."

Will this statement hold true in the coal-mining industry? I would like to hear from *Coal Age* readers who have been employed in mines before and after the mines were equipped with machinery. If, in any instance, there was a decrease in the number of men employed, following a mechanical installation at a mine, allow me to ask: How long a time elapsed before the number again reached the pre-machinery period? Could the decrease be attributed to a general car shortage or a depression in trade and industry at that time? It will also be of interest to ask: Does the present differential in favor of machine-mined coal justify the capital required to install the necessary machinery? It is my belief that in the long run, the miners would gain in wages by consenting to a lower machine-mined scale and withdrawing their opposition to machines: Under normal conditions, the consumer would be the most benefited and lower prices would stimulate consumption.

Chicago, Ill. R. T. MCKEEN.

Injured in Blasting Coal

STRANGE as it may seem after condemning the many unsafe practices of miners in blasting coal in mines, a writer on this subject makes the statement [*Coal Age*, May 20, p. 1063] that he uses for tamping "the drillings of the hole made up into small cartridges" The statement, doubtless, will be a shock to practical mining men having any knowledge of blasting coal. The footnote following the letter draws needed attention to the danger of such a practice and is well put by the editor.

The fact that a man will use the drillings of a hole made up in cartridges ready for tamping and recommend this practice shows that he not only disregards his own safety but that of his fellows, and it is high time that he was warned of his danger and made to cease the practice. There is hardly a mine official who makes regular inspections underground but has, at some time or other, run up against a miner who, wittingly or unwittingly, was committing dangerous or foolhardy acts in the use of explosives.

This reference reminds me of two incidents that occurred in my own knowledge. One of these happened when I was a boy; but I well remember that the victim

of the accident lost the sight of both eyes. Either through ignorance or carelessness, the man had taken some frozen dynamite cartridges home with him and placed them in the oven in the kitchen for the purpose of thawing the explosive. The result was an explosion, which caused the injury just stated.

The second instance happened in 1912. At that time, I was called to investigate a case where a miner had attempted to mine out the primer of a missed shot. He was an intelligent miner; but, instead of drilling another hole six inches back of the shot that failed to explode, he started to mine the first hole with his pick.

The man was warned by his buddy not to make the attempt, but he persisted and a few minutes later the point of his pick came in contact with the detonating cap and the explosion followed. By a miracle, the fellow workman did not receive a scratch, although he was but six feet to one side of the hole. The shot blew out with the result that the poor man in this case also lost the sight of both eyes and his face was badly lacerated.

Use Proper Tamping Material

Good miners know that neither coal nor any gritty substance should be used for tamping a shot. If fine road dust or other suitable tamping cannot be had in the mine proper tamping material should be supplied from the surface. The Bituminous Mine Law of Pennsylvania prohibits the use of any combustible material in the tamping of a hole.

In regard to the use of frozen dynamite, every miner should know the danger of such a practice when charging and tamping a hole. Moreover, there is always the danger that the frozen charge will fail to be exploded by the detonating cap. It is strange that the officials in charge will permit frozen dynamite to be taken into the mine. If the law sufficiently covered this point and was enforced it would prevent many accidents from this cause. In my own experience, some superintendents and mine formen shut their eyes to this danger. I have found miners supplied with frozen dynamite, and when this was reported to the mine foreman his reply was that they could thaw it out in the mine.

McKeesport, Pa. Mine Foreman.

The Rockefeller Industrial Plan

SPEAKING of the health of workers in its relation to the industry in which they are engaged, many valuable points have been brought out in the recent letters on the subject that have appeared in *Coal Age*. It is a pity that the suggestions offered in these letters are not more generally put into practice in the larger coal operations throughout the country. It is a matter that should receive the most careful consideration of every mine official.

The letter of Thomas Hogarth, which appeared in the issue for April 15, page 769, was particularly interesting. I fully agree with him that the local officials in a coal-mining village are largely responsible for the unhealthy conditions that often surround the mines and the homes of the men working therein. A peep underground would often, with little doubt, show similar unhealthy conditions.

Although health conditions have frequently been discussed in mining organizations, little has been done to improve them, in the large majority of cases. As a rule, the company owns the houses, which they have built just big enough to insure a small rent, without regard to the requirements of the families who are to live in them. Too often, no restrictions are placed on the tenants, by the management, and unsanitary conditions quickly develop.

While this is true in many instances however, a goodly number of the larger coal companies have realized the necessity of enforcing rules and regulations designed to improve the habits of living among their employees. The passage of the compensation laws enacted by many states, requiring due compensation of workers and their dependants for accidents that occur in the mines, has naturally done much to improve conditions relating to the health of the workers.

Some companies require a physical examination of the men they employ, and limit the age of employment to 45 yr., with the purpose in view of securing strong, healthy, able-bodied workers, who will be less liable to accident while at work. Bad sight or hearing and similar defects are sufficient to debar men from employment. In numerous other ways besides, we find many companies now preaching the gospel of good health.

This brings me to speak of a few of the features of the Rockefeller Industrial Representation Plan, adopted a few years ago in the various operations of the Colorado Fuel and Iron Co. The Rockefeller plan provides for a Sanitation, Health and Housing Committee of six persons, three being selected by the management and three by the miners. On the committee there are generally one or two medical men.

Visitation of Each Camp by Committee

The duty of this committee is to visit the several camps of the company and make a thorough investigation of each and report the conditions they find. The committee is clothed with power to recommend a general cleanup and to suggest any changes that they may see fit. The local officials know that the recommendations and changes suggested by the committee must receive prompt attention on their part.

As a result, there is little sickness in the mining towns and camps of the company. The investigation includes all homes, schools, stores, boarding houses, bath houses, club houses and their surroundings. The conditions relating to sanitation and the health of the workers underground are supervised by a Safe and Accident Committee, which likewise consists of six persons. It goes without saying that it is a pleasure to work in the mines of this company.

In addition to the two committees named previously, there is an Education and Recreation Committee of six persons, who have charge of all things pertaining to education, religion and recreation. While I am not a preacher or the son of a preacher, neither am I a hard-boiled or hand-painted individual, going around with a red handkerchief about my neck.

However that may be, certainly I would not care to live in a community that has no Sunday School or place of worship. The Sunday School is a great feature in educating our boys and girls in right ways of living. The Y. M. C. A. branch of the Colorado Fuel and Iron Company, who have charge of the miners' club houses, have done and are doing a wonderful work in their line. Very much has been accomplished in the education of the foreign classes among the mine workers, who are fast adopting sanitary methods of living.

Farr, Col. Robert A. Marshall.

Inquiries of General Interest

Answered by

James T. Beard

Strength of a Mine Dam

SOME years ago, I remember, there appeared in *Coal Age*, [Vol. 1, p. 920] a formula for calculating the thickness (t), in inches, of a mine dam that would withstand a pressure p, in pounds per square inch, when the width of the opening or span of the arch was w, in inches, and the shorter radius of the dam was r, in inches, the safe crushing strength of the material being S, in pounds per square inch. The formula was

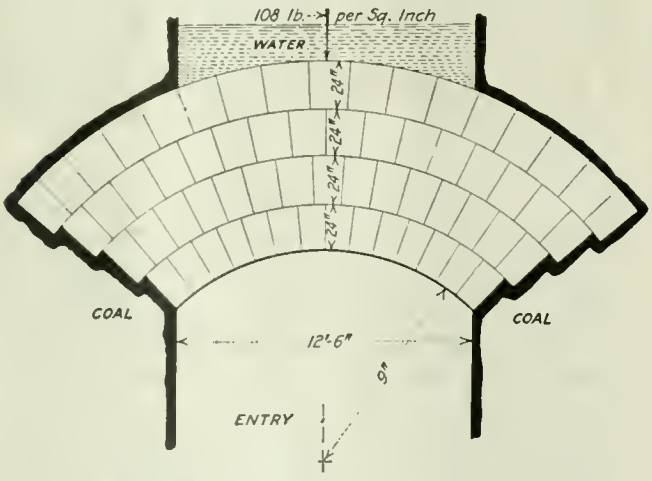
$$t = \frac{pw \sqrt{4r - 1}}{4S}$$

In applying this formula to a dam such as shown in my sketch and constructed of wooden blocks of spruce, should the estimated crushing strength of the material be taken parallel to or at right angles to the fiber of the wood? Please explain why.

A dam was built in a mine according to the dimensions shown in the sketch. The dam was supposed to withstand a water pressure of 108 lb. per sq.in.

Cadomin, Alta., Canada. T. B. WILLIAMS.

The dam shown in the accompanying figure is constructed as a circular arch and conforms to the prin-



PLAN OF MINE DAM BUILT OF WOOD BLOCKS

ciples of an arch. In an arch, the weight or pressure supported is transformed into a thrust or line of pressure that is always at right angles to the radius of the arch. When an arch dam is properly built of wooden blocks, as shown in the figure, the thrust or pressure is at right angles to the fibers of the wood.

In general, it may be stated that the ultimate crushing strength of good spruce timber, when the force is at right angles to the fiber, is 800 lb. per sq.in. Assuming that the ribs of the heading in this case are of solid coal capable of supporting the thrust of the arch without yielding, it is fair to take the safe crushing strength of a good quality of spruce as 250 lb. per sq. in., which would make the factor of safety about three.

On this basis, the calculated thickness of the dam for the given dimensions would be found as follows:

$$t = \frac{108 \times 150 \sqrt{4 \times 108 - 1}}{4 \times 250} = \text{say } 336\ in., \text{ or } 28\ ft.$$

The thickness of the dam, as shown in the sketch, is but 8 ft. Calculating the stress in the material due to a pressure of 108 lb. per sq.in. behind the dam, for this thickness and the given dimensions, we find it is over 875 lb. per sq.in., which exceeds the ultimate crushing strength of the material exerted across the fiber.

Again, assuming a safe crushing strength across the fiber of 250 lb. per sq.in., and calculating the pressure this dam would support, taking the dimensions as given in the figure, we find the following:

$$p = \frac{4St}{w \sqrt{4r - 1}} = \frac{4 \times 250 \times 96}{150 \sqrt{4 \times 108 - 1}} = 30.8\ lb.\ per\ sq.in.$$

If the walls supporting the thrust of the arch are not firm and solid, it will greatly interfere with the stability and strength of the dam.

Carbon Dioxide vs. Blackdamp

PLEASE explain the meaning of the term "blackdamp" and state how it differs from carbon dioxide. It has always seemed to me that there was no difference between these two gases as they are found in mines.

Scranton, Pa. MINER.

To the miner, carbon dioxide has practically the same meaning as blackdamp, which is to him the more familiar term. Carbon dioxide, was formerly called "carbonic acid gas," but the latter term is seldom used today.

Carbon dioxide is a gas formed by the chemical union of one atom of carbon and two atoms of oxygen, as indicated by the symbol CO_2. The gas is colorless, odorless and when unmixed with air will not support either life or flame. It is produced by the complete combustion of carbon or carbonaceous matter in a plentiful supply of air, also by the breathing of men and animals, burning of lamps and other forms of combustion of carbon in air or oxygen.

Blackdamp, on the other hand, is a variable mixture of air deficient in oxygen, and carbon dioxide. In other words, it is a chemical mixture of carbon dioxide with nitrogen and oxygen, in various proportions. Since the carbon dioxide and nitrogen form the larger proportion of blackdamp and neither of these gases support life or combustion, the properties of blackdamp are much the same as those of carbon dioxide. The presence of blackdamp in a mine is due to the generation of carbon dioxide and the depletion of the oxygen in the air.

These gases (blackdamp) are found in poorly ventilated places in the mine and accumulate in the dip workings, swamps and other low places. They are detected by the dim burning of the lamps or their final extinction when much of the gases is present.

Examination Questions

Answered by

James T. Beard

Miscellaneous Questions

(Answered by Request.)

Ques.—If a current of 52,000 cu.ft. per min. is passing through a mine, how many tons of air is passing in 8 hr., if the thermometer is 32 deg. F. and the barometer, 29.2 in.?

Ans.—The weight of one cubic foot of dry air, at the given temperature and pressure, is

$$w = \frac{1.3273 \times 29.2}{460 + 32} = 0.078775 \text{ lb.}$$

The total weight of air passing in 8 hr., in this case, is then $(8 \times 60 \times 52{,}000 \times 0.078775) \div 2{,}000 = 983+$ tons.

Ques.—What are the names of the different electrical currents? Give the advantage of each.

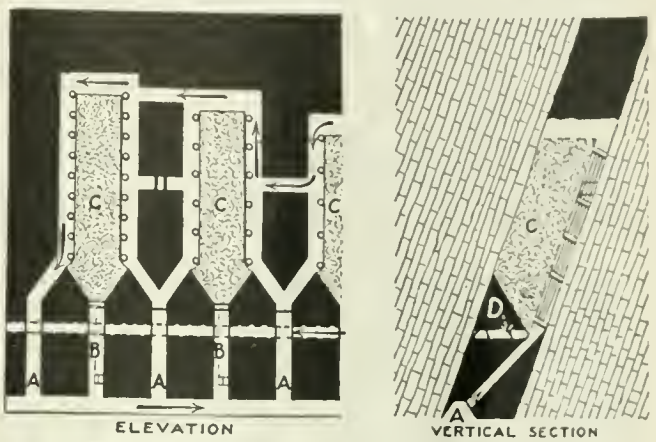
Ans.—The two different kinds of current used in electric mining are, direct current and alternating current. In mining practice, the chief advantage of direct current is the better speed control it affords in the operation of the machines employed. Direct current is continuous instead of alternating and better adapted for the operation of the motors and machines in use, affording as it does a wider range of speed than is possible with alternating current. One great advantage of alternating current is the saving effected by its use where electric power must be transmitted over a considerable distance. The high voltage of the current permits of the transmission of the same power with a less cost for copper; and there is the added advantage that the current is more readily transformed to one of a higher or lower voltage when desired. It often happens that workmen are more careful to avoid accidental contact with live wires carrying a high voltage than when a lower voltage is used.

Ques.—What advantages or disadvantages may be expected from connecting the underground workings of two or more mines, and what dangers are likely to arise therefrom?

Ans.—The chief advantage in connecting the underground workings of mines is the opportunity thus afforded for the escape of the workmen from the mine in case of accident. When mines are thus connected underground it is not necessary to provide a separate escape shaft, as required by the mining laws of most states; but mines so connected are subject to the same effects occurring in either of them, which is a disadvantage to the mine in which better discipline is maintained. The flooding of one mine generally means a flooding of both where the workings are connected. There is also the chance of the leakage of air from one mine to the other, causing an increase in the cost of ventilation for the mine requiring the higher water gage. Again, unless the connecting doors are locked, there is nothing to prevent the men passing from one mine to the other, which would make it difficult to maintain the necessary discipline and control.

Ques.—(a) Show by plan and profile how you would open up chambers in a seam 30 ft. in thickness, of a soft gaseous nature and having a pitch of 60 deg. (b) Also explain how you would conduct the ventilation in case a chamber in the middle of the panel ran and blocked.

Ans.—(a) In the accompanying figure, is shown the general plan, in elevation, and the cross-section or profile of chambers driven in a thick seam of coal having a steep inclination and generating gas. The inclination of the seam shown in the figure is about 70 deg., but the method of working is practically the same as that required on a 60-deg. pitch, under the same



SHOWING CHAMBERS DRIVEN ON STEEP PITCHES

conditions. The work is started by driving chutes *BB* up from the gangway and at such an angle of inclination or pitch as will afford proper control of the coal sliding down the dip.

The gangway should be located in the roof of the seam, as shown in the cross-section at *A*. The chutes are driven up until they strike the floor of the seam. At this point, as shown in the figure, crosscuts are driven to the roof of the seam where an airway is driven in the seam, above the gangway and connecting the several crosscuts leading to the chutes.

Strong batteries are built at the head of each chute and the chamber is then widened out at an angle of about 45 deg., as shown in the figure. Manways *AAA* are now driven up from the gangway, between the chutes, and branched to connect with the manways at the sides of each chamber. The chamber manways are maintained by setting rows of posts two or three feet from each rib and lining these with plank, as indicated. As the chamber is driven up, the space between the two manways is kept full of coal.

(b) In case one chamber runs and blocks the ventilation, it is only necessary to carry the air past that chamber by opening the doors at *D* leading to the airway and conduct the air across the blocked chamber.

The Labor Situation

Edited by
R. Dawson Hall

Miners Would Evict Negroes from Mines

SOME of the miners of the Kanawha region who belong to the United Mine Workers of America are disposed to draw the color line. On Thursday, June 17, three negro miners employed at Hernshaw, W. Va., were threatened with violence by other miners unless they left forthwith. Three deputy sheriffs were sent to Hernshaw to protect the men and, in consequence, the three negroes did not leave the mine at which they were employed.

Grand Jury Investigates Matewan Murders

INVESTIGATION of the fight between the Baldwin-Felts detectives and citizens of Matewan, May 19, in which ten persons were killed, was begun by a special grand jury at Williamson on June 21. Deliberations of the jury will be behind closed doors, and nothing will be known of its work until its report is made to the court.

Fifty men of the state constabulary were on duty following a meeting Monday night, June 20, in front of the courthouse at which Mother Jones, a radical labor leader, was the principal speaker.

Maryland Miners Want to Enter Politics

A POLITICAL twist was given the deliberations of a special convention of the United Mine Workers of district 16, which covers the Upper Potomac and Georges Creek fields, held at Cumberland, Md., during the second week of June, when the convention went on record as endorsing the plan promulgated by the American Federation of Labor, to support a non-partisan ticket both for state and national offices. The convention went a step further and declared it would support only those who stood for the federation's program and would fight those whose record had been inimical to labor. The president of district 16 called upon the mine workers to refrain from joining any National Guard organization.

Unionism Grows in Williamson Field

OF THE 8,000 miners in the Williamson field it is estimated that approximately 80 per cent, or 6,400, have become affiliated with the United Mine Workers. It is no secret that a great many of the miners in the Williamson region were reluctant to join the United Mine Workers, but did so out of fear and in order to avoid trouble. Many of the larger operations have been shut down as a result of the affiliation of the miners at such operations with the union. Some of the smaller companies have continued to operate but have given their miners to understand that under no circumstances will such companies ever agree to either the closed shop or the check-off.

Mother Jones, the aged labor agitator, made a series of addresses to the miners of the Williamson field during the third week of June on the eve of the beginning of the grand jury investigation of the Matewan trouble. Mother Jones' utterances were tame as compared with her usual inflammatory speeches. She did not counsel violence but told the miners that they were "cowards" and had a "streak of yellow" for not asserting their rights before. About 1,500 miners heard her at Williamson.

Wyatt Troubles Ended, but Not by Peters

DIFFERENCES between the Consolidation Coal Co. and some of the miners employed by it at Wyatt, W. Va., were adjusted during the second week of June, but not until nearly the entire force of officials of subdistrict 4 visited the Wyatt plant and persuaded the miners to return to work. It is said that the short-lived strike was due to a misunderstanding.

It was considered significant that H. E. Peters, president of the subdistrict, was not among the officials who aided in settling the strike though board members and others were on hand. Charges preferred against Peters by C. F. Keeney, president of the district, may have had something to do with Peters' absence, as several hearings have been held behind closed doors.

Willis Branch Agitation Led by Convict

ALTHOUGH the Willis Branch Coal Co., one of the "open shop" mines in the New River field, is operating, a desperate effort is being made by the United Mine Workers of district 29 to shut down the company's mines. One of the leading spirits in such an attempt is Tony Stafford, who last January was tried for attempted murder in trying to shoot up the mines of the E. E. White Coal Co. at Glen White in November, 1917, and who was sentenced to serve five years in the penitentiary.

Stafford, who is an organizer for the United Mine Workers, has told members of his organization that the Willis Branch Coal Co. mines must be closed down or else the supply of food for the mine workers at the Willis Branch mines will be stopped. In several instances members of the United Mine Workers have used force in keeping incoming miners away from the mines. It was at the Willis Branch mine that an attempt was made last winter to blow up the home of the general manager.

Nova Scotia Employees Get Wage Award

PUBLICATION of the award of Judge Patterson's Conciliation Board shows that the employees of the Nova Scotia Steel & Coal Co. have received increases of 4½ to 7c. per hour, according to classification of the work performed. Though less than demanded the difference between the award and desired wage is small. The award was published June 9.

Mine Workers Present Their Initial Argument To Anthracite Wage Commission

Argue Against an Agreement Based on Alleged Inequities of Roosevelt Commission—Not Satisfied That Wage Shall Be Multiplied Merely by Cost-of-Living Factor—Plead for Living Wage, New Determination of Equities and Abolition of Contracting

ON JUNE 24 the commission appointed by President Wilson to hear the anthracite wage controversy held its first meeting at the County Courthouse in Scranton. This commission is composed of Dr. W. O. Thompson, president of Ohio State University, chairman and representative of the public; W. L. Connell, representing the operators, and Neil Ferry, who represents the mine workers.

The operators were represented by the subscale committee consisting of S. D. Warriner, president of the Lehigh Coal & Navigation Co.; W. J. Richards, president of the Philadelphia & Reading Coal & Iron Co., and C. F. Huber, president of the Lehigh & Wilkes-Barre Coal Co.

John T. Dempsey, president of the district No. 1, United Mine Workers of America; Thomas Kennedy, president of district No. 7, U. M. W. A.; C. J. Golden, president of district No. 9, U. M. W. A., and Philip Murray, vice-president U. M. W. A., were in charge of the case for the anthracite mine workers.

The first meeting of the commission was held at nine o'clock in the morning, and after preliminary organization the case of the mine workers was presented to the commission by Mr. Murray, who was followed in order by the district presidents as given above.

Terms Under Which Question Is Submitted

Mr. Murray outlined the negotiations from their commencement last March to the present time and President Wilson's proclamations in regard to the case. Following this he presented the conditions under which the problem was submitted to the commission and the understanding between the operators and the miners, which are as follows:

The understanding between the representatives of the operators and the miners is that in submitting our grievances to the commission, all past offers, suggestions and proposals by either party are as of no value as precedents. The proceedings are, as it were, opened up anew. Neither party is bound or in any way compromised by what has taken place in previous conferences or mediation proceedings.

(1) The terms and provisions of the award of the Anthracite Coal Strike Commission and the subsequent agreements made in modification thereof or supplemental thereto, as well as the rulings and the decisions of the Board of Conciliation, will be ratified and continued except in so far as they may be changed by the award of the commission.

(2) When the award of the commission is made it will be written into an agreement between the anthracite operators and miners in such manner as the commission may determine.

(3) It is understood that neither operators nor miners are in any manner bound by any tentative suggestions that have been made during the period of their negotiations, and that either side shall use its own discretion in the presentation of its case in connection with the matters at issue.

In order that our position may be clearly understood and that the commission may have an opportunity as our evidence is submitted to relate it to the different points in our argument, I shall briefly outline in advance what the different steps in our argument will be.

How Miners Would Justify New Contract

We expect to show:

(1) That the cost of living has increased 104 per cent from July, 1914, to May, 1920.

(2) That the increase in pay has not kept pace with cost of living, and that a further increase of 36 per cent in pay is required.

(3) That the principle of increased living cost should be abandoned.

(4) That the rates of pay of bituminous mine workers are greater than those of anthracite mine workers and that the anthracite wage should be equal to the bituminous wage.

(5) That the old theory of fixing wages by the law of supply and demand has been condemned and wages should be based on the new conception which proceeds on the principle that all workers, including unskilled wage earners, should receive such rates of pay as will suffice to support their families in health and decent comfort.

(6) That wages can be fixed on these bases.

(7) A comparison of wages paid anthracite and bituminous mine workers and the relative opportunity for work and earnings.

(8) The hazards which are associated with the mining of anthracite coal.

(9) From official data that there is no relation between the labor cost of mining anthracite coal and the selling price of the product.

(10) That persistent attempts have been made to eliminate competition in the sale and production of anthracite coal from 1873 to 1898.

(11) The reasons for the recognition of the United Mine Workers of America.

Before presenting the synopsis of the argument McMurray stated the eighteen demands that the miners make, but the order has been changed in this article to avoid repetition and to present under each of the demands an outline of the arguments presented by the representatives of the miners. After each paragraph will be shown the name of the author:

Demand No. 1—A Two-Year Contract

We demand that the next contract be for a period not exceeding two years and that the making of individual agreements and contracts in the mining of coal shall be prohibited.

The demand for two years is reasonable, as the last 4-year contract had to be re-opened three times. (Golden and Kennedy.)

If the making of individual contracts is permitted after the execution of the general contract it leaves the door wide open so that those operators who wish to evade its terms can do so by making individual contracts. Where these contracts exist there is a tendency to favor the contractor with a greater number of cars. If it becomes necessary to make supplemental agreements, then the parties to the original contracts are the proper ones to make them and it is unfair to permit a condition to exist whereby the terms of the general contract can be evaded by the making of individual contracts. (Dempsey.)

The intent of this demand is that the custom of giving to one man a contract for two or more working places be prohibited. Contracts of this sort necessitate the hiring of miners on the part of the contractor. Contractors pay the miners company wages while they receive the contract prices and pocket the different. This system permits the operator to favor certain individuals. Elimination of this system would increase production by giving each miner what he earns and would lessen discontent and dissatisfaction. (Golden.)

There should be one contract in the anthracite region and only one. The old method permits the cutting of rates and removes one of the principal reasons which induce workers to enter trade agreements. Every man should have a right to work on contract and no monopoly of contract work should be given to a few sets of miners. (Kennedy.)

Demand No. 2—Bituminous Wage Scale

We demand that the present wages of the anthracite mine workers be increased to correspond to the increases granted the bituminous mine workers by the President's Coal Commission.

This demand contends that the rate of pay for anthracite workers should be the same as for the bituminous, and that daymen should receive at least $6 per day. Increases received by contract miners from 1914 were 7 per cent in 1916 and 40 per cent in 1918, which compounded is 49 per cent.

Demand No. 3—Uniformity in Wage Scale

We demand that a uniform wage scale be established, so that the various occupations of like character at the several collieries shall command the same wage.

Demand No. 4—Shovel Men Want More Pay

We demand that shovel crews operating for coal companies shall be paid not less than the rates paid by contractors to shovel men.

Kansas:

Shovel engineers	$213.58 per mo., plus $1 per day
Cranemen	155.83 per mo., plus $1 per day
Firemen	110.08 per mo., plus $1 per day

Anthracite Contractor's Scale:

Steam shovel engineers	$206.65 per mo., 9 hr. day
Steam shovel cranemen	159.73 per mo., 9 hr. day
Steam shovel firemen	150.30 per mo., 10 hr. day

New York Scale:

Shovel engineers	$250.00 per mo., 8 hr. day, double time
Shovel cranemen	200.00 per mo., 8 hr. day, double time
Shovel firemen	150.00 per mo., 8 hr. day, double time

Cranberry Creek Coal Co.:

Shovel engineers	$132.42 per mo., 8 hr.
Cranemen	.5327 per hr.
Firemen	.49 per hr.

Lehigh & Wilkes-Barre Coal Co.:

Shovel engineers	$0.61 per hr., 9 hr.
Firemen	.47 per hr., 9 hr.

Dodson Coal Co., Stripping:

Shovel engineers	$169.00 per mo., 10 hr. day
Cranemen	145.51 per mo., 10 hr. day
Firemen	115.00 per mo., 10 hr. day

Lehigh Coal and Navigation Coal Co., Summit Hill:

Engineers	$200 per mo., 54 hr. week
Cranemen	146.00 per mo., 54 hr. week
Firemen	.46 per hr., 12 hr. day

Lehigh Valley Coal Co., Hazelton Section:

Engineers	$135.84 per mo.
Firemen	117.34 per mo.

G. B. Markle Co.

Engineers	62c. per hr. 8 hr.
Cranesmen	52c. per hr. 8 hr.
Firemen	47c. per hr. 8 hr.

Demand No. 5—Easy Jobs To Be Short Also

We demand that the eight-hour day be extended to all classes of inside and outside day labor and monthly men, with time and half time for overtime and double time for Sundays and holidays.

Demand No. 6—Closed Shop and Recognition

We demand closed-shop contract, which means full recognition of the United Mine Workers of America as a party to the agreement.

After describing fully the organization of the United Mine Workers, the following points are offered in favor of its recognition: An agreement is necessary because the organization is the only union capable of controlling the situation. A closed shop is necessary to make every individual who is benefited by the agreement become a party to the agreement. A check-off is necessary that the organization may properly raise funds to carry out the contractual relations. All three are correlated and if welded together and inserted in a joint agreement they will become a power for compelling obedience to the agreement, for the maintenance of discipline and for a strengthening of the constructive force necessary for the peace and stability of the region. (Kennedy.)

There are elements in the country today which threaten its industrial stability and have on more than one occasion threatened it in our midst. There is only one means by which the influences of these elements may be offset and that is by an award which will give to the United Mine Workers of America, a responsible and capable organization, full jurisdiction and control by recognizing it as a party to the contract together with the closed shop and the check-off. (Dempsey.)

A closed-shop contract will improve conditions by educating the mine workers as to agreements and contracts and will do away with small strikes. The union miner has the same intolerance to a non-union miner as the soldier has to the slacker. If the anthracite operators are going to hold the organization responsible for the carrying out of contracts they should be willing to agree that all of their workers become a party to the agreement.

Demand No. 7—Consideration Men's Pay

We demand that all deadwork shall be paid for on the consideration basis existing at the colliery and that where more than one miner is employed they shall both receive the same rate.

In many parts a consideration rate is paid to miners doing dead work. Still there are some collieries where one miner is paid the consideration rate while all others receive the laborer's rate. This is evidently unfair, as the miners have labored years to become certified. (Golden.)

The point involved is that the contract miner, being a highly skilled man, when called upon to do dead work not covered by contract rates should suffer no loss in earnings by having to do it at the lower company rates, but should at least receive the rate usually paid to skilled miners employed at the work referred to. (Dempsey.)

The operators maintain in their attempt to justify this condition that the company should not have to pay the wages of two skilled miners when one miner and a helper could do the work, but on the other hand both miners would, if permitted to work on contract, at least earn miners' wages. (Kennedy.)

Demand No. 8—Pay for All Incidental Jobs

We demand payment for all sheet iron, props, timber forepoling and cribbing.

The rates for anthracite mining were fixed years ago, when the men had little to say in the matter. Most of the rates were fixed on solid mining. When the companies started to remove pillars the miners were required to do more than double the amount of propping. No compensation is paid for most of this extra work. (Kennedy.)

This demand is prompted by the fact that in some places these items are paid for and in other places they are not. There is grave doubt as to the correctness of the allegation of the operators that where they are not paid for they are covered in the car price or in the yardage or some other item. (Dempsey.)

Demand No. 9—Privilege to Have Work

We demand that where miners are prevented from working on account of lack of supplies they shall be accorded the opportunity of making a shift at some other work.

When miners report for work and are prevented from working through no fault of their own they should be permitted the opportunity of making a shift at some other work. As a rule there are places in the mines where these men could be placed to make day's wages. (Golden.)

If the employer fails to furnish the necessary supplies for the miners to work and these miners go to the mine believing that opportunity for work will be furnished them, then the responsibility to furnish work for these men should be upon the operator and he should unquestionably be required to furnish it. (Dempsey.)

Demand No. 10—Equity, Not Usage, to Rule

We demand, in the settlement of grievances, that the aggrieved parties shall have the right to demand settlement on the basis of equity, and if such equity settlement is requested the conditions of 1902 shall not enter into or prejudice the case.

The conditions prior to April 1, 1902, were the conditions upon which the Anthracite Coal Strike Commission predicated its award. During the succeeding years these conditions have been maintained except as modified by the award of the commission and the subsequent agreements. Prior to 1902 no organization existed in the region to protect the interests of the employees. Statistics show the anthracite industry at that time had a large surplus labor supply with an opportunity to work about half the working days in a year. Under these circumstances the employee was largely at the mercy of the employer in so far as the working conditions were concerned. Overzealous foremen, seeking to establish a record, and companies eager to produce coal at the lowest possible cost, introduced practices and rates not based upon justice nor with the welfare of the employee in mind, but at such a figure and under such conditions as would give the employee the smallest possible wage and the employer the largest possible profit.

The umpire of the Conciliation Board has on several occasions, when unjust and burdensome conditions were before him for adjudication, ruled that the grievances must be decided in the terms of the award and subsequent agreements. Thus these conditions, no matter how unjust or inequitable they may be, no matter what changes the intervening years may have wrought to make conditions more burdensome, must be maintained. Many of these conditions then in existence had a direct bearing upon the calling of the strike, and these conditions, except where changed by the awards of the Anthracite Coal Strike Commission, became the basis of the awards and subsequently the basis for all agreements in the region. Therefore if an inhuman, unjust, unfair condition existed in 1902 that was not changed, that condition is still in existence and will continue in existence until this policy is eliminated or until both sides at the colliery mutually agree to abolish such unfair condition.

In other words, the anthracite mine workers do not want to be chained to the conditions in effect in 1902. All others, including the anthracite operators, are free to do business on the basis of the present, while this is denied to the employees. The anthracite operators are not producing or selling coal on the conditions in effect for 1902; they have improved the old conditions of mining and selling coal; have improved the handling of coal, and if it is fair for them to get away from the 1902 basis it is equally fair for the anthracite mine workers to be permitted to do likewise. Equity is one of the cardinal principles of the American Government as reflected in the courts, and to ask that this be done in the anthracite region is simply seeking to have elemental justice established in the settlement of disputes.

Demand No. 11—Uniform Refuse Rate

We demand that a uniform rate of 17c. per inch be paid for all refuse in all kinds of mining up to 10 ft. wide and a proportional rate be applied for all workings 10 ft. wide.

In some parts of the district refuse in the vein is paid for at various rates and in others it is not paid for at all. (Golden.)

The mining and removal of the refuse means much work and considerable expense, for which in a great many instances no compensation is paid. (Dempsey.)

The present system of payment for refuse lacks in uniformity and in equity and has been productive of many grievances, countless strikes and bad feeling. The only uniform and fair system for the payment of this refuse is to pay for it on the inch basis.

Demand No. 12—Pay by Legal Ton, Not by Car

We demand that wherever miners are now paid on the car basis hereafter they shall be paid on the legal-ton basis and that dockage shall be eliminated.

The men workers contend that if it is legal and considered right for the coal operators to sell their coal to the public on the legal-ton basis it is also legal and right for the men who mine the coal on a car basis to have the coal they produce paid for on the legal-ton basis. If it is practical to sell coal to millions of consumers on the tonnage basis it would also be practical to pay about 40,000 contract miners on the same basis. The two best arguments against dockage are that the operators themselves are cutting it down and that under the laws of Pennsylvania it is illegal. (Kennedy.)

The system of paying contract miners by the car is not fair and equitable. Under this system not only are they paid an inequitable rate but there are other conditions that are obsolete and intolerable. Miners are required to top their cars and, owing to long hauls which knock off the toppage, the miners are docked for short measure. This practice is unfair. (Dempsey.)

Demand No. 13—Three Men on Reel Motor

We demand that on all reel locomotives one motorman and two brakemen be employed and that on all other locomotives and engines assistants or patchers be employed, and that when motormen or engineers are repairing their motors or engines their assistants shall be employed to help in the work.

After the cable has been attached to the trolley wire, the motorman and brakeman proceed to the face. Thus if, while there, several hundred feet perhaps from the gangway, anything occurs creating a dangerous condition, there is no one to remove the cable from the trolley wire and thus remove the danger. In the repair of motors and engines it is necessary to remove or replace heavy parts. It is moreover dangerous to have an engineer alone in this work.

Demand No. 14—Compensation for Lost Tools

We demand that employees shall be compensated for all tools lost through no fault of theirs as a result of squeezes, water or fire.

If tools are lost in the manner set forth we believe that the company is responsible and that such tools should be replaced. (Kennedy.)

Miners are required to have an expensive outfit of tools, and to lose them through no fault of theirs would greatly embarrass most of them. (Dempsey.)

This demand is self-explanatory and self-justifying, and as it has been conceded by the operators in their offer to the mine workers I shall not enlarge upon it. (Golden.)

Demand No. 15—Tools for Company Work

Where contract miners are employed doing company work, the company shall supply them with the necessary tools, and failing to do so shall compensate them by paying each of them not less than one extra hour per day for the use of such tools.

A miner invests from $50 to $100 in tools and must replace them as they become worn out. And when the company employs him at company work and has him use his tools for its benefit he should be compensated. (Golden.)

Demand No. 16—Free Tools for Daymen

We demand that the company shall supply to all company men the necessary tools free of charge.

Many companies now supply tools to company men free of charge and those that require company men to buy their own tools do not pay any higher wages than those paid to the men who get their tools free of charge. It is evident that this practice is unfair. (Kennedy.)

This demand deserves consideration because the price of tools is a considerable item and in the case of the company miner makes his actual earnings somewhat less than the rates specified. (Golden.)

Demand No. 17—Weighmen as Committee Men

We demand that check weighmen and check docking bosses be permitted to serve as members of mine committees.

These men are experienced and are well versed in the terms of agreements and contracts and moreover have time and opportunity to give attention to the grievances at the least expense. They are not strangers about the mine and are in reality employees of the company, temporarily in the employ of the contract miners. (Dempsey.)

Demand No. 18—Right to Consideration Work

We demand that where contract miners encounter abnormal conditions in their working places they shall have the privilege of going on consideration work. A definition of consideration work shall be written into the agreement.

At present unless the foreman agrees that the man is to work on the consideration basis the miners have nothing else to do but quit, because if they continue work and take up a grievance it will be held that they had no business to claim consideration rates where no agreement for the consideration basis had been reached with the foreman. Unless this is corrected in the future, serious trouble may result, brought on by the failure of the men to make a living wage and by a denial of the right to seek redress under the agreement.

Definition of Consideration Work—Whenever deficient or abnormal conditions are encountered in the working place by contract miners which prevent the miner or miners from earning a reasonable day's wage, the miner or miners affected shall make such fact known to the mine foreman, and it shall be the duty of the mine foreman to visit the working place and endeavor to adjust the matter with the men affected by placing them on consideration work and wages while such abnormal or deficient conditions are in existence, and if the foreman and the men affected shall disagree as to the facts and fail to settle the matter on the consideration basis, then the grievance shall be taken up through the proper channels, the work shall be continued, and whatever settlement is made shall be retroactive to the date upon which the grievance was raised with the mine foreman. (Kennedy.)

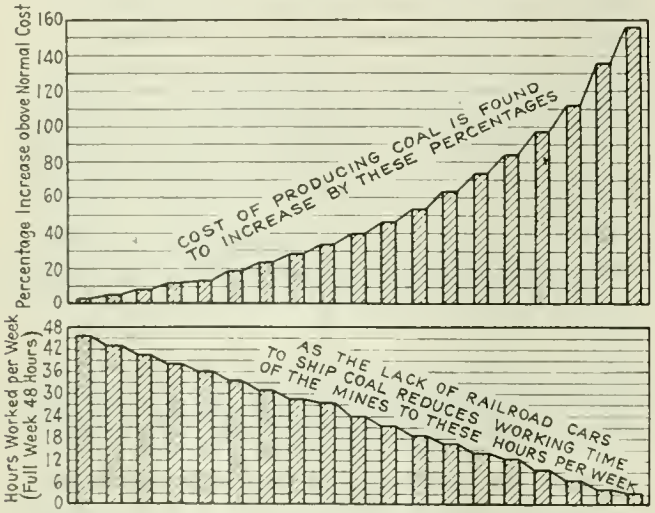
After the presentation of the outline of the miners' case in the briefs outlined above, Mr. Murray requested postponement of the case until Monday because, owing to the change in the place of sittings, the miners' statistical bureau had been unable to move and would not have its data ready for use until Monday. The commission granted the request and the meeting was adjourned.

NEWS FROM THE CAPITOL

BY PAUL WOOTON

What Makes Coal Costs High?

THE National Coal Association is circulating a diagram based on figures contained in the report of the Engineers' Committee of the Fuel Administration, recently published. This diagram, reproduced below, shows how costs of production of coal are affected by short running time which results from lack of railroad cars.



Federal Trade Commission Asks for April and May Cost Reports

IN A letter to the coal operators transmitting the March bulletin showing costs of coal production in the country and furnishing blanks on which the operators are requested to report costs in May, Francis Walker, chief economist of the Federal Trade Commission, points out that April was the first month in which the 27-per cent wage advance became operative and that the actual effect on costs of the new wages should be known and published. He urges coal operators who have not sent in their April cost reports to the commission to do so at once.

His letter concludes:

"We find in our correspondence with the operators in the coal industry that a very large proportion of them see that in the long run it is bound to react to their interest to have on record with such a disinterested Federal organization as this commission the actual facts relating to their industry, so that at any time the charge is made that profits are too high it can be shown what the facts relating to that charge really are, and likewise we find that in controversies relating to wages the figures and the reports of this commission are used by both the operators and the miners as authority upon the conditions existing in the industry.

"Operators are requested to make every effort to file their reports when due in order that the commission may issue its bulletins promptly while the information is of current value. This is not to be regarded as in any sense a departure from the announced policy of the commission to refrain from compulsory proceedings until final determination of the pending litigation. This letter seeks your voluntary co-operation."

Appropriations Cease. Bituminous Commission Activities Terminate.

AS the appropriations for the President's Bituminous Coal Commission were no longer available after June 30, the work of the commission came to an end on that date. The members, however, are not released from their responsibilities until all the wage agreements are put into effect.

The Geological Survey and the Council of National Defense will finish a few uncompleted portions of the commission's work. The commission's files go to the Interior Department, to be used in conjunction with the files of the Fuel Administration.

Trade Commission Proposes Changes in Coal Report Blanks

THE Federal Trade Commission has submitted to the National Coal Association certain proposed changes in its monthly report blanks. The changes relate principally to the items pertaining to depletion and depreciation. The idea is to make these items conform more closely to the form used by the Bureau of Internal Revenue. The Trade Commission suggests that representatives of the National Coal Association discuss the matter with its specialists. It has been referred to the cost accounting committee of the National Coal Association.

Secretaries Daniels and Payne to Examine Alaska Coal Situation

JOSEPHUS DANIELS, Secretary of the Navy, and John Barton Payne, Secretary of the Interior, will sail from Seattle July 8 to visit Alaska. While many features of the Alaskan situation are to be considered by Secretaries Daniels and Payne, the principal reason for the trip is to obtain first-hand information as to the coal situation. Appropriations aggregating $1,225,000 now are available for coal development in Alaska. Of that amount, $225,000 is set aside for a washery.

National Coal Association to Consider Statistical Program

RECOMMENDATIONS as to the future statistical program of the National Coal Association and the local associations will be submitted by the committee on statistics at the directors' meeting July 14. T. W. Guthrie is the chairman of the committee.

Cost of Coal Production in March

Federal Trade Commission Report for March, 1920, Shows Slight Drop in Cost Compared with February, Due to Greater Daily Output—Previous Figures on Increase Due to 14-Per Cent Advance to Miners Corrected

COSTS of producing bituminous coal in the many fields of the country are given for March, 1920, in the third monthly summary issued by the Federal Trade Commission. For 1,068 operators producing 16,097,642 net tons of coal in March, or about 35 per cent of the total estimated production in that month, costs of production, compared with February, decreased an average of 9 cents per ton, or 4 per cent. This decrease is attributed to more steady operation of the mines in March, the average output per working day having been 5 per cent greater than in February.

Average realization on the coal produced by these same operators was $2.76 per ton in March, compared with $2.72 in February. The decrease of 9 cents per ton in cost of production and increase of 4 cents in price received resulted in an average increase of 13 cents per ton in the "margin" of the operators. The "margin" is the difference between cost at the mine and selling price, out of which the producer must pay selling expenses, interest, income and excess-profit taxes as well as other items.

Comparing the statistics for March with those for February, 1920, and for the year 1918, the report of the commission shows data compiled from the reports of 810 identical operators who produced nearly 14,000,000 net tons in March, or about 30 per cent of the total for the country.

The average cost of production as reported by these 810 operators was $2.32 per ton in March, $2.40 in February, and $2 in the calendar year 1918. The average realization per ton of product sold—$2.58 in 1918, $2.73 in February, 1920, and $2.74 in March—did not increase in the same proportion as did cost, with the result that the "margin" decreased from a maximum of 58 cents in 1918 to 33 cents in February and 42 cents in March, 1920. The report also states "The average increase of reported f.o.b. mine cost for February, 1920, was 15 per cent over that for the year 1918, and for March was 12 per cent. This increase is attributable to two chief causes: (1) the higher wage scale put into effect in November, 1919, as a result of the Fuel Administrator's recommendation of 14 per cent increase in the wages of mining labor, and (2) in the case of February, 1920, the decrease in the production for that month from the average monthly production of 1918. While the cost in March, 1920, also increased over 1918 because of the November, 1919, wage scale, it did not increase so much over 1918 as in February, because the March production was only 1 per cent lower than the average monthly production of 1918. The changes in the supplies of general expense costs were of minor importance."

The commission discusses the effects of changes in the rate of production and of the wage advance made

TABLE I. FEBRUARY AND MARCH, 1920, SALES REALIZATIONS AND REPORTED F.O.B. MINE COSTS PER TON OF 1,068 IDENTICAL OPERATORS, BY GENERAL COMPETITIVE REGIONS

	February, 1920					March, 1920						
General Competitive Regions	No. of Operators	Production (Tons)	Average Days Worked	Sales Realization	Reported F.O.B. Mine Cost	Margin	Production (Tons)	Average Days Worked	Sales Realization	Reported F.O.B. Mine Cost	Margin	Decrease of Reported Cost in March from that in February	Increase of Output per Working day in March over that in February
Central Competitive "Interstate"[1]	301	6,014,071	16	$2.46	$2.15	$0.31	7,029,635	17	$2.46	$2.10	$0.36	$0.05 2%	10%
Eastern Adjacent [2]	300	2,343,636	15	2.66	2.48	.18	3,053,294	18	2.86	2.33	.53	.15 6	9
Western Adjacent [3]	95	1,092,672	23	2.90	2.56	.34	1,249,375	25	2.91	2.46	.45	.10 4	5
Southern Appalachian [4]	156	1,506,740	17	2.93	2.75	.18	1,706,699	19	2.94	2.66	.28	.09 3	1
Southwestern "Interstate" [5]	126	710,729	17	3.44	3.26	.18	804,965	19	3.38	3.09	.29	.17 5	1
Rocky Mountain [6]	90	2,107,108	21	2.97	2.57	.40	2,253,674	22	2.97	2.55	.42	.02 1	2
United States	1068	13,774,956	17	2.72	2.43	.29	16,097,642	19	2.76	2.34	.42	.09 4	5

[1] Includes all of Illinois, Indiana, Ohio and the Southwest District of Pennsylvania.
[2] Includes all of Maryland, West Virginia, Virginia and the Central District of Pennsylvania.
[3] Includes all of Michigan, Iowa and District No. 1 of Kentucky.
[4] Includes all of Alabama, Tennessee, and Districts Nos. 2, 3, and 4 of Kentucky.
[5] Includes all of Missouri, Kansas, Arkansas, Oklahoma, and Texas.
[6] Includes all of Colorado, New Mexico, North Dakota, Montana, Wyoming, Utah, and Washington.

TABLE II. DISTRIBUTION OF TOTAL REPORTED F.O.B. MINE COST INCREASES ACCORDING TO CHANGES IN PRODUCTION TONNAGE OF 810 OPERATORS IN FEBRUARY AND MARCH, 1920, FROM AVERAGE MONTHLY PRODUCTION FOR THE YEAR 1918

	February, 1920				March, 1920			
Change in Production from 1918 Average Monthly Production (Per Cent)	Number of Operators	Production Tons	Production Average Change Per Cent	Increase in Reported F.O.B. Mine Cost Over Year 1918 (Per Cent)	Number of Operators	Production Tons	Production Average Change Per Cent	Increase in Reported F.O.B. Mine Cost Over Year 1918 (Per Cent)
Decrease over 25	300	3,238,848	—37	$0.44 22	192	1,135,117	—41	$0.52 24
Decrease over 16-25	116	1,916,667	—20	.42 21	82	1,772,447	—21	.35 18
Decrease over 6-15	118	2,986,024	—11	.31 16	99	2,223,213	—10	.33 18
Decrease over 0- 5	76	1,138,665	— 1	.34 15	110	3,546,511	+ 1	.27 14
Increase over 0- 5								
Increase over 6-15	64	1,148,305	+ 6	.19 9	88	1,804,981	+ 13	.20 9
Increase over 16-25	42	588,657	+ 22	.16 7	61	971,666	+ 21	.09 4
Increase over 25	94	953,562	+ 64	.05 2	178	2,529,427	+ 58	.06 3
Totals	810	11,970,728	—16	.32 15	810	13,993,362	— 1	.24 12

last winter, concluding that the 14 per cent increase in wages of mine labor of last November resulted in an increase in mining cost of from 27 to 30 cents per ton, or about 14 per cent. The report reads as follows:

"In order to throw light on the effect which a change in the production tonnage has in bringing about a change in costs, the following tabulation for the 810 identical operators shown above has been made. Taking their average monthly production during 1918 as a base, they have been grouped according to the relative decrease or increase in their production for February and March, 1920, and their total f.o.b. mine cost increases or decreases are thus shown in relation to changes in production. A 14-per cent increase over the wage scale in effect throughout 1918 was made in November, 1919, and was in general effect during the two months shown in the table below. The additional award by the United States Bituminous Coal Commission (which included the 14-per cent increase) did not go into effect until April 1, 1920. This table, as explained below, is compiled by a more detailed statistical method than was used for the corresponding table of the January and February bulletins and indicates a somewhat larger increase in cost due to the wage increase of November, 1919, than was estimated in the previous bulletins.

"In February, 1920, in the groups where tonnage decreased, costs increased though only in a rough proportion to the extent of decreasing tonnage; in groups showing an increase of production, costs decreased, though only roughly in proportion. The same holds true for March. For the total 810 operators the 11,970,728 tons produced in February, 1920, as compared with their average monthly production in 1918 (14,197,986 tons), represented a decrease of 16 per cent. In March, 1920, their corresponding average decrease in tonnage was only 1 per cent. In February, 1920, a short month, 68 per cent of the total output of the 810 operators showed a decrease of 6 per cent or over as compared with their monthly average for 1918, while in March only 37 per cent showed a similar decrease.

"The results of the new method, considering the number of operators involved, their tonnages, and the average per cent of change in production, indicate an increase in cost ranging from 27 to perhaps 30 cents per ton (instead of 20 cents to 23 cents, as previously estimated) as a result of the 14-per cent wage advance, which it should be noted is about one-half of the total wage advance (27 per cent) awarded by the U. S. Bituminous Coal Commission and put into effect on April 1, 1920."

New York Public Utilities Fear Coal Shortage

BECAUSE of the shortage of bituminous coal in the Eastern part of the country and particularly because of the small supplies now in the possession of the public utility corporations of New York City, Acting Public Service Commissioner Alfred M. Barrett is urging the return of Federal fuel control. Mr. Barrett fears that the present situation will become worse during the fall and that unless something drastic is done there is danger that the local transportation lines will have to close down.

Several conferences were held last week between Mr. Barrett and representatives of the various utility corporations regarding the coal shortage. Mr. Barrett telegraphed President Wilson on June 22 saying:

Street railroads, gas and electric utilities will either close down or seriously curtail service within a few days unless they can obtain bituminous coal. They are now down to a few days' supply and advise this commission that it is impossible to obtain enough coal to keep them going. To avert a public calamity such as would follow the paralysis of public utility service in the greatest city of America, this commission respectfully urges upon you the advisibility of immediate action to give priority to such utilities in the matter of car assignment and to see to it that enough cars are immediately segregated for public utilities use and sent to the coal mines for immediate loading. Only prompt and decisive action of this kind will avert the calamity.

At the conference held that day J. W. Lieb, vice-president and general manager of the New York Edison Co., outling the general situation, said that the coal reserves had been depleted to a point where only a few days' or a few weeks' supply was left. While the corporations have contracts very few of them are getting deliveries up to full contract requirements, and even where such deliveries are obtained the contracts do not cover more than 60 per cent of the coal requirements of the companies. He said the utilities have been supplementing their contracts by purchasing coal in the open market at prices ranging from $15 to $16 a ton. Even at these prices they find it difficult to get coal enough and have to bid against manufacturers and the general public. Mr. Lieb said that the New York Edison Co. had about 50,000 tons available when it should have at least 150,000 tons. It is using 25,000 tons a week.

Another conference followed in Washington the next day between Morgan T. Donnelly, Deputy Public Service Commissioner; James B. Walker, secretary of the commission, and representatives of the Interstate Commerce Commission, as the result of which assurances were given that no public utility would go without coal.

Another conference, this time attended by A. H. Smith, president of the New York Central Lines; Samuel Rea, president of the Pennsylvania Railroad Co.; W. G. Besler, president of the Central Railroad of New Jersey; Daniel Willard, president of the Baltimore & Ohio Railroad Co., and representatives of the public utilities and of the Public Service Commission, was held on June 25. Mr. Smith presided. Figures were presented by the utility corporations showing the exact amount of coal on hand and it was then stated by Mr. Lieb that the utilities had agreed among themselves to stand together and to lend power or coal, if necessary, to prevent the shutting down of operations by any one of them.

At the conclusion of the conference Acting Commissioner Barrett said that reports had been presented to him indicating that more than 1,400 cars of coal were tied up in New Jersey and Staten Island, and that some of this fuel probably was being held for a higher market. He stated that it was extremely difficult to establish a clean-cut case of coal profiteering which would warrant summary action at this time.

Mr. Barrett in urging the return of wartime control of coal said that the public utilities of this city have less than 50 per cent of their normal supply of coal on hand. He said that facts at the disposal of the commission indicate that the local situation will be materially aggravated during the fall unless radical measures are taken. It was expected, he said, that the Interstate Commerce Commission would issue an order placing New York on the same basis of priority as New England. On June 28 announcement was made that New York had been placed on the same basis as New England in the matter of priority.

New England Order a Mistake, Coal Men Believe

Requirement That Coal Be Unloaded Within 24 Hours, They Think, Should Apply to All Freight Carried in Open Tops

THAT the Interstate Commerce Commission made a serious mistake when it issued its Service Order No. 6, which gives preference and priority to shipments of coal destined to New England, is the impression among coal authorities. Had the commission issued only Order No. 7, which gives coal mines the first call on open-top cars, everything would have been accomplished which will be brought about by Order No. 6. Had the New England order been omitted, the extreme confusion which exists today could have been avoided, in the opinion of Washington representatives of the coal industry. Such a course, it is declared, would have been much more to the interests of the public, to the railroads and to the coal shippers.

The confusion under Order No. 6 is increasing and at this writing the Interstate Commerce Commission has not seen fit to interpret its New England order. Some carriers and receivers of coal contend that Order No. 6 gives assigned cars to those who will ship to New England in a manner exactly similar to that used by the carriers in obtaining railroad fuel. The question naturally is raised as to whether railroad assigned cars have preference over New England assigned cars.

Another question is whether coal shippers who have New England orders are permitted to have cars for shipments to inland customers, a public utility, for example. In such a case, the inland public utility company would be discriminated against in favor of a New England public uitility.

While Order No. 7 is generally satisfactory to coal shippers, they cannot understand why that portion of the order which requires coal to be unloaded within twenty-four hours was not made to apply on all other commodities loaded in open-top cars. An open-top car can be loaded with automobiles and routed toward a coal field and then lie for an indefinite period under load at its destination while the consignee negotiates the financial arrangements to take over the automobiles. This example applies to the many other commodities which are being handled in open-top cars.

Objection is made to the New England order also on the ground that it places in new hands the power to say what coal may be exported and to what countries it may go. While everyone is in thorough sympathy with New England's desire to have an adequate amount of coal, there is emphatic opposition to any plan of rushing all this coal to that section in a few weeks. It is decidedly to the interest of the people of the United States that Cuba have enough coal to keep its sugar factories grinding and enough to insure its transportation to the seaboard.

Entirely apart from any selfish benefit which may be derived is the matter of interfering unnecessarily with the flow of coal to countries which are in the direst need of fuel. There is also demand that loadings for New England be limited to the amount that can be handled at New England ports. There also is a demand that steps be taken to prevent overstocking in New England. It will be recalled that under a previous priority order New England stored enough coal to last it half way through the second winter. It is hard for road commissioners to understand why candy factories in New England should be allowed to pile up large stocks of coal when the cars used to haul this coal could have been used for road materials, thereby saving millions of dollars' worth of roads which are likely to be destroyed from lack of maintenance.

New England Has Five Weeks' Stocks of Bituminous Coal

AT THE request of the U. S. Bituminous Coal Commission, and largely with the help of funds provided by the commission, the Geological Survey is conducting a rapid canvass of stocks of coal in the hands of consumers. In order to get results quickly the inquiry was limited to a selected list of representative consumers, most of them large, including byproduct coke ovens, iron and steel plants, other industrials, gas and electric utilities, and retail coal dealers, scattered over the entire country. The stocks will be expressed in terms of weeks' supply for the companies reporting, and will then be comparable with other measurements of stocks made in the past by the Fuel Administration. Because of the present interest in the coal supply of New England the returns received up to noon of Wednesday, June 23, are given in the following tables:

STOCKS OF BITUMINOUS COAL ON HAND AT REPRESENTATIVE PLANTS IN NEW ENGLAND, FEB. 29 AND MAY 31, 1920 (NET TONS)

	Number of Plants		Weekly Consumption March to May 1920 *a*	Tons on Hand		Weeks' Supply on Hand *b*	
	On List	Reporting		Feb. 29	May 31	Feb. 29	May 31
Coal gas plants:							
Total New England	17	16	13,276	100,798	61,857	7⅞	4⅝
Electric utilities:							
Total New England	34	33	34,225*c*	135,312	199,830	3⅞	5⅞
Industrial consumers *d*:							
Maine	27	21	13,861	83,577	90,154	6	6½
New Hampshire	39	33	5,587	38,179	27,313	6⅞	4⅞
Vermont	45	34	1,925	13,597	12,451	7	6½
Massachusetts	316	235	41,543	270,160	229,209	6½	5½
Rhode Island	45	31	6,851	43,085	39,692	6½	5⅞
Connecticut	90	68	17,843	119,233	82,833	6⅝	4⅝
Total New England	562	422	87,610	567,831	481,652	6⅞	5⅞

(*a*) Includes yard losses, shrinkage, etc.
(*b*) On basis of average consumption, March, April and May, 1920.
(*c*) Average weekly rate for an entire year.
(*d*) Excludes steel and by-product plants.

STOCKS OF BITUMINOUS AND ANTHRACITE COAL IN HANDS OF RETAIL COAL DEALERS IN NEW ENGLAND, FEB. 29 AND MAY 31, 1920 (NET TONS)

	Number of Dealers		Average Weekly (*a*) Deliveries March, April, May, 1920 (*a*)	Tons on Hand		Week's Supply on Hand *b*	
	On List	Reporting		Feb. 29	May 31	Feb. 29	May 31
Anthracite:							
Maine	15	8	1,352	2,881	7,623	2	5⅝
New Hampshire	14	10	1,856	5,152	8,521	2⅞	4⅝
Vermont	9	5	1,479	2,483	6,526	1⅝	4⅜
Massachusetts	72	49	38,980	169,980	121,652	4⅜	3
Rhode Island	13	11	5,398	22,952	17,025	4¼	3⅛
Connecticut	32	23	6,959	38,975	13,485	5⅝	1⅝
Total New England	155	106	56,024	242,423	174,832	4⅛	3
Bituminous:							
Maine	15	8	2,869	9,337	6,161	3¼	2⅛
New Hampshire	14	10	881	861	2,585	⅞	2⅞
Vermont	9	5	523	602	510	1⅛	⅞
Massachusetts	72	49	30,382	56,015	37,939	1⅝	1⅛
Rhode Island	13	11	16,727	16,964	17,766	1	1
Connecticut	32	23	3,580	11,426	5,083	3¼	1⅜
Total New England	155	106	54,962	95,205	70,044	1⅝	1⅛

(*a*) Includes yard losses, shrinkage, etc.
(*b*) On basis of average deliveries March, April and May, 1920

Commission Defines Use of Assigned Cars

UNLESS an operator contracts with a railroad for a season's output, it is not proper for the railroad to take coal in assigned cars without charging those cars to the mine in its regular allotment, according to the opinion of Chairman Clark of the Interstate Commerce Commission, as given in a letter recently to J. V. Norman, of the West Kentucky Coal Bureau. On June 15 Mr. Norman wrote to Mr. Clark requesting an interpretation of the asigned-car order, as follows:

Much confusion apparently exists as to the length of time for which carriers must take the output of a mine in order that such mine may be considered an output mine, and cars assigned to it not be counted. In the decisions of the commission which are referred to in the commission's recent order it was held that the output must be taken for such reasonable time as would remove the mine from commercial competition with other mines. Prior to Federal control it was generally understood, in our section of the country at least, that the output must be taken for a period of a year in order to bring the mine within the rule which permitted cars assigned to it to be eliminated from the count.

Under your recent order the carriers have placed various limitations upon the time for which the output must be taken and some of them are asserting the right to take the output for one day only, and not count the cars furnished on such day. Of course, where this is done the mine comes immediately back into commercial competition, and if the mine is given 100-per cent supply of cars every third or fourth day and the cars are not counted against it, its cost of production is so reduced as to give a very great commercial advantage over other mines not so favored and which are running only 40 to 50 per cent time. I understand that other carriers are putting a more reasonable construction on the rule.

It is my understanding that the recent order of the commission as to assigned cars was issued in the exercise of its emergency powers to control and distribute cars, and, in view of the varying interpretations placed upon this order by carriers, I wish to ask if it is not possible for the commission, in connection with this emergency power, to prescribe a minimum time for which the output of a given mine must be taken in order that cars assigned to it be not counted.

The reply of Chairman Clark clearly defines the practice now being followed on some roads as illegal. Mr. Clark's letter is as follows:

I have your letter of the 15th inst., reciting that some carriers are interpreting the commission's order and holding as to use of assigned cars as permitting them to take the entire output of a mine for one day or for a few days and putting it back on the commercial basis for succeeding days.

This same question came up in 1916 in connection with the Illinois Central R.R. At that time I wrote the president of the Taylor Coal Co. of Chicago, as follows:

"I think the inquiry contained in your letter of the 13th inst. is fully answered in the text of the report of the commission in Traer vs. C. & A. R.R. 13 I.C.C., 451, special reference being had to what is said regarding counting of cars used for transportation of the carrier's own fuel supply on pages 457, 458 and 459. Incidentally I remark that this decision was sustained by the Supreme Court of the United States in Interstate Commerce Commission vs. I.C.R.R. Co., 215 U. S., 452.

"In the decision to which you refer, in re irregularities in mine ratings, 25 I.C.C., 286, we reaffirmed, at page 297, the holding above referred to.

"The decision in the Traer case clearly points out that where the carrier purchases a portion of the output of a mine which is competing with other mines on its lines in commercial markets, it may not discriminate in favor of such mine by failing to count against it in the distribution of cars those cars which it furnishes to that mine for its own fuel. It seems to me obvious that the carrier may no more discriminate by taking the entire output of a mine one day and leaving the mine on a commercial basis the next day, and not counting its own fuel cars against the mine, than it can unjustly discriminate by taking a portion of the output each day or each alternate day. The carrier does not, in my judgment, take the entire output of a mine unless it takes the entire output for a season, or at least for a substantial period, during which that mine is not engaged in producing coal which is in competition commercially with that produced by other mines on the same line."

That apparently disposed of the question. I assume that now repeating, with approval of the commission, what I then said will suffice in the instance to which you refer.

Tidewater Shipments During May

COAL movement to tidewater during May as reported by the railroads was 4,436,000 net tons, the largest since October, 1919, and one of the largest on record. Shipments to New England were 776,000 net tons, an increase of 59,000 tons over the preceding week. Exports overseas increased by 39,000 tons, reaching a total of 1,942,000 net tons.

Port	New England Shipments (Net Tons)	Exports (Net Tons)	Total dumped at Tide (Net Tons)
New York	109,000	.....	999,000
Philadelphia	132,000	219,000	586,000
Baltimore	52,000	518,000	761,000
Hampton Roads	483,000	1,120,000	1,986,000
Charleston	.....	85,000	104,000
Totals	776,000	1,942,000	4,436,000

Bituminous Coal Loaded Into Vessels at Lake Ports, as Dumped by Docks, for Season to End of May

(IN NET TONS)

Statistics Compiled by the Ore and Coal Exchange, H. M. Griggs, Manager

Ports	Railroads	1920 Cargo	1920 Fuel	1920 Total	1919 Cargo	1919 Fuel	1919 Total	1918 Cargo	1918 Fuel	1918 Total
Toledo	Hocking Valley	126,136	1,859	127,995	979,882	29,459	1,009,341	591,858	15,696	607,554
	Toledo & Ohio Central	68,825	4,956	73,781	219,262	6,036	225,298	326,649	10,429	337,078
Sandusky	Baltimore & Ohio	101,844	10,270	112,114	242,199	5,293	247,492	261,325	5,204	266,529
Huron	Pennsylvania	64,544	995	65,539	312,597	8,919	321,516	338,525	8,119	346,694
Lorain	Wheeling & Lake Erie	301,890	25,451	327,341	396,647	12,442	409,089	353,047	13,920	366,967
Cleveland	Baltimore & Ohio	387,512	43,496	431,008	647,912	33,654	681,566	452,820	14,044	466,864
Fairport	Pennsylvania	38,664	6,522	45,186	458,111	60,129	518,240	377,512	48,849	426,361
	Erie	.....	.....	.....	.....	.....	.....	168,092	4,938	173,035
Ashtabula	Baltimore & Ohio	.....	.....	.....	10,956	10,022	20,978	.....	5,630	5,630
Conneaut	New York Central	48,660	21,415	70,075	455,339	26,211	482,050	271,666	33,190	304,856
	Pennsylvania	51,344	16,138	67,482	426,938	16,364	493,302	242,031	10,550	252,581
Erie	Bessemer & Lake Erie	299,800	9,360	309,160	318,868	919	319,787	418,018	6,464	424,482
	Pennsylvania—West	680	.....	680	155,144	7,959	163,103	101,094	5,519	106,613
	Pennsylvania—East	7,405	12,456	19,861	40,179	2,099	42,278	.....	.....	.....
Totals		1,492,304	152,918	1,650,222	4,714,034	220,006	4,934,040	3,902,692	182,552	4,085,244

Oklahoma First-Aid Meet Introduces Good System of Judging

A Commission of Medical Men Judge All the Final Dressings After Separate Judges for Each Team Have Watched the Several Operating Stages

THE Sixth Annual Oklahoma State First-Aid Contest and Field Meet was held in Chadwick Park, McAlester, Okla., at 2 p.m., May 31, 1920, under the auspices of United Mine Workers of America, District 21; the McAlester Commercial, Rotary and Lion's Clubs, city officials and the U. S. Bureau of Mines.

Work of First-Aid Teams Surprises

The spectators numbered some three thousand persons. The work of each of the eleven first-aid teams that participated was surprisingly good. The day was concluded with athletics and baseball. Music was afforded by a mine band and a prize was given to the oldest active miner present. At 9 p.m. the McAlester Commercial Club served a 250-plate banquet at the Busby Hotel to all the contestants and their lady friends. The winners were as follows:

Contestants	Percentage
Hailey-Ola Coal Co., Haileyville, Okla.	100 00
Rock Island Coal Mining Co., Alderson, Okla	98 60
Samples Coal Mining Co., North McAlester, Okla	98 30
Whitehead Coal Mining Co., Mine No. 4, Schulter, Okla.	96 60
Southern Fuel Co., Brewer, Okla	96 50
Rock Island Coal Mining Co., Gowen Okla.	94 60
Consolidated Fuel Co., Coalton, Okla	92 60
Folsom-Morris Coal Mining Co., Lehigh, Okla	91 60
Creek Coal Mining Co., Creek No. 1	85 60
Whitehead Coal Mining Co., Henryetta, Okla	84 30
Coal Department, Michigan, Kansas & Topeka R.R., Colgate, Okla.	66 60

A new system of judging first-aid contests was tried and proved highly satisfactory. All the teams that participated were outspoken in endorsing the new system. Everyone who has conducted first-aid contests realizes that the old system of judging has been the weak part of all first-aid contests, for in state and national competitive tests the best teams have not always won, for some judges are exacting, while others are exceedingly lax. This has caused much ill-feeling and has greatly hindered the work, and if any one thing will ever prevent the holding of first-aid contests, which are undoubtedly the best means of stimulating first-aid work, it will be inefficient judging.

Competitors Satisfied With Decisions

The system employed at McAlester was as follows: One doctor was placed at each team. He was instructed to observe the work as it was performed. The duty of this judge was to see that the members of the team did the most important thing first, also to observe whether they handled the patient awkwardly, whether they were slow in their work or showed lack of attention, whether they used improper treatment or failed to be aseptic, etc.

In addition to this a commission composed of five doctors who were specially fitted by training and experience for judging first-aid contests examined and passed judgment on all teams in every event. This commission carefully examined every dressing and questioned the judge of each team regarding the methods used and the manner in which each team performed its work. Then the team judge and commission marked and signed the discount sheet and passed it on to the recorders. Without a single exception, every team on the field was entirely satisfied with the decisions handed down by the team judge and commission.

Coal Age suggested many years ago the separation of the judgment on action from the judgment on the completed work, believing that this might make it possible to get the necessary judging force, doctors serving for the final inspection and qualified first-aid men watching the action of the men.

Mine Inspectors' Institute of America Announces Eleventh Annual Meeting

By James W. Paul*

ALL mine inspectors of the United States and Canada will be interested to know that the eleventh annual meeting of this institute will be held in Cleveland, Ohio, at the Statler Hotel, July 13, 14 and 15. All state and county mine inspectors in the United States, and all provincial inspectors in Canada are requested and urged to attend.

The business of the meeting will be in the nature of a conference on a number of important subjects of special interest to mine inspectors. Of special importance are the following: "Standardization of Electric Code for Mines"; "Standardization of Inspection Routine"; Standard Requirements for Mine Ventilation"; "Methods for Sealing Abandoned Workings." Come prepared to discuss these and any other questions you may care to present.

If you are not a member of the institute your application for membership can be made at the meeting. The dues are only $5 per year and there is no initiation charge. If you were a member in 1916 you should send the Secretary $5 to cover 1919-1920 dues, or bring it to the meeting.

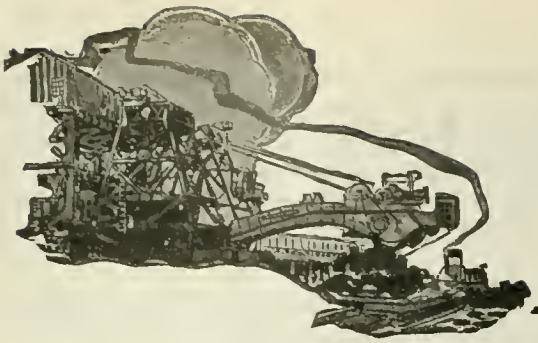
At the last meeting of the Institute, held in Indianapolis, July, 1919, the officers then in office were, by resolution, continued for another year. Owing to the war, there were no meetings in 1917 or 1918. For this reason, the institute adopted a resolution to the effect that no dues would be required of the members for those two years, and that all members who were in good standing in 1916, would be continued as members upon their paying the 1919-1920 dues.

The funds of the Institute have been insufficient to get out the regular proceedings for the last (1919) meeting; but with the payment of dues for 1919-1920, there will be sufficient funds to get out an abbreviated printed report that may be consolidated with the proceedings for the 1920 meeting.

*Secretary Mine Inspectors' Institute of America, 4800 Forbes St., Pittsburgh, Pa.

Indiana Strip-Pit Contracts Completed

CONTRACTS for the next two years between strip-pit coal miners and operators in Indiana have been adopted and put in the hands of a committee in charge of printing and distribution. The new contracts are similar to the old, with the exception of a few slight changes and clauses clearing up points which, it was feared, might later cause controversies. Those representing the miners were Edward Stewart, president of District No. 11; William Mitch, secretary-treasurer; William Ferrell and Charlie Kibbons, representing the miners, and Michael Schollard, B. E. Lundblad, W. H. Robinson, I. W. Aten and Frank Richards, for the operators.



Production and the Market

Weekly Review

Production Declines After Four Weeks of Steady Climb—New York Public Utilities Appeal to Government for Coal—Canada Is in Difficulties Over Fuel Supply—Michigan Embargoed Against Western Coal—Anthracite Output Affected by Switchmen's Strike

FROM nearly every section of the country comes further word of the increasing acuteness of the coal situation. New England has just pleaded for and obtained a priority order, although figures just released by the Geological Survey show a comfortable stock of coal there for immediate needs. New York public utilities likewise pressed their needs before the government and arranged to pool both coal and power should necessity arise. Shortly thereafter the Interstate Commerce Commission modified order No. 6, giving New York equality with New England.

A car shortage in Alabama, the like of which was unknown even during the war, is interfering with production and is raising prices. The Kansas Court of Industrial Relations is preparing a report on the coal situation and is advising everybody to buy and store now, which can be done in that section today.

Michigan has been embargoed against coal from Illinois and Indiana, and Chicago likewise is frequently so congested that coal from the nearby fields has to be embargoed. Throughout the Middle West anthracite has been in short supply and the present condition of the roads does not promise much improvement soon.

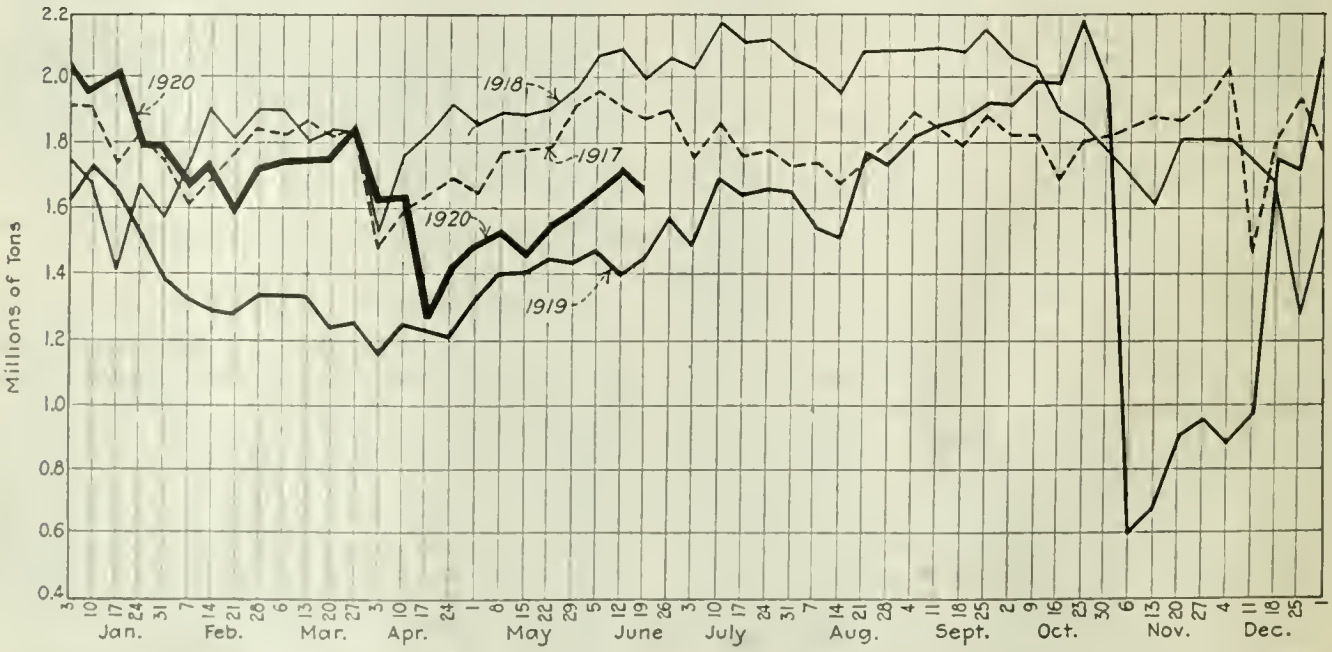
In two fields prices are reported to have begun to drop. Pittsburgh and Fairmont both report that the recent order virtually embargoing exports has had a tendency to soften prices, in the Fairmont field because of an embargo declared by the Baltimore & Ohio. Coal exports have ceased from northwestern Kentucky and buyers are reported no longer to be seeking coal in Ohio for export.

Lake Coal Dumped Season to June 26

(NET TONS)

	Cargo	Fuel	Total
1919.....	8,164,200	369,800	8,534,000
1920.....	3,052,240	277,280	3,329,520

Average Daily Production of Bituminous Coal*



* From weekly report of Geological Survey.

Reports From the Market Centers

New England

BOSTON

Questions Are Raised as to Priority Order for New England — Market Is Practically Unchanged — Hampton Roads Loading Is Slow — Anthracite Car Supply Is Curtailed.

Bituminous — The Interstate Commerce Commission issued an order, effective June 24, calling for priority for cars bearing coal destined (via Tidewater piers) for New England points in the name of J. J. Storrow, for the relief of the railroads and industries in this section. The interesting question at once arises—Where is he to get the coal?

Further, the railroads themselves are none too certain that they will not lay themselves open to heavy damages for discrimination. Neither has any way yet been devised to allow coal to run in Mr. Storrow's name and at the same time free him from any financial responsibility.

The market generally continues extremely active for spot coal. Consumers here are getting quite anxious over the serious situation of the railroads and a large number of manufacturers and utilities are subsisting upon extremely narrow margins of supply.

The New Haven road, in particular, continues in bad shape and seizures of coal in transit continue unabated. There is no let-up in demand in any direction and diligent inquiry fails to show any effect upon the general situation by the Interstate Commerce Commission's order.

There is congestion at certain of the gateways, but in the main the rate of movement shows a distinct gain. Cars are coming through in less time than for several months. Outlaw strikes that have practically paralyzed the piers at Philadelphia and certain of the loading ports at New York have spread to New Haven, Conn., and to the Mechanicsville yard of the Boston & Maine.

At Hampton Roads loading has slowed up to a marked degree. Steamers have been detained from a week to ten days and two weeks while heavy demurrage charges accrued. Buyers here are eager to absorb any such items so long as they can be assured coal.

Permits are being granted regularly for export, else the piers would not be in position to work. People talk about the number of bottoms that can be placed at the disposal of New England consumers, but no suggestion is advanced to solve the practical difficulty of getting them loaded.

Current prices of bituminous range about as follows:

	Clearfields	Cambrias and Somersets
F. o. b. mines, net tons,....	$10@$11.25	$10.50@$11.50
F. o. b. Philadelphia	13.10@ 14.50	13.60@ 14.85
F. o. b. New York	13.50@ 14.85	14.00@ 15.10

Clearfields have sold at $16@$18 f. o. b. Boston, gross tons.

Anthracite—Just at the time the movement of domestic sizes was showing a marked change for the better, came the suspension of work at the New York and Philadelphia piers. Likewise, the railroads have been directed to curtail car-supply for anthracite, on the ground that the supply of the latter is "easy." Thus collieries are obliged to shut down from lack of cars in June and time will have to be made up in October.

The Boston & Maine continues embargoes against shipments off the N. Y. C. and effective June 24 the Boston & Albany declined to accept freight marked for B. & M. or N. Y., N. H. & H. destinations via that line. This leaves only the B. & A. open and that only for stations on its own line. That being the case, the spot market is next to impossible to serve, although it is the expectation that the B. & M. embargo will be lifted within a few days.

Tidewater

PHILADELPHIA

Anthracite Trade in City Is Halted by Strike—Embargo Prevents Delivery of Coal — Mines Face Shut Down, as Empty Cars Fail To Arrive — Steam Coals Are Moved to Essential Industries — Bituminous Situation Is Most Serious, with Little Tonnage Coming In — Consumers Appeal to Governor Sproul.

Anthracite—The new outlaw strike of freight crews which broke suddenly on the lines of railroads entering this city on June 19 has come close to crippling the anthracite trade. The railroads found it necessary to embargo all shipments of anthracite into the city, and it has not been raised. As a result, no shipments of anthracite domestic sizes have reached the city for a week.

When the trouble began local dealers had quite small supplies on hand and now most of the yards are cleaned out.

At this time it is quite apparent that the mines will have to shut down, as the strike movement has gradually moved northward over the lines, until it has reached the mining regions, where crews operating the scale yards have left their posts. The collieries are faced with a scarcity of empties, as the roads have been unable to send the cars back to the mines.

Despite the scarcity of coal there has been no increase in prices and embargoes face the shippers in all directions.

There is a most urgent demand for all sizes of steam coal, with buckwheat in the lead. The railroads have endeavored to move steam sizes to the essential industries which are running on extremely close margins.

Bituminous—The bituminous situation is even more serious than the anthracite. Very little, if any, new tonnage is coming in. Brokers continue to offer small lots of fuel, the price depending upon the urgency of the buyer. Some sales have been made as high as $13 a ton for coal at the mines, although for the most part they have been closer to the $11 mark. These prices are all irrespective of grade.

The trade in general, including both shipper and consumer, has been quite wrought up over the preferential order granted by the Interstate Commerce Commission to New England interests. The various trade boards in this city and outlying sections are working strenuously to have it rescinded.

The manufacturing interests represented to Governor Sproul that the situation was fast assuming a phase where it would soon necessitate a calling of a special session of the Legislature to meet a crisis.

Numerous industrial plants are closed down and other industrial and utility plants threaten to do so before they will pay more than the contract price for fuel. Many of them have also taken exception to the increasing export trade and ask that it be at least restricted.

Fortunately the mines generally have reported a considerable improvement in the car supply, although even this is sporadic.

At tide an extremely large number of vessels are on demurrage awaiting the loading of their cargoes. The amount of coal now standing at tide is sufficient to meet the needs of vessels but due to the rail strike the movement of cars through the yards has been impeded and vessels consequently delayed.

NEW YORK

Anthracite Moves Easier Here, but Production Is Uncertain — Retailers Lack Supplies — Disturbed Bituminous Situation Brings Conferences and Improved Understanding — High Prices Are Deplored.

Anthracite—The anthracite market has not so far been affected by the newspaper agitation that there is likely to be a fuel famine here next winter.

It is generally understood that the present unrest is attributed to the lack of bituminous and not of anthracite.

Conditions fail to show any improvement unless it be in the easier movement of coal from the docks.

Production was hard hit in some sections of the coal fields last week. Nearly

all producers complained of the lack of cars, which they fear will do more to create restlessness among their workers than anything else, including the non-existence of a wage agreement.

Coal movement in this vicinity has improved but the dealers are receiving hardly more than 50 per cent of their normal requirements. Many of the smaller yards are bare of coal while some of the larger dealers are frequently without one or another of the larger sizes. However, considerable coal has already been placed in consumers' bins.

No official announcement was forthcoming early this week regarding the possible adding of 10c per ton to the June prices of domestic coals to become effective July 1. Quotations for the domestic sizes of independent mines ranged as high as $10.50 at the mines.

There was an active market for the steam sizes, although there were no heavy tonnages available. Independent buckwheat was quoted at from $4.25 to $4.75; rice $3.25 to $3.75 and barley around $2, all at the mines.

Current quotations for company coals, per gross ton, at the mine and f.o.b. New York Tidewater, at the lower ports, are as follows:

	Mine	Tidewater
Broken	$7 30—$7 50	$9.15—$9 35
Egg	7 30— 7.45	9.15— 9 30
Stove	7 55— 7 80	9 40— 9.65
Chestnut	7 60— 7 80	9 45— 9.65
Pea	5 85— 6 25	7.60— 8.00
Buckwheat	4 00— 4 10	5 75— 5 85
Rice	3.00— 3 50	4 75— 5.25
Barley	2 25— 2 50	4 00— 4 25
Boiler	2 50	4 25

Quotations for the domestic coals at the upper ports are generally 5c higher on account of the difference in freight rates.

Bituminous — Many conferences, followed in some instances by orders, and considerable agitation by the public press have tended to cause considerable uneasiness in this market. There was a slow movement of coal in New York harbor. Numerous conferences with the Interstate Commerce Commission brought about the understanding that there would be no need for further alarm, even should it become necessary to issue priority orders.

Inland dealers were in much better shape than those dependent upon water deliveries. Many of the former are well supplied and are not inclined to add to their present stocks unless there is a drop in prices.

Representatives of the various public utilities are complaining of the high prices they are obliged to pay for free coal.

Delay in bunkering vessels frequently postpones sailings here while ship captains from European ports are late in arriving because of the poor quality of coal furnished them on the other side.

The railroads continue to seize coal in large quantities, frequently causing distress to the consumers to whom it was consigned.

There are not as many loaded boats here as there was a week ago and owners find no trouble in disposing of them at prices ranging up to $14. Quotations at the mines were heard as high as $9.50 for the good grades.

BALTIMORE

New England Priority Causes Serious Situation Here—Fancy Prices Are Paid for Coal—Anthracite Runs Short and Supplies Are Bought Up by Industries Here.

Bituminous—The rail strike on top of the generally confused transportation problem placed the trade in a trying position. Many consumers are now desperately short of coal. With priority movement to New England, with grants of coal to some western points and with only coal allowed shipment east to public utilities and hospitals, and with the railroads this time not aiding local plants with fuel coal, the situation is indeed serious.

Many plants here are now on the verge of a curtailment unless relief comes, as the long weeks of inadequate supply had left them practically without coal. Fuel has been bought up right and left here at almost any price, the mine basis rate of $11 to $12 a net ton being paid frequently for small lots available in this city. In some cases there has been failure to deliver the coal thus bought, on account of labor troubles.

Many shippers with coal at the mines, or even at tide here, and who are not allowed to dispose of the fuel except to public utilities, have been offering the fuel to such purchasers as low as $8 a net ton f.o.b. mine basis. Many shippers here complain that New England was given priority, when the Lakes and the East generally are just as much in need of fuel.

The Baltimore & Ohio has been reporting a daily loading of between 2,000 and 2,500 cars for some weeks past. But the reserve of cars at Curtis Bay has now been cut to around 1,200, while there are only a few cars left at the Canton pier of the Pennsylvania. Nearly 40 ships are now waiting astream here in vain for coal.

Anthracite—The hard coal reserve here has been almost wiped out, and at this writing it is doubtful if there is 5,000 tons of anthracite in all the coal yards of the city. And to this is added the fact that some firms still have April orders to fill, while at this time last year nearly two-thirds of cellar supplies had been put in.

Last week there was a complete embargo against all hard coal shipment here, and even coal running was rerouted. Hot complaints were registered and promise of relief was given. A better run is now being started it is reported.

Meanwhile some industries without soft coal have been gunning for anthracite, and have bought up wherever the coal men would release to them. All of which means additional replacement to tide for householders here next fall and winter. Can it be done? The trade is very doubtful.

Lake

BUFFALO

Bituminous Situation Does Not Improve — Demand Is Not Insistent — Anthracite Supply Is Large With Canadian Buyers Crowding the Market— Good Lake Movement — Little Change Noticed in Coke.

Bituminous—The situation does not improve. Matters seem to become more mixed and tangled instead of straightening out. Transportation seems to be the main difficulty. Shippers are taking care of the most needy consumers first. The railroads are given the preference and then public utilities are looked after. Buffalo has a car committee which gives a large amount of time to such work, but it is an uphill task at best.

Increase the car supply 50 per cent and the $10 maximum price would go down to $4. As it is there is no settled price. Most coal goes on contract at about $3.50 at the mines. The bituminous demand is not insistent, in spite of the small amount in consumers' hands, for they know that a fair car supply would cut prices in half. Jobbers are between the two extremes and are faring badly.

Anthracite—The local supply is quite large and in it lies the hope that the winter will not exhaust the supply.

Canada is calling for more anthracite; that may indicate either an actual shortage for the time of year, or it may merely mean that consumers are eager to get what they can now and make sure of it. This market is flooded with Canadian dealers. Whether they get more for the effort is not very likely, for the shippers have now so long systematically routed their coal, in order to cover the field as best they can, that any great deviation from it would create a serious shortage somewhere.

The Lake movement is good, being for the week 124,800 net tons, of which 38,600 tons cleared for Chicago, 30,800 tons for Duluth-Superior, 29,900 tons for Milwaukee, 11,500 tons for Fort William, 7,500 tons for Ashland and 6,500 tons for Sheboygan.

Freight rates continue at 65c. to Chicago, 60c. to Milwaukee, 55c. to Sheboygan and 50c. to Duluth, Fort William and Ashland.

Coke—The movement by single order is exceedingly small, nobody buying unless an unexpected shortage takes place, all depending on contracts, made at less than half the current variable price. The latest quotation obtained by local jobbers was $17.50 for 72-hr. foundry, at the ovens, and about $1.50 less for furnace, with no domestic sizes or breeze offering. To this must be added $2.60 freight for local prices.

It is reported that more than 100 vessels are tied up at Erie and Ohio ports waiting to unload, some losing more than a week on a single trip.

Inland West

MIDWEST REVIEW

Coal Becomes More Scarce and Prices Rise—I. C. C. Is Asked To Grant Increased Freight Rates to Railroads—Open Tops Are To Be Used Only for Coal—Transportation Difficulties Must Be Solved by I. C. C.

Coal is becoming more scarce and harder to purchase every day. The market, consequently, has responded and prices uniformly are at a higher level than heretofore. Indiana and Illinois coals that have been selling on the open market during the past few weeks at $5 to $6 per ton, f.o.b. mines, are now moving at prices ranging from $5.50 to $6.50 and sometimes higher. Steam sizes, as well as the domestic grades, are rising in value, and screenings, in many cases, are bringing as good prices as either mine-run or lump.

The retail dealers of the Middle West are now pretty thoroughly aroused over the coal problems. The Interstate Commerce Commission has been urged to grant increased freight rates to railroads, so that the roads may be able to keep up their equipment and purchase additional rolling stock.

On June 21 the Commission of Car Service published an important ruling. This order provides that all open-top cars east of the Mississippi River are to be used only for coal purposes during a period of 30 days. Those interested in the coal industry feel that this order will help to alleviate the present acute coal shortage.

In the Middle West the public is beginning to realize that the only relief to be looked for in this coal crisis will have to come through the solution of the transportation difficulties, and the Interstate Commerce Commission appears to be the only body having authority to handle the situation.

It is sincerely hoped that some relief measures will be undertaken immediately, because if relief is not speedily brought it will mean not only the crippling of industry but actual want and suffering next winter.

CHICAGO

There Is a Serious Shortage of Coal Here — Publicity Campaign May Be Started To Show Up the Facts About the Coal Industry — Railroads Serving Chicago Have Placed Embargoes — Market and Prices Hold Strong.

The coal question once more occupies a prominent position on the front pages of the local daily papers. The city pretty thoroughly understands that there is a most serious shortage of coal, but does not quite know why this condition exists. It is quite widely thought that the coal men ought to undertake an extensive publicity campaign to acquaint the public with the problems confronting the coal industry.

Coal men are openly branded as profiteers, because the price of coal has advanced through the car shortage at the mines. It is to be hoped that some or all of our coal associations—producers and wholesalers—will get together and start a campaign, because such a step is quite necessary.

During the week the railroads serving the Chicago territory have placed a number of embargoes. For instance, it is said that neither Indiana nor Illinois coals can go into Michigan until further notice. In addition, there are some coal embargoes against Chicago.

The Chicago market is holding uniformly strong with advances in price for some coals, and reductions in price on none.

COLUMBUS

Ohio Operators Are Disturbed Over Present Transportation Situation—Assigned Cars Greatly Complicate Matters — Protests Are Filed—Fuel Demand Is Strong.

With reports from the East that the railroad strike is spreading and with many cities embargoes against, all classes of freight, including coal, Ohio operators are more uncertain over the outcome of the present mixup than ever.

In the meantime many large users of fuel are coming into the market and bidding almost any price to get the coal they need to keep their plants in operation.

Older operators who know the danger of a runaway market are asking only $4.50 a ton for lump or mine-run at their Hocking Valley mines. Others are asking as high as $9 and $10 a ton. Fears that there may be an investigation of alleged profiteering seem to have a deterring effect upon others who keep the price within bounds.

The whole coal industry is at the mercy of the railroads. The delivery of great numbers of assigned cars into the Ohio fields, for the exclusive loading of railroad fuel, has complicated the situation.

At the meeting of the Southern Ohio Coal Exchange this week, continued protests were filed with officials at Washington against the assigned cars, but as yet there is no relief from that condition.

With indications that there will be a scarcity of natural gas throughout central Ohio during the coming winter, the domestic demand for coal is increasing and Hocking mine-run and lump retails at $8.50 to $9, while West Virginia splint ranges about $1 higher. Pocahontas sells at retail from $10.50 to $11.50 and very little is to be had even at that price.

Hocking lump	$4 50 to $6 75
Hocking mine-run	4 50 to 6 50
Hocking screenings	4 50 to 6 50
West Virginia splints, lump	5 75 to 8 25
West Virginia splints, mine-run	5 50 to 8 00
West Virginia splints, screenings	5 50 to 8 00
Pocahontas lump	7 00 to 8 25
Pocahontas mine-run	7 00 to 8 25
Pocahontas screenings	6 75 to 8 00
Pomeroy lump	5 00 to 7 75
Pomeroy mine-run	5 00 to 7 75

MILWAUKEE

Many Public Officials Are Making Efforts To Loosen Up Transportation Conditions—Supply and Price of Soft Coal Are Investigated—Anthracite and Pocahontas Advance.

The future of the coal supply is uppermost in public attention hereabouts at the present time. Governor Philipp has appealed to Attorney-General Palmer to give his attention to the car-supply end of the coal dilemma, and Washington officials generally are being urged to lend a hand in the effort to start things in connection with the coal supply.

While the matter of supply is first in order, some attention is being paid to prices of coal for present use. A member of the Wisconsin Railway Commission is now in Illinois investigating conditions affecting both the supply and price of soft coal. Public utilities, particularly the gas companies, are greatly disturbed at the outlook and are clamoring for relief.

Although no new schedule has been announced since April, coal has been quietly advanced. Anthracite stove and nut now sell for $14.75, egg at $14.60, pea at $13.10 and buckwheat at $11.50. Steam Pocahontas retails at $13.75 and mine-run is quoted at $11.75, although there is none of the latter to be had.

Anthracite prices will be subject to another advance of 10c per ton on July 1. Soft coal generally is being sold at an advance, but price regulation is seemingly not being enforced. Dealers are in the dark as to the future of prices and dockmen refuse to make contracts for future delivery.

Receipts up to this writing by Lake aggregate 249,571 tons of anthracite and 291,235 tons of soft coal. Last year's record to date was 231,896 tons of anthracite and 1,144,308 tons of soft coal.

CINCINNATI

Car Shortage Is Still Serious, and Prices Have Increased — Cincinnati Is Favored by River Transportation — Fair Price Commission Inquires Into Rising Costs.

The average daily car supply at the mines is about 39 per cent, with more than a normal demand; only 50 per cent of the amount of coal that went to Tidewater last year has gone there this year to date. This is the situation that has been pointed out to coal users in this section and dealers report that it is beginning to bear fruit.

Dealers have been telling the coal-buying public that Cincinnati has been enjoying a very low rate for her fuel in comparison to the prices in other cities. The local dealers say that the same grade of coal that is being sold here demands from $2 to $3 a ton more in other cities.

By using the Ohio River, Cincinnati dealers have been able to get coal. A campaign was waged through the daily press during June advising the purchase of coal as prices would soon advance.

During the past week the Fair Price Commission made an inquiry to determine the causes of rising costs. Shortage of cars is one cause contributing to high prices. Agents for foreign countries are buying up coal at the mines and this also is creating a shortage.

Local retailers have raised the price to $8.50@$8.75 for bituminous block and $8.25@$8.50 for run-of-mine, delivered. It is said an extra 25c. will be added to these prices in July.

ST. LOUIS

Users of Steam Coal Are Hard Pushed—Situation Is Critical in Country Districts—Great Demand for Coal Brings Fancy Prices—Railroads Take Bulk of the Coal—Labor Shows Much Unrest.

Conditions in St. Louis are fairly good excepting on steam sizes; many plants are hard pushed and purchasing agents are busy trying to keep sufficient coal ahead.

In the country districts the situation is critical. This is especially so in places where coal is used for threshing, and it is going to handicap the wheat crop seriously unless something unusual happens in the next couple of weeks to get coal through.

Buyers from Chicago and northern cities are here in large numbers and accordingly little coal gets to its normal market, as fancy prices are offered. Standard is moving north at $5@$5.50 for all sizes. A few operators are refusing to ship coal north and are taking care of their regular trade at about $3.25@$3.50 and as high as $4.

In the Mt. Olive field prices are about $3@$3.50 for all sizes and the regular trade is getting the preference.

The railroad tonnage in both of these fields is heavy. The mines work on commercial coal from one to 1½ days a week; railroad mines get four to five days a week.

In the Carterville field working time averages about three to four days a week, with large railroad tonnage included. The Missouri Pacific mines fare badly, as that road still insists on taking coal, and many points on this system are without fuel.

Practically no anthracite, smokeless or Arkansas fuel is coming into St. Louis. Little coke is available and smithing coal is out of the market. Operators are asking from $8 to $10 a ton.

DETROIT

Michigan Is Embargoed Against Coal from Illinois and Indiana — Assistance of Public Officials Is Urged To Secure Freer Movement of Coal—Anthracite Situation Is Serious.

Bituminous—In the action of the railroads in placing embargoes against the movement of coal from Indiana or Illinois into Michigan, Detroit coal men see a new discrimination against the local market. Predictions are being made that unless relief is obtained speedily, consumers of bituminous coal in Detroit will be obliged to pay $20 or $22 a ton for their supply next winter.

Owing to the strong demand from tidewater markets, practically all the West Virginia and Kentucky coal is being shipped to the East, little coming to Detroit except occasional small consignments to apply on old contracts. The greater part of Detroit's present inadequate supply is coming from mines in Ohio and this has been supplemented to a small extent by shipments from Illinois and Indiana, which are now reported shut off.

The Ohio coal is selling at the mines (on a short ton basis) at about $7.50 for lump, $7 to $7.25 for mine-run and around $6.75 for slack.

At a meeting of the Detroit Coal Exchange (June 24) an opinion was expressed that present high prices for bituminous are the result of efforts of purchasing agents for industrial plants who attempt to buy direct from the operators at a price higher than the market.

A committee of the Coal Exchange will urge the Board of Commerce to assist in bringing about a freer movement of coal to Detroit. The assistance of the governor, the mayor and common council of Detroit and of Michigan's senators and representatives will be sought.

Anthracite.—There is little anthracite coming into Detroit. The supply is small and irregular and retail dealers are unable to get sufficient stock to fill orders they have been carrying on their books for weeks. Unless the situation is relieved in the near future, many household consumers in Detroit may be unable to get a supply of anthracite for next winter. Distribution is already far behind.

South

BIRMINGHAM

Heavy Demand for Coal Cannot Be Supplied Until More Cars Are Provided — Little Spot Coal Is Available—Strikes Keep Output Down.

The whole situation affecting the coal trade here is summed up in transportation and production. There is a heavy and continued demand for all grades of coal which cannot be supplied until more cars are provided in order that the mines may operate regularly.

The car supply the past week has been about 50 per cent of requirements at commercial mines and domestic operations, and from 90 to 100 per cent at contract mines. Industrial needs provided for by contract cannot be fully supplied under present conditions, hence the only available coal for the spot trade comes from small operations which dispose of their output as mined.

This tonnage is of medium or low-grade coal and its volume is not sufficient to give any material relief, and it brings a premium of from $2 to $4 per ton if the holder sees fit to accept this high figure. Domestic sizes are also scarce, the supply available moves slowly and retailers are not making much progress in stocking up, especially in the better grades.

LOUISVILLE

Production Is Light and Prices Continue Firm—Priority Rulings and Possible Zoning of Coal Interest Operators—Dealers and Consumers Are Not Stocking Coal.

Prices continue strong. Demand heavy for steam and byproduct coal, with production light. Prepared sizes in small production, with fair demand from North. Louisville retailers report very light business.

The shortage of cars and resulting small production, which has been less than two days' run for the past two weeks, is resulting in prices remaining firm, although the market is not increasing quite as rapidly just now as earlier in the month.

The market is quoted at around $9@$9.50 a ton on the best grades of gas coal. Gas coal is the big item in sales, although all other grades are selling well, but not commanding as high prices.

Coal men are now considering possibilities of priority rulings, and also of possible zoning of coal from the various fields in an effort to improve car supply. While some operators are opposed to zoning, as it would cut off excellent markets, others are of the opinion that it would improve car supply materially, and make for better production as a whole.

Retailers are not stocking coal at present markets, and are merely buying enough coal to supply immediate demand. In fact retail prices on eastern Kentucky coals today are lower than mine prices. Stocking of domestic consumers is very light.

Quotations on mine-run coal per ton at mine from the three principal grades produced in the state are as follows: Gas coal, $9@$9.50; non-gas, $8@$8.50; western Kentucky, $5@5.50. Production of prepared sizes continues very light, with prices practically unobtainable.

West

SAN FRANCISCO

Price for Domestic Coal Is Increased, with No Change for Bunker Fuel.

The upward tendency in prices predicted some time ago has materialized here in the domestic trade, with no change in the price for bunker coal, Large steamships are coming here this summer in good numbers for the Utah coal supplied by the King Coal Co. A further advance may be expected in the fuel sold to the factory and household trade.

The bituminous price, f.o.b., mines, wholesale, Utah and Wyoming, per net ton, is as follows: Stove and lump, $4.50. The bunker price is $13.55.

News From the Coal Fields

Northern Appalachian

FAIRMONT

Output Is Less Than 40 Per Cent in Northern W. Va. Fields—Curtis Bay Is Embargoed—Lake and Inland West Shipments Are Increased—Prices Drop Slightly.

Production was still at an extremely low ebb in northern West Virginia regions during the period between June 14 and June 19, lack of cars still holding back the output in that part of West Virginia to quite a serious extent—less than 40 per cent.

Producers were debarred during the week from shipping any coal to Curtis Bay for export, there being a serious congestion at this tidewater terminal of the Baltimore & Ohio. In fact over 1,700 cars awaited dumping at the piers, while to the west of Baltimore there were 2,750 car loads of coal awaiting unloading.

This situation was relieved by an embargo on Curtis Bay. One of the tidewater outlets still open for northern West Virginia coal, however, was Port Reading and it was also possible during the weekly period to ship to Port Richmond.

Numerous embargoes applying to eastern shipments on all roads were having a decided tendency to increase the volume of western tonnage and there were further increases in Lake and Inland West shipments; although industrial concerns in the East endeavored to hurry shipments eastward in order to avert a complete suspension of their operations.

Tidewater embargoes had a good deal to do with driving prices in northern West Virginia downward on June 17, the fall in some instances being from $1 to $1.50 a ton, but there was a partial recovery on Saturday, prices climbing back about 60c. a ton.

CONNELLSVILLE

Car Supplies Are Slightly Poorer—Spot Prices Are Higher—Contract Market Is Excited, with Buyers and Sellers Far Apart.

Car supplies for coke loading in the Connellsville district have decreased a trifle for two or three weeks past, and there is not much hope of an early restoration of the March output, production having lately averaged about 70 per cent of the March rate.

Coke operators express the opinion that the priority order in favor of car supplies to coal mines will operate disadvantageously to the shippers of coke. The order may react upon the Connellsville coke trade in another way, by increasing supplies of coal to byproduct ovens and thus decreasing the demand for coke in the open market.

The spot-coke market has experienced a further advance in the past week—about a dollar a ton. The advance seems to be the result not of increased scarcity of coke, but of increased willingness on the part of consumers to pay fancy prices, as they have become more accustomed to these high prices.

Some coke operators are predicting an advance in pig iron to $50 or $60, but their arguments are not accepted in all quarters. The lowest flat price quoted on second half furnace coke seems to be $12, a price that does not interest the average furnaceman.

Basic pig iron has advanced 50c., or $4, valley, so that ratio contracts at 4-to-1 (as now offered) would produce $11 for coke if pig iron stayed at the present level. Thus a $12 average could be attained only by a very considerable advance in pig iron.

The market is quotable at about $16 for spot furnace coke; $16 to $17 for spot foundry; $12 asked on contract furnace and $12 on contract foundry—all quotations are per net ton at ovens.

The *Courier* reports production in the Connellsville and Lower Connellsville region, in the week ended June 19, at 178,730 tons, a decrease of 6,500 tons.

PITTSBURGH

Better Transportation and Increased Production Improve Coal Situation—Bidding by Export Buyers Decreases, Due to Embargoes — Easy Market Would Follow Betterment—Prices Are Declining.

Coal supplies for local consumption have increased, and a downward trend in prices has been established, by the double influence of the railroads functioning better as to domestic deliveries and worse as to shipments to Tidewater.

The 100 per cent priority order of the Interstate Commerce Commission as to car supplies to the coal mines, in place of the 50 per cent priority, previously in force, has resulted in an improvement in car supplies and a consequent increase in coal shipments.

As to the coal market itself, the more important influence of the embargoes on shipments East is a decreased bidding for coal by export buyers. The very high prices lately ruling for Pittsburgh district coal, have been due largely to the wild bidding of export buyers, who exerted an influence upon market prices quite out of line with the volume of their purchases.

While the present rate of production in the Pittsburgh district (with the recent increase) is only about 50 per cent of rated capacity, the production is much more than one-half the actual requirements, and there is reason to believe that a relatively small further increase in car supplies would put the market in an easy position and give all consumers a fair supply. The shortage in cars, furthermore, is not the full measure of the restriction in output, on account of the extraordinary heavy duty being performed by the Monongahela River.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

BITUMINOUS COAL.

	1920 Week	1920 Calendar Year to Date	1919 (a) Week	1919 (a) Calendar Year to Date
June 5b	9,141,000	221,067,000	8,927,000	184,004,000
Daily average	1,660,000	1,654,000	1,488,000	1,377,000
June 12b	10,269,000	231,335,000	8,485,000	192,489,000
Daily average	1,711,000	1,657,000	1,414,000	1,379,000
June 19c	9,956,000	241,291,000	8,681,000	201,170,000
Daily average	1,659,000	1,657,000	1,447,000	1,382,000

ANTHRACITE

	1920 Week	1920 Calendar Year to Date	1919 (a) Week	1919 (a) Calendar Year to Date
June 5	1,495,000	36,382,000	1,703,000	33,351,000
June 12b	1,907,000	38,289,000	1,695,000	35,047,000
June 19c	1,810,000	40,099,000	1,753,000	36,800,000

BEEHIVE COKE

United States Total

Week Ended June 19c 1920	Week Ended June 12b 1920	Week Ended June 21 1919	1920 to Date	1919a to Date
373,000	400,000	286,000	10,127,000	9,225,000

(a) Less one day's production during New Year's week to equalize number of days covered for the two years. (b) Revised from last report. (c) Subject to revision. All figures in net tons.

NORTHERN PAN HANDLE

Cars for Commercial Loading Average 30 Per Cent in Pan Handle — Mines Operate One and Two Days a Week in Ohio Near River.

Ground was lost after the middle of June in the Northern Pan Handle mining regions of West Virginia. In that section conditions were not so propitious as during the first half of June, the average car supply for commercial loading after June 15 being only about 30 per cent, with the result that production was correspondingly decreased.

The rail movement was said to be reasonably good and lack of cars was the sole limiting factor. The carriers operating in the Pan Handle region claim it is impossible to even approach a 50 per cent supply to the coal industry under present conditions.

During the week ended June 19 no relief from a steady and heavy assignment of cars had been secured, such assignment of course making serious inroads on the supply of empties generally available for the loading of fuel other than for railroad purposes.

Transportation conditions in the Eastern Ohio fields bordering upon the Ohio River were just about on a par with those in the Northern Pan Handle region and hence production was being much curtailed in that field. In some parts of that particular section, in fact, mines were not being operated more than one and two days a week.

Middle Appalachian

NEW RIVER AND WINDING GULF

There Is Less Than a 50 Per Cent Run on the C. & O. Against Over 60 Per Cent on Virginian on the Gulf—New River Ships Some Coal West, But Bulk Goes to Tide.

There was a slight upward swing to production in the New River and Winding Gulf smokeless fields of West Virginia in the week ended June 19. Insofar as the Chesapeake & Ohio R.R. was concerned, it was unable to help either one of the smokeless fields referred to more than from 40 to 45 per cent.

An order effective June 24 stopped the export coal movement on the Winding Gulf and diverted coal to New England, Inland East points and to the Lakes.

As the result of the pooling arrangement at Sewell's Point (the tidewater terminal of the Virginian Ry.) there was a marked improvement in the car supply on the Virginian Ry. in the Winding Gulf district. On the Chesapeake & Ohio there was less than a 50 per cent run of cars as against over 60 per cent on the Virginian.

The output in the New River field crept upward slightly for the week ended June 19, the output for the week being about 111,000 tons as against about 104,000 for the previous period. But the scarcity of loading equipment was still holding mines down to about a 40 per cent production.

New River shippers sent more coal to Western markets, though the tonnage was small compared with Tidewater shipments. Tonnage available for commercial usage was still so limited that there was no softening in prices on New River fuel.

LOGAN AND THACKER

Logan Increases and Thacker Decreases Output—Much Splint Coal Goes to Inland West and Lake Markets—Thacker Strike Costs $250,000 a Week.

While production continued to crawl upward in the Logan field, as the middle of the month of June was reached, the output lagged further and further behind in the Thacker region, where labor troubles had reduced a number of mines to idleness. Logan is a non-union field and the Thacker now a partly unionized field.

However in both fields it was possible to use all the cars supplied, yet in neither instance was the supply of empties sufficient to enable mines to reach the half-way mark in normal production.

The aggregate output of all Logan mines was about 185,000 tons, or just about 46 per cent of potential capacity, representing an increase of about 5 per cent in production over the preceding week. Mines were still so short of equipment that the loss from a car shortage was about 225,000 tons.

Owing to the larger number of cars obtained from the West, more coal was consigned to Western points than had been true even earlier in June. With splint coal shut out from tidewater, more of that kind of coal was shipped to Inland West markets and to the Lakes.

As most shippers are far behind with their contracts the addition to the output of the Logan region did little to contribute to the general supply of coal available for commercial usage. The price offered for Logan coal was averaging anywhere from $8 to $10 a ton with little spot coal available even at that figure.

While many mines in the Thacker field were still in idleness due to labor disturbance, yet all cars furnished the field were being utilized. However, production in the Thacker district is slowly dwindling, being at the end of the third week of June not much more than 80,000 tons. The strike is costing in excess of 50,000 tons a week, or more than $250,000 a week on the basis of $5 contract coal.

VIRGINIA

Virginia Mines Increase Coal Output—Charleston, S. C., Fuel Exports Continue—Spot Coal Price Is Not Changed.

A rather material gain was made in the tonnage produced in the Virginia fields during the week ended June 19, the total output reaching 143,000 tons as against 125,000, or a gain of 18,000 tons, the increase being due to the fact that there was not so heavy a loss from a loss due to car shortage. In that respect there was a three per cent gain, a shortage of cars costing a loss in production of 27 per cent. In addition to the tonnage shipped, mines managed to produce 32,000 tons of coal which were used in making coke.

Despite the improvement in the car supply, so many cars were asigned to be loaded with railroad fuel, that there was little actual increase in the tonnage of coal for commercial purposes produced. There continued to be a shortage of empties at such mines as had no preferential car supply.

No inroads will be made on the export business of Virginia mines since coal from such mines is shipped for the most part through Charleston, S. C., that port being too far away from Boston to be affected by the priority order of the Interstate Commerce Commission.

Little or no change was observed in the price of spot coal from the Virginia fields, the price still hovering right around $8 a ton.

KANAWHA

Production Gains But Output Is Embargoed to Tide—Bulk of Kanawha Coal Is Applied to Contracts.

Production gained somewhat in the Kanawha field in the week ended June 19 as compared with the previous week, but even with such a gain there was not an output of more than 40 per cent. Day by day, however, with possibly one or two exceptions during the week, more cars were available than had been the case in the period ended June 12.

Although there was twice as much cargo space as there was tonnage in Pool 6 at Newport News, yet Kanawha splint (which goes to Pool 6) was under embargo all last week and hence the export of that particular kind of coal was largely at a standstill.

While tidewater was open to other high-volatile coal during the week, there was nevertheless a heavier tonnage forwarded to the Lakes, the percentage of coal so shipped amounting to perhaps 20 per cent of the Kanawha output.

There was so little free coal available from the Kanawha field, that as high as $8.50 and even $10 a ton was being offered for spot shipments. However, such prices had little significance because no orders could be filled, the bulk of production being applied on the fulfilment of contract requirements.

NORTHEAST KENTUCKY

Tonnage Increases Slightly — Most of Output Goes to Inland West Markets—Coal Exports Cease from Local Mines.

Northeast Kentucky mines, although increasing production 6 per cent over the preceding week, were only able to mine 46 per cent of potential capacity, or 130,990 tons, out of a possible 295,470 tons during the week ended June 19. Of the tonnage just given a car shortage was responsible for a loss of 158,035 tons or 53 per cent. Increased production was about equal on both the Chesapeake & Ohio and on the Louisville & Nashville.

By far the greatest proportion of the output of eastern Kentucky, or approximately 80 per cent, was moving to Inland West markets. Only 6 per cent

was going to the Lakes, while railroads were securing about 4 per cent of the output, leaving 10 per cent for inland east movement.

The exporting of coal from Northeast Kentucky mines had ceased although for a time a fair tonnage was shipped to Charleston, S. C., for export. However, the market in northern Ohio, Indiana and Illinois has proved so much more attractive than the export trade, the haul so much shorter and freight rates so much lower, as well as the return of cars so much more expeditious, that Eastern Kentucky shippers have cultivated the markets in the states named.

POCAHONTAS AND TUG RIVER

Smokeless Fields on N. & W. Increase Output—Shipments to the West Are Larger—Tug River Mines Fare Better Than Pocahontas as to Empties.

The Norfolk & Western was just beginning to make it possible to increase the loading of coal in the two smokeless fields of Pocahontas and Tug River during the week ended June 19. Car-shortage losses were still far in excess of the total production in both of these areas, the output in the Pocahontas and Tug River regions and the Thacker volatile field as well not being much over 450,000 tons.

Western empties were not quite so plentiful and the supply from that source was not being sustained. Lake and Inland West shipments, however, were running a little heavier than had been the case during the two preceding weeks of June, nevertheless little of the fuel so shipped was free coal.

Mines in the Pocahontas region got away to a flying start, there being fully 1,200 cars loaded on the first day of the week, that representing about 60,000 tons. Still production was below the 50 per cent level, with a car shortage figuring as the greatest factor in curtailing the output.

Pocahontas mines were able to obtain a somewhat larger number of cars from Western points and reciprocated by increasing Western shipments, though still routing the bulk of the tonnage produced in the opposite direction and to Tidewater.

With the increase in the flow of empties from Western points, it is estimated that Tug River mines were receiving about a 70 per cent car supply and in that respect were faring better than Pocahontas mines. Wagon mines in the Tug River field were cut off from a car supply owing to the need for box cars in the West.

Middle Western

INDIANA

Bureau of Mines Looks for Coal Mine in Which to Store Helium Gas.

An Indiana coal mine in which helium gas (to be used by dirigible balloons) could be stored, is desired by the Bureau of Mines of the Department of the Interior, according to Cairy Littlejohn, State Mine Inspector of Indiana. The Government contemplates a transcontinental dirigible balloon route and to do this it must obtain at least four storage stations for helium gas. The Bureau of Mines is considering using one of the Indiana mines for this purpose. The mine must be dry, have a good roof and 200 or 300 ft. of cover. Gas would be stored in the mines under pressure.

State officials of Indiana are considering the feasibility of purchasing 100 coal cars to provide the public institutions with fuel. They say that the coal companies are unwilling to enter into contracts for coal, because of unfavorable production conditions.

The Purchasing Committee so far has been unsuccessful in obtaining bids for coal after the present contracts expire on June 30. The coal companies are loath to enter into contracts as they will be able to market every ton they can produce.

Several ways in which to overcome the situation and keep from buying coal on the market at high prices are under consideration and one of these is the purchase of coal cars. With state ownership, it is alleged car movements can be controlled and cars set at any mine desiring to fill them at a reasonable price.

Another possible solution being considered is the leasing of a mine and while this might insure lower-priced coal, yet it would not insure an adequate supply of cars.

ILLINOIS

Illinois Bureau of Forestry Directs Planting of Trees—Electrical Coal Co. Co-operates—Kind of Trees Planted.

Under the direction of the Illinois Bureau of Forestry, 6,500 trees have been planted recently on the waste land of the Electrical Coal Co.'s tract, near Gray's Siding, west of Danville. Of the total number, 4,000 are pine, being about equally divided between red and Norway pine, jack pine and Scotch pine, all trees of comparatively rapid growth.

The 2,500 hardwood trees, red oak, black locust, ash and yellow poplar, are planted in an area stripped twelve or fourteen years ago, which is grown over with willows and scrub growth.

A desire to save the soil, where the coal has been taken out, and at the same time arrange for timber sufficient for mine props and similar work, to be used twenty or thirty years later, caused the company to appeal to the forestry bureau for assistance. The trees are now about 10 in. in height.

UTAH

Utah Land Board Agrees to Lease Carbon County Coal Land—Terms of the Lease Are Stated—Operators Interested Have Invested Heavily in the Section.

Plans for the extensive development of new coal properties in Carbon County were disclosed recently at a meeting of the State Board of Land Commissioners with representatives of the Rio Grande Fuel Co.

The land board agreed to lease to the fuel company a section of school land at a minimum rental of $1 an acre per year for the first two years: at a royalty of ten cents a ton on a minimum production of 50,000 tons of coal for the third year, and a minimum production of 100,000 tons of coal for the fourth year and thereafter.

It was disclosed that the Standard Coal Co. and the Rio Grande Fuel Co. are virtually one concern, and represent interests that already have invested about $1,700,000 in coal properties in Carbon County.

The coal operators concerned would like to know whether the beds underlying the school section in question will be available to them or not, for the reason that it will have an effect on the laying out of the mine.

Canada

OTTAWA

Canadian Government Officials Investigate the Coal Question—Canada and the United States Should Co-operate —Vast Canadian Resources Must Be Developed.

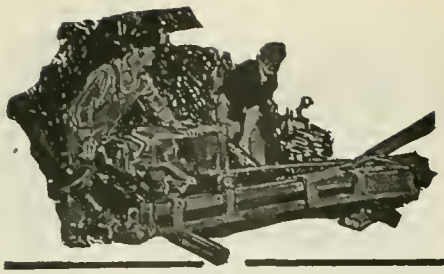
In the House of Commons at Ottawa on June 17, the Hon. Rodolphe Lemieux stated that coal was recently selling in Ottawa at $15 and $16 per ton, and there was no guarantee that it would not go higher. Industries were faced with the necessity of closing down, while western Canadian coal operators were shipping Canadian coal to the United States and the eastern coal mines were shipping to Europe.

He suggested that more coal be shipped from the maritime provinces to Quebec and Montreal, those ports to be made distributing centers for eastern Canada, or that cheap railway rates be given on coal from the west. If the government did not act quickly there would be a panic next fall.

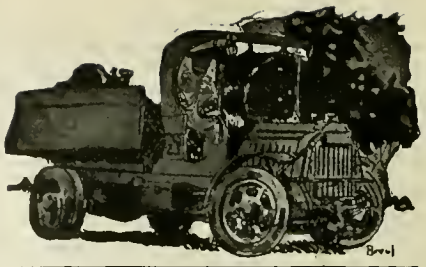
Sir Robert Borden replied that the Government was already taking whatever steps were necessary. Some weeks ago a committee of the cabinet met for the purpose of considering the coal situation.

A Government agent had spent much time in the United States investigating the situation there and endeavoring to speed up coal shipments to Canada. Dealing with exports of coal from Canada to the United States it was said that it must be remembered that Canada is dependent upon the United States for her anthracite. Canada must show a spirit of co-operation in dealing with her neighbor.

The question of a future coal supply must be squarely met by Canada. Canada has ample coal resources, but the difficulty lay in transportation. Canada holds about 80 per cent of the coal resources of the British Empire. The question was to make these vast coal resources available for the use of the Canadian people as a whole.



Mine and Company News



ILLINOIS

Zeigler—The Bell & Zoller Mining Co., of Chicago, is completing plans for the building of a number of houses near its No. 2 mine at Zeigler, after several failures to induce private parties to erect dwellings. It is said that the housing conditions in the vicinity of Zeigler, and, in fact, throughout the Franklin County field, are almost as great a hindrance to production as the car shortage is at the present time.

Christopher—The Old Ben Coal Corporation, which operates a number of modern mines in Franklin County, has organized a mining class for the benefit of persons seeking certificates of competency in mining. The class is not confined to employees of the company, but is open to all who wish to enter and no charge is made. This company is taking an unusual interest in the improvement of the communities where its plants are located; among other things the company donated $1,500 to help pay and retain the teachers in the schools at Buckner, where one of its largest mines is located.

INDIANA

Clinton—It is said that the largest power contract ever made in western Indiana was signed recently when the Clinton Coal Co., of Clinton, closed a contract with the Wabash Valley Power & Light Co., by which the power company will provide electric current for the operation of three of the Crown Hill mines. Since the mines began operation the company has been generating its own electricity, but investigation showed it would be a saving and an elimination of much trouble to buy the power.

KENTUCKY

Ashland—Operations will be conducted on quite a large scale by the Porter Mining Co. near Lackey, Ky., on the waters of the right fork of Beaver Creek, the new concern having a capital of $150,000. Those chiefly interested in the new concern are Ashland and Big Sandy people, among them being Dr. M. M. Collins, and Fred Blackburn, of Lackey, Ky.; S. S. Porter, J. E. King and J. W. Kitchen, of Ashland, Ky. The company will develop a tract of about 1,000 acres and will begin at once the erection of a plant and the opening of a mine.

NEW YORK

New York—The John Markle Co., Inc., was recently organized and occupies offices at 28 W. 44th St., New York City. John Markle is president of this company; A. B. Jessup is vice president, and Harry Hasford is general sales manager. The company was organized to sell the output of the G. B. Markle Co., whose mines are north of Hazleton, Pa., in the neighboring valley. The well known Jeddo and Highland anthracite of this company will be sold by the new sales organization in New York and New England territory.

OHIO

Columbus—The Maynard Coal Co., of Columbus, increased its capital from $2,300,000 to $3,000,000. The increase was made to take care of extensions and development work on the properties. The company controls mines in the Pomeroy Bend, Eastern Ohio, in Hazard and in other fields, as well as docks in the upper Lake region.

PENNSYLVANIA

Starford—Robert McTaggert, mine superintendent, and Clark Brown, of Patton, were killed, and Mark Brown, a brother of the victim, Edward Wilkie, of Patton, and Albert Kannar, were painfully burned as the result of an explosion of gas in No. 3 mine of the Glenside Coal Co., at Starford, Indiana County on June 7.

The section of the mine where the explosion occurred had been idle for about a year and had been filled with water. The water was being pumped out preparatory to placing it in a workable condition.

The injured men were making some repairs, and McTaggert and Brown, the fireboss, had just finished inspecting the work and had traveled to about a distance of 50 yards away from the men when the explosion occurred.

Mine inspectors are at work in an effort to determine the cause of the explosion. McTaggert and Brown carried a safety lamp.

The injured men (Mark Brown, Wilkie and Kannar) managed to get to the outside before the deadly afterdamp set in.

Wilkes-Barre —The large playground, which covers several acres of the Lehigh & Wilkes-Barre Coal Co. property at Sugar Notch near here was opened recently. This is the second year that this playground has been available to the children. Miss Lucille Morris, of Sugar Notch, is the instructor in charge. The coal company has put the playground in fine condition, there having been a large force of men working on it.

UTAH

Salt Lake City—A tidewater plant, costing $500,000, for the storage of Utah coal to be used for bunker purposes, is to be built at Oakland, Cal., almost immediately by the Standard Coal Co., it was announced by F. A. Sweet, president of that company.

The announcement came in connection with the hearing before the Public Utilities Commission of Utah on the application of the Utah Terminal Ry. for permission to construct a line from Standardville, in Spring canyon, to a junction with the Utah Ry. company's line.

The contemplated plant would store 250,000 tons of coal. It is to be constructed in an estuary off San Francisco bay, near Oakland.

The plant will enable the coal company to market its product to the shipping trade on the Pacific Ocean.

The application is opposed by the Denver & Rio Grande, which already has a line up Spring canyon. The applicant is made up of three coal companies operating near the mouth of that canyon.

The Utah Railway company, is a subsidiary of the U. S. Smelting, Refining & Mining Co.

WEST VIRGINIA

Huntington—The Logan-Elkhorn Coal Corporation is planning for the development of coal properties in the vicinity of Fleming, Ky. It is planned to install equipment to allow for a maximum of 1,000 tons capacity. The company recently increased its capital from $200,000 to $500,000 for expansion. A. B. Ewan is general manager of the company.

Blair—The Opperman Coal Co. at Blair, W. Va., has placed a contract with the Roberts & Schaefer Co. for the construction of its tipple, which will involve changing the present shaker screen to a Marcus screen. The work is under way and will be completed within a short time.

CANADA

Fernie, B. C.—The head office of the Crow's Nest Pass Coal Co., as well as that of two subsidiary companies, the Crow's Nest Pass Electric Light & Power Co., Ltd., and the Morrissey, Fernie & Michel Ry., has been transferred from Toronto to Fernie, B. C. W. R. Wilson, general manager of the company, has been elected to the presidency in place of the late Elias Rogers. A. Klauer, chief accountant for many years, has been made treasurer.

Association Activities

M. O. I. Coal Association

The Michigan-Ohio-Indiana Coal Association convention at Cedar Point, Mich., recently adopted resolutions requesting the Interstate Commerce Commission to take immediate action to compel the railroads to furnish 85 per cent normal car supply for the next 60 days to the mines supplying the domestic coal consumers of Michigan, Ohio and Indiana. This action, the association declared, is necessary unless the three states are to suffer an intolerable domestic coal shortage next winter.

The officers elected were: Homer G. Gill, Columbus, president; H. A Bauchnecht, Muskegon, Mich., vice president; B. F. Nigh, Columbus, secretary-treasurer; W. H. Kelly, Angola, Ind., W. M. Brown, St. Joseph, Mich., George C. Matthes, Sandusky, S. Pollok, Coldwater, Mich., W. M. Donker, Grand Rapids, Mich., Charles Albright, Cleveland, Louis O'Connell, Tiffin, E. T. Rolfe, Fort Wayne, Ind. and R. B. Mather, Richmond, Ind., members of the board of directors.

Illinois Coal Traffic Bureau

Although agreeing upon the advisability of granting increased freight rates to the railroads, Illinois coal operators presented widely different views to the Interstate Commerce Commission as to the means of applying advanced rates on coal.

F. H. Howard, representing the Illinois Coal Traffic Bureau, told the commission that rate advances should be made with as little disruption of long-existing rate relationships and adjustments as possible, and that the application of advanced rates to coal should be on the same basis of adjustments as proposed by the carriers of the eastern territory.

C. O. Elbert, representing coal operators of the northern Illinois district, declared coal should bear its burden of the advanced rates, along with other commodities, but that the increases should be made on a strictly percentage basis without differentials or the preservation of relationships and adjustments.

Indiana Bituminous Coal Operators' Association

In a statement issued recently, Phil H. Penna, secretary-treasurer of the Indiana Bituminous Coal Operators' Association, said: "The coal operators of Indiana regret the course of the proceedings in the Federal court at Indianapolis and are disappointed that they have to go to trial in November, not because of fear of the outcome of the trial, but because of the inconvenience, annoyance and expense that is involved and because of the false situation in which they are placed before the public by the indictment.

"The charge that we have curtailed production to enhance the price of our product is too silly to men familiar with our industry for serious thought. We could not, if we would; to be charged with it in an indictment is an injustice.

"There is just one thing of value that can come from the trial of this case and that is that there will be public testimony under oath as to the manner in which coal is mined and sold, involving our relations with labor as well as the market, and the public will get a clearer view about many things regarding which it has been mistakenly advised."

Bituminous Mine Inspectors' Advisory Association

The semi-annual meeting of the Bituminous Mine Inspectors Advisory Association, composed of the bituminous mine inspectors of Pennsylvania was held in the Seventh Avenue Hotel in Pittsburgh, Pa., recently. Chief of Department of Mines Button, of Harrisburg, and Deputy Chief Hall were present. Problems facing the inspectors in their several districts were discussed by all present.

One of the features of the meeting was the demonstration by Captain Burrell and Mr. Deyke and their associates of the Mine Safety Appliances Co., of a newly invented instrument for the detection and determination of the percentage of carbon monoxide gas contained in mine atmospheres in the presence of mine fires, etc.

The bituminous field of Pennsylvania has been re-districted with respect to the various mine-inspection districts. Practically every district has had some mines taken from it and others added in order to make the work of the mine inspectors more efficient and the mines easier to reach.

The Thirteenth district, which was formerly located in the Pittsburgh district, with headquarters at Elizabeth, has been eliminated and these mines added to the surrounding districts. A new district has been formed to be known as the Thirteenth district with headquarters at Johnstown.

J. Ira Thomas, formerly mine inspector of the Fourth district, at DeBois, will be in charge of the new Thirteenth district and has removed to Johnstown. William Langan, formerly inspector for the old Thirteenth district will move from Elizabeth to DeBois where he will be in charge of the Fourth district.

The adding of another district to the Johnstown group makes four mine inspectors located in Johnstown. Besides Mr Thomas they are Thomas D. Williams of the Sixth district; Nicholas Evans of the Twenty-fourth; and Charles H. Crocker of the Thirtieth.

Northern W. Va. Operators' Association

Representatives of the Northern West Virginia Operators' Association, including Geo. T. Bell, executive vice president and others of Fairmont and Morgantown, were in Washington on June 11 to present their side of the case against the Monongahela and other railroads.

The case brought before the Interstate Commerce Commission was to compel the roads named in the association's complaint to make up a deficiency in the car supply covering the period beginning July 1, 1919, it being claimed that the railroads, including the Pennsylania, Pittsburgh & Lake Erie and the Morgantown & Wheeling, were short 16,000 cars.

Kanawha Operators' Association

In the opinion of A. K. Yarborough, traffic manager of the Kanawha Operators' Association, the mines in whose territory have been seriously affected by the assignment of cars, it will be necessary for the Interstate Commerce Commission to prohibit (for a time) the use of open-top cars in loading gravel, crushed stone, etc.

Mr. Yarborough points out that notwithstanding the recent transportation order of the Interstate Commerce Commission, the car supply in the Kanawha field for the period between June 1 and June 8 was only 32 per cent of requirements, as compared with 36 per cent for the corresponding period of May. Mr. Yarborough says:

"While the railroads are apparently doing everything in their power, to increase the car supply for the mines, in my opinion the Interstate Commerce Commission is not sufficiently drastic in the handling of the situation. Thousands of open-top cars are being used for gravel, crushed stone and other commodities that should be embargoed. I believe that an embargo should be general against shipments other than necessaries until the present congested condition is relieved."

Northern W. Va. Operators' Association

As a result of a number of conferences, between directors of the Northern West Virginia Operators' Association (special committee on assigned cars acting for the association) and lawyers representing the National Coal Association, which were held at Fairmont beginning June 9, injunction proceedings were instituted in the Circuit Court of Marion County, W. Va., to test the legality of the Interstate Commerce Commissions' order permitting the assignment of cars.

The proceedings instituted were against the Baltimore & Ohio R.R. by the Lambert Run Coal Co., on behalf of itself and a large number of other coal operators, for the purpose of insuring the equal and non-preferential distribution of empty coal cars among all mines served by that railroad company.

The acute coal shortage throughout the country which is due primarily to lack of transportation facilities, including coal cars, is greatly increased by the practices complained of.

Similar suits are expected to be started in the immediate future in Alabama, Pennsylvania, Ohio, Indiana and perhaps other jurisdictions served by different lines of railroads in order to enjoin the practices complained of on the lines of other carriers.

Upper Potomac Mining Institute

A paper on "Mine Ventilation," by E. P. Brennan, of Thomas, and on "The Most Common Cause of Failure of a Mine Foreman," by J. C. Messenger, of Beryl, W. Va., were the outstanding features of a meeting of the Upper Potomac Mining Institute held at Piedmont recently. The papers were well received.

The following honorary members were admitted at the Piedmont meeting: J. C. Watson president of the Masletter Coal Co., Keyser, W. Va.; R. M. Lamble, head of the West Virginia Department of Mines; R. P. Maloney, general manager of the Dover Coal & Coke Co., Cumberland, Md. After the business session, members of the institute enjoyed a luncheon and entertainment.

Rocky Mountain Branch of the Canadian Mining Institute

At the annual meeting of the Rocky Mountain Branch of the Canadian Mining Institute, which was held at Fernie on May 27, an instructive paper was read by Robert Strachan, Inspector of Mines, on "The Coal Fields of the Crow's Nest Pass." He told of operations from the year 1873 to the present, dwelt on the abnormalities of the formation and explained some of the methods most useful in overcoming the difficulties and the dangers of extracting coal.

W. P. Williams, president of this branch of the institute, presided and Dr. McDonald, Inspector of Mines, Calgary, acted as secretary. There was an address of welcome by Mayor Henderson, of Fernie, B. C., and a speech was delivered by A. J. Fisher, member of the Legislative Assembly.

Mr. Fisher expressed the opinion that because of the precautionary measures introduced by the Department of Mines the experiences of the past (always involving interruption to work and loss of production and sometimes causing loss of life) had not been repeated of late.

However Mr. Fisher stated that Government officials welcomed suggestions, particularly from a practical man, and he recommended that Mr. Strachan's paper be submitted to the Department of Mines. W. R. Wilson, general manager of the Crow's Nest Pass Coal Co., entertained the delegates at luncheon. Subsequently the mines were inspected.

Recent Patents

Priming Device. J. J. Hogan, Erie, Pa., 1,337,772. April 20, 1920. Filed Dec. 29, 1917. Serial No. 209,414.

Mine-Car Cager. James A. Nolan, Bowerston, Ohio, 1,337,944. April 20, 1920. Filed Nov. 3, 1919. Serial No. 335,344.

Automatic Checking and Stopping Apparatus for Cars. Frank Leslie Parr, Huntington, W. Va., 1,337,948. April 20, 1920. Filed June 23, 1919. Serial No. 306,148.

Mine Car. Klaus Sollie, Youngstown, Ohio, 1,338,046. April 27, 1920. Filed Dec. 16, 1919. Serial No. 345,329.

Pump. John C. Briggs, Cumberland, England, assignor to Aero & General Pump Mfg. Co., Ltd., 1,338,118. April 27, 1920. Filed July 1, 1919. Serial No. 307,983.

Water-Level Alarm Apparatus for Steam Generators. Henry W. Spencer, London and Robert Clark, Kew Gardens, England, 1,338,197. April 27, 1920. Filed June 9, 1919. Serial No. 302,951.

Car Check. George M. Johnson, McDonald, Pa., 1,338,225 April 27, 1920. Filed Sept. 6, 1917. Serial No. 189,987.

Automatic Mine-Car Coupling. John T. Blackledge, Elvins, Mo., assignor of two-fifths to Carr Hartshorn, Elvins, Mo., 1,339,016. May 4, 1920. Filed June 8, 1918. Serial No. 239,008.

Mechanical Stoker. Earl S. Wallen, Lansford, Pa., assignor to Coxe Traveling Grate Co., Hazelton, Pa., 1,339,531. May 11, 1920. Filed Oct. 8, 1917. Serial No. 195,412.

Coal Bag. Harry Josephson, Bridgeport, Conn., assignor of one-half to R. C. McNell, Brideport, Conn., 1,339,851. May 11, 1920. Filed Nov. 7, 1919. Serial No. 336,451.

Single-Roll Crusher. W. K. Liggett, Columbus, Ohio, assignor to The Jeffrey Mfg. Co., Columbus, Ohio, 1,339,932. May 11, 1920. Filed July 10, 1916. Serial No. 108,485.

Single-Roll Crusher. W. K. Liggett, Columbus, Ohio, assignor to The Jeffrey Mfg. Co., Columbus, Ohio, 1,339,933. May 11, 1920. Filed July 10, 1916. Serial No. 108,486.

Motor Controller. C. T. Henderson, Milwaukee, Wis., assignor to the Cutler-Hammer Mfg. Co., Milwaukee, Wis., 1,339,930. May 11, 1920. Filed June 29, 1914. Serial No. 847,974.

Industrial News

East Pittsburgh, Pa.—Recent advertisements of the Westinghouse Union Battery Co., Swissvale, Pa., have led many to assume that the Westinghouse Electric & Manufacturing Co. was entering the storage battery field. In order to clear away any misunderstanding, the Westinghouse Electric & Manufacturing Co. authorizes the statement that the Westinghouse Union Battery Co. is owned and controlled by the Westinghouse Air Brake Co., at Wilmerding, Pa., and the Westinghouse Electric & Manufacturing Co. is not in any way connected with the manufacture, sale, distribution or service of its product.

Chicago, Ill.—The Ingersoll-Rand Co. of Illinois and the A. S. Cameron Steam Pump Works, Chicago Branch, announce a change in address. On and after May 10 the offices were located at 709 Fisher Building, Chicago.

Stamford, Conn.—The Yale & Towne Manufacturing Co., whose works are at this place, announces some important changes in its organization as follows: The resignation of John B. Milliken, as treasurer and director of this company, was accepted, effective June 30, 1920. Mr. Milliken resigns to enter other fields. Willard L. Case was elected treasurer to succeed Mr. Milliken. Mr. Case's experience has been along the line of banking, industrial engineering and in connection with operation, management, accounting and construction. Another change in the personnel of this company included the election of Edward C. Waldvogel as a director. Mr. Waldvogel has been connected with this company for 15 years, during the last four of which he has occupied the position of general manager, having charge of all sales and advertising.

Pittsburgh, Pa.—The Iron Trade Products Co., of this place, announces the opening of a branch office in the Greenwood Building, sixth & Vine Sts., Cincinnati, Ohio, with C. S. Siebert in charge as district sales manager. Mr. Siebert, who has been in the employ of this company for some time, in the Pittsburgh office, is the son of W. P Siebert, assistant general manager of sales, Carnegie Steel Co. and will look after business in the Cincinnati territory.

New York, N. Y.—At a special meeting of the board of directors of SKF Industries, Inc., held May 13, 1920, the resignation of G. G. Prytz as president was accepted. Mr. Prytz having been elected managing director of the parent company, with headquarters at Gothenburg, Sweden. At the same meeting F. B. Kirkbride, vice president since the organization of the company, was elected president to succeed Mr. Prytz.

Personals

The Lehigh & Wilkes-Barre Coal Co. announces an important change in plan of organization, which was effective June 1, eliminating division and inside superintendents, substituting for these positions colliery superintendents. The following have been appointed colliery superintendents:—

J. B. Tamblyn, of Wilkes-Barre, in charge of Hollenback and Stanton collieries, with headquarters at Hollenback colliery, Wilkes-Barre.

J. D. Joseph, of Wilkes-Barre, in charge of South Wilkes-Barre and Buttonwood collieries, with headquarters at South Wilkes-Barre colliery, Wilkes-Barre.

T. R. Gambold, of Ashley, in charge of Sugar Notch and Maxwell collieries, with headquarters at Maxwell colliery, Ashley.

R. G. Carpenter, of Plymouth, in charge of Lance and Nottingham collieries, with headquarters at Nottingham colliery, Plymouth.

L. J. Davies, of Plymouth, in charge of Wanamie colliery, with headquarters at Wanamie colliery, Wanamie.

Edward Griffith, of Kingston, will resume his position as assistant general superintendent, under Douglas Bunting, general superintendent.

All of the men appointed colliery superintendents entered the employ of Lehigh & Wilkes-Barre Coal Company a number of years ago and step by step worked up to their present positions.

Thus J. D. Joseph entered the employ of the company about 34 years ago. He started in as a laborer at Stanton mines as a miner, later was made fireboss and inside foreman. About 12 years ago he was made inside superintendent of Wilkes-Barre division.

T. R. Gambold started in 1902 to work as a company laborer. He later was successively a fireboss at the Empire colliery, inside foreman at Stanton colliery, foreman of Maxwell No. 20 and on May 1, 1919, was inside superintendent of Maxwell No. 20, Sugar Notch No. 9 and Wanamie No. 18.

R. G. Carpenter started to work for the company in the mine engineering department in 1896. He remained in that department up until two years ago, when he was made superintendent of the Plymouth division.

L. J. Davies entered the employ of the company in 1883, as a laborer at Hollenback colliery. For the last 12 years he has been one of the superintendents of Plymouth division.

L. G. Shipley, of Thurmond, W. Va., is the latest acquisition to the growing staff of the Lake & Export Coal Corporation of Huntington. Prior to his connection with the company named, Mr. Shipley was the car distributor for the Chesapeake & Ohio at Thurmond, W. Va.

Gordon K. Nigh has been appointed manager of the Huntington branch of the Interstate Coal & Dock Co., that company having just opened an office in Huntington, W. Va.

Lieutenant Phil J. Weiss, member of the naval commission to investigate the extent of the Mantanuska, Alaska, coal beds and their value as a possible source of supply for the U. S. Navy, arrived in Seattle, Wash., recently. He will leave for Alaska soon, to remain until November.

H. H. Boyd, for the past two years with the Bell & Zoller Mining Co., operating at Zeigler, Ill., has resigned as chief engineer of that company and is now assistant bridge engineer for the Missouri, Kansas & Texas R.R.

J. B. Hurley, of the Fuel Department of the Wabash railroad, was recently elected as president of the International Railroad Fuel Association, at a convention of the organization held in Chicago.

The Ohio State Public Utilities Commission has named inspectors at four important Ohio rail centers to serve on the joint committee representing the Interstate Commerce Commission, the railroads and the shippers, in an effort to relieve the car congestion. The inspectors who will represent the Ohio Utilities Commission are **William Kelly, C. C. Thorpe, H. M. Gray** and **T. H. Burke.**

W. R. Wilson, general manager of the Crows Nest Pass Coal Co., has been elected president in succession to the late Elias Rogers. He will continue to hold the position of general manager. The head office of the company has been removed from Toronto to Fernie, B. C., where the principal operations are carried on.

Colonel Edward P. Merrill has been appointed general manager of the Dominion Iron & Steel Co. and the Dominion Coal Co. and their subsidiaries. He has had a wide experience in mining and metallurgical affairs. He developed and operated extensive coal mines in the United States, was three years in Mexico superintending the electrification of mines and the construction of reduction plants and served overseas with the U. S. Air service. **H. J. McCann** has been appointed assistant general manager of the Dominion Coal Co.

John T. Cartright, of Dorranceton, Pa., has resigned from the position of superintendent of the Hillman Colliery Co., of Wilkes-Barre, Pa., to accept the position of general superintendent of the Scranton Coal Co. He succeeds the late Daniel H. Young, of Scranton.

Mr. Cartright was born in England and came to this country when a boy. His parents settled in Nanticoke. While still a youngster he started work in the mines for the Susquehanna Coal Co. At the age of 18 he went on the engineering corps of the same company and for 13 years followed this line of work.

Mr. Cartright held the position of inside foreman for six years when he left to assume charge of the Mount Jessup Coal Co. at Jessup, Pa. where he remained until 1915. In that year he went to Schuylkill County to direct the Jessup company's workings at that place. He came to Wilkes-Barre in 1918 as superintendent of the Hillman Colliery Co.

Coming Meetings

American Mining Congress will hold its annual meeting at Denver, Col., Nov. 15. Secretary, J. F. Callbreath, Munsey Building, Washington, D. C.

American Institute of Mining & Metallurgical Engineers will hold its fall meeting Aug. 20 to Sept. 3. It is proposed to leave Buffalo by steamer and cruise through the Lakes, the first stop being at Houghton, Mich., after which the party will visit Duluth and the Iron Ranges of Minnesota, spending a day or two in Minneapolis on its return. Secretary, Bradley Stoughton, 29 West 39th St., New York City.

New York State Coal Merchants' Association will hold its annual meeting Sept. 9, 10 and 11 at Richfield Springs, N. Y. Treasurer, G. W. F. Woodside, Albany, N. Y.

Mine Inspectors' Institute of America will hold its annual meeting July 13, 14 and 15 at Cleveland, Ohio. Secretary, J. W. Paul, Pittsburgh, Pa.

Illinois and Wisconsin Retail Coal Dealers' Association's annual meeting Aug. 4 and 5 at Milwaukee, Wis. Secretary, I. L. Runyan, Chicago, Ill.

Indiana State First Aid Meet at Clinton, Ind., July 5, under the auspices of the Indiana State First Aid Association, with the co-operation of the Clinton First Aid Association, Chamber of Commerce, Indiana Coal Operators' Association, United Mine Workers of America, Bureau of Mines, and State Mine Inspection Department.

The Rocky Mountain Coal Mining Institute, in conjunction with the Colorado Metal Mining Association, the local chapters of the American Mining Congress and the American Institute of Mining & Metallurgical Engineers, and the International First-Aid Meet, will hold its annual meeting Sept. 9, 10 and 11 at Denver, Col. Secretary, F. W. Whiteside, Denver, Col.

National Safety Council will hold its 1920 congress on Sept. 27 to Oct. 1 inclusive at Milwaukee, Wis. General manager, C. W. Price, Chicago, Ill.

Oklahoma Coal Operators' Association will hold its annual meeting Sept. 14 at McAlester, Okla. Secretary, F. F. LaGrave, McAlester, Okla.

Obituary

Charles Blizard, third vice president of the Electric Storage Battery Co., of Philadelphia, died on June 12. Although born at Steven's Point, Wis., 56 years ago, Mr. Blizard was educated in the East, graduating from the Brooklyn Polytechnic Institute. In 1893 he became associated with the Electric Storage Battery Co., as manager of the New York office, and in 1900 he was moved to the home office in Philadelphia in charge of Sales. In April, 1906, he was made third vice president, which position he retained until the time of his death.

Trade Catalogs

Pulmors—Smith & Serrell, 90 West St., New York, N. Y. Bulletin 201. Pp. 11; 6 x 9 in.; illustrated. Description of method of preventing the slipping of belts on pulleys.

Davis-Bournonville Oxy-Acetylene Apparatus—Davis-Bournonville Co., Jersey City, N. J. Catalogue. Pp. 16; 6 x 9 in.; illustrated. Description of acetylene generators, welding and cutting torches, pressure regulators and portable outfits.

Economical Handling and Storage of Coal, Ashes and Other Materials—Guarantee Construction Co., 140 Cedar St., New York, N. Y. Bulletin 124. Pp. 40; 8½ x 11¼ in.; illustrated. Description of apparatus and installations.

COAL AGE

The Weekly Journal of the Coal and Coke Industries

Volume 18 NEW YORK, THURSDAY, JULY 8, 1920 Number 2

Two Problems: Tackle Both

TWO fundamental problems are present in the coal situation today. First and foremost is the need of increased production, which calls for more transportation. Production to meet the demand will retire all other questions, but until that production is forthcoming the problem of distribution must have attention.

Absolute observance of the Interstate Commerce Commission order that open-top cars be used only for coal will, if extended beyond the original thirty days, increase the coal output to a satisfactory point, provided also, of course, that the railroads move the cars and do not sidetrack and forget them. There is more to the job of getting sufficient coal moved than issuing an order or a dozen orders. The railroad organization is complex, divers motives compel its acts and today labor for its operation is lacking both in numbers and in co-operative spirit.

We would suggest for the consideration of the chairman of the Interstate Commerce Commission that real lively interest in getting the car supply for the coal mines back to normal would follow were the railroads compelled to meet the market in the purchase of such free coal as may be required. Remove the assigned car, put the carriers on the same basis as regards price as the public at large, and there will be real incentive provided for the railroad organization to get on its toes and move coal. If railroads were like other people and had to take pro rata shipments on contracts shrunk by reduced car supply, and had to buy in the open market what they were short, their interest in car shortage would be more than academic. Real, honest pressure, beginning with the financial interests behind the roads and extending down the line to the lowest official, would surely be exerted were assigned cars prohibited. There is ample reason for saying that the railroads must have their coal before others are supplied, but no reason exists for giving them coal at prices lower than the public. The assigned car practice does more, for it raises the price to the public in proportion as it lowers it for the railroads. If Chairman Clark will not recede from his position on this question, it appears that the courts are disposed to do it for him.

We find few who expect production of bituminous coal to be so increased in the next three or four months that all danger of serious trouble can be averted this winter. Distribution of what is produced will therefore be a matter of great importance and will assume even more so than today the aspect of a national problem. Without abating for one instant the call for greater output of coal, we cannot minimize the necessity for proper distribution of what modicum is produced.

With respect to distribution the coal industry finds itself, as it did in 1917, in a more or less helpless position because the tonnage that is coming forth is largely under contract. It is the ordinary practice for coal operators each spring to contract to deliver in the coming year from 50 to 75 per cent of normal capacity. Because of car shortage few operators are today producing sufficient coal to meet contracts and, of course, have little or no coal free to satisfy the needs of the consumers who last spring did not contract for a supply. We believe that 90 per cent of the production is today leaving the mines under contract. The free coal, the remaining 10 per cent for which prices as high as $15 per ton have been offered, comes largely from operators with mines the limit of output of which is from one car to two or three per day. The large, responsible companies, in both anthracite and bituminous fields, are holding prices of such free coal as they have to offer at a level that is not objectionable and that in many instances is barely above the excessive cost of production brought about by the reduced running time of today.

Railroads, public utilities and domestic consumers will be conceded as having first call for coal from purely social reasons. But a shipper of coal who has among his contractors industrial consumers as well as public utilities is under contractual obligations to ship equal proportions of his output to each in accordance with the relation the individual contracts bear to his total obligations. In other words, most producers of coal are not free today to ship their product where public interest may indicate lies the greater need.

The present policy of temporizing with the distribution problem will lead to serious trouble this fall and winter as it did three years ago. No good can come from plastering one transportation priority on top of another. The personnel of the Interstate Commerce Commission is no more qualified to handle national distribution of coal than was Dr. Garfield personally. Dr. Garfield called the coal operators to his assistance; so should those at Washington attempting to handle the situation.

Either leave distribution of coal to the coal producers entirely or invite them to Washington to do the work for the government. If the combined judgment of the commission, the railroads and the coal men is that control of distribution is necesasry, the way can be found to make it effective.

The decision as to whether control of distribution is necessary or advisable should not be made solely on the representations of the governors of states and managers of public utilities; it is on such a basis that regulation has been begun. Nor is the shortage of coal of like magnitude in Minnesota and Kansas, nor the difficulties of transportation as great in Colorado as in Pennsylvania. The coal men know the game and to the coal men the Government should turn for advice and assistance when the Government is dealing with the situation.

Cushing on Coal Prices

GOVERNMENTAL control and regulation have not been the causes of the rise in the level of coal prices, as Mr. Cushing would lead us to think by his excellent review of the situation as published in the issue of *Coal Age* of June 10. Mr. Cushing is a most active and persistent exponent of *laissez faire* in the attitude of the Government to industry and in that belief he represents the opinion of a solid majority in the coal trade. But let no one conclude, as he implies, that the "artificial force" of Government regulation "froze" prices at the new high level. He aptly points out that the four years 1917-1920 stand alone in a hundred years of coal history because of the change in prices, and it is more nearly true than the reverse that this is the only period when the coal business was uniformly profitable and yet failed to bring a great overproduction of coal.

The only possible deduction to be drawn from this, according to Cushing, is that detailed Government interference with the coal industry reverses its usual effect by bringing about a period of uncertain supply, which results in a sustained period during which uniformly profitable prices apply. He only notes in passing that this period of high prices was and is co-existent with a period of detailed control of transportation. He finally admits that it is undubitably true that after all transportation shortage was responsible for the high price of coal.

There is sufficient reason to anticipate some sort of Federal regulation of—or should it be interference with —the coal industry to make it feasible for us to consider the arguments pro and con, using calm judgment and giving due thought to the subject before and not after the deed. Plainly, the causes for the marked rise in coal prices from 1917 to date, with one exception—a part of 1919—were outside and not inside the industry. During this period of four years, in which there has been a shortage of coal compared with the demands of consumers, the developed capacity of bituminous coal mines has been more than ample to supply requirements. The anthracite field is not so favored, and the cause for such shortage as has existed there—small in comparison with that in the bituminous regions—has been due to labor shortage.

The first notable rise in prices of bituminous coal, in 1917, was due to excess of demand over supply, a result of car shortage. The next pronounced rise followed a wage advance authorized by the Fuel Administration in October, 1917. Prices were more or less stationary during 1918 and 1919, varying only locally, to be followed by a rise on April 1, 1920, when a large increase in wages was awarded the mine workers by the Bituminous Coal Commission. The present marked upward climb is again due to a pronounced car shortage.

The drop in prices that under pre-war conditions might have followed the slump in demand in the first six months of 1919 did not materialize, and here we find the one exception to the generalization that for four years prices have been dependent on conditions outside the industry.

The coal men had learned what it was costing them to produce coal, something they had not known before. And knowing cost, a majority of the individual operators elected not to sell below that cost. Therefore when cost did not go down when demand and production slumped after the armistice, prices did not recede.

The only effect of Government regulation was the education of the coal producer. The local organizations of operators stiffened the backbone of the individual.

The net result was a stabilizing of the industry. Let no one harbor the idea that further Government regulation will *per se* still further increase prices. And let each distinguish between prices and profits.

Many Men and Kegs of Powder

QUITE correctly the Bureau of Mines, in its annual report on accidents, in speaking of the value of the Baltimore tunnel disaster as a lesson to executives and mine workers, says that the question of whether electricity was responsible should not obscure the importance of a due "consideration of the various dangers which arise in underground transportation and handling of explosives." It might be well to note that transportation was not of the essence of the fatality, and that seems to be recognized by Mr. Fay, for, as quoted, he adds to "transportation" the "underground handling of explosives."

Wherever there are many men together and a keg or kegs of powder there is a possibility of accidents ranking in horror almost with that just instanced, in which it will be remembered that ninety-two lives were lost. There are some who lay so much stress on transportation that they think that powder can be taken inside in bulk and the mine workers allowed to scramble over one another with open lights to get it when it arrives. The distribution of it underground is as important as its transportation. Care should be taken, when the car of powder, protected by all manner of covers and constructed of wood planks and pegs, arrives at its destination that it is not met by a lot of hurried, excited miners with open lights, each seeking to grab his keg first.

Unless arrangements are made to take care of the distribution of the powder kegs great danger is introduced by the use of a powder trip, for it arranges that in a single car, or at best two cars, enough powder will be carried to serve for a single shift. No more disastrous place could be found for an explosion of this kind than the face of a working heading. Order in distribution of powder and security in its storage at the working heading, even when it is only temporarily stored, is an essential requirement, and these provisions are hard to secure with undisciplined mine forces. Orderly transportation could not be secured at the Baltimore Tunnel. The union demanded a wrong method of transportation; it finally agreed on certain modifications of that method and promised to require compliance from all its members, but this compliance it most grievously failed to enforce.

Orderly storage and distribution in working headings is not as safe as the carriage by each man of his own keg. However, it is safer than carrying powder on man trips, especially if discipline is observed.

Wholesome indeed is the fear that the average man has of powder. Unfortunately, however, it only too soon wears off, and caution gives way to risk taking. Most powder accidents are unnecessary and can be explained only by recalling the misplaced confidence that arises after long use and the exuberant thoughtlessness of men which finds greatest expression in the freshness of the early morning and when the hours for baseball and other relaxation approach.

Germany Tardy with Coal

Germany is three million tons in arrears of her engagements for the delivery of coal in execution of the Treaty of Versailles, according to a statement by Louis Loucheur printed in the *Petit Parisien.*

Urges Operation of Roads as a Unit

Relief of transportation difficulties through operation of the railroads of the country "as a unit" was proposed by William B. Colver of the Federal Trade Commission in an address before the Washington Ad Club. Mr. Colver predicted that a continuation of the present situation would mean "untold suffering and industrial shutdowns next winter." Hundreds of millions of dollars are tied up now in merchandise in sidetracked cars, he said, keeping from the market badly-needed capital.

Anthracite Mine Workers Present Their Case

On June 28 the ubiquitous Jett Lauck appeared before the Anthracite Wage Commission and presented the case of his clients in twenty-one exhibits. The session lasted one day and at its conclusion was adjourned till July 7 so as to give the operators time to prepare their evidence in rebuttal. Details of the conference and the exhibits presented by Mr. Lauck will be found on pages 80-82 of this issue.

May Have State Coal Mine

Governor James P. Goodrich of Indiana has approved the purchase and operation by the state of a coal mine in order to insure State institutions of an adequate supply of coal. This action was recommended by the State Purchasing Committee. Money to carry out the project will be asked of the state Legislature, which Governor Goodrich has announced he will call in special session soon. The state's coal contracts expire June 30, and, according to a resolution prepared by the purchasing committee, it has received no bids in response to advertisements for the purchase of coal for state institutions during the coming year.

Freight Rate Increase of 55½ Per Cent?

An increase of 55½ per cent in freight rates will result if the roads' demands for increased freight tariffs and the men's demands for increased pay are granted, and the whole burden will be placed on the freight traffic in the opinion of Clifford Thorne, representing Chicago shippers. Mr. Thorne recommended to the Interstate Commerce Commission that the wage advances be added, without further hearings, to the costs upon which the roads now base their request for advanced freight rates, that a 5 per cent increase be made in passenger rates, with the balance of freight tariffs to care for the present case, and that any advance occasioned by the wage decision be spread out over the entire earnings of the railroads from all sources.

English Roads Also Congested

That even in England trouble is experienced in curtailing exports is evident from the report in the *Journal of Commerce* that in the western part of South Wales "there are 20,000 tons of coal ready in the wagons which cannot be got away. These wagons are in the sidings, and although shipping is waiting the coal cannot be sent away by reason of the limitation of exports of coal. Nor can it be sent inland."

NEWS BRIEFS

Terse Items Chronicling Events of Interest to the Industry

B. R. T. Borrows Coal

Because of the depletion of its coal supply, the Brooklyn Rapid Transit Company, under the pooling arrangement agreed to by the public utilities, last week borrowed 1,000 tons from other companies, and may have to take further similar steps to maintain operation.

Court Enjoins Assignment of Cars by B. & O.

The Baltimore & Ohio R. R. has been ordered by the Federal Court to cease the practice of assigning cars for fuel coal, in accordance with the plea of the Lambert Coal Co. in the Fairmont field of West Virginia. The injunction becomes effective July 20, the delay having been granted by the court at the request of the railroad and with the consent of the coal company.

Production of Coal in British Columbia

Production of coal in British Columbia for the five months ended with May was approximately 1,250,000 net tons, about the same as in 1919.

Philadelphia Electric Gets Priority Order

The Interstate Commerce Commission has given the Philadelphia Electric Co. a priority order for coal. This is Order No. 8 and provides for a supply of 12,000 tons for that company. The order specifies the Rockhill Coal and Iron Co. as the shipper and the Pennsylvania and East Broad Top Railroad and Coal companies as the carriers. The order is justified as an emergency to protect the peace, health and welfare of the people of Philadelphia.

Coal Exports from New York in May

Bituminous coal exported from the Port of New York in May amounted to 17,000 net tons—5,600 tons to Austria, 5,200 tons to France, 3,000 tons to Norway and 1,700 tons to Italy. The balance was in small lots to six other foreign lands. This is the largest record for this port for the same month in many years.

Sues Chesapeake & Ohio

The Leeval Coal Co. has entered suit in the Kanawha Circuit Court in Charleston, W. Va., against the Chesapeake & Ohio Railroad Co. to test the right of the railroad to give preferences in assigned cars to coal mines furnishing fuel coal to the railroads. While the suit is in the name of that Leeval Co. it is understood that practically all operators in the Kanawha, New River and Guyan Valley fields which have no railroad contracts are interested.

Wants Practical Men on Rail Boards

In an address at the City Club, Washington, D. C., William N. Doak, vice-president of the Brotherhood of Railway Trainmen, declared that in his opinion there can be no industrial peace in the railroad world until the question of rates of pay for employees is separated from the arena of politics. "The only real solution," he said, "is by the application of commonsense methods, by the creation or maintenance of boards, be they either local or general, in which the employer and the employee are equally represented and where the responsibility is placed upon practical railroad men."

No Cars Assigned Under Order No. 6

The New York Central has notified coal shippers on its lines that as the Interstate Commerce Commission has ruled that Service Order No. 6 does not give the carriers the right to modify mine-rating and car-distribution rules, no assigned cars can be given by virtue of that order for shipment to tidewater.

Readers' Views and Comments

W. H. Williams Gives Additional Data on Railroad Situation

[W. H. Williams has written to the editor of *Coal Age* stating that the account of his address at Detroit before the Retail Coal Merchants' Association (*Coal Age*, Vol. 17, No. 25, page 1,244) does not properly record his views on the railroad situation. In order to correct any misconception that may have resulted from the account contained in *Coal Age*, we publish his letter.—EDITOR.]

The 26.9 miles per car per day was made in 1916—the 71 per cent of rated capacity was made in 1919, at a time when the minimum loading requirements of tariffs were suspended.

The low average miles is not due to improper handling by the railroads, but is caused by the fact that shippers have from two to three days to load and an equal amount of time to unload, and Sundays, holidays and rainy days do not count. Additional time is given on tidewater shipments and in other special cases. The result is that a car moves less than three hours out of the twenty-four and in 1919 cars made much less than 26.9 miles per car per day.

Among other provisions which create delay in the handling of cars might be cited "reconsignment" of cars. Under normal conditions it is the practice to forward coal and, to some extent, some perishable traffic and other commodities to large traffic centers for the purpose of reconsignment, and this necessitates the railroads holding a tremendous volume of business, all of which requires track room and cars, and, of course, reduces the average mileage of the cars.

Now that the Railroad Administration has ceased to operate the properties, the tariff provision with reference to minimums will be restored. If we go back to the conditions in 1915 we will secure a loading of only 52 per cent of the rated capacity of cars instead of 71 per cent, as in 1919.

It is not possible at this time to purchase new equipment over night—it will take several months to get the cars built. If, however, the shippers will promptly load and unload existing cars and thereby make it possible to improve the movement, and if they will load them to marked capacity or to the cubical content capacity of the cars, as the case may be, they can thereby create a surplus in excess of 250,000 cars, and this surplus can be created within thirty days.

As I stated at Detroit, I feel the responsibility for the lack of understanding of this subject rests with the railroads rather than the shippers, in that the railroads have not clearly presented to the shippers the aggregate results of their lack of co-operation with the railroads in securing the utmost use of the cars.

In making the suggestion with reference to the 26.9 miles per car per day and the loading of 71 per cent of rated capacity it is not to be understood that these figures are considered as the maximum possible of attainment; they indicate only that which has been accomplished in the past.

It may be interesting to your readers to know that had the railroads of the country secured an average mileage of 26.9 per car per day and a loading of 71 per cent of the rated capacity of cars from 1906 to date, during two years there would have been a surplus in excess of one million cars, during five years there would have been a surplus in excess of nine hundred thousand cars, and in eight consecutive years there would have been a minimum surplus in any one year in excess of six hundred and fifty thousand cars, and in no single year would there have been a surplus of less than two hundred and thirty thousand cars.

The statement further misquotes me with reference to the anthracite situation. The output is fairly satisfactory, but owing to certain limitations on the use of cars some markets have not received the normal supply. This, it is expected, will be corrected as the months go by.

W. H. WILLIAMS,
New York City. Vice-President Hudson Coal Co.

Produce First—Export Second

The present export coal situation recalls a word of warning which apparently was not heeded as it should have been when issued by the National Committee on European Finance in its report to the Chamber of Commerce of the United States last April. This committee gave full measure of encouragement to the export of raw materials and necessities for industrial rehabilitation abroad, but they warned against excessive exports without adequate expansion of production.

It is vitally essential to the economic readjustment of world affairs that large export of raw materials and fuels be made to Europe in order that the basic activities of the devastated countries be restored. The financial support for foreign business was discussed at length by this committee and it gave the fullest encouragement to the idea that credit to enable export should be made available promptly. Abnormal encouragement of credit, however, did not find favor in the eyes of the committee, for it was clearly recognized that export without corresponding expansion of production within the United States would only add to America's burden in high costs and industrial shortages.

Right now we are seeing the wisdom of this warning. Production, for reasons beyond the control of the coal operator, has been inadequate to meet domestic needs. And yet we have seen a tendency to send abroad all of that coal which could find rail, dock and shipping facilities. Without attempting to appraise the value of the Interstate Commerce Commission limitations upon this business, we must recognize that there has been a certain measure of evil in our export practice. Our bankers saw it some months ago, but the producer, dealer and shipper have been unwilling to place voluntary limitations upon this practice. The inevitable consequence is the restoration of governmental regulation upon this part of the coal trade.

R. S. MCBRIDE.
Washington, D. C.

TIPPLE AND RETARDING-CONVEYORS, LOUP CREEK COLLIERY, FAYETTE COUNTY, WEST VIRGINIA

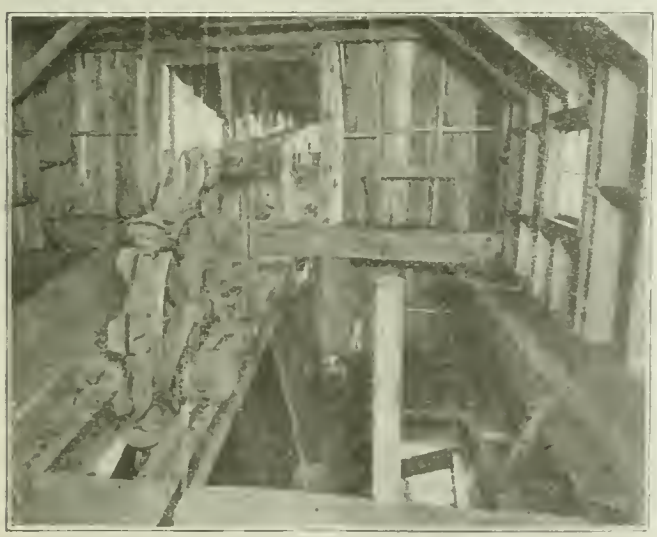
View looking west from the empty tracks above the tipple. On the left over Beard's Fork may be seen the domestic-coal chute. The coal is diverted to the chute from the tipple by opening a door in the conveyor trough and is thus directed back to a wagon to rapid sliding being restrained by check doors at points in its travel. The narrow valley has room for only a stream and three rail tracks.

Lowering Lump Coal Down a Steep Mountain On a Moving Bed of Slack

At Beard's Fork May Be Found What Are Probably the Two Longest Retarding Conveyors in the World—The Machines Require Power to Start Them, but One, When Started, Is Self-Actuating and the Other Approaches That Point—They Save the Coal from Breakage and Act as Picking Tables

BY DONALD J. BAKER
Pittsburgh, Pa.

AN INSTALLATION of unusual interest to coal-mining men has recently been completed for the Loup Creek Colliery at its Beard's Fork Mine, in Fayette County, W. Va. It is believed to be the longest retarding conveyor system in the bituminous coal fields of America, and probably in the world. Two retarding conveyors with a total length of nearly half a mile reach up the steep mountain side from either side of the tipple to the two headhouses located at approximately the elevation of the outcrop of the coal.



CABLE PASSING OVER A TAIL SPROCKET

Note the long adjustable mounting given the shaft which holds the sheave in place. Extreme temperatures play an important part in the contraction and expansion of the conveyor rope.

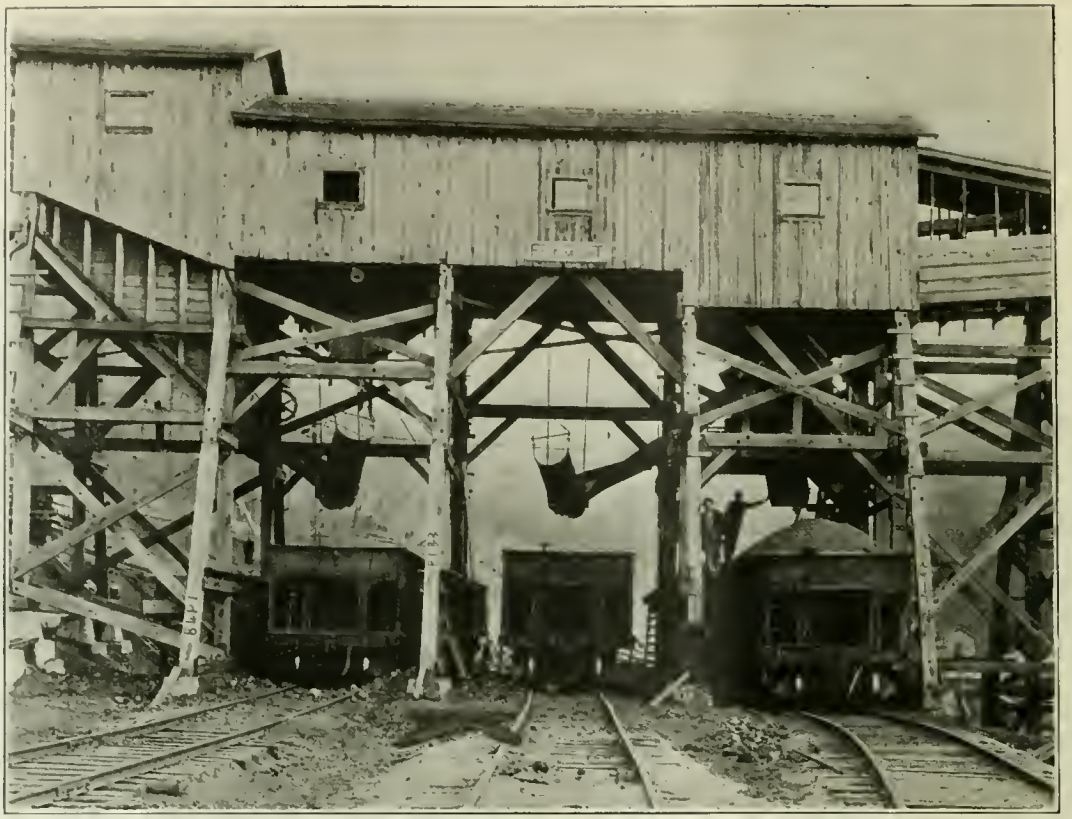
One of the most valuable coal deposits in this district, the No. 2 Gas, or Kanawha, bed, has long resisted the efforts of operators who have been successful in profitably mining other beds. They have found this bed peculiarly difficult to develop because the coal is found only near the top of the highest ridges, which are often 600 or 700 ft. above the valley below.

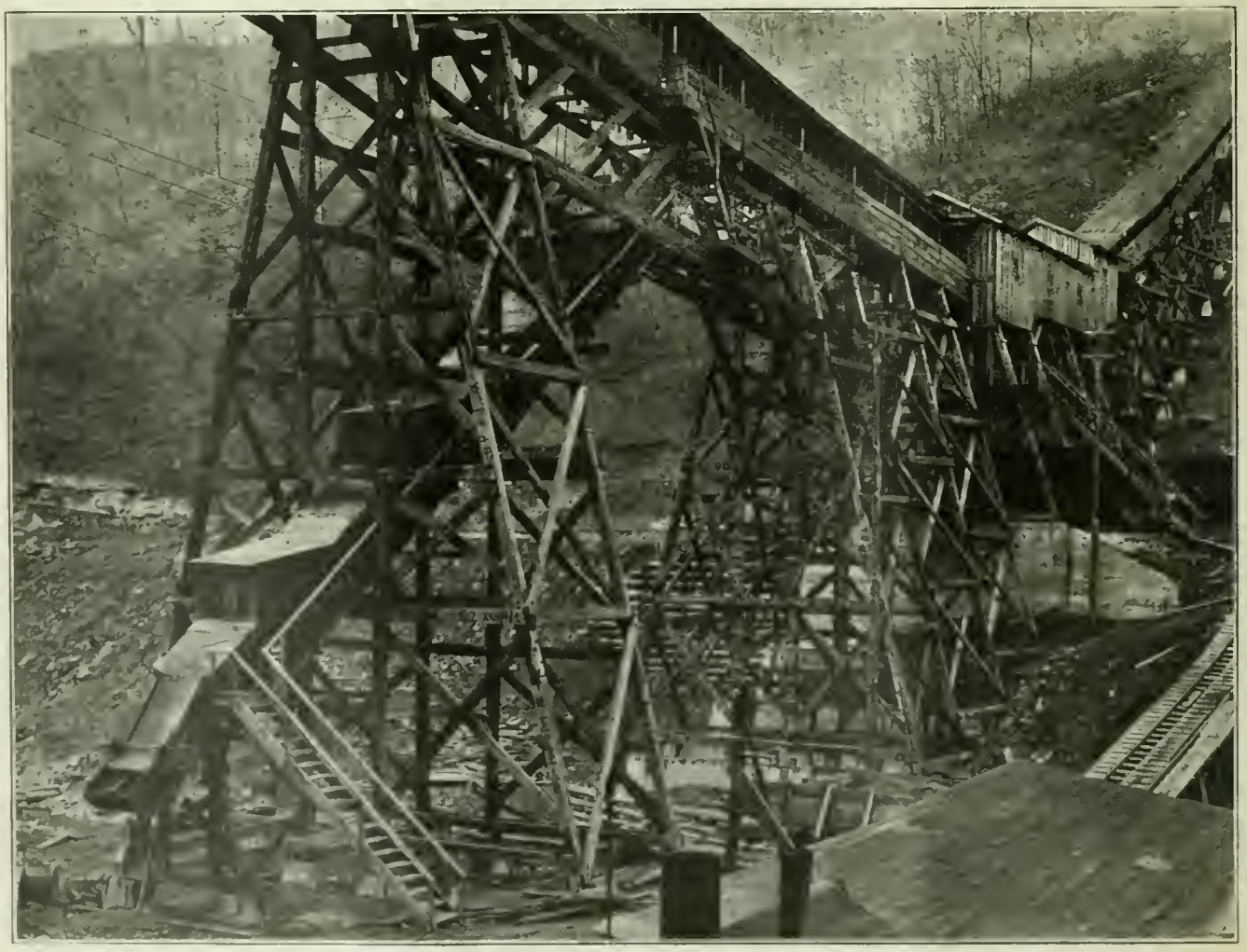
The Loup Creek Colliery Co., one of the pioneer operators in Fayette County, has for several years been successfully working this bed at Page, four miles from Beard's Fork. Here it has utilized monitors for lowering the coal down the steep, wooded slope of the hill.

When the present holdings of this company at Beard's Fork were purchased it was thought by the officials that monitors must be again employed as the transporting medium from the headhouse to the tipple. There were several reasons however, why the company desired to find some other solution for this transportation problem. Chief among these was the fact that the coal outcropped on opposite hillsides.

Beard's Fork Tipple

This is really a double tipple, the coal from the left conveyor not mingling with that from the right. The coal from the mine to the left of the double tipple, the north mine, is not screened but sold as run-of-mine. On the other hand the coal from the south tipple is passed over a bar screen by gravity, and two sizes, not always the same sizes, are produced and delivered to the railroad car.





SOUTHERN CONVEYOR TRESTLE WITH FRONT VIEW OF DOMESTIC-COAL CHUTE

On the right can be seen the tipple, the northern conveyor and the supply track. Note the letters marked on the timbers. The timber was framed before it was shipped to the mine and every part was plainly marked for the place which it now occupies. The structure consists of towers and trusses, a good substitute for the trestle when lofty construction is necessary.

If monitors were employed, a double installation would have been necessary, and this would have meant the purchase of a machine for the operation of each of the two planes. This appeared to the management likely to involve a considerable outlay, both for equipment and construction, with the outcome more or less problematical. The company questioned whether the monitor would prove to be the most effective transporting medium.

The monitor or self-acting plane is of course an old and well-established form of retarding conveyor. It is particularly successful where installed for short hauls regardless of the slope over which the car travels. The longer the slope, however, the more ineffective this means of transportation becomes, by reason of the greater amount of time consumed in traveling between the upper and lower termini of the slope—that is, between the headhouse and tipple.

Furthermore, the question of coal breakage, or degradation, may be an important consideration. When employing a monitor it is necessary to dump the coal three times—from the mine car into the storage bin, from the storage bin into the monitor itself and from the monitor into a hopper at the tipple.

At Beard's Fork there was only one place available for the construction of a tipple such as would be suitable for preparing the output from the contemplated openings. It was early perceived therefore that no matter what type of conveyor was installed it would necessarily be a double one. The distance from the foot of the hill to the outcrop line upon either side was more than 1,000 ft.

The topographic conformation of the country consequently strongly influenced the decision for a double tipple. The button type of conveyor was chosen as the one best suited to meet the demands imposed by nature. These naturally limited or made impossible a wide field of selection.

Simplicity, Small Power Demand, Low Cost

The cable-and-button type of retarding conveyor is well adapted to rough country. It is relatively simple in construction, and the cable when broken can be repaired easily. Furthermore, this type of conveyor is cheaper to install than almost any other system of transportation. In addition to this, on steep grades the power required for operation is practically negligible, for under such conditions it is only necessary to give the cable a start when it is being loaded, and it becomes thereafter self-operating. The three cardinal considerations governing the selection of any conveyor are, therefore, well met in this type. These are simple construction, small power consumption and low first cost.

Consideration of coal breakage, or degradation, in any installation of this kind is by no means negligible. In this particular instance this has been reduced to a minimum through the medium of a distributing plate at the point in the headhouse where the coal is fed to the conveyor. This plate serves two purposes. First, by means of fingers or prongs attached to its end, the coal is distributed over the cable and buttons in such manner that the slack lies at the bottom of the conveyor trough with the lumps resting upon it. This construction prevents the lump coal from coming in contact with, or rubbing against, the sides and bottom of the trough. Second, with the slack thus disposed greater friction is secured between the coal and the trough lining. This acts as a brake and reduces the tendency of the conveyor to run away when the cable is in motion. It can be readily seen that when the conveyor is installed on a steep slope, with the upper part moving uphill light and the loaded strand coming down, there will be much power generated.

Two Installations Are Almost Duplicates

The installations at Beard's Fork are duplicates in almost every particular. The headhouses are situated on opposite hillsides, and are identical in design and construction, the two conveyors being of almost exactly the same length and having approximately an equal slope, while the tipple in the valley handles the output from both mines simultaneously.

Loaded trips coming from the drift mouths upon either hillside are directed into storage yards adjacent to each headhouse. Here they are broken up and the cars fed by hand, one at a time, to a Phillips automatic kickback dump, where the contents of the cars are discharged into an 8-ton hopper. From this point the coal enters an oscillating feeder making seventy-five reciprocations per minute. The eccentric throw may be adjusted so as to impart a 2,- 3,- 4,- 5- or 6-in. movement to the plate. The 6-in. stroke is preferred, since it delivers the coal to the distributing device at the rate of 300 tons per hour.

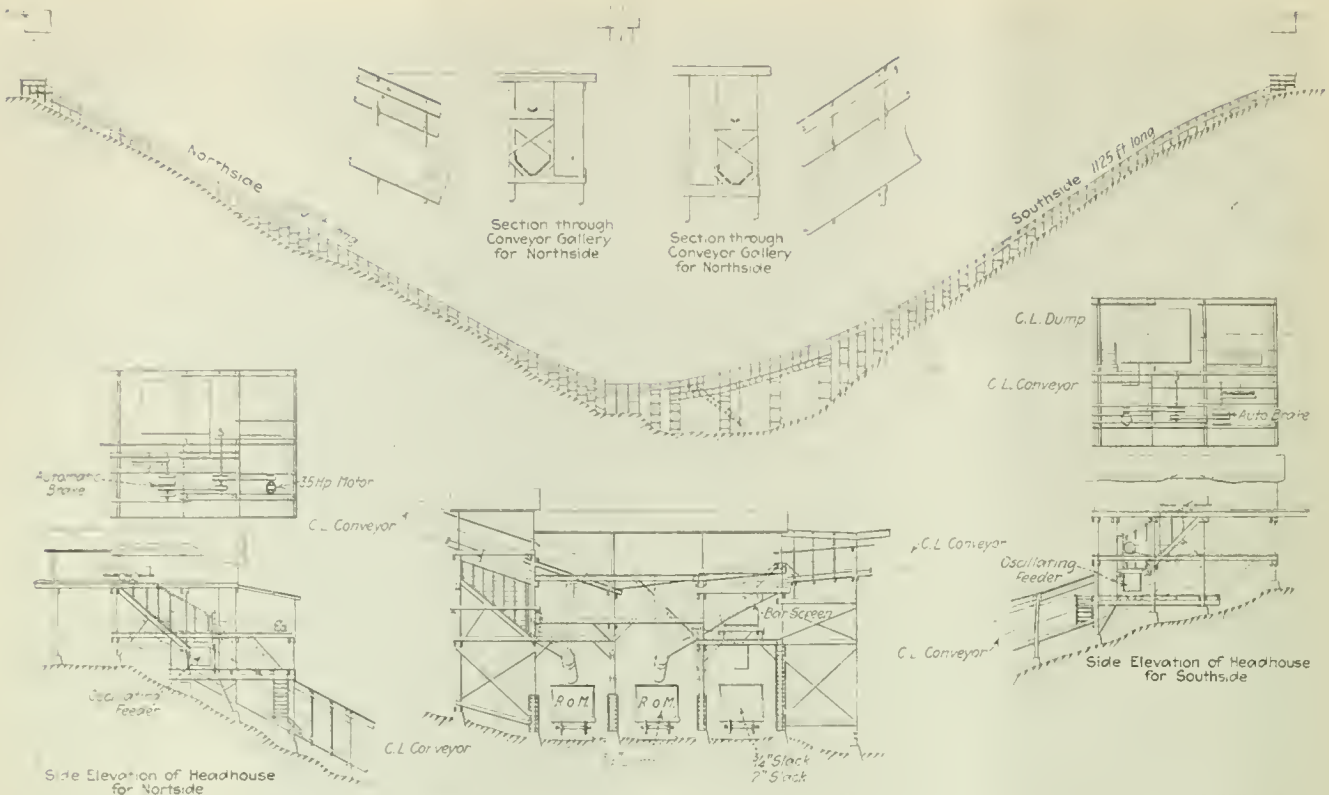
From the feeder the coal passes to the distributing plate, which is so arranged that the material is fed to the cable longitudinally and not at right angles, as is frequently the case. This is to be preferred to the scheme of passing the coal to the cable from the side, as it allows the end of the plate to be fingered so that the coal may be roughly screened into lump and slack, producing the desirable results, already detailed.

The manner is which the coal is distributed on the cable makes it readily possible to pick out the impurities. This operation is performed by men stationed along the side of the conveyor and protected by the shed which covers it. Slate and other undesirable material are removed and thrown into chutes that lead away from the cable to a point on the hillside, where the thickness and density of the shrubbery prevent it from rolling to the bottom of the hill.

Despite the fact that the generation of power has been somewhat curtailed by placing the slack coal in the bottom of the trough, thus giving a greater frictional surface to the load traveling down hill, there is a tendency for the trough contents to run away and carry the cable along with it. This must be checked lest momentum be gained and control lost. The regulation of this energy is secured by an automatic brake that has been installed in connection with the driving gears of the conveyor.

Any Tendency to Speed Puts on Brakes

The device is a combined belt and brake pulley that is connected to a 35-hp. three-phase 60-cycle motor. This shaft of the pulley is so supported as to permit an oscillatory movement, its maximum traverse being 3 in. The pinion on the first gear reduction is keyed to this shaft and drives the countershaft of the second gear reduction. When the conveyor is generating power the force is transmitted by the gears to the shaft supporting the brakes, and as a result the brake pulley is moved forward and into contact with the brake block, which is asbestos-lined.

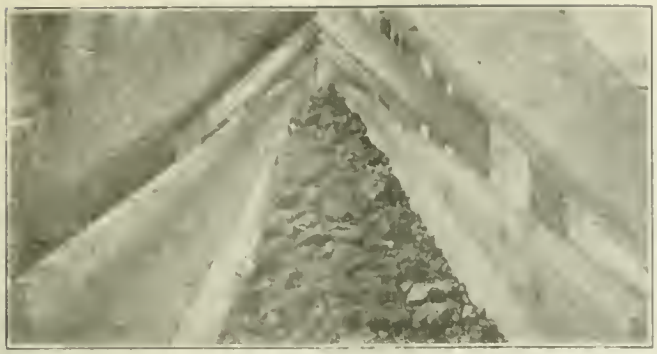


DETAILS OF CONVEYOR GALLERIES, HEADHOUSES AND TIPPLE, AND SIDE VIEW OF ENTIRE SYSTEM

The south-side conveyor, having to cross the ravine, needed considerable trestling and as, for this reason, it is less steep than on the north side it is necessary to use a little power on it at all times, while the northern conveyor would tend to run away at times if it were not for the restraint of the brake. The south-side headhouse is 12 ft. the higher but the distance from headhouse to tipple is 55 ft. longer. The greater length more than overcomes the increase in fall.

Northward from Southern Headhouse

Half-way up the north-side conveyor and to the left of it can be seen one of the "picking-table" chutes which carries away the refuse which the pickers extract from the coal as it descends the hill behind the buttons that retard its progress. The rock does not fall to the bottom of the hill, for the brush and small trees prevent it from rolling any distance from the point of deposit. The conveyor is substantially set on concrete posts. Note the supply track to the right of the conveyor.



COAL IN CONVEYOR ON DOWNWARD JOURNEY

Only the lumps of coal are visible, with three buttons almost entirely hidden by the coal. The slack lies on the bottom and furnishes a larger frictional area and thus aids in retarding the flow of coal, which prevents its degradation.

ARRANGEMENT OF COUNTERSHAFT AND GEARS

These moving parts operate the brake eccentric. A rough fence surrounds them and so makes accident less likely, while leaving the machinery readily accessible for oiling. The brake would act if the power were to fail or the belt were to be displaced.

If the generation of power ceases, and the motor is called upon to deliver energy through the belt, the reaction of the pinion driving the countershaft is immediate, with the result that the gear drives the brake away from the brake block. If the belt should break or the power go off the line, the pull of the conveyor will apply the brake through this same action. Inasmuch as there is no possible way of starting the conveyor under such a condition the brake remains in position against the block and the entire cable is dead.

This safety feature merits more than passing attention. The conveyor when loaded holds about fifty tons of coal. Should this ever get beyond control, it would rapidly gain momentum in moving down the hillside and cause great damage through piling up at the bottom. It is more than possible that some men on the tipple might lose their lives should this occur, for the men there employed would have scant time to realize their danger and seek safer quarters.

The brake shaft upon either conveyor has a continuous oscillation caused by the ever-changing loads on the cable and the resultant application and release of the brake to and from the brake-block. This type of brake has proved highly effective both here and elsewhere, and is beyond doubt a detail tending toward safety.

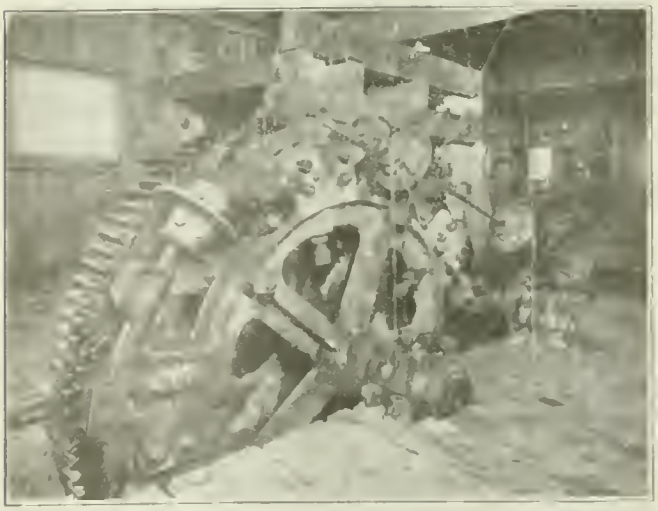
All the mechanism in the headhouse is driven by countershafts from the 35-hp. motor operating the conveyor. Approximately 20 hp. is required to put the conveyor in motion from rest. This motor is started by a man stationed at the headhouse, although it may be stopped instantly by the men on the tipple. To start it again a signal is given from the men below.

The conveyor on the north side of the property is 1,070 ft. long, while the rise is 458 feet. This gives it practically a 29-deg. pitch, which is constant from the headhouse to the tipple. On the south side the conveor is 1,125 ft. long and the rise is 470 feet. This conveyor has three distinct slopes. The section leading away from the headhouse is on a pitch of 19 deg., the middle section has an inclination of 33 deg., while at the bottom the pitch flattens out until a 5-deg. slope is attained

This is the inclination at which the conveyor enters the tipple. The south conveyor is thus on a reverse curve, which is, perhaps, the ideal arrangement. While much power is generated on the steep incline, this is almost entirely absorbed on the nearly level section at the bottom. A brake is provided in the headhouse on the south hill for this conveyor, but it is practically never operative, serving merely as a safety factor. While power is required to operate this conveyor at all times, the amount needed is small. Both conveyors have a speed of 90 ft. per min.

Tail Sheaves Only Maintain Alignment

As may be noted from the accompanying illustrations, the troughs, which are of wooden construction, are supported for most of their length upon trestles. The trestle framework also is of wood, while the supporting tower legs are set on solid concrete bases. Both cables are 1¼ in. in diameter, and to them at intervals



TWO VIEWS OF THE HEAD SHEAVE AND ENCLOSED BRAKE BLOCK

The large gear reduction of the left illustration drives a shaft that operates the eccentric for the oscillating feeder. In the rear of the room in both illustrations can be seen the motor which is connected by a belt to a flywheel and drives the entire mechanism.

of 4 ft. are bolted iron discs 12 in. in diameter. Each head sheave has five pockets and may accommodate three buttons at one time.

The tail sheaves are given a simple shaft mounting as they serve merely to keep the cable in alignment and facilitate an easy return. The bottom plate of the trough is of steel, ¼ in. in thickness. This is curved to the radius of the buttons so as to give a contact with them for about one-third of their circumference. The sides of the trough are made of ⅜-in. steel plates, while the return cable passing above the loaded strand runs in a steel chute that serves both as a guide and a support.

Parallel to and alongside of each conveyor is a narrow-gage track, by means of which cars containing supplies and materials for use in and around the mines and in the surface buildings at the outcrop may be transported up the hillside by means of a small steam-driven hoisting engine, situated at the bottom. The efficient handling of materials and supplies at such mines as this is a difficult problem. When it is considered that all supplies must be elevated through a vertical distance of 400 ft. the magnitude of this problem can be appreciated.

Gravity Does Almost All the Work

The double tipple, which, like other units of this plant, is constructed of wood, is equipped for handling and preparing the output from both conveyors. Considering the amount of mechanical equipment installed at this operation, the power consumption is perhaps less than at any other plant of similar capacity in the country. Not only is the conveying system practically self-propelled by reason of the steepness of its pitch, but gravity also plays an important part in the preparation of the coal on the tipple. Outside of the two tail sprockets for the conveyors everything in the building is operated either by gravity or by hand.

Each tail sprocket has been given a long take-up in the tipple. Considering the fact that each cable, including both upper and lower strands, is over 2,000 ft. long, it is readily apparent that changes in temperature will make a marked difference in its length. In order that these steel ropes may be kept in proper tension the tail shafts are so mounted that the cables may be tightened in warm and loosened in cold weather. This arrangement prevents an excessive amount of play or lost motion that might otherwise develop and handicap steady production.

The coal on each conveyor is delivered to hoppers upon either side of the tipple. An undercut gate on the south side of the building and a roller-supported sliding gate upon the north side control the outlet of these temporary reservoirs. The product from the south mine passes over a gravity bar screen, while that from the north mine is loaded only as run-of-mine. The bar screens are fitted in such a way that either ¾- or 2-in. spacing may be used.

Adjustable Loading Chutes Save Breakage

The slack passes directly into a hopper, from which it goes, by way of a rectangular chute, to the railroad car beneath. Lump sizes coming from the screen descend through a curved loading chute which is fitted with an extension. These lump sizes may be loaded separately and dropped into the cars without appreciable breakage, as the extensions of the loading chute are counterbalanced and controlled by the trimmers through geared hand crabs.

As has been mentioned, the coal from the north conveyor is loaded only as run-of-mine. It passes to the railroad cars by means of a curved loading chute which is a duplicate of the one employed for the lump from the south side.

As the miners at this operation all live in the town nearby, it will be evident that some means must be provided to supply them with domestic coal. The conveyor from the mine on the south hill passes over a wagon road in the hollow. At a suitable point a chute has been built from this conveyor to the wagon road, so that a portion of the coal coming down the south hill may be directed away from the tipple. This is accomplished by the simple means of providing a door in the conveyor trough.

Domestic Coal Chute Has Check Gates

Since the domestic coal chute is about 100 ft. long and constructed on a slope of 35 deg. it would be inadvisable to allow coal to rush down it, gathering momentum as it traveled, lest the gate at the bottom be torn loose from its support through the impact. Check-gates are therefore installed in this chute. These are hinged from the top and counterbalanced so as to retard the rapid movement of the coal down the chute. At the lower end of the chute an undercut gate permits of the transfer of the coal into wagons. This is regulated by a chain passing over a 30-in. chain wheel.

As may be seen from the foregoing description, this whole installation, which was built by the Fairmont Mining Machine Co., is strikingly simple yet highly effective. Although power is employed to put the conveyors in motion, once they are started they are practically self-propelling and the only energy required to keep the coal moving is that furnished by nature, namely, gravity. This holds true not only down the steep mountain side but through the tipple as well.

Presence of Gold and Silver in Refuse Products from Coal Washeries

IN studying the question of the value and possible utilization of the refuse or tailings from bituminous-coal washeries the presence of gold and silver was given consideration, prompted by the fact that certain coals in Wyoming have carried those metals and that traces of both have been found in the coke produced from these coals.

The why and the wherefore of the occurrence of gold in coals from this district has never been determined. The most plausible explanation seems to be that the sands which submerged the swamps during the geological period in which the coal was formed, which sands, transformed into sandstone, now form the roof of the coal, were derived in part from old gold-bearing alluvium. While the sand was being deposited the gold may have worked down into the underlying body and, in any event, gold is now found in the coal.

A preliminary study of this possible occurrence was conducted on refuse from coal washeries in the southern Illinois coal fields. A representative sample of washery tailings analyzing 40 per cent ash and 7 per cent sulphur when assayed by the standard fire method was found to contain a trace of gold and nine-tenths of one ounce of silver per 2,000 lb. of refuse. The cost of extraction and other economic features were not considered, as the investigation was confined to theoretical possibilities.

How to Operate Combination Storage Battery and Trolley Locomotives*

Practical Instructions for Motormen, Repairmen, Superintendents and Foremen Which Will Enable Them to Keep Their Equipment Continuously in Running Order—Use of Constant Current and Constant Potential in Charging

By John B. Hicks†
Jenkins, Ky.

AT THE Elkhorn Mines of the Consolidation Coal Co. the instructions given the motormen on the handling of combination storage-battery and trolley locomotives are as follows, it being assumed that the batteries are fully charged when locomotives are taken out of the motor barn at the beginning of the shift:

(1) Open the main battery switch on the locomotive. (This is to prevent a short circuit in the battery should the metal covers accidentally come in contact with the inter-cell connections and the frame of the locomotive.)

(2) Place the asbestos-board covers over the battery compartments, place the metal covers on the locomotives and close the main battery switch. (The locomotive is now ready for operation.)

Constant-voltage charging is preferred where a night attendant can be kept at the motor barn, the constant-current method adapting itself best to unattended charging. Supplies should not be hauled on the tops of locomotives. "Goosing" the battery or trolley should be forbidden. Batteries should not be flushed with water that has been left in any metallic vessel except one of lead.

(3) Do not charge the battery until the indicating hand on the ampere-hour meter has passed the gassing point. After this the shunt trip circuit breaker in the charging circuit may be closed and the battery charged at will.

(4) Do not meddle with the shunt trip breaker in the discharge circuit. (When the indicating hand on the ampere-hour meter makes contact at the maximum discharge point the shunt trip circuit breaker opens in the battery discharge circuit. This has already been described in the article entitled "Changes That Experience Has Dictated in Details of Combination Locomotives.")

At the end of the shift the motorman delivers his locomotive to the motor barn. Here he is instructed as follows:

(1) Open the main battery switch on the locomotive. (This prevents a short circuit in case the metal covers accidentally come in contact with the inter-cell connectors of the battery and the side frames of the locomotive.)

(2) Remove the metal covers from the top of the locomotive and the asbestos-board covers from the battery compartments.

(3) Report to the electrician for the purpose of recording the number of cars of coal and slate pulled, and any trouble experienced with the battery or locomotive, also any delays such as waiting on empties, waiting on charge, off track or hauling supplies.

The instructions which we have issued to repairmen who have been given charge of motor barns where combination locomotives are cared for are as follows:

(1) At the end of each shift inspect the battery to see if the electrolyte is at the proper height in all cells. If found low the battery must be flushed. (This means pure distilled water is added until the electrolyte reaches the proper level. A battery may need flushing once, twice or three times a week, depending on the amount of work done.)

(2) Replace any cracked covers or jars, repair any leaky sealing, and examine any cells which show signs of trouble.

(3) Take the gravity reading of the pilot cell daily, comparing it with the ampere-hour meter reading. (This is done to keep check on the battery and to keep the ampere-hour meter and battery in step.)

(4) See if the motorman has turned the indicating hand on the ampere-hour meter by tampering with the reset. (This meddling with the ampere-hour meter was easily done on the locomotives first installed, but in their later designs the meter manufacturers have overcome this feature.)

(5) Put the battery on charge and so leave it until fully charged, at which time contact is made within the meters, thus stopping the charge.

(6) Do not allow a locomotive to leave the motor barn with a jumper in the boosting resistance. Take a locomotive out of service whenever its boosting resistance is broken or otherwise damaged, and do not operate it again until this resistance can be replaced or repaired. (This is necessary to protect the battery from too high a rate of charge. It must be kept in mind that the boosting resistance is a fixed resistance of proper capacity which is in series with the battery while it is being charged from the trolley.)

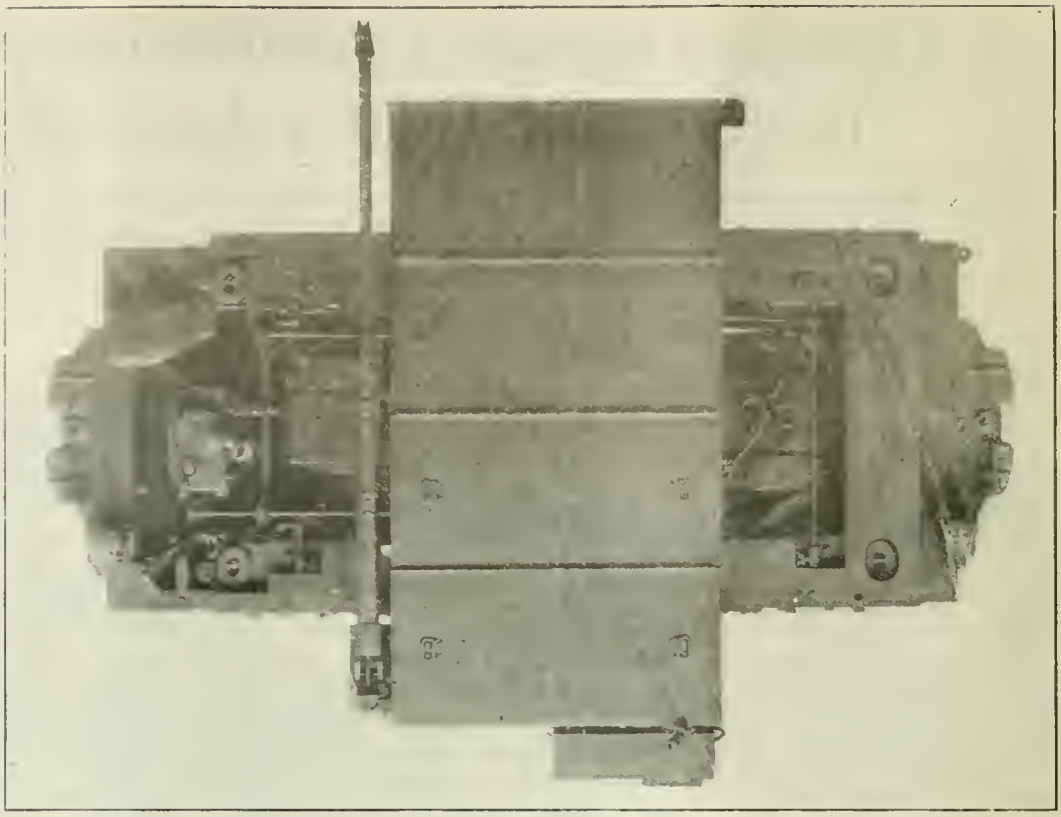
(7) Never add acid to a cell in the battery without first ascertaining the cause of the low gravity. (As only the water evaporates from the electrolyte, there is no loss of acid during charge or discharge. The only causes of loss of acid are spilling, excessive flushing when adding water, leaking through cracked jars or covers, or through a defective seal. If the repairman finds that the electrolyte has been lost for any reason,

*Second installment of an article entitled, "Use of Combination Battery and Trolley Mine Locomotives," read before the Kentucky Mining Institute at Lexington, Ky., June 4, 1920. Prior installment, entitled "Changes That Experience Has Dictated in Details of Combination Locomotives," appeared in the issue of July 1. Illustrations supplied by courtesy of Jeffrey Manufacturing Co.

†Assistant superintendent, power and mechanical department, Consolidation Coal Co.

Top View With Storage Battery Swung Over

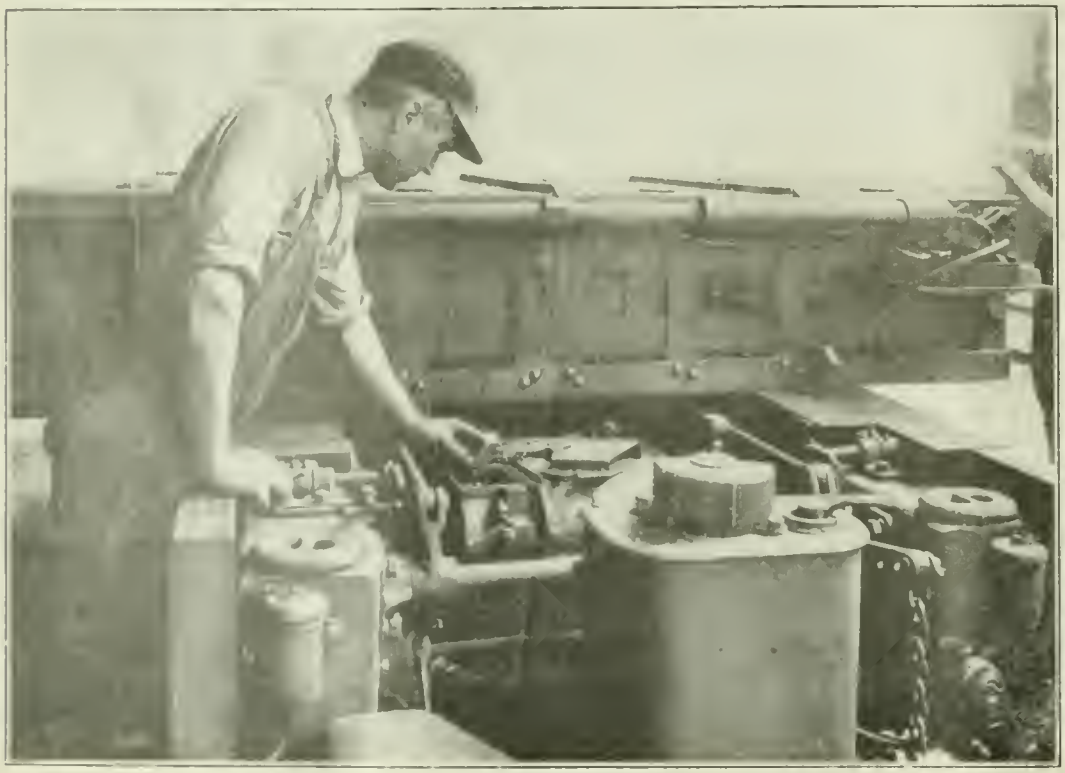
This illustration gives an excellent idea of how easily access may be gained to all electrical parts of the machine. It will be noted that the sand-box lids are never covered by the battery compartment.



the cells in trouble are refilled with electrolyte of about the same specific gravity as that in the surrounding cells.)

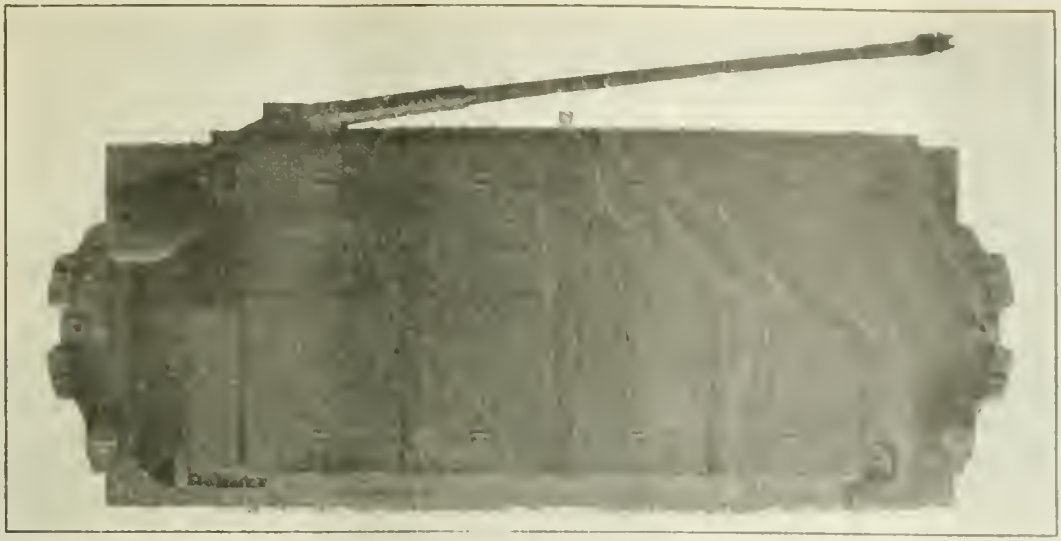
(8) Never flush a battery with distilled water which has been placed or stored in a metallic vessel of any kind (lead excepted) and always keep the vessel clean and covered and so exclude all impurities. Glass, earthenware, rubber or wooden receptacles which have been thoroughly cleaned are permissible.

(9) Give an equalizing charge once each week. To do this place the battery on charge in the regular way and when the indicating hand on the meter reaches the zero contact turn the indicator back about 25 per cent of the capacity of the battery in ampere-hours and continue the charge (disregarding the ampere-hour meter) at approximately one-half the finishing rate until the maximum specific gravity of the electrolyte is reached. This is determined by taking the gravity reading of one or more pilot cells every half hour until there is no further rise in gravity. The indicating hand of the ampere-hour meter is then placed at zero, showing that the battery is fully charged. The meter and battery are



Renewing a Brush

When the battery container is lifted slightly and is swung crosswise of the machine practically all of the electrical parts are accessible.



Top View of Combination Locomotive

Removal of the four cover plates shown gives ready access to the battery for inspection, repair or the addition of distilled water to the electrolyte.

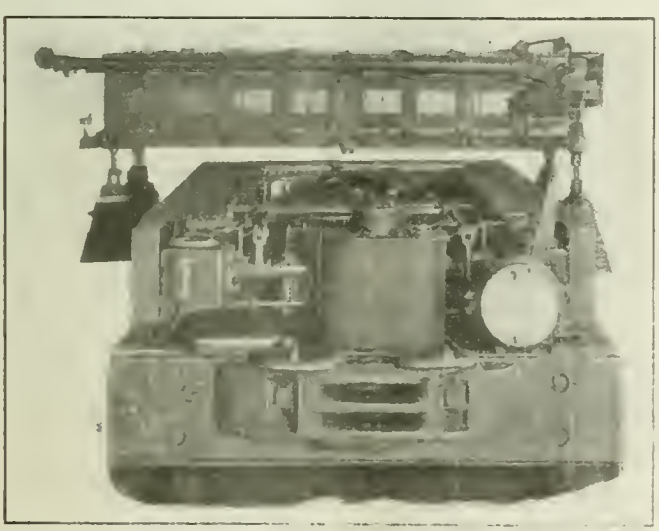
now said to be in step. Full directions for giving the equalizing charge are given in the battery manufacturer's instruction book. Every man who has charge of batteries should have one of these books.

(10) During a slack run at the mines, keep the batteries properly flushed, charged and clean at all times.

(11) Do not leave a locomotive standing out in the hot sun with the covers over the batteries removed. (The heat from the sun will soften the covers and top edges of the jars. These will harden again as soon as taken in out of the sun. The heat of the sun also causes the sealing compound to run, possibly causing the sealing to become leaky. This is highly objectionable.)

(12) In cold weather, after flushing a battery, put it on charge immediately. (This will cause the water and electrolyte to become thoroughly mixed, thus preventing the water from freezing. In cold weather a battery in a discharged condition must not be left standing out exposed, as the specific gravity of the electrolyte is low and it will freeze at about 28 deg. F. above zero. See battery-manufacturer's instruction book for complete instructions.)

(13) Once a week wash the tops of the batteries with a soda solution and wash the solution off by turning a hose on the whole battery while still in the locomotive. (This neutralizes any acid that may be on the tops of the trays and battery, keeping them clean and in good condition. It also washes away any dirt that might be in the battery compartments. The battery compartments in the locomotives here described are so designed that it is possible to wash the batteries without getting any water on the electrical equipment.) Before washing the battery, as above stated, ascertain that all plugs are in place and that there are no broken or leaky covers in the battery. (By preventing the trays from becoming acid-soaked they last as long as the battery. To clean the battery in this manner does not require more than about fifteen minutes and about two cents' worth of soda and sufficient water for washing.)



END VIEW WITH STORAGE BATTERY LIFTED AND SWUNG TO TRANSVERSE POSITION

This illustration shows the ease with which the battery compartment may be moved as a unit. The trolley pole, of course, is attached to the battery container.

(14) Report any unnecessary abuse of the storage battery or locomotive to the mine foreman and superintendent.

(15) Properly instruct all motormen in the care of the battery, that is as to its charging and discharging, also in the care of the locomotive.

The operating instructions to superintendents, mine foremen and assistant foremen in charge of the mines where the combination locomotives are used are the same as to the motormen, but they emphasize the importance of the fact that the batteries must be charged and discharged in strict accordance with instructions. These officials are also given the following instructions:

(1) Do not permit motormen to haul supplies on the tops of locomotives. (This is necessary because it will prevent metal covers from being mashed down into the top of the battery. It also prevents nails, track spikes or any other metal conductors from working down between the metal and asbestos-board covers to the top of the battery. These pieces of metal coming in contact with the inter-cell connectors might cause a short circuit on one or more of the cells, or they might form contact between these connectors and the frame of the locomotive, making a heavy short circuit. In either case an explosion might occur in the battery and by blowing the covers out, breaking them and cracking the jars, do much damage to the locomotive.)

(2) Do not permit "goosing" the battery or trolley. (To express this in common English: Do not change the reverse cylinder to the position opposite to that of the direction of motion of the locomotive, before the machine is stopped by the brakes.)

If the reverse cylinder position is changed to that op-

posite to the direction of motion of the locomotive and the motors fail to generate and do not stop the locomotive, the controller is then opened to the first point. This will result in a heavy current being drawn momentarily through the armature, causing unnecessary heating and burning between the commutator and brushes. The reason the motormen "goose" the motors is to avoid setting and releasing the brake.

(3) Report to the repairman at once any unsatisfactory service or trouble with the battery or locomotive.

Elkhorn Mines Utilize Both Methods

At present both the constant-potential and the constant-current methods are employed at the Elkhorn mines in charging. The constant-voltage method is followed at those mines where a sufficient number of locomotives are installed to warrant the employment of a night attendant.

The charging apparatus for the constant-voltage system consists of a motor-generator set of sufficient capacity to give the charge properly, a switchboard, including a machine-control panel with an overload circuit breaker and the necessary switches and instuments. The charging panels are of the unit type, each panel being equipped with one double-pole single-throw knife switch, one ammeter switch and one fuse.

There also is an instrument panel unit type equipped with a voltmeter and ammeter so arranged as to read any circuit desired. The charge is given to the battery with constant bus potential of about 2.3 volts per cell. A battery in any state of discharge can be put on charge and in a short time will receive a large portion of the energy it lost in its discharge. The current automatically tapers from a high rate at the start to a low rate toward the finish, and no attention or adjustment is required.

When the indicating hand returns to zero, contact is made within the meter. This opens the shunt trip breaker in the charging circuit, thus stopping the charge. Where it is necessary to have the battery charged quickly the constant-potential method should be used.

Constant Current Needs No Night Attendant

In motor barns where no night attendant is employed the constant-current method is employed. The batteries are given the entire charge at the finishing rate, through an external fixed resistance. When the battery is fully charged contact is made within the meter, which causes the shunt trip breaker in the charging circuit to open, thus stopping the charge. This particular method of employing constant current can be used only where there is ample time for the charge. There are several constant-current charging equipments manufactured any of which automatically cut in resistance during the charge.

The batteries while being charged by this method (constant-current) are prevented from discharging back to the line by an automatic reclosing switch. This switch is installed between the line and the battery. When the power goes off the switch opens, while as soon as the power comes on it closes. It has been found that this system of charging works satisfactorily, for there usually is sufficient time in which to charge the batteries. The method of charging to be used must be chosen for each installation according to its merits and cost.

To Encourage Development of Coal and Oil Resources of Alaska

LIBERALIZATION of the leasing law as pertains to coal and oil in Alaska is one of the most necessary requirements looking to the development of that territory. This is the finding of the Alaska Advisory Committee, which has just reported the results of its investigations to the Secretary of the Interior. The recommendations of the committee pertaining to the mining industry are as follows:

That the Bureau of Mines make a report of the feasibility of smelting Alaska copper ores within the territory, this work to be done in co-operation with the Geological Survey so far as may be necessary.

That the Bureau of Mines make an investigation and report on methods and costs of placer mining in Alaska, this to be specially directed toward the development of methods of exploiting the large bodies of auriferous gravels of low gold content.

The committee finds that the development of coal and oil fields is of first importance to the territory. It therefore recommends that:

Every encouragement be given to coal and oil development, especially by making the terms of leases as liberal as the law allows.

The necessary underground explorations in the Matanuska coal field be prosecuted with vigor by the Government.

The companies engaged in prospecting the Bering River coal field be given every encouragement to develop coal and to build railroads necessary to its marketing.

The Inter-Departmental Committee give immediate and earnest consideration to the desirability of the establishment of a coaling station for commercial and naval uses at a port in the Aleutian Islands most suitably located to serve trans-Pacific shipping and, if possible, the cannery industry of southwestern Alaska.

The committee furthermore recommends that Congress be asked:

To increase the appropriation for the investigation of the mineral resources of Alaska as being one of the most important steps to further mining development in the territory and the development of tonnage for the railroad.

To modify the Alaska coal-leasing law allowing a prospecting period of four years before a lease is signed.

The committee finds that while the Alaska petroleum leasing law is liberal for developed fields, for those where there are some surface indications of petroleum, and for those that are readily accessible, its terms do not encourage the search for oil in inaccessible wildcat territory.

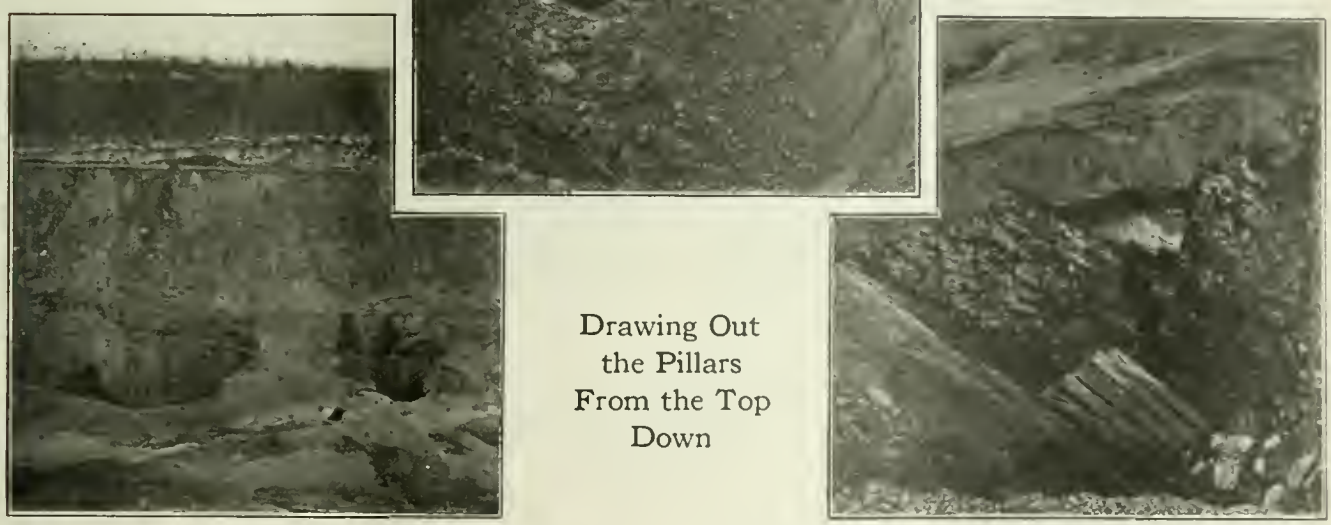
The committee is of the opinion, for example, that to induce capital to explore for oil in the Arctic coast region of Alaska, where there are some indications of its presence, a more generous law must be enacted. It recommends that this matter be taken under advisement and that appropriate legislation be asked for.

Trade Commissioner H. Lawrence Groves, Zurich, Switzerland, reports that satisfactory arrangements have been concluded whereby American coal destined for Switzerland will be received at the Italian port of Savone, for transportation into Switzerland by rail over the Loetschberg or the Gothard lines.

Stripping 85-Ft. Cover from an Anthracite Bed with a Dragline Excavator

A Large Tonnage Will Be Mined on the Surface and Passed Down Battery Breasts, Which Will Be Driven Upward from the Mine Below—The Coal Is To Be Hauled Underground to a Breaker for Preparation

ONE of the most interesting stripping operations now being undertaken in the anthracite region of Pennsylvania is that of the Lehigh Coal & Navigation Co. near Nesquehoning. It is the intention of this firm to uncover a large area of the Mammoth Bed, which in this vicinity is as much as 230 ft. wide on the top and tapers down to practically a point at the bottom. The coal deposit is here overlaid with an overburden reaching a maximum of 85 ft. This cover consists mainly of gravel and clay and contains a few boulders, but no stratified rock. A cross-section of the bed at a point where the stripping is being made is shown in one of the accompanying illustrations.



Top of Breast With Timbers in the Manway

Breaking into the Workings Excavated Below

Drawing Out the Pillars From the Top Down

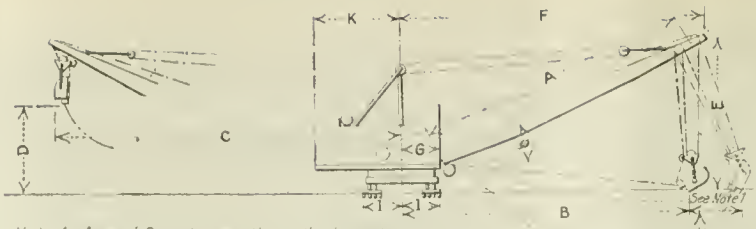
It is known that, from the point where the cross-section illustrated was taken, the coal extends for a distance of 1,400 ft. toward the city of Mauch Chunk and probably somewhat further. The maximum width of the cut at the bottom is 230 ft. while at the top it will measure 430 ft. In order to strip the overburden the company has purchased and installed a No. 175-B Bucyrus dragline excavator.

This machine is operated electrically, two motors being required for this purpose. One of these is of 250 hp. and is used to operate the hoist line, while the other is a 150-hp. machine and is used to rotate the excavator. Both of these motors are Westinghouse machines of the slip-ring type. Power for the operation of the excavator is furnished by a high-tension line of the Lehigh Coal & Navigation Co. Energy thus reaches the plant at 11,000 volts, 60 cycles, 3 phase and is stepped down to 440 volts before going to the machine. The transformers employed are mounted on trucks, permitting their movement from place to place as the stripping proceeds. They are protected upon either side by fuses.

While the clutches on the excavator are air-controlled, the brakes are hand-operated. The boom is 128 ft. long, while the distance from its attachment to the excavator to the center of the machine is 13 ft. The total reach of the machine, taking into account the angle at which the boom is set, is about 130 ft., while a good operator can swing the bucket 40 ft. more, making an absolute maximum reach of 170 ft.

A 3½-cu.yd. bucket is at present employed on the excavator. The depth of the cut at which this machine is now working is 85 ft. This is believed to be the greatest depth for a single cut upon which any machine of this type has ever been employed.

A dragline excavator of this type is hard on ropes, therefore a few figures covering the life of such members may be of interest. The greatest wear comes upon the hoisting rope, which in this machine is of ¾-in. diameter. It is a Lang lay cable composed of 6 strands of 19 plough-steel wires each and has a length of 660 ft. The longest life of this rope yet secured upon this particular machine has been 52 days, while the shortest life noted has been 4 days.



Note 1: *A good Operator can throw the bucket from 10 to 40 feet beyond the end of the boom, depending upon the size of the machine and the conditions under which it is working.*

A	Class 175 125 ft. Boom 3½ cu. yd. Bucket	
Angle of Boom	25°	40°
B	125'-3"	109'-0"
C	129'-9"	113'-8"
D	40'-4"	67'-4"
E	62'-0"	90'-4"
F	130'-2"	113'-0"
G	12'-10"	12'-10"
I	13'-10"	13'-10"
K	27'-2"	27'-2"
Note 2 " 3	45' to 50' 69'-0"	43'-0"
Optional Equipment	90 ft. Boom 6 cu. yd. Bucket 100 ft. Boom 5 cu. yd. Bucket	

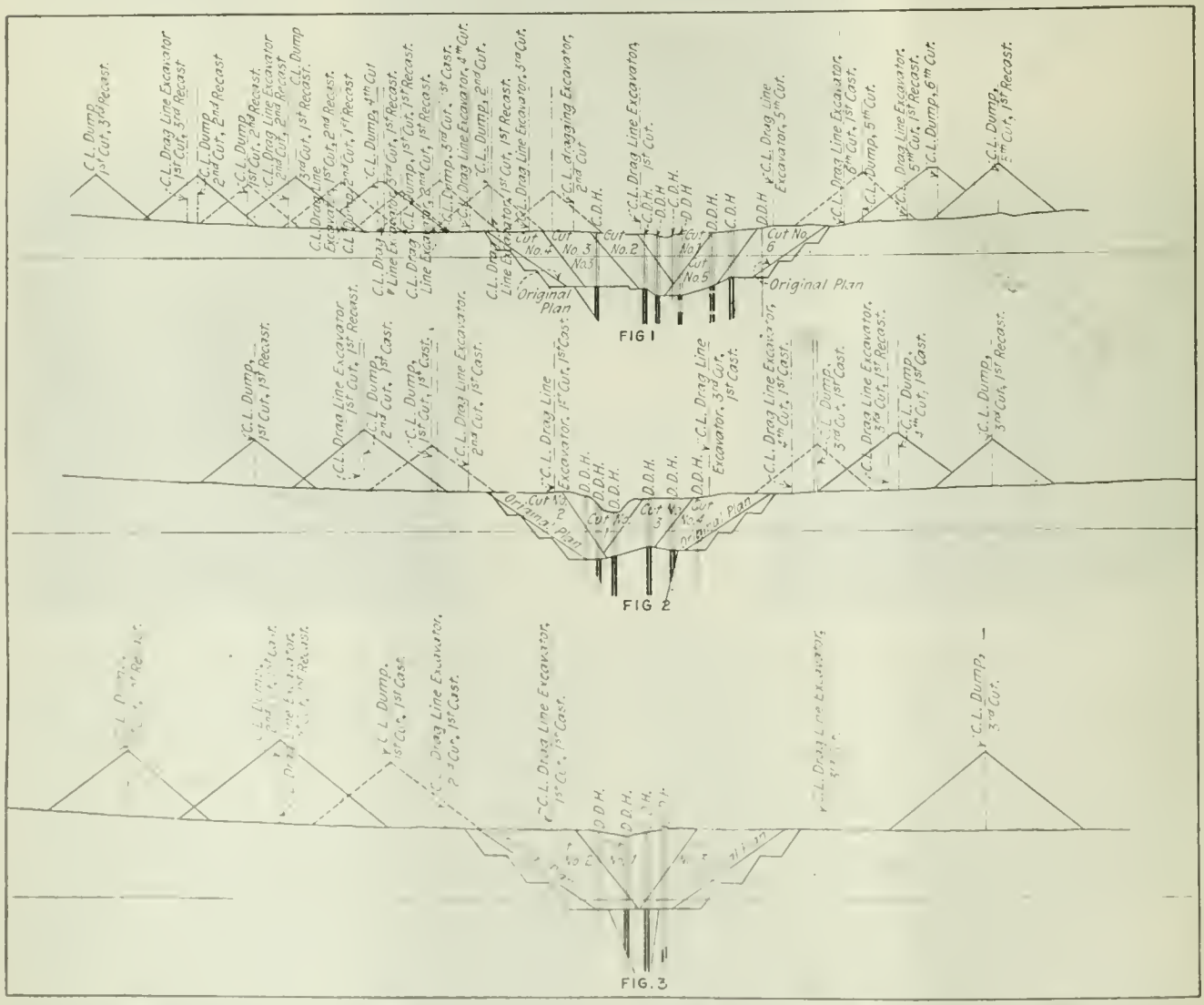
DRAGLINE EXCAVATOR

All the dimensions being carefully worked out, it is readily possible to ascertain what will be the length of the cast under any given condition. Every item of the excavation is plotted out beforehand so as to define the amount of casting and recasting necessary in performing any given part of the work. There are more considerations necessary than with shallower excavations.

The ordinary or average life of a hoisting rope is approximately 30 days, this being as much as can reasonably be expected. At the present time a Waterbury rope is being used on this machine. It is a peculiar coincidence that the make of rope which gave the longest life as stated above also gave the shortest.

Next to the hoisting rope the dragline receives the greatest wear, and a life of approximately 30 days is all that this rope can be expected to have. The diameter of this rope is 1½ in. and its length 200 ft. At present a Roebling rope is employed as dragline.

Two other ropes are employed, one of which is the dump line and the other the boom extension rope or topping lift. An old hoisting rope is used for dumping



OPERATIONS OF DRAGLINE EXCAVATOR AS PLANNED FOR WIDE, LESS WIDE AND NARROW CUTS

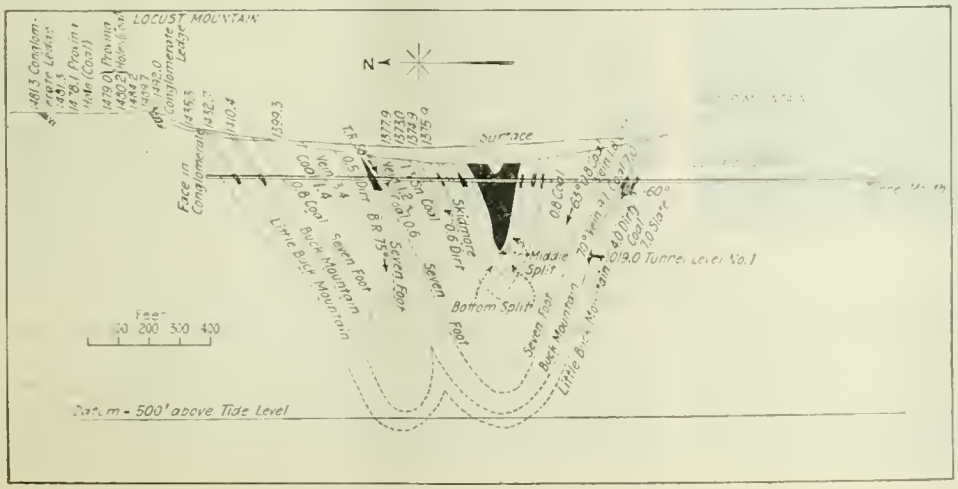
In Fig. 1 the excavator will make no less than six cuts and will recast the first cut three times, the second cut twice, the third and fifth cuts once, while the fourth and sixth cuts will be handled but once. In Fig. 2 there are but four cuts and only the first and third cuts are recast and they are recast only once. In Fig. 3, owing to the narrowness of the cut, only the first cut is recast. The difficulties arise as much from the width as from the depth. The wider the cut the more recasting necessary.

DRAGLINE EXCAVATOR PREPARING TO DIG, DIGGING, TRANSFERRING MATERIAL AND UNLOADING

Upper left illustration shows the 125-ft. boom engaged in loading at a point quite near the base of the excavator; upper right, the 3½-cu.yd. scraper with its strong steel teeth just beginning to dig in at a point still not near its further reach; lower left, the scraper lifted a few feet from the ground, and lower right, the excavator revolved and starting to dump its load on the spoil bank. When operating under extreme conditions, from bottom of cut to top of dump is a lift of 170 ft. The shovel will dig and move 25,000 cu.yd. per month in virgin soil, a nine-hour day being worked. It will recast 15,000 cu.yd. in that time.

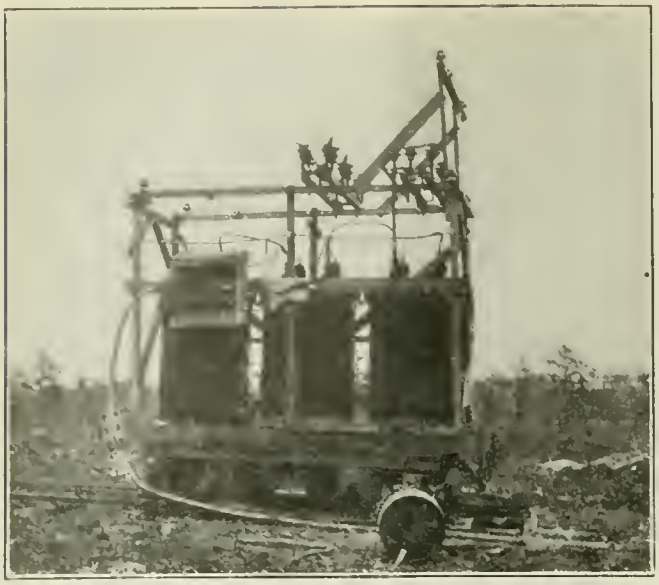
and gives excellent satisfaction. Practically no work is done by this member. The diameter of the boom extension rope is ⅞ in.; its total length, 1 300 ft. A Waterbury rope is now being used for extending the boom.

The dragline excavator here used has a rated capacity of 140 cu.yd. per hour. This with an eight-hour shift gives a capacity of 22,000 cu.yd. per month. During the summer time this capacity has been increased some-



Cross-Section of Trough

Though the bed is only 20 to 40 ft. thick, which is thin for the Mammoth Bed, the bend is so sharp that a large body of coal is found on a small acreage. The width to be uncovered is only 230 ft. and tapers down to nothing at the bottom. The 85-ft. cover is unstratified material—gravel, clay and a few boulders.



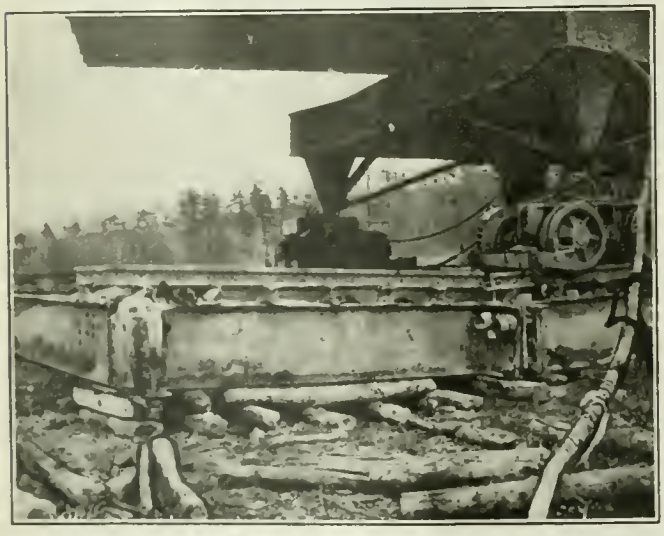
TRANSFORMERS ARE MOUNTED ON TRUCKS

The transformers receive their current at 11,000 volts and step it down to 440. The current is received from high-tension lines from the Hauto plant of the Lehigh Coal & Navigation Co. The transformers are large and somewhat topheavy and will soon be replaced by three which are smaller and more compact.

what, 26,000 cu.yd. having been handled. In winter the ordinary capacity runs to 19,000 cu.yd. per month.

In winter stripping is quite difficult. The machine is situated a considerable distance from any means of transportation and during the past winter from early December it could only be reached by sleds and the men therefore had to be hauled to and from their work three to four miles by sled each day.

Moreover, severely cold weather prevailed, and the frost penetrated the ground in some instances to a depth of five feet. This made it necessary to drill and blast the overburden. It is customary to drill three 10-ft. holes about 10 ft. apart and 13 ft. from the edge of the bank. These are sprung or chambered with dynamite, and then each is loaded with three kegs of black powder. The charge is fired electrically. In summer it is of course unnecessary to blast the soil, it being sufficiently loose to be readily dug. Six men handle the dragline excavator. Practically all operations on the machine are performed mechanically, and consequently require only a few men.



MOVABLE TRACKS SUPPORT AND HOLD EXCAVATOR

Track sections of the heaviest construction are used to sustain the heavy excavator (it weighs 350 tons) on the 85-ft. gravel and clay bed that covers the coal. The machine is always near the edge of the big cliff that its industry has created and its footing is rendered none the surer by that fact. Each unit of the track is nearly square. Four I-beams set on edge and securely riveted form the sides of the square. An I-beam brace placed diagonally across the middle of the frame gives it additional strength and stiffness. Two-rail tracks each with a 24-in. gage are bolted fast to the ties, and when it is necessary to move the machine forward the whole unit is picked up bodily without unbolting any part of it and moved wherever desired.

If Cut Is Wide Rehandling Is Inevitable

A dragline excavator of this type is open to the objection that when the pit being excavated is wide it will be necessary to rehandle the spoil. By glancing at the illustration showing the pit at its widest point it will be observed that the excavated material from the first cut will have to be recast three times while that from the second cut must be recast twice and the spoil from the third cut recast once.

On the opposite side of the pit the spoil from the fifth cut has to be recast once. This makes it necessary for the material to be handled in this case four times for the first cut, three times for the second, twice for the third and fifth, while the spoil from the fourth and sixth cuts need be handled only once.

In the next section comparatively little rehandling is required, since the cut is narrow, while in the third or last section the spoil has to be handled only once. The best results can be secured with this type of machine when the cut is narrow and the excavator is not compelled to handle its spoil more than once.

Although in this case the excavator is compelled to rehandle the excavated material the cost is not greater than it would be with other types of machines for the same purpose, since with them auxiliary means must be provided in order to remove the spoil from the bed. The Lehigh Coal & Navigation Co. is now investigating various types of machines and methods of operation that may obviate the necessity of the excavator rehandling the spoil.

At this stripping operation the coal will not be handled by mechanical excavator or other means, but will be mined in a manner similar to that now employed in working the Mammoth Bed elsewhere in this district. Two tunnels or gangways will be driven in the rock near the bottom or base of the coal, and these will run parallel to the apex of the fold in the bed. Risers will then be driven through the rock to the coal and then breasts will be driven to the surface. The coal will then be mined from the top and shot down the breasts to the haulage roads, where it will be loaded onto mine cars and transported to a breaker for preparation.

Philippine Coal Mines To Be Developed

SIGNS of industrial expansion in the Philippine Islands are seen in the recent formation of a company which is developing the Cebu coal mines as well as those in Mindanao. It is expected that within a comparatively short time the output of these two islands will be sufficient to supply the needs of the whole archipelago as regards good steam coal.

The Mindanao product, which comes from what is known as the Sibuguey coal field, is claimed on the one hand to be superior to any other Philippine coal or any coal imported into the islands, while, on the other hand, it is said to be liable to deterioration if not used promptly, and to be probably of a quality more comparable to Borneo coal.

Illinois Mining Institute Holds Seventh Annual Summer Meeting in Chicago

Saline Coal Dust Declared To Be of Excessive Explosibility — Papers Read on Labor Problem and Vocational Education — Machine Cutting Urged as Means for Reducing Mine Accidents

By Donald J. Baker
Pittsburgh, Pa.

WHEN the Illinois Mining Institute met to hold its seventh annual summer outing a program had been arranged that called for a more extended discussion of the sociological problems confronting the coal-mining industry than the institute has hitherto indulged in. The meeting was called at the La Salle Hotel, Chicago, on June 23. The first session, which was for the transaction of business, was called to order at 10:45 a.m. by the president, William Hall, who also is president of the Illinois Miners' Examining Board. William H. Thompson, Mayor of Chicago, was to have given an address of welcome to the convening institute members, but owing to an eleventh-hour cancellation, Dr. John Dill Robertson, Commissioner of Public Health, substituted for the head of the municipality.

In welcoming the delegates to the city, Dr. Robertson said in relation to the smoke nuisance that the Chamber of Commerce of Chicago had recently expended $20,000 in compiling data for a report on Chicago's so-called "smoke horror." Dr. Robertson stated that the results of the investigation showed that in that city over $40,000 is wasted yearly as a result of imperfect combustion, while a further sum of equal size is lost through the shipping to the city of dirty coal for factory and domestic consumption.

Chicago, with a population of over 2½ millions, looses through tuberculosis and pneumonia twenty-four persons daily. These deaths, Dr. Robertson believes, are directly attributable to the large amounts of dust and soot in suspension in the air of the city. Black wash, a condition of the lungs resultant from breathing soot-laden air, is highly prevalent around manufacturing centers and will be until such time as more perfect combustion has been attained.

Health Measures Mine Owners Might Copy

Commenting on the water supply, Dr. Robertson said that the city uses 800,000,000 gal. daily, all of which has been chlorinated. As a result of the scheme of passing chlorine gas through the water, Chicago has the lowest typhoid death rate of any city in the country. Chicago also uses 700,000 gal. of milk daily, but this necessity is not permitted to reach the consumer until it has first been heated to a temperature of 140 deg. F. Dr. Robertson's talk was well received by the institute members, many of whom were entirely ignorant of the innumerable problems that confront the department of health of a large city. In closing he extended a hearty welcome to the convening delegates.

The response to Dr. Robertson's address of welcome was made by George Bagwill, state mine inspector of district No. 11. He thanked Dr. Robertson for the reception accorded the institute and stated that the time was already at hand when closer co-operation was possible between large cities and coal-mine officials, in order that a better quality of coal might be delivered to city consumers, thus helping to alleviate to some extent the imperfect combustion of the product. Mr. Bagwill regretted the passing, since the last meeting, of Joseph C. Thompson, formerly chief of the Illinois Department of Mines and Minerals. In closing, he urged a larger attendance at the institute meetings of mine managers and their assistants.

By vote of the members, the following were called upon to make extemporaneous speeches: Colonel M. H. Madden, editor of the *Steam Shovel and Dredge;* W. C. Pomroy, editor of the *Illinois Journal of Labor;* Dean H. H. Stoek, professor of mining engineering at the University of Illinois, and Patrick Donnelly, of the du Pont Powder Co.

James Taylor Discusses Labor Discontent

Professor Stoek announced that if any delegates knew of fires underground arising from spontaneous combustion, he would highly appreciate their being reported to him, that they might be investigated.

In the afternoon business session James Taylor, economic investigator of the State Department of Mines and Minerals, read a carefully-prepared paper entitled, "The Cause of the Discontent Among Miners and Laboring Men." Mr. Taylor read this paper at the last meeting of the American Mining Congress, which was held in St. Louis, but many of the delegates did not have the good fortune to hear him at that time. His article was well received. In Mr. Taylor's opinion, the wants of the laborer are increasing with his intelligence, and the statement that "The rich are growing richer and the poor are growing poorer," is not without foundation. "It is not the right of capital," said Mr. Taylor, "to decide the basis of labor organization." Only through a better understanding between labor and capital will come peace.

Saline Dust Has Excessive Explosibility

There was no discussion of Mr. Taylor's paper. George Bagwill, a state mine inspector and first vice-president of the institute, read the other paper of the afternoon. This was entitled "The Explosibility of Southern Illinois or Saline County Coal Dust." Mr. Bagwill has assisted at the experimental mine near Bruceton, Pa., in the making of many tests with dust from this county. His paper dealt largely with the results of these observations.

The State of Illinois was among the first to take advantage of the Bureau of Mines' equipment and apparatus for determining the explosibility of its dust. Pul-

verized coal from certain counties of Illinois is more sensitive to ignition than others, but none of the dust that has been tested has been found immune to ignition when subjected to conditions such as exist when a shot blows out.

Mr. Bagwill related how dust had been placed near a small cannon in the experimental mine and the cannon fired. When coal dust from Saline County had been used the force of the explosion was of such magnitude that the concussion and flame passed through 50 ft. of rock-dust barriers, igniting dust taken from the Pittsburgh bed of coal which was strewn on the other side of the barrier. When the same experiment was tried with pulverized coal from Franklin County, the rock-dust barriers broke the strength of the explosion and failed to ignite the dust beyond, thus indicating that Saline County coal dust is more explosive than that from Franklin County.

In the discussion following the presentation of Mr. Bagwill's paper Dean Stoek stated that the greatest evidence of the explosion was usually found at the end of the return airway. It was his belief that, all things being equal, the initial concussion would cushion itself upon the incoming air and, meeting with resistance here, would take the path of least resistance, which would be in the direction of the air current. In this manner he accounted for the fact that in shaft mines when visited by an explosion greater damage was often apparent at the bottom of the upcast shaft than at the downcast.

James Taylor lamented the fact that Illinois dust had not been used exclusively in the experiments near Pittsburgh, although be it said that for all practical purposes it had been so used. It was Mr. Taylor's opinion that in testing coal dust from Illinois the same degree of humidity and the same quantity of air should be in circulation during the experiment as was found in the mine from which the coal had been taken. "Not until this is done," stated Mr. Taylor, "will the experiments have any practical value." However, there were many who took exception to Mr. Taylor's viewpoint.

Brake Sand on Trucks Deadens Explosion

J. F. Fleming, of the faculty of the University of Illinois, remarked that sand spilled along the haulageways by the locomotives was a big factor in breaking the force of a dust explosion and cited certain explosions in the state where he had made observations. In some cases the sand and rock dust on the floor when thrown into circulation had been of sufficient thickness to completely arrest the progress of the wave. It was not believed by the majority of the members that an effective sprinkling system could be installed, nor that it was possible to keep the entries clean at all times, although the state mining law demands that one of these alternatives be provided.

It is not on the floor that the greatest hazard exists, for the accumulation of dust is larger on the ledges in the roof and in the crevices of the rib. Donald J. Baker remarked that the cement gun could be used to advantage by giving the roof and rib a thin coating of concrete. In this way there would be less surface afforded for the accumulation of dust. If it was not desirable that the entries be lined with cement throughout, it was at least feasible to isolate certain panels in the mine and thus circumscribe the extent of an explosion.

The discussion of Mr. Bagwill's paper ended when one member stated that explosions would be practically eliminated if mining machines were installed, and permissible explosives used after the coal had been undercut. There is little doubt that shooting off the solid is a highly dangerous method of bringing down coal. Some believed that a state mining law should be enacted that would forbid this practice. However, the speaker believed this would not be necessary if every operator would install within his mines machines for cutting coal. There is certainly no statute at present that forbids the use of machines, and to this degree every operator is able to decide for himself whether he will hazard a coal-dust explosion.

After the appointment of two committees on resolutions by the secretary, Martin Bolt, the meeting adjourned.

Instructive Sightseeing Filled Second Day

The following day was set aside for sightseeing. In the morning nearly all turned out for a visit to the Union Stock Yards and an inspection trip through the plant of Armour & Co. This feature was perhaps more thoroughly enjoyed than any other the Entertainment Committee had arranged. The meat packers have long been noted for the efficient operation of their plants and there was not one of the institute members who did not carry away with him a distinct impression of the importance of one man doing a certain thing and doing that thing well, if maximum production is to be attained.

After lunch a visit was made to the works of the Goodman Manufacturing Co., where a royal reception was accorded the visitors. Every piece of equipment that is made by this concern is first thoroughly tested before shipment to the buyer. Special devices for the testing of locomotives and mining machines attracted considerable attention. Later in the afternoon a visit was made to the factory of the Justrite Manufacturing Co. This company is equipped to turn out 5,000 carbide lamps daily, and the automatic devices that make this capacity possible are almost innumerable.

The banquet at the La Salle Hotel in the evening was not up to the caliber of former ones—so older members said. It was here that the late director of the Department of Mines and Minerals, Joseph C. Thompson, appeared to be most sadly missed. A pall seemed to hang over the banqueters, which even extended to the speakers of the evening, for there were many who commented on the passing of Mr. Thompson. The president, Mr. Hall, acted as toastmaster and called upon the following men for addresses, all of whom responded: J. A. Ede, consulting mining engineer for the Illinois Zinc Co.; W. J. Gates, St. Louis manager of the Caldera Purga Co.; Thomas Back, state mine inspector of district No. 2; Adam Currie of the La Salle County Carbon Coal Co.; Colonel M. H. Madden, formerly president of the Illinois Labor Board; James Taylor and Martin Bolt, assistant director of the Illinois Department of Mines and Minerals.

Madden Urges Workmen's Old-Age Pension

Colonel Madden, who is most highly revered by the members of the institute, after his address was given the most generous round of applause. He traced the growth in the progress that had been made in giving the workingman a square deal. "No industry should survive," said Mr. Madden, "whose laborers are not

paid sufficiently to assure them the right to raise their families according to the present standards of American living or guarantee to these men a pension when they have passed their period of active usefulness." The price of the product of any industry must be high enough to warrant the expenditure necessary to achieve these ends.

The original program called for a boat ride to Milwaukee on Friday, but because of a misunderstanding eleventh-hour plans had to be formulated, and it was finally decided to take a lake trip to Benton Harbor, Mich., instead. That the business session scheduled for Saturday morning might not suffer by reason of the lateness of the boat arriving back at Chicago the day following, this session was moved forward to Friday morning.

Move to Make Attendance General

The final business session was called to order by the chairman, Mr. Hall, with Mr. Back acting as secretary, it being necessary for Mr. Bolt to absent himself from the trip on Lake Michigan. Resolutions were adopted in which sympathy was extended to the family of Joseph C. Thompson in its bereavement.

In an extemporaneous speech, Frank Lewin, of the Mancha Storage-Battery Locomotive Co., called attention to the fact that while the membership of the organization was all that it should be in point of numbers and while the finances were in excellent shape, yet there was something missing that was of more vital importance than either of these two. By this Mr. Lewin meant that not enough members were attending the meetings. The absence of many mine managers and their assistants who are members could, he thought, be remedied if the higher officials of the coal companies could be induced to defray the convention expenses of these men. This could only be accomplished if the purposes and interests of the institute were more generally known.

Mr. Lewin thought that a committee composed of men who were traveling all over the state would form an excellent nucleus for the spreading of the propaganda for larger attendance. A committee composed of Mr. Lewin; E. G. Lewis, of the Chicago Sandoval Co.; Samuel Jenkins, of the Goodman Manufacturing Co.; Milo McQuown, general manager of the Egyptian Coal & Mining Co.; John Streble of the Egyptian Spring Creek Coal Co., and Philip Phaler, of the Superior Coal Co., was appointed to promote systematic boosting for the institute in accordance with the ideas of Mr. Lewin. Following the appointment of this committee the report of the Auditing Committee was heard.

Vocational Education Not Flourishing

The paper of the morning, entitled "The Value of Vocational Education to the Miner," was read by Thomas English, superintendent of the state mine-rescue station at Springfield, in the absence of the author, Thomas C. Wright, of Belleville, Ill. Mr. Wright's paper while short, had been carefully prepared and brought forth the most interesting discussion of any that had been read.

Thomas Back declared that out of a class registering eighty-four which he had volunteered to teach, only fifteen completed the course. Of the fifteen who had remained five had taken the state examination for mine manager and four had passed successfully. Mr. Back stated that the greatest difficulty in holding the attention of the class had been caused by the introduction of problems that apparently bore no direct relation to the work for which the men were trying to fit themselves. He said that while the class would be intensely interested in mathematical problems, there was an immediate reaction when problems of mining law and first-aid were brought up. Another factor that made vocational teaching difficult was the distractions which existed when the school was located in a large town. A dearth of textbooks had made the work doubly hard, although this had been overcome to some slight extent by the utilization of correspondence-school pamphlets.

Mr. Bagwill, who had considerable experience as a teacher in vocational training schools, had encountered the same trouble as Mr. Back. In one class that he had taught 130 men began the course but only thirty had completed it. Mr. Bagwill said there were two classes of men who attended the opening of a vocational school. One of these was composed of a type of men who realized what the knowledge received meant to them in the betterment of their positions, and what they would have to do to satisfactorily complete the course.

Thought Presence Guaranteed Certificate

The other class, Mr. Bagwill affirmed, was composed of men who did not have any intention of applying themselves to the tasks at hand and believed that merely their presence was sufficient to attain for them the cherished reward. Mr. Bagwill had held the attention of his classes by changing onto some other subject when the appearance of the men had indicated that their interest was lagging in the subject under treatment. Although this change sometimes meant the introduction of a subject quite foreign, yet he believed the scheme worth while, for interest had usually been maintained at fever heat.

Dean Stock declared that the public-school teacher must be enlisted if the work is to assume any magnitude and be productive of definite results. He stated that the short summer course that had been tried at the University of Illinois had worked out well, yet he did not believe that this was the place where the men should be taught. Men school teachers are needed, as the nature of the subjects taught was more often rudimentary and did not require college professors. He did not believe that women teachers could do the work successfully, and at present the men teachers could not be found by reason of the small salary paid them. If vocational teaching is to be made worth while, a living wage for the teachers would have to be provided first. In bringing the discussion to a close, Dean Stock made a motion that the executive committee of the institute when drawing up the program for the next meeting, which would be held at Springfield in November, should set aside a portion of the time for the further discussion of this topic. The motion was unanimously carried, after which the meeting adjourned.

In the afternoon the steamer docked at Benton Harbor and some of the members bathed in the lake near Silver Beach, at St. Joseph City, while others turned to the numerous entertainment facilities afforded at the park at that place. Supper was served at the House of David, in Benton, among the famous bewhiskered tribe of the Israelites. Following the supper, which was strictly vegetarian, the trip back to Chicago by steamer was made without incident.

How Shall the World's Biggest Trust Be Dissolved?*

Cessation of War Makes Necessary Lifting of the Monopoly Created for Its Successful Prosecution — It Is Futile to Seek Short Cuts to Relieve the Situation — Avoidance of Drastic Measures in Restoring Normal Conditions Is the Perplexing Problem

By Judge Milton C. Elliott
Washington, D. C.

UNDER normal conditions there are few laws which can be said to control private business. Going back to its origin, law, according to the text writers, is defined as a rule of conduct prescribed by the law-making power. All of us, I think, have an inherent objection to having our rules of conduct prescribed by anybody, whether married or single, and our ancestors had that very deeply ingrained in their makeup.

Therefore the laws governing rules of conduct are limited very definitely by our Constitution. Under normal conditions, practically the only laws, so far as the United States Government is concerned, which can be said to control private business, are those which relate to businesses like yours, which are necessarily engaged in interstate commerce. Those laws prohibit combinations in restraint of trade; they prohibit unfair practices—they regulate it to a limited extent.

The framers of the Constitution not only limited the subject matter that legislation might deal with but, as you all know, they created under the Constitution the system of checks and balances. They vested in one body the power of making the laws; in another the power to enforce them, and in the third body the power to interpret those laws, so they adopted every possible safeguard for business in normal times.

Centralization Necessary in War Time

The laws controlling or regulating private business in normal times are limited and few, but in times of war or times of national emergency it is consistent with our Government that the power should be centralized in the Government. No democracy could successfully prosecute a war if it had to get an act of Congress for every move. No democracy could successfully prosecute a war without making the resources of the country available and placing them in the hands of the Government.

So it was consistent and not in violation of our Constitution in time of war to centralize in the Government the power to take over and control the railroads; through other bodies to control the telegraph and telephone systems; through the Food Administration to control the national food supply, and through the Fuel Administration to control the distribution of coal, and through the War Industries Board to control other essentials necessary to prosecute the war.

As I say, that was entirely proper and consistent with the spirit of our Constitution, and that was what was done. The Constitution, however, provides among other safeguards that the fruit of every man's labor—his private property—shall be held safely and that it shall not be taken from him without due process of law.

Therefore it was necessary in taking over these resources to compensate those owners. To do this it was necessary for the Government to borrow several billions of dollars, and this made it necessary for the Government to control to a very great extent even the credit resources of the country, having to go to citizens for enormous sums of money. Therefore the Capital Issues Committee was created, with power to pass upon all issues of stocks and bonds to determine whether the proceeds were going to be used for war purposes or non-essential purposes.

Having then taken control of the resources and credit, the Government had to provide means of furnishing credits and money to essentials, so it created the War Finance Corporation to make loans to those essential industries who could not procure the money otherwise.

World's Greatest Monopoly Due to the War

As a consequence of this war it was necessary for the Government to create the largest monopoly ever created in the world. The biggest trust that was ever created in the world was created as a necessary instrument of the war. Now we stand at a period when the Government is going to dissolve that monopoly, and the situation is further complicated—the task would be great at any time—by the fact that during the period of the war we became a world center of trade and finance, and so the dissolving of that monopoly means the adoption of a great many new rules.

The problem that confronts the country today is one of serious consequence and one for which, I think, there is no short cut or panacea, despite the fact that we hear of these panaceas on all sides. The real problem, however, as it appears to me is this: We have changed, in order to meet this national emergency, from a democratic form of government to a bureaucratic form of government. It has been necessary to leave the orderly processes of normal times and to centralize in these government bureaus things that approach legislation and regulation, interpreting their own regulations, and we have to untangle and dissolve this great monopoly.

There are some who advocate repeal of all war measures and that we go back to normal, selling all the Government commodities so as to reduce the cost of living. Even those who advocate this—the producers—do not want the commodities sold in competition with goods which have been bought and sold at high prices. They want regulation. Even those who want to cancel and repeal all war measures immediately are not of one mind.

There is another group of extremists who want to perpetuate this government control, this bureaucratic

*Address delivered at the third annual convention of the American Wholesale Coal Association, Pittsburgh, Pa., June 1, 1920.

form of government, and they are working very subtly, I think, to accomplish their ends. Take, for instance, the railroad situation, which has been explained to you so clearly here. The most conservative advocate of the preservation of private property would never have undertaken to repeal war measures and turn the war measures back in the condition they were in at the end of the war. It would have meant receivership to 90 per cent.

It was necessary to have some form of legislation. Now, I am not an advocate of the Transportation Act of 1920. It has, I think, many faulty and unsound things in it, but it was necessary to cover this period of transition in some way. It was necessary, to provide for the relief of congestion, to find some means of financing the roads in that period. What happened? It guarantees the roads a period of standard return and provides that in an emergency such as has arisen recently the Interstate Commerce Commission place an emgargo on freight. Now the minute the railroads go to the Interstate Commerce Commission and ask for relief these fellows advocating Government control immediately begin to cry that the Government has made a failure, and private ownership is not going to succeed. What are the facts? There are 230,000 cars waiting to be moved.

Legislation Will Not Move Cars

In the last analysis those cars are not going to be moved by railroad Government legislation. They require labor and engines to move them. Their relief may be facilitated by the priority order, but legislative regulation is not going to straighten out this situation.

There is still another class that wants to see the Government destroyed entirely. I am not very familiar with the refinement of socialism, radicalism, or whatever it is. Of course, they don't want to regulate the rights of private pproperty, but in a certain aspect those who consciously or unconsciously are advocating a permanent paternalistic Government are more dangerous to this country than those outlaws who want to overthrow the Government.

The difficulty about it is that it is so hard to keep from playing into the hands of those who believe in Government control and ownership of railroads. As has been pointed out, that will be merely the entering wedge. Once they establish the principle of public ownership it is going to extend through all our industries. Every time those of us who believe in the old fundamental principles that our ancestors fought to establish go down to Washington and ask for the creation of another bureau or adjustment of our difficulties through some new board, in a certain sense we play into the hands of those who want to perpetuate this kind of government.

The problem is essentially one to be solved by the business men. I don't think it is going to be solved in a day. I am optimistic. I believe ultimately we are going to get back to those principles which are the foundation of this Government, but I don't think it is going to come in a day, and it isn't coming through any short-cut method. It is coming through the display of conservatism by American business men. It is coming from realization that, whatever business they are in, it has to be done from a purely national and not a purely local standpoint. The business man must see the other fellow's standpoint as well as his own.

Take for instance, the railroad situation. We know the railroads cannot be operated on the existing freight rate. We know the Government, without an increase of freight rate, could not operate and pay expenses. We know there is an average of two million dollars a day for ordinary expenses, and to keep the railroads going they need an increase in the freight rates, and they must have this relief in order to move the coal that you gentlemen are selling.

Therefore your problem is a railroad problem. The railroad problem is your problem. These functions have got to be worked out by a spirit of co-operation and a spirit of understanding on the part of the American business man.

One great danger, as it appears to me, in the future of this country is what we popularly call class control—one class working for one end, in utter disregard of the rights and privileges of another. We see it in every aspect. We see the movements quietly going on. We see this Constitution which our ancestors fought for, which was intended to represent the maximum of power, legislative and judicial, regulated by the popular plan of organized vote.

We see the Constitution tampered with. We have seen the power under Interstate Commerce rule extended beyond what it was in its inception, and it is very hard now to draw the line. The quasi-public corporations are beginning to include more and more corporations, and the movement is on, quietly working, to bring about a Government paternalism that will destroy all individual effort, all individual incentive, and substitute a bureaucratic for a democratic form of government.

Business Men Must Solve the Problems

I regret that I cannot offer any short cut, any panacea. My only thought is that the business man must think these problems out. The business man must use his influence in the proper way. A great association, nonpartisan, as this is, can do a great work, but when legislation is advocated don't wait until it has been passed and then cuss the legislator, but when it starts use your influence to give these gentlemen who have that big responsibility the information to enable them to act intelligently.

As my friend Mr. Cushing has referred to the man back home, I recall this story of the President when he was asked to speak at Stamford. He said he had lived there and he couldn't refuse. He told a story about Daniel Webster, who was asked to speak to a certain body. Dan said he was very busy; the legislative work took up all his time and he wouldn't be able to go. The man who asked him started in and used every argument he could think of, but it was no use. Finally he said, "Well, all right, but I don't know what the folks back home will think."

Dan said, "Folks back home? Damn it, why didn't you mention that in the first place? I will go with you this afternoon."

The real work in a legislative body is done back home. They can't be experts on fifty thousand propositions, and I wonder sometimes that the laws are as good as they are, but the work has got to be done in the beginning. This movement has to be stopped in the beginning, and the way to get in your work and exercise your influence is to meet your home Congressman as Irishman to Irishman. The business men must get to work. We must do our part, and if we are going to preserve the independence of private business it has to come through the concerted action and continuous working action of the business men of this country.

Discussion by Readers

Edited by
James T. Beard

Are the Miners Un-American?

FROM the start, it has always seemed that *Coal Age* has been the friend of the miner, judging by the fair and just manner it has dealt with labor problems whenever they have arisen. However, in dealing with the labor situation, not long since, an article appeared under the heading "Miners' Demands Un-American," *Coal Age*, Feb. 5, p. 275. The article is a report of the statement of Attorney Rose, made before the commission appointed by the President to investigate the bituminous coal industry.

Recent events seem to have proved that the miners were, in a measure, right in their demand for a living wage and a shorter working day. It can be truthfully said, as has already been stated, that there are today 150,000 more miners than are required to produce the coal needed in this country. In other words, there is a large surplus of labor in the mines. The question of production of coal is not one of shortage of labor, but rather one of car supply and steady work in the mines. These are items that lie beyond the control of the miner.

Let it be considered that, in all of our large coal mines, the miner is compelled to stay underground practically from nine to eleven hours, by reason of the worn-out agreement of "Eight hours work, at the working face." Set this fact side by side with the adoption of a shorter workday, in war-torn Europe, and then judge the miners' cause and say whether it is un-American for him to ask for relief from a custom that is dragging out his life and energy.

What England Has Done for Her Miners

Even England has given its miners a seven-hour day, "from bank to bank," with a six-hour day commencing June, 1921. Are American ideals to lag behind those of other countries? Is it American to make a machine of a man? Or, is it un-American to ask that this custom be changed so as to be more humane?

The late war proved the loyalty of the American coal miners and showed, beyond a doubt, the truth of their claims regarding production. It is unfortunate that the miners have in their ranks thousands—yes, hundreds of thousands—of foreigners whose sympathies were not in favor of our war program. But the loyal minority of American miners was able to keep this mass of their fellow workers in line. Washington knows this; the coal operators know it and the miners know it. Indeed, no one questioned the loyalty of our coal miners during the war. If the miner was not un-American then why is he "un-American" today, when asking a living wage?

I have spoken of recent events proving that the miners were right in asking this consideration. No one will deny that the price of necessities has continued to soar higher and higher, while a privileged few are still permitted to manipulate consumption and production in the personal interest of the richer classes, while the many toilers throughout the land are barely able to maintain a decent existence.

Note for example the "overall craze." It was started to enrich a few at the expense of the worker. Who has a right to wear overalls more than the workman? Yet, this craze has raised the price of overalls three and four times, while those responsible for the craze have thrown them aside as not needed, and the worker is not able to buy them with his limited means.

Does the Treatment of Miners in this Country Uphold American Standards?

It must be admitted, as facts prove, that those who live from the profits of labor can never reason from the same standpoint as the laborer. Speaking of the large class of foreign miners now employed in the mines in this country, it seemed to promise to be a paying proposition, from the viewpoint of the operator. The foreigner, however, having lower ideals in regard to living and working conditions, forms a class of labor that is able to accept a lower wage; and large numbers of American miners have been forced into other industries in order to find support for their families. Let me ask, Is this condition American? Does it uphold American standards?

Again, as a closing thought, allow me to ask, Is there anyone who is familiar with the operation of a coal mine—a fair-minded operator, superintendent or other mine official—who can honestly say that the award of the said commission was not a serious blunder and an injustice to thousands of skilled daymen, who were refused the 27 per cent increase, while the miners' pay was increased 24c. a ton, or practically 34 per cent of their former wage? Yet, the majority of the commission refused to concede to the daymen the increase asked, which would equalize conditions and be a just concession to a large and faithful class of workers. Let us hope that there may be some way yet found to alter this decision, in justice to all.

Staunton, Ill. W. M. Chambers.

Give the Ambitious Worker Every Chance

REFERRING to the story told some time since in *Coal Age*, Feb. 12, p. 327, by a worker who made application to his superintendent to be transferred from a substation of which he had charge to the work of bonding rails in the mine and was refused with abusive language, all will agree that there was no excuse for the superintendent using violent language or showing any temper when confronted with such a request.

What has already been written regarding this case proves the fact that an ambitious worker who merits promotion should be helped rather than kept back. It has also been shown that a superintendent's side of the question may and often does present a complex problem.

On that account we should not be hasty in condemning an official's judgment in refusing such a request on the part of an employee.

There may be reasons known only to the superintendent why the change should not be made. If the substation engineer was a good man and capable in that line of work, which he doubtless was since the electrician wanted him in the mine, he had one of the essential qualifications for promotion. In such a case, it is my opinion that a superintendent would not be justified in holding the man in a position lower than what he was qualified to fill, any longer than a reasonable time to get another man for the place.

The vision of an ambitious man penetrates beyond the walls of a substation. So far as hard work is concerned it was a "soft berth." Too many men are not interested beyond getting something "soft," requiring little headwork or bodily exertion. If a man is ambitious enough to seek work demanding greater physical and mental effort on his part he deserves recognition and is no doubt a valuable man.

When a man's ability promises well for himself and his employers, it is not fair to hold him back. Many famous men in all walks of life started at the bottom. At that time, neither they nor anybody else dreamed that they would ever climb to the top. Generally, when a man wants a chance at something better, it is a favorable symptom and indicates that he is probably capable of *doing* something better.

A Superintendent's Judgment of a Man Will Seldom Be Found To Err

There are times, of course, when one will be deceived in promoting a man to a higher position or class of work than that in which he is at present engaged. However, if one is a close observer and studies the man's past record his judgment will seldom err. If confirmation is needed, it is not always a sign of weakness to consult his foreman or his fellow-workers, in order to get a better idea of his personal qualities and capability. In any case, the worker can be given a trial, being made to understand that his old job will be waiting for him if he fails to make good in his new place, which is seldom the case.

In this instance, had the superintendent attempted to justify his action, by stating that he was not able to get another man for the place, he would be excusable for delaying to give the man a chance to do better. However, not knowing all the facts in the case, we can assume that there might have been something wrong, either in regard to the conditions at the substation or in the superintendent's method of training his men, which would account for the fact that no one was available to take this man's place. Usually, there are several applicants for such a place and little difficulty is experienced in finding the right man, with a proper system of training men for the work.

But look, for a moment, at the other side. The man's demeanor and his past record may make him responsible for the treatment he received, except only the abusive language used. This man may have been a close friend of the electrician, who may have encouraged him to show his independence and not be afraid to ask for what he wanted. Such contriving would naturally exasperate the superintendent and make him firm in his determination to assert his own authority, in spite of the man's fitness and capability for other work.

These different phases of the situation must all be considered in order to enable one to arrive at a just and right conclusion. The letter, which was written by the worker himself, evidently tells but one side of the story and, to judge correctly, one must know the real conditions as they exist. In saying this, I am not trying to condone or defend either the superintendent or the worker. I desire only to emphasize the importance of recognizing the merit of every ambitious worker and giving such all the chances that lie in their path, leaving it with them to make good. W. H. Noone.

Thomas, W. Va.

Diagrammatic Illustration of Labor Turnover

After completing what has seemed to me to be the only correct method of analyzing the annual payroll of a mine, as explained in my article entitled "Concrete Example of Labor Turnover," *Coal Age*, June 10, p. 1209, the thought was suggested that a diagram would show more clearly the difference between this method and that commonly used to estimate the average monthly earnings of the workers in a particular plant or industry.

Following that suggestion I prepared the diagram here shown. The curve marked "specific rates" shows

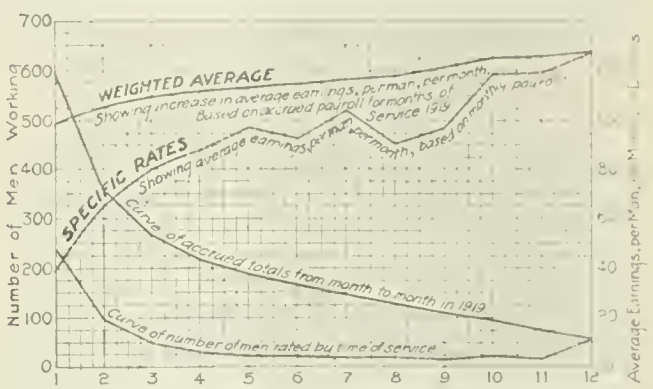


DIAGRAM OF AVERAGE MONTHLY EARNINGS PER MAN

the results obtained by a method commonly employed in averaging the monthly earnings per man. In this method, the total earnings of the men working one, two, three, etc. months is divided by the number of men who worked the corresponding length of time.

In strong contrast with this curve of estimated average earnings is the curve of "weighted average" just above the first. In this method of finding the average monthly earnings per man, the total accrued payroll for one, two, three, etc., months is divided by the number of men at work in each separate period.

The two lower curves show, respectively, the number of men who worked one month (239); two months (96); three months (48). . . . twelve months (56); and the accrued number of men on the payroll for one month (598); two months (359); three months (263). . . . twelve months (56).

As stated in my previous article and as is clearly shown by the curve of weighted averages, the true average monthly earnings of men increases directly with length of service. This is a factor worthy of careful consideration by workers who are accustomed to drift from one place to another and never stay long at one mine, and is of equal interest to employers.

Philadelphia, Pa. W. R. R.

Education Needed to Correct Abuse of Privileges by Miners

REFERRING to the article summarizing the results of the survey of housing conditions in the bituminous coal fields by the Bureau of Labor, *Coal Age*, May 20, p. 1057, one cannot but feel that the miners themselves are largely to blame for the unsanitary conditions reported as prevailing in western Pennsylvania, West Virginia, Ohio, Indiana, Kentucky, Tennessee, Alabama, Colorado and Wyoming.

In the anthracite field, experience has shown that miners, generally, greatly abuse the municipal and township laws. While this can be attributed partly to their ignorance regarding the laws, it is mostly the result of their habits and previous training. The large majority of miners who dominate the coal regions are of foreign birth and do not appreciate the moral influences thrown around them through the efforts of the companies that employ them.

The tenants of company houses, for the most part, appear to feel that they do the company a favor by renting their property and should receive more consideration than the other fellow who is not a company tenant. They do not realize that the low rent asked by the company, generally less than $8.00 a month, is not sufficient to cover the taxes and upkeep of the property, let alone a small interest on the investment.

Comfortable Home Surroundings Needed But Not Always Appreciated.

In my opinion, every miner's dwelling should be comfortable and provided with ordinary conveniences. But, observation shows that a four- or five-room house is commonly made to hold several boarders, while the family live in two rooms or the basement. In other instances, two families will occupy one of these houses.

Recently, while visiting a small mining town in the Wyoming valley where the mine owners had built 38 houses for their employees, the superintendent of the colliery narrated an incident that showed the abuses committed by miners in return for efforts made in their behalf. He said that, some two months previous to my visit, a flume had been built in close proximity to the little village of houses. The company had constructed this flume at a considerable expense, for the sole purpose of conducting the overflow water of a creek to prevent its flooding the cellars of the houses during the spring freshets, which had always been an annoyance to the tenants. Now, two months later, there only remained the postholes to show what had been done. Posts and boards had been carried off for firewood or to build chicken coops.

Another instance the superintendent related concerned a committee of miners, who came to him asking the privilege of picking up the butt ends of props and ties that were drawn out of the mine and unloaded on the rockdump. Permission was given them to do this, provided nothing over a foot in length was taken and they kept away from the tipple.

A week had hardly passed when a dozen 10 x 12 in. pine timbers, 16 ft. long, which had been shaped by the carpenter for installing at one of the landings in the shaft, had disappeared and could not be found, having probably been sawed up and used for firewood or for a foundation for a pig pen. These are only a few instances that show where miners fail to do their share in maintaining good feeling between their employers and themselves.

During the period of the war our government proved what they could do in a short time in creating sanitary conditions in the camps they established. It would seem that it is now high time for the government to take some action to improve the sanitary conditions in mining camps. The question of educating these foreigners is a difficult one and all needed assistance should be given mining companies in the efforts they are making along this line. Schools and churches are needed, besides teachers and community workers. Much could be done if Congress would wake up to the necessity and realize their responsibilities in this regard.

Privileges Afforded in the Anthracite Field Have Proved Worth While

The majority of the mines in the anthracite coal regions are located near cities, besides being provided with excellent schools for the children and night schools for the men. The same conditions are not to be found in the numerous isolated mining towns and camps in the bituminous fields. What is the result?

Advantage has been taken of the privileges afforded in the anthracite regions and many sons of coal miners, through the education afforded, have risen to positions of trust and influence. Many of them are among the most brilliant attorneys, judges and doctors in this region. The present district and assistant district attorneys of the Luzerne County Bar are examples of what education will do for the miner and his children. There are many similar examples that could be mentioned if space permitted.

The article mentioned referred to the dull uniformity and unattractiveness of the houses, the absence of trees, lack of sidewalks and the bad condition of the streets, in the usual mining camp. The same would be true in this region were it not for the untiring efforts of many anthracite operators, who have awakened a spirit of pride among their employees and induced them to beautify their properties by planting flowers and trees and keeping up their lawns.

Contests for Prizes Promote a Worthy Ambition Among the Workers

Annual contests have been started and prizes offered for the best gardens and dooryards. It is my pleasure to say that many of these small properties compare favorably with the best residences of large cities. For the education of communities, free lectures are given during the winter season, on subjects relating to the mining of coal, prevention of accidents and sanitary living. These, together with the publication of bulletins of information, the maintenance of recreation grounds, places of amusement and other attractions, have succeeded in breaking the monotonous life of the miner and improving conditions generally.

Many of the miners have taken advantage of the privilege of depositing their savings in the banking systems established by the companies and which pay the same interest as other banks. Many miners are purchasing their homes, for which a small percentage is deducted from the monthly payroll. It goes without saying that this is the spirit that will bring efficiency into any mining camp or operation and develop good citizenship, which is an important consideration.

Plains, Pa. RICHARD BOWEN.

Inquiries of General Interest

Answered by

James T. Beard

Counter-Balancing the Load in a Single-Compartment Shaft

READING the inquiries and solutions given to problems, in *Coal Age*, leads me to submit one that has been a growing source of trouble in the operation of our small mine. The conditions are as follows:

We are operating a wagon mine and hoisting the coal by a horse-whim, in a shaft having a single cage. There is room enough in the shaft for a counterweight, and we have been thinking, for some time, of putting in such a weight to balance a portion of the load, but have not been able to decide what weight is required that will best answer the purpose.

The approximate load we are hoisting is as follows: cage 900 lb.; car 800 lb.; coal 1,800 lb.; making the total load on the rope 3,500 lb. With our present arrangement, this load is too great for the strength of the horse, and much delay and trouble results from this cause. Wishing to avoid the expense of getting an engine for hoisting this coal, it has occurred to us that the proper thing to do is to balance the load with a counterweight.

Kindly state what this weight should be to obtain the best results. Is there any necessity of altering the diameter of the winding drum; or is there any other arrangement that would serve the purpose and make the work easier on the horse? Would there be any advantage in using gears as some one has suggested?

Clinton, Ind. BONDIS COAL CO.

While hoisting coal in a single-compartment shaft, there is always a great saving in power by counterbalancing the load. Otherwise, the load hoisted is a dead weight, and the descent of the cage and car into the shaft, after the coal has been dumped at the surface, represents an actual loss of available power, which is taken up in the friction of the brake required to control the descent of the load, instead of its being utilized to lighten the work of hoisting.

While installing gears, as suggested, would relieve the horse of much of the load, the time required for hoisting would be lengthened in the same proportion; and the work performed would be increased by an amount equal to the friction of the gears. There would be no advantage in such an arrangement. Also, to decrease the diameter of the drum would relieve the horse of a portion of the load; but, at the same time, lengthen the time of hoisting and there would be no saving in power.

The proper means to adopt, therefore, in order to avoid the present loss in power, is to counterbalance the load hoisted. In order to obtain the necessary weight of such a counter-balance, the aim must be to make the work performed in hoisting the load out of the shaft, equal to that performed when hoisting the counterbalance again to the surface. For example, when hoisting coal, the net weight hoisted, or the unbalanced load, is 3,500 lb. less the weight of the counter-balance. Calling the latter x, the net weight hoisted is $3,500 - x$.

Again, when lowering the empty car and cage and hoisting the counterbalance, the net load hoisted is $x - (800 + 900) = x - 1,700$. Therefore, to find the value of x, we equate the net load when hoisting coal, with the net load when hoisting the counter-balance;

$$3,500 - x = x - 1,700$$
$$2x = 3,500 + 1,700 = 5,200$$
$$x = 2,600 \text{ lb.}$$

Hence, to equalize the load when hoisting coal and when lowering the cage and empty car, the weight of the counter-balance should be 2,600 lb. It is not necessary to consider the weight of the rope hanging in the shaft, as this is transferred from one side of the shaft to the other during each hoist. In the first half of the hoist the load is increased by the weight of the rope; but, in the second half of the hoist, the load is decreased an equal amount, which makes the effect of this weight, as far as the work performed is concerned, of no importance.

Pressure In Atmospheres

KINDLY explain, in *Coal Age*, what is meant by the expression "an atmosphere." What is the pressure equivalent to 3,000 atmospheres?

Taylor, Pa. MINER.

The term "atmosphere," as commonly used to express the pressure of compressed air or gases, is often taken to mean a pressure of 14.7 lb. per sq.in., which is the atmospheric pressure at sea level, under normal conditions. Roughly, atmospheric pressure at sea level is estimated at 15 lb. per sq.in. On that basis, a pressure of two atmospheres would be 30 lb.; three atmospheres, 45 lb.; five atmospheres, 75 lb. per sq.in., etc.

More correctly, the term "atmosphere" refers to the number of compressions to which a volume of air or gas is compressed. Owing to the decrease of atmospheric pressure as we ascend above sea level it is evident that an atmosphere at sea level will indicate a much greater pressure than an atmosphere at an elevation of 10,000 ft. above sea level. At this altitude, the normal atmospheric pressure is 10.107 lb. per sq.in., or practically two-thirds of what it is at sea level.

Therefore, when five volumes of air or gas are compressed into one volume, at an elevation of 10,000 ft. above sea level, the resulting pressure would be 5×10.107 equals 50.535 lb. per sq.in. In other words, five atmospheres, at this altitude, would mean a pressure of practically 50 lb. per sq.in., instead of 75 lb. per sq. in., the equivalent of five atmospheres at sea level.

The pressure corresponding to 3,000 atmospheres at Taylor, Pa., where the elevation is practically 700 ft. above sea level and the normal atmospheric pressure 14.3 lb. per sq.in., is $3,000 \times 14.3 \div 2,000 =$ say 21½ tons per square inch.

Examination Questions

Answered by

James T. Beard

Miscellaneous Questions

(Answered by Request.)

Ques.—The quantity of air passing, at the bottom of a shaft, is 140,000 cu.ft. per minute and is divided into three splits as follows:

Split A, 6 x 9 ft., 9,000 ft. long; split B, 6 x 9 ft., 12,000 ft. long; split C, 6 x 8 ft., 6,500 ft. long. Find the natural division of this current of air between the three splits.

Ans.—The sectional area, perimeter and length of the airway, in each split, are as follows:

A, Area, 54 sq.ft.; perimeter 30 ft.; length 9,000 ft.;
B, Area, 54 sq.ft.; perimeter, 30 ft.; length 12,000 ft.;
C, Area, 48 sq.ft.; perimeter, 28 ft.; length 6,500 ft.

In split calculations, the operation is much shortened by taking the lowest relative values of the areas, perimeters and lengths. For example, the relative areas of these three airways are 9, 9, 8; the relative perimeters 15, 15, 14; and the relative lengths 18, 24, 13.

Therefore, finding the relative potential factor for each split we have

A, $\sqrt{\frac{a}{lo}} = 9\sqrt{\frac{9}{18 \times 15}} = \frac{9}{\sqrt{30}} = 1.643$

B, $= 9\sqrt{\frac{9}{24 \times 15}} = \frac{9}{\sqrt{40}} = 1.423$

C, $= 8\sqrt{\frac{8}{13 \times 14}} = \frac{16}{\sqrt{91}} = 1.677$

Total . . . 4.743

Then, since the quantity of air passing in each split is proportional to the potential for that split, we have

A, $\frac{1.643}{4.743} \times 140{,}000 = 48{,}500$ *cu.ft. per min.*

B, $\frac{1.423}{4.743} \times 140{,}000 = 42{,}000$ *cu.ft. per min.*

C, $\frac{1.677}{4.743} \times 140{,}000 = 49{,}500$ *cu.ft. per min.*

Total 140,000 *cu.ft. per min.*

Ques.—What should be the ratio of the diameter of the air cylinder to that of the steam cylinder, in order to compress air to 100 lb. per square inch, when the steam pressure of the boiler plant is 75 lb. per square inch, assuming the efficiency of the compressor at 80 per cent?

Ans.—The steam pressure at the boiler plant being 75 lb. per square inch, allowance must be made for the drop in pressure in transmission to the steam cylinder of the compressor. No data being given, we will assume there is a drop of 5 lb. between the boiler plant and the compressor, making the effective steam pressure 70 lb. per square inch. Again, taking the efficiency of the compressor at 80 per cent, to compress air to 100 lb. per square inch, will require an estimated pressure of $100 \div 0.80 = 125$ lb. per square inch. In other words, the estimated ratio of pressure, steam to air, is 70:125; which is the inverse ratio of the area. Therefore, the area ratio, steam to air, is $125:70 = 1.7857$. But the diameter ratio is equal to the square root of the area ratio, which makes the diameter ratio, steam to air, $\sqrt{1.7857} = 1.33$, showing that the diameter of the steam cylinder in this case, should be one-third larger than that of the air cylinder. For example, a 9-in. air cylinder would require a 12-in. steam cylinder, on the assumed basis.

Ques.—What gain is effected by using high-pressure steam expansively, rather than low-pressure steam at full stroke?

Ans.—When steam is used expansively the valve closes the steam port before the piston reaches the end of its stroke. As a consequence, steam is admitted to the cylinder during a fraction of the stroke only, and a less quantity of steam is required. During the remainder of the stroke, after the valve has closed the port, the steam in the cylinder expands and not only is the work of this expansion saved, but the engine exhausts at a lower pressure than when steam is admitted during the full stroke of the piston. There is also less loss by condensation and greater efficiency results in the use of high-pressure steam.

Ques.—How much work is done in raising 300 tons of coal up an incline 2,700 ft. long and rising 1 ft. in 3, adding 40 per cent to the load, for friction?

Ans.—Adding 40 per cent gives a total estimated load, including friction, of $300 \times 1.40 = 420$ tons. Then, taking the rise as one foot vertical in three feet of inclined measurement, gives a total rise of $\frac{1}{3} \times 2{,}700 = 900$ ft. The total work performed in this case is, therefore, $420 \times 900 = 378{,}000$ ft.-lb.

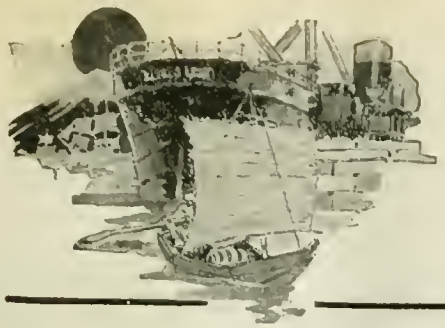
Ques.—Give the breaking strain and safe working load of a plow-steel, hoisting rope seven-eighths of an inch in diameter. State the factor of safety used.

Ans.—The breaking strain of a one-inch, cast-steel, 6-strand, 19-wire, hoisting rope is 34 tons. Since the strength of wire rope is proportional to the square of the diameter of the rope, the breaking strain of a $\frac{7}{8}$-in. hoisting rope is $34(\frac{7}{8})^2 = 26$ tons.

A suitable factor of safety in hoisting practice will depend on the depth and character of the hoist. Under ordinary conditions, when the depth of the shaft does not exceed 100 yards, a factor of safety of five will be sufficient. This would make the safe-working load, in this case, $\frac{1}{5} \times 26 =$ say 5 tons.

Ques.—State an air condition that will cause distress while, at the same time, the air is chemically pure.

Ans.—When the oxygen content of the air has been depleted and is less than normal, distress will be caused in breathing; and yet the air may be said to be chemically pure, as being free from noxious gases.



Foreign Markets and Export News

Coal Imports of Italy in 1919

According to approximate statistics the total arrivals of coal for all Italy, Consul General David F. Wilber, Genoa reports, amounted in 1919 to 7,120,669 tons. The following figures give the total imports of coal into Italy for each year from 1910 to 1919:

	Tons
1910	8,428,115
1911	9,595,832
1912	10,057,228
1913	10,873,608
1914	9,722,813
1915	8,348,176
1916	8,065,041
1917	5,283,723
1918	6,718,871
1919	7,120,659

The imports for 1918 and 1919, although showing an increase over those of 1917, were far below the minimum amount necessary for Italian industry as shown by the pre-war figures.

The preceding table shows the total imports of coal for all Italy for 1919 by months and countries of origin.

The decrease in the imports of American coal in December was due to the coal strike and consequent temporary prohibition of export.

According to the lists of the Commissariat General for Fuel, the prices for coal during 1919 were, per ton, as follows, in lire:

Type	Lire per Ton						
	Jan	May	July	Sept	Oct	Nov 5	Nov 15
English	200	175	240	210	180	355	395
French	180	160	210	240	250	290	350
American		210	270	330	340	380	420
Belgian			240	270	280	355	395
German				270	289	355	395

These prices, however, have been almost always exceeded in the sales made by private importers and dealers; especially for British coal.

Months	England Tons	United States Tons	France Tons	Belgium Tons	Totals Tons
January	389,419		32,772		422,191
February	495,568	2,127	9,294		503,989
March	393,810	9,638	9,990		413,438
April	400,359	26,184	a39,592		466,135
May	510,582	37,258	a71,898	18,817	635,555
June	527,853	63,774	a12,910	17,957	622,524
July	454,386	115,291	a4,460	12,573	586,710
August	335,676	250,428	a21,951	21,526	629,581
September	382,119	346,195	a18,623	20,117	747,054
October	266,280	510,099		6,830	783,209
November	448,530	329,359		13,568	791,457
December	491,721	18,451		5,644	515,816
Totals	5,076,303	1,705,804	221,520	117,032	7,120,659

a In these figures are included the shipments of coal from the Sarre (via Domodossola) and up to the month of August the coal imported by rail.

Mexico's Annual Coal Output Amounts to 900,000 Tons

Coahuila is the only state in Mexico which produces coal. Normal production is about 900,000 tons a year, but at present only about half that quantity is obtained and none is exported. The shortage is supplied from the United States. Coal is not needed for heating purposes and charcoal is used for cooking.

Imports of Coal at Rio Janeiro for First Quarter of 1920

Figures for arrival of coal at Rio de Janeiro during the months of January, February, and March, 1920, according to a report from the U. S. Bureau of Foreign and Domestic Commerce, are as follows:

Month	American Coal, Kilos	British Coal, Kilos	Total Kilos
January		34,102,319	34,103,319
February	38,386,151	32,723,969	71,110,120
March	26,928,543	14,424,018	41,352,561
Totals	65,314,694	81,250,306	146,565,000

During the same period in 1919, 128,787,527 kilos of American coal were received and 27,448,461 kilos of British coal, making a total of 156,235,988 kilos for the three months.

Output and Shipments of Australian Coal

A dispatch from Newcastle, Australia, says that during the month of April the total amount of coal mined was 166,000 tons, of which 64,300 tons were shipped overseas. This last amount does not include bunkers. There were 52,600 tons of coal supplied to overseas vessels for bunkers, the remaining number of tons being consumed in Australia. Freight rates to the west coast during April were 90s. per Norwegian vessel and 87s. 6d. per American vessel

February Belgian Coal Output

According to a report by Consul General Henry H. Morgan, Brussels, Belgium's net production of coal during the month of February, the stocks up to March 1, 1920, as well as the average personnel employed in the pits and at the surface for each of the coal-mining districts and for the country in general, were as shown in the first table below.

The production diminished in February, 1920, compared with that of January, 1920, in five districts, and increased only in the Province of Namur. On the whole the decrease was 9.9 per cent of the January production, which is accounted for by the fact that in January there were 27 workdays and only 24 in February. Besides, there was a strike in the Borinage region and also in a part of the Centre, which affected production. Stocks diminished 93,517 tons during January.

To permit a comparison with the normal production the second table is given, showing the elements relative to the year 1913, which was not affected by any particular influence.

COAL PRODUCED IN BELGIUM, FEBRUARY, 1920

Districts	Net production for February Metric Tons	Stocks at end of February Metric Tons	Average number of workers employed		
			Pits	Surface	Total
Hainaut:					
Couchant de Mons	311,690	59,410	26,765	10,200	36,965
Centre	290,120	38,740	18,970	7,738	26,708
Charleroi	602,530	229,390	33,432	17,330	50,762
Namur	49,860	17,470	2,825	1,245	4,070
Liege	412,750	50,980	27,866	10,948	38,814
Limbourg	16,800	250	1,052	745	1,797
Totals	1,683,750	398,240	110,910	48,206	159,116

COAL PRODUCED IN BELGIUM IN 1913 AND 1920

Provinces	Average monthly production in 1913	Net production for February 1920	Percentage in February 1920 compared with 1913
	Tons	Tons	Per Cent
Hainaut:			
Couchant de Mons	364,200	311,960	85 6
Centre	303,830	290,120	95 5
Charleroi	679,000	602,530	88 7
Namur	65,420	49,860	76 2
Liege	498,260	412,750	82 8
Limbourg		16,800	
Totals	1,910,710	1,683,750	88 1

Coal Exported from the Port of New York During April

Shipments Are Larger Than for the Same Month of Three Preceding Years—Average Value of Anthracite Was $10.71 Per Ton and That of Bituminous $10.07

Export shipment of coal and coke through the Port of New York during April of this year totalled 13,305 tons, with a valuation of $151,425. In April of 1917 the exports totalled 9,835 tons valued at $72,987; in 1918, 10,825 tons valued at $87,847, and last year there were 3,164 tons sent to foreign lands through the Port of New York which were valued at $27,407.

The 9,637 tons of anthracite shipped from this port in April of this year were valued at $103,298, an average cost of more than $10.71 a ton, as compared with 1,695 tons shipped in the corresponding month of last year, valued at $13,368, an average cost per ton of $7.88 plus.

The average cost per ton of the 1,385 tons of bituminous sent abroad during last April was a trifle less than $10.07 as compared with a little more than $6.32 per ton in April of last year.

The 2,283 tons of coke shipped in April last cost $34,167, an average of $14.96 per ton, as compared with an average cost of more than $16.47 per ton for the 468 tons exported in April of last year.

In 1917 the average price for anthracite sent abroad was $6.36; for bituminous, $10.37 and for coke $13.65. The average cost in 1918 was anthracite $7; bituminous $6.91 and coke, $26.47.

Shipments to the various countries, with the valuation, follow:—

	Anthracite				Bituminous				Coke			
	1919		1920		1920		1920		1919		1920	
	Tons	Value	Tons	Value	Tons	Value	Tons	Value	Tons	Value	Tons	Value
Azores							1,372	$13,720				
Barbados			25	552								
Canada	1,261	$9,954	2,904	$26,197								
Colombia					15	$260			18	$515		
Costa Rica									8	192		
Cuba			2,177	34,073							49	$1,147
Ecuador											23	655
Egypt			1,000	7,000								
France									395	5,600	2,174	32,000
French W. I			2,852	28,520					8	206	3	90
Italy			15	200								
Mexico											32	223
Newfoundland	404	3,234	100	1,250								
O. B. W. I	30	180	25	475								
Peru									33	1,043		
Port Africa					316	2,370						
Salvador									4	96	2	52
San Domingo			487	4,261	670	3,698	10	200				
Uruguay			50	740								
Venezuela			2	25			3	40	2	59		
Totals	1,695	$13,368	9,637	$103,298	1,001	$6,328	1,385	$13,960	468	$7,711	2,283	$34,167

British to Export 80,000 Tons of Coal Monthly to South America

Replying to a question in the House of Commons, W. C. Bridgeman, Parliamentary Secretary of the Board of Trade, said it was not proposed to prohibit the export of coal from the British Isles to South America. The quantity expected to be available for export to South America was approximately 80,000 tons monthly, and directions had been given that that amount might be released from the South Wales district.

Belgian Coal Production Nears Pre-War Volume

Belgian coal production during the month of January reached 97.8 per cent of that month's output in 1913, according to figures of the Mining Administration. This is the percentage for the total production of the kingdom. As to different districts, the percentage in January for the district of Mons was 118 per cent, compared with 1913; that of the Centre district 101.8 per cent, Charleroi 93.8 per cent, Liege 85.3 per cent and Namur 75.2 per cent. The total production in January, 1920, was 1,869,635 metric tons, or 321,000 tons more than in December, 1919, which month, however, was seriously affected by the strike in Hainaut.

Output of Roumanian Coal Mines Is Inadequate

Roumanian coal mines, according to compilations by the Near East division of the U. S. Bureau of Foreign and Domestic Commerce, are not producing sufficient coal to meet the requirements of the railways. The decreasing output is reported to be caused chiefly by lack of labor and mining tools, together with the destruction caused by the Germans who mined the coal without consolidating the mine shafts. It has been suggested, says the Near East, that experienced miners be brought from Germany to overcome this condition, as the local workmen are not professional miners. The railway management has been requested to furnish wagons for the transport of coal dust in order to correct the present congestion at the pit-head. It is said that the monthly production will be raised from 14,000 tons to 23,000 tons.

Swiss Fuel Imports Still Lag

A report on the foreign trade of Switzerland for 1919 by Trade Commissioner H. Lawrence Groves, Zurich, gives imports of coal as 1,258,176 metric tons, compared with 1,158,508 metric tons in 1918 and 1,969,454 metric tons in 1913. Imports of coke amounted to 191,415 metric tons in 1919, 673,853 metric tons in 1918 and 439,495 metric tons in 1913; briquets of all kinds, 281,295 metric tons in 1919, 288,778 metric tons in 1918 and 968,530 metric tons in 1913.

Coal Imports of Austrian Republic

According to data compiled by the research division of the U. S. Bureau of Foreign and Domestic Commerce imports by the Republic of Austria for the eight months ending October, 1919, included the following (in metric tons): Coal, 1,037,270; brown coal, 500,602; coke, 107,566; briquets, 10,621.

Coal Being Discharged Quickly at Italian Ports

Statistics supplied by the Ministry of Transportation in Rome to the Italian Government Commission in New York, gives an idea of the excellent situation prevailing at Italian ports, as can be seen from the quick discharge of coal in different ports during the month of May, 1920, by steamers controlled by the Italian Government.

DAILY AVERAGE RATE OF DISCHARGE OF COAL AT ITALIAN PORTS

(In Metric Tons)

Leghorn	1,127	Savona	1,005
Naples	1,066	Brindisi	970
Civitavecchia	1,062	Genoa	886
Palermo	1,060	Ancona	845
Torre Annunziata	1,032	Venice	784

For all the above ports the daily average discharge was 950 metric tons.

Coal Production in South Africa During March, 1920*

(NET TONS)

Province	No. of Collieries Producing	Mined, Tons	Waste Sorted, Tons	Percentage of Waste Sorted to Tons Mined	Total Coal Sold, Tons	Total Value Realized at Pit Mouth	Value per Ton at Pit Mouth s.	d
Transvaal	35	703,201	73,306	10 42	604,423	£170,737	5	7 79
Springs Brakpan Area	5	61,187	9,875	16 14	42,820	113,163	5	5 99
Middleburg Area	19	545,449	55,215	10 12	473,930	36,228	5	9 01
Other Areas	11	96,565	8,216	8 51	82,673	21,296	5	1 82
Cape	5	777	83	10 68	695	561	16	1 73
Orange Free State	4	87,252	2,923	3 35	79,286	22,737	5	8 83
Natal	27	390,861	21,459	18 28	306,506	180,971	11	9 70
Union of South Africa	71	1,182,091	147,771		990,960	375,006		

*Yearly production 1910-1919 inclusive and for January and February, 1920, was printed in *Coal Age* May 27, 1920.

Coal Operator Insures Lives of Underground Workers

AT its own expense, G. B. Markle Co. has insured until further notice the life of every underground coal mine worker in its employ, including underground foremen. This insurance, which is effective June 1, 1920, does not take the place of compensation benefits, which will be continued as prescribed by the Pennsylvania State law. This insurance covers death from accident in the mines or away from the mines, and also death from sickness or disease. It is also payable during the lifetime of the insured in regular installments in case he becomes permanently and totally disabled by accident or disease.

The amount of the insurance increases yearly according to the following schedule of continuous employment: In the first year, $500; second year, $600; third year, $700; fourth year, $800; fifth year, $900; sixth year, $1,000.

Celebrate Edward Caldwell's Thirty Years in Technical Publishing

ON TUESDAY evening, June 15, the business associates of Edward Caldwell, treasurer of the McGraw-Hill Co., publisher of *Coal Age*, and the McGraw-Hill Book Co., tendered him a dinner at the Engineers' Club to commemorate his thirty years of service with these companies. Mr. Caldwell became assistant editor of the *Electrical World* on June 15, 1890, at which time Dr. Louis Bell was editor.

In June, 1894, Mr. Caldwell became business manager for the *Street Railway Journal*, the predecessor of the *Electric Railway Journal*, and he continued in this work until January, 1897, when he became associated with Hugh J. Grant, former Mayor of New York City, in street-car advertising. In January, 1899, he returned to the McGraw Publishing Co. and took charge of the book department.

Two years ago Mr. Caldwell became treasurer of the McGraw-Hill Co., at the same time retaining his connection with the book company.

Mr. Caldwell has always kept closely in touch with electrical engineering progress, and for many years has been a member of the American Institute of Electrical Engineers.

Transatlantic Liner Returns to Service Equipped to Use Oil Fuel

AFTER an absence of nearly a year, during which time the vessel has been reconditioned throughout, the White Star liner Olympic will re-enter the passenger service between New York, Cherbourg and Southampton fitted for the consumption of oil fuel—the largest steamer in the world so equipped.

The selection of oil fuel as a motive power for this steamer was made after exhaustive tests. The operation of converting the Olympic's 195 furnaces from coal to oil fuel to provide steam in the twenty-nine boilers was a huge undertaking, 4,000 men having been employed for several months installing special machinery for this purpose.

The oil-carrying capacity of the ship is estimated at 50,000 barrels, which will be stored in the cellular compartments between the ship's double bottoms. The steamer will require about 25,000 barrels on each voyage, the quantity varying slightly according to speed. The International Mercantile Marine Co. is reported to have negotiated contracts recently for large deliveries of fuel oil for all its oil-burning steamers, including the Olympic. The installation of oil, which is loaded by gravity or pumped from tankers, is expected to eliminate delays heretofore caused by bad weather and other unusual conditions, which frequently interfered with coal loading, and also will eliminate dust and cinders on the deck. The oil is blown in a fine spray under each furnace, and cleaning out of the furnaces, which had to be done regularly when coal was used, will no longer be necessary.

Members Appointed to Council of National Defense

DR. F. G. COTTRELL, director of the Bureau of Mines of the Department of the Interior, was appointed by Secretary John Barton Payne to represent him on the interdepartmental defense board of the Council of National Defense. Dr. Cottrell will succeed Dr. Van H. Manning, who served on the board from its creation until he resigned from the Government service to become technical director of the division of research of the American Petroleum Institute.

Ethelbert Stewart, of the conciliation division of the Department of Labor, has been appointed by Secretary William B. Wilson to represent him on the same board. Mr. Stewart will succeed Dr. Royal H. Meeker, chief of the Bureau of Labor Statistics.

These are the first changes in personnel on the interdepartmental defense board since its creation. The director of the council, Herbert N. Shenton, who is chairman of the board, stated that the activities of the council were so urgent that it probably will be necessary for the board to continue to meet each Wednesday morning during the summer.

The board with its newly elected members met June 23 to consider a preliminary report on the bituminous-coal industry which is being prepared by the council in co-operation with the U. S. Bituminous Coal Commission, the U. S. Geological Survey and various other Government agencies.

Bureau of Mines Coal Laboratory To Be Moved to Pittsburgh

THE Bureau of Mines is moving its fuel-testing laboratories from Washington to Pittsburgh, where they will be consolidated with the work done in the latter location. This is a move in the general program of the bureau to have all of the executive offices in Washington but the laboratory work in the field stations.

The laboratories which are to be moved are the development of the old U. S. Geological Survey technological branch, which was transferred to the Bureau of Mines when the latter institution was formed some years ago. This laboratory has been handling the routine testing of about three hundred to five hundred coal samples per month for proximate analysis and B.t.u. determination. The research work on coal testing, all ultimate analyses and the overload of routine work have been done at Pittsburgh for some time. This change merely brings together all parts of the coal testing.

Anthracite Mine Workers' Argument for a Larger Wage Presented by Jett Lauck

By Going Back to 1881 Lauck Attempts to Show Anthracite Mines Run Less Steadily than Bituminous — He Presents Figures to Prove Hard-Coal Mine Workers Are Paid Less Than Soft and Argues They Should Be Paid More

THE meetings of the Anthracite Wage Commission recommenced on Monday, June 28, after an adjournment from the previous Thursday. W. Jett Lauck, statistician for the United Mine Workers of America, was ready to present testimony on behalf of the mine workers, the information including twenty-one exhibits. The first fourteen related to wages and the establishment of a living wage, while the last seven related to the profits made by the operators.

Mr. Warriner for the latter objected to the presentation of the last seven exhibits as immaterial and not dealing with the issue before the commission. Dr. Thompson, the chairman, took these exhibits under advisement and said the commission would hear arguments later as to whether or not the exhibits as to profits should be presented.

Mr. Lauck then resumed his testimony and commenced the presentation of the exhibits to the commission. On the Thursday preceding this session the mine workers had presented two exhibits showing the wages actually received by the employees and so Mr. Lauck presented his first exhibit as No. 3. It will be noted that the twenty-one exhibits mentioned above do not correspond to the number of the exhibits as presented in this article, for a number of supporting papers and books were introduced and they were consecutively numbered with the twenty-one exhibits.

Presents Argument from a Past Condition

Exhibit No. 3 shows the "Irregularity of Employment in the Anthracite Industry." It declares that the average number of days employed was 212 in the period 1881 to 1919, whereas the Pennsylvania bituminous mines worked 229 days and the bituminous mines throughout the United States averaged 216 days in the same period. In other words, Jett Lauck would try to show that the anthracite workers have not had the same opportunity to work that the bituminous workers have had and that if it had not been for the war period this discrepancy would have been greater. He argues in his exhibit that during the last few years the increase in employment was due to labor shortage and war conditions.

Exhibit No. 4 shows "Comparison of Earnings and Wage Rates in the Anthracite and the Bituminous Mines of Pennsylvania." In a table it shows that the average earnings for all employees of the anthracite field were less than the earnings for the bituminous fields during the period 1903 to 1919. Then it goes to show by separate occupations that the individual wages of the bituminous workers are class by class higher than the wages for the anthracite workers class by class. Mr. Lauck asserts that the anthracite industry is a more skilled industry than the bituminous and that the wages of the anthracite miners should be at least equal to, if they do not exceed, those of bituminous miners.

Exhibit No. 5 discusses the "Average Full-Time Weekly Earnings in the Anthracite Coal Mines of Pennsylvania." This exhibit is an amplification of the previous one and with those following up to No. 12 makes comparisons in the costs of living and wages in different localities. These exhibits will therefore be listed with little comment.

Exhibit No. 6 is entitled "Wage Rates in New York, Philadelphia, Pittsburgh and Buffalo." It makes comparison of the wages paid in several industries conducted in those cities. Exhibit No. 7 covers "Wages in Various Industries and Occupations, 1914 to 1920," and exhibit No. 8, "The Changes in Cost of Living and Prices." This shows that the cost of living since 1914 has increased 104 per cent.

Exhibit No. 9 argues that there is an "Improbability of Any Decrease in Prices and Cost of Living," while exhibit No. 10 confines itself to "Food Prices, Scranton, Pa." This exhibit and that numbered eight show that as regards high prices Scranton ranked fifteenth in the cities and shipbuilding centers of the United States. The latter are unfavorably distinguished by the high cost of living that obtains in them.

Exhibit No. 11 is entitled "Income and Expenditures in the Families of Anthracite Mine Workers," the succeeding exhibit, No. 12, discussing "The Relationship Between Rates of Pay and Earnings and the Cost of Living in the Anthracite Industry of Pennsylvania." It declares that the rate of pay of the contract miner had increased 81.3 per cent since 1902 and from 1914 49.8 per cent, but that since 1914 the increase in the cost of living had amounted to 104 per cent and the miners had been compelled to stand the difference.

Steadier Work Had Supplemented Advance

A diagram was presented which shows this graphically. S. D. Warriner and O. F. Huber made objections to this table, asserting that it did not show the exact conditions, for they said that the miner and the laborer had been given sufficient extra work to enable them to make up for this deficit. Mr. Lauck claimed that the men should not be forced to make up any such deficit by additional work.

Exhibit No. 13 is entitled "The Sanction for a Living Wage." This exhibit is divided into two parts, the first being headed "The verdict against the old theory of wages; against the determination of rates of pay through the alleged unhampered forces of supply and demand." This is supported by a number of quotations from various speeches and books. Among those quoted are "What Happened to Europe," by Frank A. Vanderlip; I. M. Rubinow's "The Trend in Real Wages," and "Sociology and the Modern Social Problems," by Charles A. El'wood.

The second part of this exhibit is entitled "The Living Wage." It quotes extensively from speeches, books and reports made by official organizations and agencies in the United States; it gives legislative enactments, state, national and international, favoring the principles enunciated; it quotes court decisions and arbitration

awards and the opinions of public men and women; the statements of economists and men of leading in the church, the joint agreements of capital and labor, the declarations of employers, of organized labor and the planks in political party platforms.

Not "Why a Living Wage?" But "What Is a Living Wage?"

Mr. Warriner and Mr. Lauck both called attention to the fact that both sides of this controversy were agreed that labor was entitled to a living wage, but the point to be brought out was, "What is a living wage?" Mr. Lauck said this exhibit was presented for the information of the commission and not as meeting any existing controversy as to the right of the working man in the mines to receive a living wage.

Exhibit No. 14 was entitled "What Happened to Europe," by Frank A. Vanderlip. This exhibit and all of the following up to No. 18 were books or pamphlets enlarging on exhibit No. 13. For this reason the titles of these exhibits will be given and no remarks made upon them. They are: Exhibit No. 15, "Report Immigration Commission, Vol. 16"; exhibit No. 16, "Working Men's Standard of Living, Philadelphia"; exhibit No. 17, "The Living Wage," by Father Ryan.

"Secondary Wage Depending on Capacity"

It is interesting to note a quotation which found place in exhibit No. 13. It is headed "Conclusions Reached by a Group of Twenty British Quaker Employers; from the Survey, Nov. 23, 1918." It runs: "The principle is held down that a minimum or basic wage should be established in every industry and that there should be a secondary wage depending upon the capacity of the worker." It seems rather unusual that a labor union should use the latter part of this quotation in one of its exhibits, as it has been in general opposed to payment for ability and results in any form, but this quotation was particularly noted by Mr. Lauck.

The commission adjourned at 4 p.m. on Monday and reassembled the following morning at 10 o'clock when Mr. Lauck resumed his presentation of exhibits to the commission. The three of these were: Exhibit No. 18, "Standard of Living" (budgetary studies); exhibit No. 19, "Cost of Living in a Coal Town"; exhibit No. 20, "What a Living Wage Should Be." The mine workers quote with great zest this last exhibit, which purports to show what a living wage should cover, and what is the cost of maintaining a family of five in Washington. It is a report made for the U. S. Bureau of Labor Statistics.

What Is a Fair Basis of Decent Living?

The budget gives the minimum wage needed to support a government employee and his family if the following items are to be supplied: 1. A sufficiency of nourishing food for the maintenance of health, particularly of the health of children. 2. Housing in low-rent neighborhoods and with the smallest possible number or rooms consistent with decency, but with sufficient light, heat and toilet facilities for the maintenance of health and self-respect. 3. The upkeep of household equipment, such as kitchen utensils, bedding and linen, necessary for health, but no provision for the purchase of additional furniture. 4. Clothing sufficient for warmth, of a sufficiently good quality to be economical, but with no further regard for appearance and style than is necessary to permit the family members to appear in public and in their narrow social circles without slovenliness or loss of self-respect. 5. A surplus over the above expenditures which would permit of only a minimum outlay for such necessary demands as: a. Street-car fares to and from work and necessary rides to stores and markets. b. The keeping up of a modest amount of insurance. c. Medical and dental care. d. Contributions to churches and labor or beneficial organizations. e. Simple amusements, such as moving pictures once in a while, occasional street-car rides for pleasure, some Christmas gifts for the children, etc. f. Daily newspaper.

Mr. Lauck elaborated on this budget at some length, explaining just what each item covered. In this same exhibit were presented a list of other budgets that had been prepared by various individuals and organizations and these were brought up to date by increasing the amounts by the percentage of increase in the cost of living since they were prepared. These budgets were based on provision of a bare subsistence level and on one assuring, at least, a minimum of comfort to the persons affected. The average for the minimum-comfort level was stated as approximately about $2,200 a year for a family of five.

Six Dollars a Day Less Than $2,200 a Year

Mr. Lauck then pointed out that the minimum wage that the United Mine Workers demanded was extremely reasonable as all they sought was a lower limit of $6 per day, which, based on a working year of 300 days, made a minimum wage of only $1,800 per year, or $400 less than the minimum-wage level. Mr. Lauck also pointed out the fact that the anthracite mine workers at no time had received a working year of 300 days, that during 1919 the men had worked only about 252 days. This fact was disputed by the operators.

Mr. Warriner tried to establish the fact that if there was an increase in wages it would have a tendency to increase the cost of living and that if it did the minimum living wage that had been provided for would not then be sufficient and the case would be in the same position that it was at present. Mr. Lauck would not agree to that argument, declaring that he thought that prices would not advance with an increase of wages.

Can a Living Wage Be Set Arbitrarily?

In further support of the need of a living wage Mr. Lauck presented exhibit No. 21, "Practicability of a Living Wage." Mr. Warriner inquired whether at any time wages had actually been fixed in accord with the studies referred to. Mr. Lauck answered this by pointing out that a minimum wage had been set to conform with the budget in the case of the street cleaners in New York and the employees of the Seattle and Tacoma street railways and also by the Bituminous Coal Commission.

Exhibit No. 22 was "The Trade Union as the Basis for Collective Bargaining." This exhibit caused more discussion than all the preceding ones together, and at times the temperature of the room notably rose. Up until this time the proceedings had been rather slow and uninteresting but the injection of this matter much enlivened the session.

Mr. Lauck endeavored to show that the trade union was the proper vehicle to make a collective bargain and in support of this presented numerous quotations and the experiences of many persons and associations. The exhibit is divided into nineteen parts: Statesmen (including Wilson, Roosevelt, Taft, Hughes and Hoover);

the church, the government, the law, the national agreement, the organized employer, historians, economists, social scientists, journalists, the peace treaty, the Republican platform, the employer, the President's First Industrial Conference, the American Federation of Labor, the Industrial Workers of the World, the war and labor, foreign recognition and the growth of unionism. After Jett Lauck had completed the reading of numerous extracts from this exhibit Mr. Warriner requested that Mr. Lauck state whether he was trying to demonstrate any other point than the fact that collective bargaining was good in itself but that it was better when taken in connection with the labor union.

Argument on Union Recognition Grew Warm

Then the argument started and at times became warm. Mr. Warriner wanted to know if Mr. Lauck did not approve of the collective bargaining that had been taking place in the anthracite field since 1902 Mr. Lauck stated that it was good but it would have been better if the operators had bargained with the United Mine Workers of America. Mr. Warriner then stated that the United Mine Workers had acted for the men. Mr. Murray and Mr. Dempsey took exception to this, declaring that the United Mine Workers had not acted for the men as a body, but as individuals posing as representatives of the Anthracite Coal Workers' Association, which was really a non-existent organization. They declared that the mine operators would not deal with the United Mine Workers of America.

The United Mine Workers had assumed the burden of the contract that had been made between the non-existing body of the Anthracite Coal Workers' Association and had seen that it was complied with, but now, after eighteen years of carrying out an agreement in the name of a body not existing, the United Mine Workers felt that they should be recognized and be allowed the check-off and the closed shop. Mr. Warriner declared that Mr. Mitchell, formerly president of the United Mine Workers of America, had signed the contracts in that capacity, but Messrs. Dempsey, Murray and Kennedy took exception, asserting that Mr. Mitchell did not sign for the United Mine Workers of America but as representing, through the board of conciliation, the imaginary Anthracite Coal Workers' Association.

Further, Mr. Kennedy averred that if the United Mine Workers had lived up to the contracts that had been signed in the past the board of conciliation for the anthracite region would have gone out of existence a number of times, as in many cases a majority of the mine workers were not members of the association, which fact annulled the agreement for the board of conciliation.

Another Too Busy Chairman Must Go Early

As 4 p.m. was approaching the chairman of the commission called a halt in the proceedings, it being his intention to leave on the 5 p.m. train for Ohio. In consequence Mr. Lauck presented exhibits 23 to 26 without any comment, thus affording the operators in the period prior to the re-assembling of the commission, Wednesday, July 7, a chance to study the documents and prepare their reply.

Two of the exhibits just mentioned were: Exhibit No. 23, "The Report of the Anthracite Coal Commission for 1902," and Exhibit No. 24, "The Sanction for the Eight-Hour Day." The latter exhibit covers 87 pages and contains the opinions of many individuals as to the reason for upholding the eight-hour day. It starts with a discussion of the trend toward that length of work per day in the United States and foreign countries.

Then it discusses the eight-hour day and its relation to output, and tries to show that a greater output is attained with the eight-hour day than with longer hours and gives actual figures to prove it, these figures being compiled from fifteen sources. The eight-hour day is considered also from its social side. The results of a study of the short working day in English coal mines are then shown and the exhibit is concluded by general statements, recommendations and decisions on the shorter working day.

Dilate on Hazards of Anthracite Mining

The other exhibits were: Exhibit No. 25, "A Brief by Justice Brandeis, U. S. Supreme Court, on the Shorter Work Day," and exhibit No. 26, "Occupation Hazard of Anthracite Miners." In this exhibit it is shown that anthracite mining is a hazardous occupation and eleven conclusions are reached:

(1) A prominent authority states, "Probably no industry is so subject to exceptional hazards as the coal industry." (2) The general mortality of the anthracite miner is distinctly above the average for all occupied males. (3) A large and representative insurance company will accept miners only if they pay rates such as are required of normal individuals who are sixteen years older than the insuring miner and even then it will permit them to have no cheaper form of policy than a twenty-year endowment. Only one other occupation is subject to more drastic conditions. (4) The director of the U. S. Bureau of Mines stated, "The hazard of coal mining is undoubtedly on the increase." (5) The latest anthracite report of the Pennsylvania Department of Mines states that in spite of increased inspections there has been no decrease in the fatalities about the mines. (6) A bulletin of the U. S. Bureau of Labor Statistics states, "Throughout every year of the working period of life the mortality of coal miners includes a relatively much higher proportion of deaths from accidents than is found to prevail among all occupied males." The State Insurance Department of Pennsylvania found that anthracite mining had the highest accident rating of all industries under the Compensation Act, with but on exception, viz., iron construction. (7) The personal-accident insurance companies impose strict limitations on the occupation of coal miner and will grant only a minimum amount of insurance. For the same money, printers and machinists are given five and six times as much insurance protection as is afforded the coal miner. (8) The leading causes of death are respiratory diseases and industrial accidents. (9) The non-fatal accidents in the Pennsylvania anthracite field in 1916 disabled about one-sixth of the entire working force for a greater or less period. The report of the Pennsylvania State Health Insurance Commission states that "the total sickness rate among miners was 8 per cent higher than the general rate for white adult males." (10) Where the injury did not cause death, it most frequently caused disability in the arms and legs, resulting on recovery in an inability to resume mine work. (11) The report of the Pennsylvania State Commission on Old Age Pensions states, "Miners age prematurely." The balance of this exhibit elaborates on these points and explains them more fully.

NEWS FROM THE CAPITOL

BY PAUL WOOTON

To Confer on Prepayment of Freight on Coal for Canada

PREPAYMENT of freight charges on coal for Canada is to be the subject of a conference in the near future. The Interstate Commerce Commission has designated Commissioner Hall to make the necessary arrangements for a meeting of those concerned in this matter. The date has not been set, but it is expected that the conference will be held this week.

Make Application for Water Power Before Commission Is Perfected

THE Federal Power Commission, which will administer the new Water-Power Act, has received applications for more than 500,000 hp., despite the fact that the commission's machinery has not been established.

The President has designated Secretary Baker as chairman of the commission. The other members are Secretaries Payne and Meredith. They are expected to name the executive secretary during the week of July 12. It is understood that O. C. Merrill, the chief engineer of the forest service, has been agreed upon for the position.

Technicalities Delay Purchase of Needed Railroad Equipment

DIFFICULTIES have been encountered which have prevented any portion of the railroads' revolving fund being used in the purchase of new equipment. Of the $300,000,000 of the revolving fund, $125,000,000 was apportioned for the purchase of equipment. It now develops that the Treasury cannot accept equipment notes. Under the present practice it would be necessary to have the amount covered by first mortgage funds. In the case of the railroads, however, this is impossible. There are first, second and third mortgages outstanding against most railroads. It may be that the permission of all bondholders will have to be secured before security acceptable to the Treasury Department can be issued.

Shift in Demand for Coal Held Responsible For Trouble

DISINTERESTED coal specialists in the service of the Government attach great importance, in analyzing the coal situation, to the readjustment of distribution which has been made necessary by the changed conditions which have grown out of the war. The coal industry is called upon to lay down at tidewater 10,000,000 or 15,000,000 more tons than ever has been the case before. Even before the increase in exports the demand for coal in the East and the difficulties of transportation were reducing the quantities of westbound coal.

Under present conditions there is a strong tendency to give up Lake business so that more coal can be sent East. It is believed that this tendency will increase and that it will be left more and more to Illinois and Indiana to supply the Northwest. New England is certain to suffer in the same way, although it is fully recognized that New England has a prior lien on 21,000,000 tons of coal a year. Not more than 10,000,000 of that amount can move by rail without interfering too severely with the use of the railroads for distributing New England's manufactured products. As a result 11,000,000 tons of New England's coal must move by tidewater in normal years.

These same specialists point to the labor troubles on the railroads as the basic cause of insufficient coal production and suggested that if those interested would bring the same amount of pressure to bear on the Railroad Labor Board as has been brought against the Interstate Commerce Commission, they would be striking closer to the seat of the present trouble with coal.

Assigned Cars Are Ordered by I. C. C. for Public Utility

YIELDING to the insistence of public utility companies, the Interstate Commerce Commission on June 30 issued Service Order No. 8, which gives a priority to the Philadelphia Electric Co. for 12,000 tons of coal. That the commission will be called upon to issue a very large number of similar orders is not doubted.

The order is unique for today, in that it is for the benefit of an individual shipper. It gives the impression that the commission has gone beyond the law which provides for dealing with the carriers' business. It reopens the many difficult questions which confronted the Priorities Board during the war. Such a policy will require differentiation between essential and non-essential industries and it is predicted that several additional acres of office floor space will be required to house the employees who will be necessary if the practice is continued.

The order is as follows:

It appearing, in the opinion of the Interstate Commerce Commission that because of a shortage of equipment and congestion of traffic, aggravated by unfavorable labor conditions which exist upon the lines of the Pennsylvania Railroad Co. and the East Broad Top Railroad & Coal Co., each of which is a common carrier by railroad subject to the Interstate Commerce Act, an emergency exists which requires immediate action with respect to the transportation of bituminous coal for the Philadelphia Electric Co., a public utility which operates lighting and electric power systems

of the city of Philadelphia, Pa., upon the continued operation of which depends the peace, health and welfare of the people of that city;

It further appearing that the said Philadelphia Electric Co. has not a sufficient supply of coal with which to continue the operation of the lighting and electric power system in Philadelphia and may shortly be obliged to cease and discontinue such operation unless immediate relief is afforded in the transportation to it of bituminous coal:

It is ordered that the Pennsylvania Railroad Co. and the East Broad Top Railroad & Coal Co. be, and they are hereby, authorized and directed to assign cars to the Rock Hill Coal & Iron Co. for the transportation by said common carriers of approximately 12,000 tons of bituminous coal now above ground to be shipped by that company from Orbisonia, Pa., to the Philadelphia Electric Co., Philadelphia, Pa., at the rate of twenty cars per day for twelve consecutive working days beginning with July 1, 1920, excluding Sundays and legal holidays, in addition to and without regard to the existing ratings and distributive shares for the mines upon said railroads.

It is further ordered that all rules, regulations and practices of said common carriers by railroad with respect to car service are hereby suspended insofar only as conflicting with the directions hereby made.

E. A. Holbrook Appointed Assistant Director Of Bureau of Mines

ELMER ALLEN HOLBROOK has been appointed assistant director of the Bureau of Mines. He succeeds Dr. F. G. Cottrell, who recently became director of the bureau. Mr. Holbrook was born at Pittsfield, Mass., forty years ago. His early education was obtained at the public schools of that place. His higher education was secured at the Massachusetts Institute of Technology, from which institution he was graduated in 1904, after having completed his course in mining engineering. Prior to his graduation from the Institute he worked in mines in Montana and was a member of one of the locals of the Western Federation of Miners.

Mr. Holbrook's first position after leaving college was with the Standard Ore Co. in Montana, where he served as a sampler and underground surveyor. His next position was as superintendent of Ruby Gulch Mining Co. at Zortman, Mont. Later he served in the same capacity for the Gould Mines Co. at Gould, Mont. In 1907 he was made general superintendent of the Daly Reduction Co. at Hedley, British Columbia. At that time the Daly Co. was the largest producer of gold in the Dominion of Canada. After three years with this company Mr. Holbrook began a general practice as an examining engineer. He reported on properties in Nevada, South Dakota, Georgia, Ontario and Quebec, and was engaged for a time at Guanajuato, Mexico.

In 1911 he established headquarters at Halifax, Nova Scotia, where he designed and erected the mining laboratory for the Department of Technical Education of the Province of Nova Scotia. During the three years he was at Halifax he did a general engineering practice, most of which was in coal mines. For a time he was in charge of the mining department of the Nova Scotia Technical College.

In 1913 Mr. Holbrook joined the staff of the University of Illinois as associate professor in the mining department. Two years later he was raised to the rank of professor in the same department. During the several years he was associated with the University of Illinois he carried out important engineering and investigational work in the coal mines of the Middle West. In 1917 he was made supervising mining engineer of the Bureau of Mines and was placed in charge of the Middle West coal field station at Urbana, Ill.

Stocks of Bituminous Coal

AT THE request of the U. S. Bituminous Coal Commission, and largely with the help of funds provided by the commission, the Geological Survey, under the direction of F. G. Tryon, has conducted a rapid canvass of stocks of coal in the hands of representative consumers. Inquiries were sent out to a selected list of

STOCKS OF BITUMINOUS COAL ON HAND AT REPRESENTATIVE INDUSTRIAL PLANTS OTHER THAN STEEL AND BYPRODUCT PLANTS

Feb. 29 and May 31, 1920 (Net Tons)

State	Number of Plants Reporting	Weekly Consumption, March to May, 1920	Tons on Hand		Weeks' Supply on Hand (a)*	
			Feb. 29	May 31	Feb. 29	May 31
Maine	23	14,745	87,291	93,457	5	6
New Hampshire	37	7,725	60,712	38,416	7	5
Vermont	41	2,184	16,203	13,642	7	6
Massachusetts	299	51,265	312,068	267,555	6	5
Connecticut	84	23,255	132,640	98,076	5	4
Rhode Island	66	9,159	60,456	56,327	6	6
New York	161	90,773	291,679	269,407	3	3
New Jersey	100	42,936	203,946	204,139	4	4
Pennsylvania	125	113,867	290,026	315,911	2	2
Maryland	28	12,448	35,209	29,678	2	2
Delaware	24	3,918	20,949	26,674	5	6
District of Columbia	11	1,132	2,155	1,364	1	1
West Virginia	51	21,467	39,462	41,239	1	1
Ohio	140	94,972	221,148	238,264	2	2
Indiana	105	45,639	131,314	104,848	2	2
Illinois	148	106,941	313,145	248,059	2	2
Michigan (b)	120	120,992	618,966	486,525	5	4
Wisconsin	96	40,886	170,262	111,621	4	2
Minnesota (c)	54	18,417	145,091	92,436	7	5
Iowa	32	16,906	34,799	34,885	2	2
North Dakota	6	524	1,160	989	2	1
South Dakota	4	143	1,255	605	8	4
Nebraska	8	4,864	14,431	12,405	3	2
Virginia	38	11,225	28,574	41,678	2	3
North Carolina	52	10,754	68,603	52,422	6	4
South Carolina	46	4,231	28,055	32,211	6	7
Georgia	30	3,514	25,803	16,780	7	4
Florida	13	513	324	1,494	4	2
Kentucky	30	7,336	17,404	17,303	2	2
Tennessee	68	15,814	55,346	39,651	3	2
Alabama	38	9,094	28,608	25,114	3	2
Mississippi	28	1,104	6,798	5,274	6	4
Missouri	84	31,930	108,291	86,401	3	2
Kansas	55	15,144	47,250	49,633	3	3
Oklahoma	17	3,654	31,016	33,795	8	9
Arkansas	24	1,484	6,008	5,165	4	3
Louisiana	6	136	1,065	1,385	7	10
Texas	56	4,771	8,571	4,522	1	1
Colorado	35	6,953	31,929	35,792	4	5
New Mexico	6	2,708	14,072	22,890	5	8
Arizona	11	2,160	15,825	16,482	7	7
Utah	25	7,923	34,817	18,840	4	2
Nevada	8	3,842	16,650	11,921	4	3
Wyoming	3	78	477	364	6	4
Montana	15	11,492	64,580	70,264	5	6
Idaho	15	732	3,434	2,516	4	3
Washington	13	2,392	10,669	10,144	4	4
Oregon	7	158	773	503	4	3
Grand totals	2,486	1,004,240	3,859,309	3,389,066	3	3

*Approximate.

(a) Calculated at average rate of consumption during March, April, and May 1920

(b) Figures given include certain copper mines of Northern Peninsula. If the mines be eliminated the supply in hands of other consumers was 2 weeks on Feb. 29, and 3 weeks on May 31.

(c) Figures given include certain iron mines. If the mines be eliminated the supply in the hands of other consumers was 3 weeks on Feb. 29, and the same on May 31.

STOCKS OF GAS COAL ON HAND AT REPRESENTATIVE COAL-GAS PLANTS

Feb. 29 and May 31, 1920 (Net Tons)

State	Number of Plants Reporting	Weekly Consumption, March to May, 1920	Tons on Hand Feb. 29	Tons on Hand May 31	Weeks' Supply on Hand* Feb. 29	Weeks' Supply on Hand* May 13
Maine						
New Hampshire	3	901	10,059	9,417	11	10
Massachusetts	9	6,572	46,002	18,169	7	2
Rhode Island	2	4,097	30,247	24,283	7	5
Connecticut	2	1,827	14,490	9,988	7	5
New York	4	13,296	25,677	7,558	1	
New Jersey	2	144	486	201	3	1
Pennsylvania	3	3,879	15,360	19,930	3	5
Maryland	3	198	637	427	3	2
Ohio	5	334	854	758	2	2
Indiana	13	2,434	15,960	10,846	6	4
Illinois	12	3,416	15,245	9,270	4	2
Michigan	13	12,995	50,632	49,620	3	3
Wisconsin	6	5,156	43,443	14,175	8	2
Minnesota and North Dakota	3	1,941	3,732	942	2	
Iowa	5	824	2,241	2,085	2	2
Virginia	6	2,208	1,846	2,794		1
North Carolina	5	813	2,717	4,015	3	4
South Carolina	2	271	857	472	3	1
Georgia and Florida	3	2,050	2,636	7,753	1	3
Kentucky	4	236	984	503	4	2
Tennessee	3	1,201	3,049	2,010	2	1
Alabama	4	1,479	5,806	826	3	
Mississippi	3	470	1,559	1,522	3	3
Arkansas and Louisiana	2	112	874	539	7	4
Texas	2	285	740	1,233	2	4
Colorado and Utah	2	2,322	12,060	12,279	5	5
Idaho and Washington	5	2,811	12,004	11,190	4	4
Grand totals	126	72,272	320,197	222,805	4	3

*Approximate.

consumers, most of them large, including byproduct coke ovens, iron and steel plants, other industrial consumers, coal-gas plants, electric public utilities, and retail coal dealers well scattered over the entire country.

Because of the limited time available it was impossible to secure figures from all of the ninety-odd thousand commercial consumers in the country. By addressing a limited list of about 5,500 plants it has been possible practically to complete the survey within a month. While a number of the consumers addressed have not yet furnished returns, the proportion received has been sufficient to justify the publication of preliminary figures for the gas and electric utilities and for industrial consumers other than steel and byproduct plants.

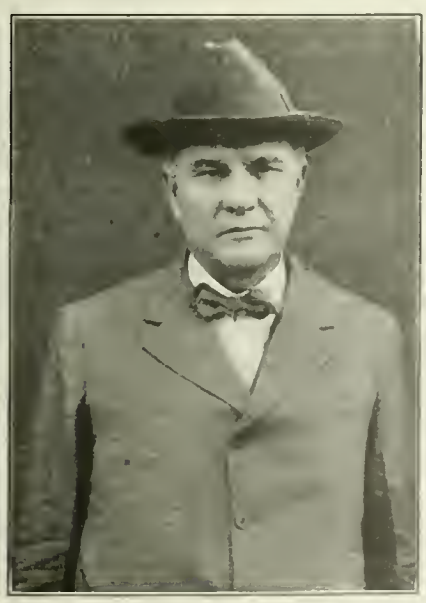
In examining the tables shown herewith it must be remembered that the figures of weeks' supply on hand are necessarily averages, and that the conditions at particular plants may depart widely from the average. Furthermore, the smaller the number of plants upon which the average is based, the greater becomes the chance that exceptional conditions at one plant may unduly influence the average.

STOCKS OF BITUMINOUS COAL ON HAND AT REPRESENTATIVE ELECTRIC UTILITY PLANTS

Feb. 29 and May 31, 1920 (Net Tons)

State	Number of Plants Reporting	Weekly Consumption, March to May, 1920	Tons on Hand Feb. 29	Tons on Hand May 31	Weeks' Supply on Hand* Feb. 29	Weeks' Supply on Hand* May 31
Maine	2	120	789	1,021	6	8
New Hampshire	3	1,224	3,654	3,475	3	2
Vermont	3	189	25	670		3
Massachusetts	12	19,925	77,989	103,650	3	5
Connecticut	9	9,301	27,909	54,339	3	5
Rhode Island	4	5,290	24,946	36,675	4	7
New York	15	48,150	154,174	139,556	3	2
New Jersey	19	19,236	43,895	65,227	2	3
Pennsylvania	18	44,195	119,926	141,523	2	3
Maryland	6	5,722	27,446	30,855	4	5
Delaware	2	1,643	4,720	5,406	2	3
District of Columbia	2	978	7,217	4,512	7	4
West Virginia	6	5,685	6,054	19,630	1	3
Ohio	25	42,000	111,764	137,215	2	3
Indiana	26	23,077	74,836	47,644	3	2
Illinois	20	59,206	212,754	118,494	3	2
Michigan	7	17,591	42,018	109,398	2	6
Wisconsin	8	10,533	67,463	40,920	6	3
Minnesota	6	5,201	27,944	44,946	5	8
Iowa	22	12,963	46,557	38,796	3	3
North Dakota	5	1,000	2,427	3,163	2	3
South Dakota	5	457	3,090	3,197	6	6
Nebraska	8	5,090	16,006	11,819	3	2
Virginia	8	9,460	11,117	12,185	1	1
North Carolina	3	461	4,337	2,922	9	6
South Carolina	6	1,836	4,741	4,550	2	2
Georgia	8	1,985	11,584	10,727	5	5
Florida	4	403	2,500	3,158	6	7
Kentucky	10	5,683	18,976	11,550	3	2
Tennessee	7	5,223	10,277	11,619	1	2
Alabama and Mississippi	16	5,031	42,635	50,251	8	10
Missouri	5	7,180	36,266	19,458	5	2
Kansas	9	5,514	24,992	20,140	4	3
Oklahoma	6	462	1,400	1,681	3	3
Arkansas	6	693	1,171	1,403	1	2
Louisiana	3	2,854	4,418	7,914	1	2
Texas	6	1,890	3,864	3,143	2	1
Colorado	9	6,984	12,902	13,710	1	2
New Mexico	4	521	1,903	2,245	3	4
Wyoming	3	1,157	1,734	2,393	1	2
Montana and Washington	4	2,543	21,948	31,700	8	12
Grand totals	350	398,656	1,320,368	1,372,880	3	3

*Approximate.



Horgan, Scranton, Pa.

Anthracite Wage Commission Appointed by President To Settle Hard-Coal Labor Matters

NEIL FERRY
Who represents on the Commission the United Mine Workers of America, or, as the operators would rather say, the Anthracite Coal Workers' Association

DR. W. O. THOMPSON
Chairman of the commission and president of Ohio State University, who was appointed to represent the interest which the public has in the controversy

W. L. CONNELL
At one time mayor of Scranton, president of the Connell Anthracite Mining Co., chairman of the Anthracite Conciliation Board, who will represent the operators

Panic Created by New England Priority and Reckless Bidding

In Letter of Protest to Governors and I. C. C. Chairman W. H. Williams Scores Action of Executives

PROTESTING against the action of the governors of New England States in appealing to the Interstate Commerce Commission for relief from the so-called coal shortage in those states, W. H. Williams, vice-president of the Delaware & Hudson Co., has written a letter to the governor of each of those states and also to Edgar E. Clark, chairman of the Interstate Commerce Commission, in which he says that the action of the state executives, together with the action of some of the larger manufacturers in bidding any kind of a price for coal, is creating a state of panic. Mr. Williams says this is a buyers' market. Addressing the governors of New England Mr. Williams on June 21, wrote:

We have gotten into a buyers' market, which originally started very largely through a desire of the people to get in a stock of coal in advance of an increase in freight rates, which it is believed will be anywhere from 25 per cent to 35 per cent.

While this is a practice which undoubtedly any business man would follow as a matter of economy, in this instance it has resulted in active competition for coal. This has in some measure disturbed the sources of supply of some people, and through a misunderstanding of the causes they have assumed it was due to the total coal produced being insufficient to meet current needs. I believe a review of the statistics will clearly show the contrary to be the fact.

The action of the governors of the New England States in making an appeal to the Interstate Commerce Commission and claiming an actual shortage in New England, together with the action of some of the larger manufacturers in bidding any kind of a price for coal, is creating a state of panic in the minds of the people rather than clarifying the situation and permitting of the matter being brought within proper lines.

From this it is not to be understood that I would contend that some of the cities in New England may not be in need of coal or that particular industries may not have experienced some shortage of coal. Where this exists it is due to one of your industries bidding against another and thereby securing a greater supply than is needed for current requirements. The fact remains, however, that the New England territory collectively has received more coal than was needed for current requirements, and it is this competition in buying that has disturbed the distribution of coal and, to some extent, seriously and adversely affected the price to the consumer.

I deem it most important that the facts themselves be assembled and so clearly presented to your people as to allay their needless alarm and permit of normal conditions being established at as early a date as possible.

Mr. Williams had already, on June 17, written to Mr. Clark his view of the coal situation, in which he stated that the country—New England in particular—is really much better off as regards supplies than most people realize. His letter follows:

I understand your commission now has before you the question of bituminous coal supply for this country, and in this connection I am endeavoring to prepare an analysis which I hope to send you within a couple of days.

Bulletin 144 of the Department of the Interior, U. S. Geological Survey, indicates production during the first 86 working days, viz.: Jan. 1 to April 10, 1920, aggregating 150,255,000 tons, being within 1,750,000 tons of the record of 1917, within 19,000 tons of the year 1918 and an increased production over the corresponding period of 1919 of 31,525,000 tons. About this time labor troubles seriously embarrassed the railroads between New York, Chicago, St. Louis and Kansas City, causing a sharp falling off in tonnage in the month of April. The railroads are rapidly getting back to normal.

Notwithstanding the labor troubles in April, the production in no week was less than during the corresponding week of 1919, and each week after the middle of April has shown a decided improvement over the preceding week, so that Bulletin 152, for the week ended June 5, shows a production for the year to date of 221,043,000 tons, being within 20,000,000 tons of the record of 1918; within 14,000,000 tons of the year 1917, the second largest year, and being an increase of 37,000,000 tons over the corresponding period of 1919.

The chart in Bulletin 152 shows so decided an improvement as to indicate the probability of getting up to top production in three to four weeks.

Concerning coal for export and the probable effect thereof on the domestic situation, Bulletin 151 indicates that during the first four months of 1920 there were exported through North Atlantic ports 4,551,000 tons, as against 8,291,000 tons in the corresponding period of 1919. There is nothing in these figures indicating that the export situation is adversely affecting the local markets.

Regarding bituminous tidewater shipments to New England, Bulletin 152 indicates for the first four months of 1920 3,268,000 tons, as against 2,400,000 tons during the corresponding four months of 1919, and compared with 3,859,000 tons during the corresponding period of 1918.

Regarding lake shipments to the Northwest, Bulletin 152 indicates that shipments from the beginning of navigation to the end of June 5, 1920, amounted to 1,992,000 tons, as against 4,967,000 tons in 1918 and 6,117,000 tons in 1919. With one-fifth of the season of navigation gone, the Lake movement is thus 2,975,000 tons behind 1918 and 4,125,000 tons behind 1919. This is the only section of the country which, from the standpoint of supply, may be said to be embarrassed at this time or facing embarrassment for the coming winter.

The several bulletins of the department indicate that in a general way the mines west of the Mississippi River are reasonably taken care of as to car supply, the only shortage of moment being reported from the State of Utah. The bulletins show as to the mines collectively that the total production is considerably in excess of last year, only 14,000,000 tons behind 1917 and 20,000,000 tons behind 1916. When consideration is given to the fact that the amount exported is 3,700,000 tons less than in 1919, it must follow that the amount available for domestic consumption is now in excess of 40,000,000 tons over the corresponding period of 1919.

In this connection I enclose herewith copy of my letter of Feb. 6, 1918, to Dr. Garfield, then U. S. Fuel Administrator, analyzing the anthracite and bituminous coal tonnage moving into New England via the various gateways. The letter shows the source of my information.

While the bulletins of the department indicate an increase of approximately 33 per cent in the tidewater shipment of bituminous coal to New England over the first four months of 1919, they are slightly under the corresponding period of preceding years. This, however, is due to the diversion of coal from tidewater to rail routes. The information which I get from railroad men is that the quantity of coal moving via rail is in excess of previous years. We are hopeful within a few days of securing a statement of this tonnage with a view to clarifying the atmosphere as to the New England coal situation.

During the year 1918 there was an overproduction of coal, with the result that at the close of that year many industries had a stock sufficient to carry them from two to eight months. The result was that in February and March, 1919, it was almost impossible to get the industries to purchase coal. In the first five months of 1919 I believe it will be found that no industry had to close down for lack of fuel. Therefore the very substantial reduction in tonnage in the forepart of 1919 as compared with 1918 is due to the overstocking of 1918 and not due to inability of the mines to produce or the railroads to handle.

Production and the Market

Weekly Review

Increased Production Noted as a Result of Order No. 7—Prices in Fairmont and Pittsburgh Resume Upward Trend—Foreign Vessels Given One-Way Bunker Requirements—Anthracite and Coke Output Improves.

RECOVERY in the rate of production in the week of June 26, with no material change anticipated in the week preceding the July 4 holiday, marked the initial effect of the Interstate Commerce Commission's order No. 7, giving preference to coal in the use of open-top cars. The commission will hold hearings this week to ascertain how order No. 7 is affecting other users of open-top cars, the particular object announced being to hear evidence on the abuse of such cars for use at the mines.

The check in rising prices in Fairmont and Pittsburgh was but temporary. As soon as coal thrown on the market by embargoes was absorbed prices recovered and are still slowly gaining. There has been some speculation as to whether turning coal away from foreign buyers would cause active bidding against New England, but no evidence of such has materialized at the present time.

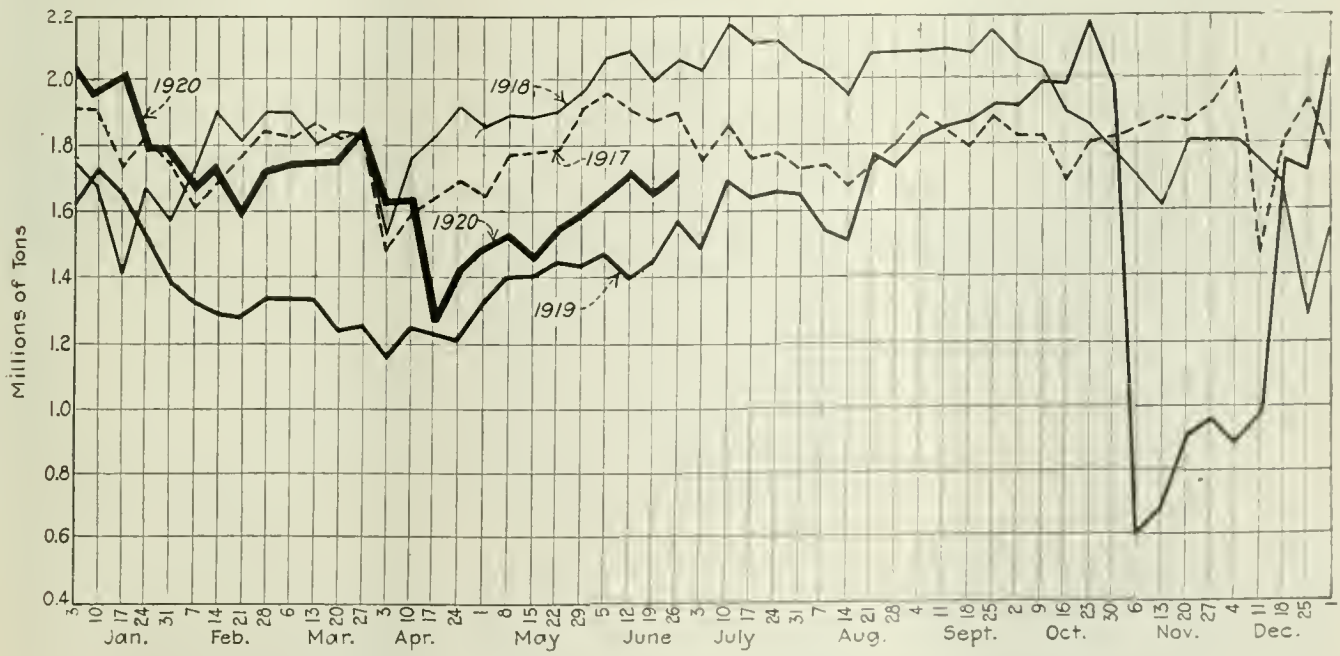
Exports are virtually embargoed. Bunker coal for vessels under the American flag is freely permitted without restriction, but for ships under foreign flags, supplies are limited to one-way requirements. Coal is, of course, being loaded into vessels for export, but it is coal that was started from the mines prior to the effective date of order No. 6.

Anthracite production and beehive coke output were both better in the last week of June than the week previous.

The Geological Survey reports that stocks of gas coal held by 126 representative gas plants on June 1 were equivalent to three weeks and one day's average supply; for 350 central station and public utility plants stocks on June 1 were in the aggregate, if evenly divided, sufficient for three weeks and three days' supply to meet their requirements.

Industrial plants (2,486 in number), other than iron and steel, held on the same date three weeks and three days' supply.

Average Daily Production of Bituminous Coal*



*From weekly report of Geological Survey.

Reports From the Market Centers

New England

BOSTON

New England Priority Fails—Market Continues Strong with Prices Higher—Rail Movement Steadily Improves—Despatch at Hampton Roads Continues Slow—Anthracite Mines Feel Diversion of Cars—Effort Is Made to Help Shipments.

Bituminous—The service order that was secured in behalf of needs in this territory has proved unavailing. There is nothing left for the New England Fuel Administrator to do but to rail against the shippers, including a large number who are regularly shipping coal to this market on their obligations but not at fabulous prices. As it stands, a careful reading of Order No. 6, in the first place would have saved much trouble and annoyance.

Movement continues to show steady improvement, and the flow of empties from the New England roads increases week by week. The number of coal cars in New England has been greatly reduced in the past two months.

As a rule steamer and barge despatch at the Virginia terminals continues slow. A large number of bottoms reported for export coal are also waiting, although gradually turns are reached in line with the permits issued. In order to clear ships, some fancy prices have been paid at Hampton Roads. It is rumored that $17.50 was paid for one lot.

Current quotations on bituminous at wholesale range about as follows:

	Clearfields	Cambrias and Somersets
F.o.b. mines, net tons	$10 25@$11 50	$10 75@$11.75
F.o.b. Philadelphia, gross tons	13 25@ 14 75	13 85@ 15 10
F.o.b. New York, gross tons	13 75@ 15 10	14 25@ 15.35

Anthracite—Due to the hue and cry over bituminous there are said to be many anthracite collieries that have been obliged to close down because of the lack of cars. This is a costly result of the wholesale diversion of empties. Once again we are likely to see the ill effects of upsetting the normal avenues of supply.

Tidewater

NEW YORK

Demand Strong but Receipts Are Light — Consumers Urge Deliveries, with Local Yards Empty—Bituminous Movement Is Slow Except to Public Utilities — Effects of New England Priority Orders Are Not Apparent.

Anthracite—There has been no noticeable increase in the receipts here. Due to the "outlaw" strike Port Reading was under embargo for several days and deliveries from the other lower ports were considerably delayed because of labor conditions. Embargoes were also in force on the New England roads.

Demand is growing. Consumers who placed their orders early in the season and have not yet received their winter supply of fuel are now urging deliveries. Many of the local yards are empty of the domestic sizes.

Prices for the domestic sizes were advanced 10c. per ton on July 1. Individual product is bringing from 75c. to $1 more than the company schedule. Upstate and New Jersey inland dealers are faring better than those here.

There is a good demand for the steam coals with prices for the independent product about as follows: Buckwheat, $5 to $5.75; rice, $3.75 to $4 and barley, $3 to $3.75. Current quotations for company coals, per gross tons, at the mine at f.o.b., New York Tidewater, at the power ports, are as follows:

	Mine	Tidewater
Broken	$7.40—$7.60	$9.25—$9 45
Egg	7.40— 7 55	9 25— 9 40
Stove	7.65— 7 90	9 50— 9 75
Chestnut	7.70— 7.90	9 55— 9.75
Pea	5.95— 6.35	7 70— 8.10
Buckwheat	4 00— 4 10	5.75— 5.85
Rice	3.00— 3.50	4 75— 5.25
Barley	2.25— 2.50	4 00— 4.25
Boiler	2.50	4 25

Quotations for the domestic coals at the upper ports are generally 5c. higher on account of the difference in freight rates.

Bituminous—Up to the early part of the week this market had not felt any effects from the operation of the New England priority order of the Interstate Commerce Commission. Coal was not moving easier unless it was to the public utilities which were reported as receiving larger tonnages.

Several of the piers were under embargo at various times during the week because of the "outlaw" strike and the lack of help at the loading docks.

If the order restricting exports is allowed to continue for a short time, much lower prices are expected to result, especially as soon as the public utilities have large reserves.

Contract coals move in good volume but there is some difficulty in getting the boats towed from the loading docks. There are many loaded boats in the harbor and shippers say the demand is not as heavy as it was a week ago.

Mine quotations on Pool 10 and 11 ranged from $11 to $11.50, with other pools being quoted around the same figures. At the piers, Pool 18 was being quoted by some shippers at around $17 and loaded boats ranging from $17 to $18.50, according to the quality.

PHILADELPHIA

The City Is Embargoed Against Domestic Coal, but Schuylkill Valley Can Receive Shipments—Most Local Yards Are Empty—Mines Price Increases 10c. on Domestic Sizes — Bituminous Is Extremely Short — Prices Are from $10 to $15.

Anthracite—The railroads at this time are reporting some improvement in the freight situation, although the entire city is still embargoed against receiving shipments of domestic coal. The strike has made a complete tie-up of the anthracite coal trade in this territory.

There has been much idle time in the anthracite region this past week, and the loss of tonnage will have a serious effect on the output for the year. The local retailers have received practically no coal for almost two weeks. Most yards are now entirely empty, with the exception of small tonnages of pea.

Some of the larger companies added 10c. a ton to the family sizes for July. The July prices per gross ton at mines for line delivery and f.o.b. Port Richmond for tide are as follows:

	Line	Tide
Broken	$7 35	$9.20
Egg	7.45	9.30
Stove	7.80	9.65
Nut	7.80	9.65
Pea	6 10	7.70
Buckwheat	4 10	5.15
Rice	3 00	3.90
Boiler	2.50	3.50
Barley	2.25	3.15

The independent prices continue to vary, but the average for July is about as follows per gross ton at mines: Egg, $8.30; stove, $8.65; chestnut, $8.65 and pea $6.70.

As yet no change has been announced by the larger companies on the steam sizes, although it is expected that buckwheat will soon move upward—possibly as much as 25 cents.

All quotations for spot delivery are made with the understanding that prices are subject to change without notice. Independent shippers are disposing of their buckwheat to their old customers from $4.25 to $4.50.

Bituminous—All local industries are seriously crippled by the shortage of bituminous coal. Owing to the rail strike the roads have been devoting their efforts to taking care of the utilities and so far they have gotten through on a close margin.

Many of the more essential industries have made appeals to the State authorities and through them to the Interstate Commerce Commission and are being assisted to a considerable extent in that manner.

It is quite difficult to quote any prices on fuel at this time. Some quite ordinary coal has sold at $10.

From this price sales have been made upward to as high as $15 for the best coal, much depending upon the need of the consumer. Some quite good steam coals are being sold at $12 and $13, and blacksmithing coal has also been moved at these prices.

With embargoes against the principal tidewater piers, the yards at those

points are beginning to clear up, as no coal is being received and a fair volume is being loaded from the coal on hand before the strike.

BALTIMORE

Railroad Distribution Body Is Expected to Improve Coal Movement—Movement Now Is at Low Ebb—Export Trade Is Embargoed—Hard-Coal Dealers Raise Prices Here.

Bituminous—The bituminous trade here is expecting better conditions shortly, and looking forward to the end of priority coal movement in any particular direction and to a start on export shipments. The failure of the outlaw railroad strike and the formation by 75 railroads of a committee of nine, headed by President Daniel Willard of the Baltimore & Ohio, to have charge of car distribution and general transportation conditions, under the Interstate Commerce Commission's general direction, gives faith in a better future.

Meanwhile shipment on permit has so restricted trading that there is no real price market. Some coal is sold still at the highest of recent figures, while in other cases sales of as good coal are made far below those figures, when quick outlet to some priority or preferential consumer is found.

At tide the reserve has been cut to a few hundred cars, from which some 2,000 a day are being dumped at all the piers on the coastwise priority business. More than forty ships to take on a total of close to 250,000 tons of export coal are now anchored in midstream here waiting a lifting of the export embargo.

This port made an export record in June, when around 615,000 tons of coal, of which about 530,000 was cargo fuel, was loaded here on foreign bound coal carriers.

Anthracite—Hard-coal dealers here, faced by mounting overhead costs and higher basic mine rates, have advanced retail prices again. The trade increased prices one dollar a ton last April and the dealers here have added another 25c. a ton to white-ash coals of all sizes except pea and buckwheat. Because of independent price increases they have added 50c. a ton to the cost of Lykens Valley coal. Coal has been coming in a little better.

Lake

BUFFALO

Bituminous Situation Improves Slightly—Price Varies Considerably—Consumers Bid Against Each Other, with Supply Small—Anthracite Is in Demand, but the Lakes Get Most of It—Coke Movement Is Light.

Bituminous—The situation in general is somewhat better, but it is of course all dependent on the car supply. If that could be increased materially most of the difficulties would disappear from the trade. Prices would drop to a rational figure and relief would be general. If the existing efficiency of coal cars could be increased relief would be obtained, but not much progress has as yet been made in that direction.

Some shippers, with favorable mine connections, are able to sell soft coal at $5 at the mine. Quite a good many, operators as well as jobbers, are trying to get $10, even up to $12 or so, but the amount at these prices is small. One Lake coal shipping company still sells steamboat fuel at $6.50 delivered, but the price is generally several dollars more.

Anthracite—The city consumers want more coal, but that will be true until all are supplied for winter. A leading distributor says that there is more coal delivered in the city now than ever before at this time of the year, unless it might be last season.

The shippers are crowding coal forward to the Lake trade as fast as possible. Points in the Buffalo territory can be supplied in winter, but coal must reach the upper lakes before winter sets in.

The amount of coal loaded in the Lake trade for the week was 135,300 net tons, of which 76,800 tons cleared for Duluth-Superior, 32,800 tons for Milwaukee, 25,800 tons for Chicago, 13,500 tons for fort William, 10,000 tons for Sheboygan, 3,400 tons for Manitowoc and 3,000 tons for Houghton.

Coke—Jobbers report a small movement of high grade coke to the furnaces on the basis of $17 at the ovens for 72-hr. Connellsville foundry and $16 for 48-hr. furnace. The nearest approach to low grade is breeze, but there is no regular market for it. One shipper reports offers for breeze in a single day ranging from $1.50 to $8.

Inland West

INDIANAPOLIS

Coal and Coke Prices Increase 75c. and $1, Respcetively — Industries Bid for Fuel and Raise Prices.

Increases of 75c. a ton on four grades of retail coal and $1 a ton on coke were announced last week. West Virginia splint is now selling for $11; Eastern Kentucky lump, $11; anthracite, egg, stove and grate, $14.75; anthracite, nut, $15.25 and coke, $14.

Retailers say they are unable to get satisfactory prices on coal from the operators. They say that industries who have to have coal are bidding the price so high that the retailers are compelled to pay correspondingly high prices and the ultimate consumer must stand the raise.

Five increases in the price of coal have been made in the last three months. Before March 30, West Virginia splint and Eastern Kentucky lump were selling for $8.50 a ton. The first increase came the day following, the second on May 11 and another May 18. The next came on June 2.

ST. LOUIS

Local Situation Is Fairly Good, but Country West of the River Is Seriously Lacking in Coal—Car Supply Shows Little Improvement—Steam Coal Is in Great Demand.

The local situation is fairly good; the supply of steam coal is about equal to the demand. Outside, however, there is insufficient steam tonnage to take care of actual requirements.

Chicago and points in Michigan and the north are draining heavily on the local market at prices ranging from $5 @$5.50 for lump, egg, nut, screenings and mine-run from the Standard field. This has forced local prices up.

A few operators in this field (principally the large shippers) still continue to sell coal at about $3.50@$4, the bulk of which tonnage is sold to railroads and on contracts. The mines in the Standard field average from 1½ to two days a week on commercial coal and about four days a week where railroad coal is loaded. The railroad tonnage continues heavy.

In the Mt. Olive field a little better working time on commercial coal prevails. Railroad tonnage is also heavy. The prices in this field average around $3@$3.50 to the regular trade.

In the Carterville field the circular of about $3.80 is pretty well maintained among big shippers, but here and there prices as high as $5 and $5.50 are asked on all sizes.

In the Duquoin field 2½ days a week average on commercial coal. Contracts and old orders are side-tracked for the prevailing prices of $4.50@ $5.50 on all sizes.

The country west of the Mississippi River is pretty well stripped of coal. The wheat crop will be delayed in harvesting on account of the scarcity of coal for threshing. Public utility plants are running on three or four days supply ahead throughout Missouri and Arkansas.

In St. Louis proper no anthracite has come in, no smokeless and no Arkansas, and no coke is available. There is no change in retail prices.

DETROIT

Quantity and Quality of Coal Coming to Detroit Is Quite Unsatisfactory—Detroit Coal Exchange Appoints a Committee to bring About Federal Action—High Prices Are Due to Manufacturers Bidding for Coal.

Bituminous—Confronting a situation which dealers fear will result in placing bituminous coal on a price level of $20 to $22 a ton next winter, members of the Detroit Coal Exchange are working to influence intervention by Government agencies that will bring about a freer movement of bituminous to Detroit.

Shipments now coming to the city are meager and fall far short of meeting the market's requirements, both as regards quantity and quality of stock. Among some of the members of the Coal Exchange the impression has been created that the Federal authorities are

endeavoring to meet the requirements of New England consumers by diverting to that district coal that has been coming to Detroit, and that the high-grade coal is to be replaced in the local market by shipments of western stock, which is regarded by the local trade as of low quality and undesirable for either industrial or domestic use.

The Coal Exchange has appointed a special committee to lead the movement to obtain more and better coal for Detroit consumers. The committee is to seek the co-operation of the Detroit Board of Commerce, of Detroit's mayor and common council, the governor of Michigan and the state's senators and representatives. Methods of some large industrial consumers are being criticised by local coal men as stimulating objectionable price advances. Certain industrial plants, the identity of which is not disclosed, are alleged to have sent several representatives to mining districts to bid against each other for coal with the result that prices were forced up so that the coal cannot be handled by dealers serving domestic consumers.

COLUMBUS

Transportation Conditions Improve Only Slightly—Coal Associations Urge I. C. C. to Extend Open-Top Order and Time for Unloading Coal—There Is No Coal on Retail Yards and Consumers Are Uneasy About the Winter Supply.

The coal market remains unsettled with active buyers ready to snap up all coal which can be offered for shipment. But the great barrier to any stability to the trade is the car situation. Only a little improvement in transportation conditions has resulted from the orders of the Interstate Commerce Commission.

Ohio operators continue to be pessimistic over the situation, but the railroads say they are doing the best they can under the circumstances. When the coal cars were turned over to private owners by the Railroad Administration, they were in bad shape and since that time, the railroads have had little chance of catching up.

While the roads have been making special efforts to reach a better car supply, reports from Ohio mines show that only from 40 to 50 per cent of the necessary cars have been supplied during the past week.

The Southern Ohio Coal Exchange adopted a resolution urging the Interstate Commerce Commission to extend for another 30 days, the order permitting the use of open top cars only for coal.

The Michigan-Ohio-Indiana Coal Association has sent a protest to the Interstate Commerce Commission against the enforcement of the order which cuts the free time for unloading coal from 48 to 24 hours, and which is working a great hardship upon the small dealers.

Public utilities are having much trouble in getting enough coal of the right grade to keep their plants running and they fear they are facing a most serious condition.

With practically no coal on the retail yards of Columbus, the people are getting somewhat uneasy regarding the coal supply for next winter. This feeling is intensified by the natural gas companies serving Columbus announcing that a shortage of gas was certain the coming winter.

Practically no free coal is to be found anywhere, and in many instances larger industries are paying a bonus of as high as $1 a ton for spot coal. The approximate prices at the mines, with here and there a wildcat market, are:

Hocking lump	$4.50 to $6 75
Hocking mine-run	4 50 to 6.50
Hocking screenings	4 50 to 6.50
West Virginia splints, lump	5 75 to 8.25
West Virginia splints, mine-run	5 50 to 8 00
West Virginia splints, screenings	5 50 to 8 00
Pocahontas lump	7 00 to 8.25
Pocahontas mine-run	7 00 to 8.25
Pocahontas screenings	6 75 to 8.00
Pomeroy lump	5.00 to 7.75
Pomeroy mine-run	5 00 to 7.75

CINCINNATI

Transportation Improves Slightly—Fair Price Commission Investigates Conditions—Ohio River Could Have Been Used to Greater Advantage.

Perhaps the only thing of note in the local field this past week has been the slight improvement in transportation, but the change has been so small as to hardly cause more than a ripple in the situation that has become alarming.

Coal men on all sides are interested in the investigation being made by the Fair Price Commission and they claim that some quite interesting facts will be brought out at these meetings. The blame for the high prices is placed by the dealers on the mine operators. The local brokers and wholesale dealers declare that they are charging no more commissions than formerly.

There appears to have been considerable negligence in using the Ohio River, the greatest natural waterway in the coal fields. There has been a fine stage all during the spring and summer and this transportation highway could have been used to greater advantage in shipping coal throughout the Ohio and Mississippi valley.

The use of this river would have greatly relieved the coal situation at points along the Ohio and its tributaries, and there is no reason why coal could not be shipped down this great waterway and then reloaded for interior points. But as it is, only a comparatively small amount of coal has passed through the Cincinnati harbor.

Southern Ohio coal men do not look for any improvement in the fuel situation for some time. There will be no relief until there is a sufficient car supply so that an amount of coal can be moved to meet the requirements of consumers.

MILWAUKEE

Soft Coal Receipts Are Much Behind Record for 1919—Lakes Must Relieve Situation by Maximum Tonnage—Anthracite Prices Advance—Soft Coal Held at High Rates.

With the month of June gone and receipts of soft coal over a million tons behind the record of last year, the prospect of a fuel famine in this section of the country next winter looms larger with each passing day. There are five months of Lake navigation left, and unless receipts can be maintained at a maximum figure throughout that period the game will be lost. Rail conditions are deplorable and but little coal reaches the yards through that channel.

Receipts of anthracite are slightly in excess of the record of last year up to the present time, but the stock of this grade of coal is less than it was in 1919, because no anthracite was carried over from the previous season, as was the case in the spring of 1919.

Anthracite was advanced 10c per ton on July 1. No price list on soft coal has been formulated by dockmen, but the following figures rule, seemingly by common consent. An extra charge of $1 per ton is added to all coal carried into bins:

Anthracite:	
Stove and nut	$14.85
Egg	14.70
Pea	13.20
Buckwheat	11.60
Illinois and Indiana coal:	
Steam, screened	9.00
Steam, screened, retail price	10.00
Mine-run	8.50
Mine-run, retail price	9.50
Youghiogheny:	
Screened	10.50
Mine-run	10.00
Screenings	9.25
Smithing	12.75
Cannel	16.00
Pocahontas:	
Lump, egg and nut	13.75
Mine-run, steam	10.50
Mine-run, retail	11.25

Receipts of coal by Lake for the first six months of 1920 aggregate 265,671 tons of anthracite and 244,635 tons of soft coal, against 263,572 tons of the former and 1,269,992 tons of the latter in 1919, a gain of 2,099 tons of anthracite and a loss of 1,025,257 tons of soft coal in comparison with the receipts up to the present time last year.

MID-WEST REVIEW

Embargoes on Michigan and Eastern Points, Send Local Coals to National Territories—Retail Dealers Crowd the Market and Coal Is Getting Scarcer—Situation Is and Will Be Critical for Some Time.

Coal is moving a little more freely to points in Illinois, Iowa, Minnesota and Wisconsin, because operators who have been tempted by high prices to ship coal into Michigan have been forced to discontinue this, as Michigan and Eastern points have been embargoed so far as Illinois and Indiana coals are concerned.

As a result, our local coals are going back for the time being into their natural territories, and the retailers and manufacturers of Iowa, Minnesota, etc., are being given an opportunity to accumulate a little coal. The fact that Chicago for the time being is partly embargoed goes still further to relieve the acute situation as now prevails in the Northwest.

A noticeable feature of the trade is the fact that retail dealers are now beginning to come into the market in

large numbers. Up until quite recently the manufacturers were the people buying the coal, but now the retailers are as numerous in our coal markets as the manufacturing or steam coal buying element.

One reason for the influx of retail dealers is that the farmers are now ready to purchase coal for threshing purposes, consequently the retailers are trying to cover, and with but medium success, as all grades of coal are harder to obtain as the season advances.

The coal shortage has now reached the point where some industries have been forced to curtail production or close down altogether, and it is freely predicted that within a short time the "non-essentials" will not be allowed to receive coal.

Of course the car situation will doubtless improve to some extent, owing to the efforts of the railroads and the Interstate Commerce Commission, but it will be considered somewhat in the light of a miracle, if the mines will produce enough coal between now and the fall, to keep our industries running and our people supplied with an adequate amount of coal for the early winter months.

CHICAGO

Demand Increases with Supply Stationary — Mine-Run Sells at Same Price as Prepared Sizes—Little Free Coal Is Obtainable from Southern Illinois — Railroads Culminating in Chicago Are Embargoed.

The Chicago coal market continues quite favorable for the producers as the demand exceeds the supply, and the demand is growing in volume every day while the supply is remaining practically stationary.

The car supply in some districts has improved slightly but not enough to influence the market in the slightest degree. It is thought, however, that within the immediate future more cars will be available at the mines as the measures taken by the Interstate Commerce Commission ought to bring about some improvement soon.

Prices on current sales appear to be between $5 and $6 f.o.b. mines on central and northern Illinois coals. Screenings and mine-run are selling at the same prices as lump or other domestic prepared coal.

Current sales on the higher-grade fuels from Williamson, Franklin and Saline counties are from $5.25 to $7 f.o.b. mines, according to grade and quality. It must be remembered, however, that the great bulk of southern Illinois is moving at prices ranging from $3.55 to $4 mines, on old orders, and that consequently there is little free coal obtainable from southern Illinois.

Prices on Indiana coals for current shipment are from $4.75 to $7 according to grade. Indiana Third Vein coals are selling on the market at from $4.75 to $5.25 mines for screenings or mine-run, while some Fourth Vein coals from either the Linton or Clinton districts are bringing as high as $7 mines for 11-in. lump. No great changes are expected in the market for the next week or two.

South

BIRMINGHAM

Production Improves with Greater Car Supplies on Southern Ry.—Strikes and Irregular Working Keep Down Output —Steam and Domestic Coal Are Quite Short—Demand Is Strong.

A more equitable and liberal distribution of coal-loading equipment has been made to mines on the lines of the Southern Ry. this week, this line being enjoined from alleged preferential assignment of cars to fuel-contract mines, and the number of cars available being increased to some extent by the effectiveness of the Interstate Commerce Commission order. A like improvement is expected on the Louisville & Nashville and Frisco lines.

These helpful factors are bringing about a better production, but labor disturbances, where local strikes are being maintained for union recognition and where mine workers report for duty irregularly, are seriously crippling the supply of coal, which is so badly needed from the merchant and domestic mines of the district.

Industries of every character, both utilities and bunkerage interests, are suffering as a result of the irregular and insufficient deliveries they are receiving, and sales agents and brokers are besieged by wire, letter and personal visits of fuel-users from every section of Southern territory.

There is very little spot coal of the better grades to be had above contract requirements, and the situation is little better as respects the medium and lower qualities. Quotations, which remain comparatively steady, are as follows per net ton mines:

Carbon Hill mine-run	$4 25@$5 00
Black Creek and Cahaba mine-run	4 00@ 6.00
Nickel-plate mine-run	3 50@ 5.00
Big Seam mine-run	2 90@ 5 00

The receipts of domestic coal are quite unsatisfactory, as a number of mines producing this grade of coal in Walker, Bibb and Tuscaloosa counties are entirely or partially closed by several weeks. Contracts for monthly quotas past due, which could not be shipped on account of labor difficulties and car shortage, have been cancelled in most cases, as there is no possible chance for the mines to catch up with those deliveries later.

There is only approximately 14,000 tons of domestic coal in the yards of Greater Birmingham at this time, and retailers have been endeavoring to stock up since April 1. Consumers are showing little disposition to lay in winter coal, and the accumulation of reserves. Domestic quotations are as follows per net ton mines on lump and nut sizes:

Black Creek and Cahaba	$4 80@$6 50
Carbon Hill	3 80@ 4 75
Corona	5 70
Montevallo	7 45
Big Seam	3 75@ 4 00

LOUISVILLE

High Prices Check Bidding of Industrial Buyers—Retailers and Domestic Consumers Are Not Stocking Coal — Demand Is Strong for Immediate Use —Suits Are Filed Against Contract Violators.

It is claimed by some coal men that the markets are now so high that consumers have stopped the practice of bidding up the markets. At any rate advances have about ceased, and the markets appear firm. Eastern Kentucky prices have not advanced materially for the past two weeks, although there have been some slight gains in Western Kentucky prices.

Strikes in some sections of Eastern Kentucky and West Virginia at the present time may give individual mine owners trouble, but it will not affect production, as there is such a car shortage that half of the mines could be shut down, and the balance would not secure a full supply even then.

Retailers are stocking practically no coal, and the same is true of domestic consumers. High-priced coal is selling for immediate consumption. It is believed that industrial demand is for immediate use only, and that stocks are not accumulating.

The industrials and the utility companies continue to be the big buyers, with some little demand coming from railroads.

Much complaint is being heard from jobbers, consumers and even retailers concerning failure of some mining companies to fill contracts, after the market went up. Several suits are pending, and a number of others are to be filed.

Quotations show Eastern Kentucky gas coal at $8.75@$9.50 for mine-run; non-gas or steam, $8.25@$8.75; Western Kentucky, $5.25@$5.50. Some Wetern Kentucky block is reported to be selling at $5.75@$6 a ton, with some small lots of screenings at $5@$5.25. All these prices are at the mine.

West

SAN FRANCISCO

Conditions Remain Stable—Coal Comes from Utah and Wyoming Mines, with Small Amount from New Mexico.

Conditions continue stable here. The bulk of the coal is shipped to San Francisco from the Utah and Wyoming mines, at the same price as last quoted. The shipments from New Mexico are comparatively small, with the price steadily rising, according to announcement. The present figure of $5.25, will go up at the rate of 25c. a month for the next three or four months. A large quantity of Utah coal is used each month by the King Coal Co. in bunkering steamships.

The bituminous prices, f.o.b. mines, wholesale, Utah and Wyoming, per net ton, are as follows:

Stove and lump, $4.50.

The bunker price is $13.55.

News From the Coal Fields

Northern Appalachian

PITTSBURGH

Divergence of Views on Car Supplies —Spot Market Recovers Most of Its Decline—Some Operators Take Care of Regular Customers.

The curious situation is presented of the coal interests complaining that the 100 per cent car-supply order, issued by the Interstate Commerce Commission in favor of the coal mines, has produced but little increase in their car supplies; and of the iron and steel interests complaining that the operation of the order has greatly reduced their car supplies, through cars being taken out of the one service and being put in the other.

The declining tendency in the spot coal market reported a week ago was short lived, as prices have since been advancing and are now nearly as high as at any time. The evidence is that the decline was due to embargoes on shipments east for export, rather than to there being larger supplies for consumption at home in proportion to market demand.

Attention is called to the fact that some operators are selling coal to more or less regular customers at prices ranging generally from $6 to $8 a ton, instead of exacting all that the market might pay if the coal were simply sold to the highest bidder. The ordinary open market for spot shipment is quotable at about $9 to $10, per net ton at mine, Pittsburgh district, for steam, gas and byproduct coal; an advance of fully a dollar a ton from the reduced level reported a week ago.

CONNELLSVILLE

Rate of Production Is Practically Unchanged—More Coal Is Moving to Byproduct Ovens — Spot Prices Are Higher—Contracting Is Slow.

Connellsville coke operators continue to complain of their car supplies, which in most quarters are represented as having decreased since the Interstate Commerce Commission's order, as to coal-mine preference, went into operation; but there is no evidence that there has really been any change of consequence. Shipments are still quite unsatisfactory, of course, being at only about 70 per cent of the rate in March.

Coal operators do not admit that there has been much improvement in their car supplies, but there is no doubt that considerably more coal is moving, and supplies to byproduct ovens have accordingly increased; more byproduct coke is being made, easily more than sufficient to offset the largest decrease that can have occurred in the output of coke by the Connellsville region.

The market for Connellsville coke for spot shipment has advanced $1 to $2 a ton in the week. Sales of both furnace and foundry coke have been made at $18, though some coke has gone at slightly less.

The advance hardly reflects increased demand or decreased offerings, but rather a tendency for some consumers to become more accustomed to high prices, and nearly all producers becoming accustomed to asking high prices.

The contract furnace-coke market is not moving very well, prices asked failing to attract consumers not yet covered, but the bulk of the second-half contracting has been done. The market for both furnace and foundry coke is quotable at about $17.50 to $18 for spot and at $12 for contract, per net ton at ovens.

The Connellsville *Courier* reports production in the Connellsville and Lower Connellsville region in the week ended June 26 at 185,610 tons, an increase of 6,880 tons.

FAIRMONT

Further B. & O. Strikes Interfere with Production in Fairmont Region—Railroads Are Congested from Mines to Tide—Coal Moving East Is for Railroad Consumption.

When the strike of switchmen and yardmen on the Baltimore & Ohio extended to Fairmont on Saturday, June 26 it brought coal production and coal movement in the Fairmont region almost to a complete standstill, while in other northern West Virginia fields, production was almost as seriously affected. On the Western Maryland the coal freight movement was also practically at a standstill. The Fairmont strike was short-lived, the men voting Sunday night to return to work.

The delay of the Railroad Labor Board in reaching a decision on the demand for an increase in wages, was the reason given by the strikers for their going out. While some coal was produced and moved in the Fairmont region during the five days preceding Saturday, both the mines and the various railroads were greatly handicapped, the car supply being seriously curtailed, owing to the fact that the Baltimore & Ohio railroad was unable to move any coal to speak of east of Grafton. For the same reason it was impossible to bring in empties from the East.

However, there were more cars available for the mines than producers had any reason to expect, in view of the fact that there was a serious congestion of freight all the way from Fairmont to New York and other points, with yards in the Fairmont region also clogged with cars because of the inability of the railroad to move loads except to quite a limited extent.

While there was a fairly adequate run of empties on the Monongahela R. R. in West Virginia for the first few days of the week, nearly all the supply during the latter part of the week was assigned for railroad fuel. That was true also as to mines on other railroads, nearly all the 300 cars furnished Monongah division mines of the B. & O. being assigned for railroad-fuel loading.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

BITUMINOUS COAL.

	1920		1919 (a)	
	Week	Calendar Year to Date	Week	Calendar Year to Date
June 12b	10,355,000	231,421,000	8,485,000	192,489,000
Daily average	1,726,000	1,658,000	1,414,000	1,379,000
June 19b	10,077,000	241,499,000	8,681,000	201,170,000
Daily average	1,680,000	1,659,000	1,447,000	1,382,000
June 26c	10,454,000	251,953,000	9,470,000	210,640,000
Daily average	1,742,000	1,662,000	1,578,000	1,389,000

ANTHRACITE

	1920		1919(a)	
	Week	Calendar Year to Date	Week	Calendar Year to Date
June 12	1,907,000	38,289,000	1,695,000	35,647,000
June 19b	1,803,000	40,092,000	1,753,000	36,800,000
June 26c	1,820,000	41,912,000	1,855,000	38,655,000

BEEHIVE COKE

United States Total

Week Ended June 26 1920	Week Ended June 19b 1920	Week Ended June 28 1919	1920 to Date	1919 to Date a
406,000	372,000	284,000	10,532,000	9,508,000

(a) Lessone day's production during New Year's week to equalize number of days covered for the two years. (b) Revised from last report. (c) Subject to revision. All figures in net tons

NORTHERN PAN HANDLE

Railroads Improve Service, but Only 40 Per Cent Commercial Coal Is Mined —Eastern Ohio Also Speeds Up Production.

There was some improvement reported in railroad service at mines loading commercial coal in the Northern Pan Handle district and carriers appeared to be making an earnest effort to comply with the 50 per cent supply order, though during the week the tonnage of commercial fuel mined and loaded equalled only about 40 per cent of potential capacity.

Mining conditions in general were pronounced as satisfactory except for the shortage of labor, due solely to broken time in the operation of mines following in the wake of an insufficient car supply.

Just as there was a slight improvement in the course of the week in the Northern Pan Handle region so also were Eastern Ohio mines able to speed up production to a limited extent, although still seriously handicapped by inability to secure a sufficient supply of cars.

Middle Appalachian

VIRGINIA

Production in Virginia Decreases— Permits for Export Are Cancelled— Commercial Buyers Absorb Spot Coal.

Production in Virginia during the week ended June 26 was 136,261 tons, as against 143,000 tons the previous week, losses in production from all sources amounting to 53,845 tons, the mines operating to 66 per cent of capacity.

Under service order No. 6 and No. 7 of the Interstate Commerce Commission permits for export via Charleston, were cancelled and no new authority to move coal was issued. In that way export shipments were largely cut off, although, as reported last week, it had not been generally anticipated that exports from the Virginia fields would be cut off because of the fact that Charleston, S. C., is too far south to make any difference as to New England shipments.

Commercial buyers, it was stated at the end of the week, were absorbing all spot coal which was limited in volume, at a price ranging around $9.

KANAWHA

Embargoes Cut Off Exports and Send High-Volatile West—Car Supply Is Erratic but Production Increases.

Even before the New England order became effective Kanawha splint could not be shipped to tidewater because of a congestion there. The feeling existed among shippers that embargoes by the railroad were only a round-about way of cutting off Kanawha exports. Shipments to Inland Eastern markets were relatively small as compared with previous weeks.

With high-volatile coal cut off altogether from the piers it was felt that such congestion as had existed there should be speedily cleaned up. With a barrier existing against seaboard consignments there was a rather marked increase in the Western movement of Kanawha coal, even the Lakes deriving some benefit.

Production in the week of June 26 was 105,000 tons as against 98,000 tons for the previous week. It is believed that car supply was not above forty-one per cent. Traffic on Coal River was interrupted for a time about the middle of the week by a derailment which served to shut off empties and car supply on the Kanawha & Michigan was low during the week.

Monday, June 28, however, saw the largest car supply in recent months, the mines on the Chesapeake & Ohio system as a whole having an 88 per cent supply while in the Kanawha region mines had 104 per cent. Coal River mines on the same day received a supply equal to 88 per cent of requirements.

NEW RIVER AND WINDING GULF

Priority Orders Make It Almost Impossible to Send Coal East, Even for New England Use — Considerable Smokeless Goes West — Production Slumps on the Gulf and in New River Field.

While the priority order of the Interstate Commerce Commission may be giving relief to New England, it has resulted in such a snarl at tidewater terminals that by Monday, June 28, it was impossible to ship either high or low-volatile coal to Atlantic piers. The priority order, combined with orders forbidding export (thinly disguised as embargoes), put an end almost entirely to the exporting of smokeless coal, and by the end of the month made it almost impossible even to send coal eastward for New England use.

It was impossible to handle all the coal at tidewater held for New England transshipment, yet neither the Interstate Commerce Commission nor the railroads would permit any of the surplus coal to be exported. Only coal to Pool 1 and that for the Navy was permitted to be forwarded to tidewater after Monday, June 28.

The tidewater embargoes forced a larger volume of smokeless coal west through Russell, Ky., and through other terminals than at any time during the present year.

Production fell off in the week of June 26 owing to a slump in the car supply. The congestion at tidewater is expected to contribute further to the car shortage, although on June 28 cars were more plentiful on the Chesapeake & Ohio than they had been at any time during the year.

Production in the Winding Gulf field on the Virginian Ry. slumped in the week of June 26. Operation was limited to about half a week compared with about four days during the previous week. On the Chesapeake & Ohio car supply was still hovering around 40 per cent. The orders of the Interstate Commerce Commission have resulted in such a congestion at Newport News that the C. & O. has embargoed all tide shipments except Pool 1 for Navy use.

Hope for a better car supply in the week of June 26 in the New River field, as promised by the C. & O., was dissipated early in the week. Three full working days had been promised but the car supply was under that of the previous week. Production in the week of June 19 was 114,000 tons, but decreased in the week of the twenty-sixth to less than 100,000.

Many New River producers began shipping their coal west anticipating the congestion at tidewater. After Monday, June 28, tidewater shipments of smokeless coal over the C. & O. ceased to a great extent with a corresponding increase in Inland West and Lake shipments.

POCAHONTAS AND TUG RIVER

Car Supply Is Equalized in N. & W. Fields—Priority Orders Cut Off Exports and Create Confusion—Western Coal Fields of U. & W. May Receive More Empties.

Although production in the Norfolk & Western fields, during a part of the week ended June 26, appeared to be on a larger scale than during the previous week, not all the regions supplied by the N. & W. enjoyed the benefit of the increased car supply, it having been the policy of the road to equalize the supply available in the different fields from week to week, as a result of which some of the districts suffered.

While the flow of empties from the West was somewhat in excess of that witnessed earlier in the month, it was not what had been anticipated. The general confusion created by the New England priority order, virtually cutting off exports, tendeed to materially affect the supply of empties.

While sufficient time had hardly elapsed to observe the effect of the priority order, it was the judgment of some operators that such an order would prove a boon to shippers in the western fields of the Norfolk & Western although more difficulty would be experienced in getting cars back.

Production as a whole in the Pocahontas region is now slightly over 50 per cent of potential capacity but whether it will be possible to maintain production at that figure will depend to a large extent upon how empty cars move in from the West.

While rather deploring the priority order which served to shut off export shipment, yet some of the Tug River operators were rather of the opinion that the decreased eastern movement, which would inevitably result from the priority order, would tend to help matters insofar as the western coal fields of the Norfolk & Western were concerned, by increasing the supply of empty cars available for this field.

NORTHEAST KENTUCKY

Production Here Is 41 Per Cent of Capacity — New England Priority Order Has Little Effect in Kentucky.

Production in the Northeast Kentucky field during the week ended June 26 was 122,535 tons, or 41 per cent of capacity. The loss of 59 per cent of capacity was almost wholly due to lack of cars.

The New England priority order had little effect in Kentucky coal fields. Markets in northern Ohio, Illinois and Indiana are receiving most of the output of the eastern Kentucky mines. So far as could be learned there had been no material increase in lake shipments.

Southern Appalachian

ALABAMA

State Should Receive $500,000 from Coal and Iron-Ore Tax, in the Fiscal Year.

Alabama will receive a little more than $500,000 as taxes on coal and iron during the fiscal year, which began last October, if the monthly payments continue to make the average they have made during the first seven months.

Figures compiled by the State Auditor's Department show that the total amount paid in to the treasury during the seven months was $294,263.58, an average of $42,037.65, or a total of $504,451.60 for the 12 months.

The tax of 2c. a ton on coal has exceeded the total from the tax of 3c. a ton on iron by about $100,000. The total from coal has reached $197,111.72, while the total from iron has been $97,151.86. During April, the last month reported to the state, the tax on coal was $28,918.12, and the tax on iron $14,197.11

Middle Western

INDIANA

State First-Aid and Rescue Meet Will Be Held Next August—Prizes Aggregating $3,000 Are Offered—Governor Goodrich Indorses Proposition for State to Purchase a Coal Mine and Coal Cars.

Miners in the western part of Indiana are preparing for the competition in the first-aid and rescue meet at Clinton, Ind. The affair will be the largest ever held in the state and prizes of $3,000 have been offered for the winning teams.

The Indiana Bituminous Coal Operators' Association and the United Mine Workers of America (district No. 11) will defray the expenses of one team each to the national meet at Denver, Col., during the latter part of next August.

A new feature, which will be introduced in the state meet, is the adoption of the methods of rescue and first-aid work as recommended by the Bureau of Mines.

A coal development program will depend on whether the school land adjacent to the lands now owned by the Standard and the Rio Grande coal companies will be available.

To provide for the speedy development of the property the state land board required a minimum rental of $5,000 the third year and of $10,000 a year thereafter.

After many conferences, Governor James P. Goodrich, of Indiana, has indorsed a resolution adopted by the State Purchasing Committee proposing that the state purchase a coal mine and coal cars in order to insure state institutions an adequate supply of fuel. As the project will entail an expenditure of several hundred thousand dollars, it will be necessary to obtain an appropriation from the State Legislature, which shortly is expected to convene in special session.

The resolution was submitted to the Purchasing Committee by Charles A. McGonagle, superintendent of the Indiana Boys' School. Upon adoption by the committee, it was immediately presented to the Governor who officially approved it. This is the first time in the history of the coal industry in Indiana that such active steps have been taken toward the ownership by the state of a coal mine.

Missouri Valley

OKLAHOMA

Auction of Indian Coal Lands Is Held at McAlester, Okla.

Bids of $505,312.96 were made for coal deposits sold at the Government auction of Choctaw and Chickasaw holdings at McAlester recently. Tracts aggregating 25,288 acres were disposed of, bringing the average price to $19.98.

This was the third and last sale under special act of Congress, and the remaining 423 tracts will continue as tribal property until another disposal law is passed.

The highest price, of $54 an acre, was paid by the East McCurtain Coal Co., Fort Smith, Ark., for 3,443 acres near McCurtain. No bids were received above the minimum set by the government.

NORTH DAKOTA

Railroads Promise Help for Lignite Mines—Conference Is Held to Discuss Plans—Spur Tracks Are Discussed.

Recently a conference was held in the offices of the Railroad Commission at Bismarck, between railroad officials and coal operators concerning the development of the lignite industry.

The chief problem taken up was that of supplying spur tracks to coal mines and the manner of paying the cost of the installation.

The Railroad Commission probably will issue orders in the near future covering the subjects discussed. The practice of carriers, it was stated, is to install the portion of a spur track from the main line to the point of clearance of a car, and to ask the operators to install the remainder of the track and pay for the right-of-way.

It was reported that the railroads generally observed the practice of furnishing steel for the tracks and leasing them. Assurance was given by the railroad representatives that they would furnish second-hand steel whenever possible for spur tracks, but gave no assurance that new steel would be purchased for such work.

Western

UTAH

Special Pillars Should Not Be Taxed—Legislation Is Recommended—Outcome Affects Method of Mining.

That pillars of coal left in mines for the protection of haulageways should not be classed as coal or subject to tax, is the contention of the Independent Coal & Coke Co., of Utah, before the State Board of Equalization. These pillars, it is argued, should be left so that coal seams farther back from the surface may be mined by future generations, when the coal near the outcrop has been mined out.

The board has, in the present instance, not yet rendered a decision, but it has for some time had under consideration the question of recommending legislation with regard to haulageways in Utah mines.

It is recognized that once the pillars of a mine are pulled it will no longer be possible to reach (by tunnels) the ground farther back; and the topography of the Carbon County coal fields is such that mining by means of shafts is not practicable, as in the coal-mining districts in other parts of the country.

The problem here is, therefore, an individual one.

Alaska

BERING RIVER

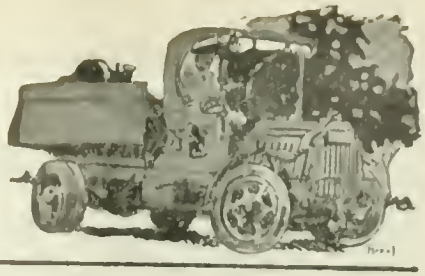
Coal Lands on Government Railroad in Alaska Are Ready for Sale.

Under the coal lands leasing law enacted in Oct., 1914, coal lands in the Bering River, Cook Inlet, Matanuska and Nenana coal fields have been divided into leasing blocks or units, ready for sale. The two last named fields are tributary to the Government railroad now being constructed.

New town sites have been established upon the public lands along the line of the railroad and lots for business and residential purposes disposed of through the Land and Industrial Department of the Alaskan Engineering Commission.

As soon as arrangements are completed for traffic on the Government railroad, large numbers of settlers are expected to rush into the agricultural districts.

Mine and Company News



ALABAMA

Birmingham—The Sheffield Iron Corporation has closed a contract with the Semet-Solvay Co. whereby the Ensley plant of the latter company will be furnished with coal from the mines of the Sheffield corporation near Porter and Littleton; the coke produced is to be shipped to Sheffield and used in the furnaces of the Sheffield company.

The Semet-Solvay Co. is now coking about 1,000 tons of coal per day for the Alabama company for use in its furnaces. There are 240 byproduct ovens at the Ensley plant and the company maintains a heavy production of byproducts, for which there is a strong and steady market.

This district is experiencing the strongest demand for both furnace and foundry coke that has been in evidence before in quite a while. Both grades are quite scarce and the local consumption of furnace coke is greater than at any time in the past year; practically every furnace stack in the district, except those undergoing needed repairs, being in blast. Foundry coke is quoted from $11 to $12.50 per net ton ovens.

NEW YORK

New York—The Crystal Coal Corporation, with offices at 47 Broadway, New York City, has been organized under the laws of Delaware. The new corporation has a capital stock of $1,000,000 and, according to an announcement, is to engage "actively in the sale and production of anthrarite and bituminous, particularly for export." It was said at the offices of the corporation that contracts for the export of coal to Italy, France and Scandinavia have been closed for more than 2,000,000 tons, for movement within the next two years.

PENNSYLVANIA

Lansford—As the result of a gas explosion in the Lehigh Coal & Navigation Co.'s No. 10 mine on June 21, two men were instantly killed and two were taken to the Coaldale Hospital in a critical condition. All were miners.

Michael Dillon, of Tamaqua, and Paul Scroback, of Coaldale, were the men killed, several hours being required to reach their bodies, owing to the debris and gas. The force of the explosion was so great that dirt was blown more than 600 feet to the top of the shaft.

Scranton—Two miners of the Delaware Lackawanna & Western Company were caught in a cave-in in the surface seam of the National mine. One of the men was instantly killed while the other was imprisoned between two loaded mine cars. Twenty nine hours were required before the rescue party was able to dig its way into the imprisoned miner to relieve him. The work was exceedingly dangerous as there was continual danger of further caves occurring. In order to reach the miner, it was finally necessary to drive a bore hole through a large slab of coal and then enlarge this hole to a size that would permit the miner to crawl through it. If the slab of coal had been removed the roof would have fallen and caused the death of the imprisoned man.

Cowanshannoc — Angelo Potegrina, aged 45, and Loret Monterelli, aged 43, were instantly killed on June 14 in a gas explosion at one of the mines of the Pittsburgh Carbon Steel Co. at Buttermilk Falls, three miles west of Kittanning. The mine was badly damaged by the force of the explosion which is thought to have been caused by the unfortunate men coming in contact with a pocket of gas as they were carrying open lights.

Waynesburg—Two deeds, the largest in the history of Greene County, were filed on June 14 in the office of the Recorder at this place. Both, however, are dated April 1, 1920. One deed was to the Piedmont Coal Co. by the Josiah V. Thompson coal interests, in which coal under 625 tracts of land, located in Cumberland, Dunkard, Franklin, Gilmore, Greene, Jefferson, Monongahela, Perry, Wayne and Whitley townships, and Rice's Landing and Carmichael's boroughs, amounting to thousands of acres of its unused land in Indiana County.

Wilkes-Barre—The Lehigh & Wilkes-Barre Coal Co. is making preparations to remove a mammoth culm bank located on the Wilkes-Barre city line near Gilligan St. The company expects that about three million tons of coal will be recovered.

Two miles of railroad track are being laid around the bank for a five cu.yd. steam shovel. The culm will be loaded into mine cars, transferred to a pocket and then loaded into gondolas. It will then be taken to the Empire Colliery washery, at Wilkes-Barre. It will require about three years to remove the bank.

WEST VIRGINIA

Morgantown—What is giving an impetus to the development of the coal lands on Scotts Run and in other parts of Monongalia County at the present time, is the strong probability of an extension of the Morgantown & Wheeling R.R. Of late there have been a good many new coal companies organized to operate both in Monongalia and Preston counties. While there was a steady growth in development during the war period there has been even a more rapid growth since the close of the war.

Beckley—The Gracum Coal Co. has purchased about 1,900 acres of coal land on Fat Creek, in Raleigh County, from the Beaver Coal Co., the consideration being, it is said, $200,000. It is understood that the purchasing company will begin development work at an early date.

Page—A deal of considerable magnitude has been consummated involving a change in the ownership of the Loup Creek Colliery Co. This coal operation and all its holdings have been acquired by the Virginian Ry., the transportation company having purchased the mines for the purpose of insuring a dependable fuel supply for itself. The present capacity of the plant is about 500,000 tons a year. In view of increasing the output, some 2,000 additional acres of coal lands have been purchased.

Charleston—The mining and shipment of coal at the plant of the Nellis Coal Co., on Brush's Creek in the Coal River field has begun, although for the time being the company is using a temporary tipple, to be replaced later by a permanent structure. Other improvements will be made entailing an expenditure of about $250,000. It is proposed to build more houses. The new tipple will be equipped with shaker screens, picking tables, loading bins, etc. The company has available for development about 2,000 acres of No. 2 gas coal.

Two West Virginian coal companies materially increased their capital stock during the early part of June. One was the Fairmont & Cleveland Coal Co., of Fairmont, the capital stock of that concern being increased from $600,000 to $1,250,000. W. E. Watson, of Fairmont, is the president of the company. The South Fork Coal Co., of Huntington, W. Va., increased its capital stock from $500,000 to $700,000. The president of the company is Donald Clark.

The entire holdings of the H. C. Coal & Coke Co. in Kanawha County, near Charleston, were taken over by A. S. Davis and D. E. Mitchell, of Pittsburgh, Pa. The new owners will make extensive improvements on this property and will operate it in connection with their 50,000 acres of coal lands recently acquired by them in Buchanan County, W. Va.

Industrial News

Chicago, Ill.—The Krehbiel Co., of this place, announces that the Gladstone Coal Co., of Petersburg, Ind., has placed a contract with it for a new four-track wood tipple with Jacobson horizontal screens and picking tables for the new mine near that place. Also that the Key Coal Co., of Evansville, Ind., has ordered a three-track Jacobsen horizontal screen and picking table of Krehbiel Co., for the mine Caledonia No. 3 near Evansville, Ind.

New York, N. Y.—The Chicago Pneumatic Tool Co., with offices here, announces the election of Allan E. Goodhue as vice president in charge of sales. Mr. Goodhue since May 1, 1919, has been managing director of the company's English subsidiary, The Consolidated Pneumatic Tool Co., London, England; also director of European sales for the Chicago Pneumatic Tool Co. Mr. Goodhue was for a number of years connected with the Sales Department of the Midvale Steel Co. and Midvale Steel and Ordnance Co., in Philadelphia, Chicago and Boston, leaving that company in March, 1918, to enter the service of the Government. From that time until Jan. 1, 1919, when he became connected with the Chicago Pneumatic Tool Co., he was assistant manager of the steel and raw material section, Production division, of the Emergency Fleet Corporation.

Personals

Charles L. Fay, of Cumberland, Md., who had been an official of the Davis Coal & Coke Co. for five years, has resigned. Mr. Fay will become manager of the Quaker City Coal & Coke Co., of Philadelphia, with offices in Cumberland.

During Mr. Fay's administration the Safety and Welfare department of the Davis Coal & Coke Co. expanded to large proportions and now has club houses, affording entertainment and instruction, at all the mining towns.

George Wilkinson, general superintendent of the Pacific Coast Coal Mines, Ltd., states that **Samuel D. Wark** has been appointed to re-open the company's mine at Suquash, Vancouver Island. This mine has been inactive since 1914. Mr. Wark will unwater it, restore ventilation, and put it in shape for production.

James Gray, superintendent of the Harvard Coal Co., operating at East Princeton, B.C., reports that the colliery plant has been augmented by a modern screening system and that screened coal is to be shipped to Vancouver City where a good market is assured. Work is in progress on two seams of coal, one six feet and the other nine feet in thickness.

Almost coincident with the announcement of the retirement of F. M. Sylvester as managing director in British Columbia of the Granby Mining & Smelting Co. and the appointment as general manager of **H. S. Munroe**, of New York, comes word from Prince Rupert that shipments of coking coal are being received by the company at Anyox from eastern British Columbia. This coal is being tried in the company's by-product ovens and it said to be giving satisfaction.

A bill has passed the House of Commons, Ottawa, Can., under which Coal Controller **W. H. Armstrong** is continued in charge of coal operations in district 18 (comprising the provinces of Alberta and British Columbia) for another year, and also by virtue of which all regulations and orders issued by him during the past year have been ratified.

Newell G. Alford, until recently chief engineer of the St. Bernard Mining Co., Earlington, Ky., was appointed assistant to the president and chief engineer of this company with offices in Earlington, Ky., effective June 2d.

Ben Pulliam, of Carrier Mills, Ill., was recently elected mine examiner for Saline County, Ill.

Fred Vinton has been promoted from private mine inspector of the mines of the Rochester & Pittsburgh Coal & Iron Co. and allied interests, to general superintendent of all the mines of these companies in Indiana and Jefferson counties, Pa.

Thomas Scott, of Coalgate, Okla., mine inspector for Oklahoma and having jurisdiction over the mines in the eastern part of that state, was killed in the Folsom-Morris Coal Co.'s No. 7 mine at Phillips, Okla., recently, by a runaway car. Mr. Scott was inspecting the mine at the time.

Eugene Dupuis, who was connected with the New York Central lines for years and most recently division freight agent at Columbus, Ohio, has resigned to become traffic manager of the Philadelphia & Cleveland Coal Co., of Cleveland and Columbus. Mr. Dupuis will be located at Columbus.

V. A. O. Gabany has been made general superintendent of the Kentucky operations of the Bertha Coal Co. interests of Pittsburgh, Pa. His supervision will include the Elsie, Jessie and Sarah mines in the Whitesburg district of the Hazard field, in Kentucky, and the Isabella Mine at Blackie, Ky. The Sarah and Elsie mines were formerly the property of the West Virginia-Kentucky Coal Co., while the Jessie mine was operated by the Smoot Creek Coal Co.

George C. Bucey, formerly superintendent at the Goucher mine, Brilliant, Ohio, of the Consolidated Fuel Co., Pittsburgh, Pa., has taken charge of the new operations at Captina, W. Va., to be known as Frances mine No. 1. **Richard I. Redfern** has been made superintendent at the Goucher mine.

Charles L. Snowdon, of Brownsville and Pittsburgh, Pa., former president of the Snowdon Coke Co., near Brownsville, Pa., and interested in other Pennsylvania coal and coke operations, has resigned as president of the Brownsville town council.

L. G. Shipley has been appointed on the staff of the Lake & Export Corporation with headquarters in Huntington, W. Va., having resigned as a car distributor for the Chesapeake & Ohio R.R. at Thurmond, W. Va., to accept that position.

Ernest F. Heusley has been appointed district manager of the Boone Coal Sales Co. which has just opened branch offices at Huntington, W. Va.

Charles A. Sandberg has been appointed as Charleston manager of the Interstate Coal & Dock Co. Mr. Sandberg until recently was general manager of the mines of the Chesapeake & Ohio R.R.

Gordon K. Nigh has been placed in charge of the newly opened office of the Interstate Coal & Dock Co. at Huntington, W. Va.

Lamson Blenkensopp has been appointed chief mine inspector of the State of Kentucky. Mr. Blenkensopp was formerly a district mine inspector in West Virginia with headquarters at Landgraff. About four years ago he resigned, however, to take charge of a number of Kentucky operations as manager. His ability as a mining man soon attracted the attention of the public officials of Kentucky and led to his appointment as head of the Kentucky Department of Mines, with headquarters at Lexington, Ky.

T. H. Huddy has been appointed general manager of the Williamson Coal & Coke Co., Bailey Coal Co. and of the Sudduth Coal Co., his appointment having become effective on June 1. For some time Mr. Huddy has been the general superintendent of the Boomer Coal & Coke Co. and of the Paint Creek Coal Mining Co., in the Kanawha field.

The following men have been appointed as foreign managers of the Westinghouse Electric International Co.: **F. M. Rodgers**, of London, England, European manager; **J. W. White**, Royal Bank of Canada Building, Havana, Cuba, manager for Cuba; L. T. Peck, Bartolome Mitre, 754, Buenos Aires, manager for the Argentine.

Several appointments have been made in the organization of the Westinghouse Electric International Co. At East Pittsburgh they are as follows: **H. F. Griffith**, assistant to general manager; **R. W. Everson**, manager of the Merchandising Department; **H. C. Soule**, manager of the Apparatus Department; and **H. S. Reizenstein**, manager of the Price Department. In New York they are: **G. H. Bueher**, assistant to the general manager; **J. H. Payne**, supervisor of agencies; and **F. M. Sammis**, manager of the Incandescent Lamp Department. **A. R. Cole**, assistant manager, of the Department of Publicity, Westinghouse Electric & Manufacturing Co., has been placed in charge of the advertising and promotion work for the Westinghouse International Co.

In rearranging the personnel of the Railway Department of the Westinghouse Electric & Manufacturing Co., of East Pittsburgh, Pa., promotions have been made as follows: **W. R. Stinemetz** is manager of the Heavy Traction section, with **Franklin W. Carter** in charge of both Foreign and Domestic negotiations; **E. D. Lynch** is manager of the Light Traction Equipment section with **George Skipton** in charge of negotiations; **J. L. Croose** is manager of the new Railway Apparatus and Supply section and **K. A. Simmon** is manager of the Safety Car and Foreign Railway Equipment section.

Obituary

Whitfield P. Pressinger, of New York, vice president of the Chicago Pneumatic Tool Co., died June 10 as a result of complications following an operation. Mr. Pressinger was actively engaged in the pneumatic tool and allied machinery industry for many years. He was general manager of the Clayton Air Compressor Co. for seven years and became widely known through numerous activities in the American Society of Mechanical Engineers and the Compressed Air Society. He was born in New York City in 1871.

William Lancaster, Inspector of Mines for the Kootenay district, B.C., Canada, was killed instantly on May 29 when his motor car overturned on the Coal Creek mine road. He was on his way to inspect the mines of the Crow's Nest Pass Coal Co. Mr. Lancaster had been inspector for three years and was a much esteemed Government official.

Trade Catalogs

Westinghouse Insulating Materials and Supplies. Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa. Pp. 25; 4 x 7 in.; illustrated. Miniature Catalogue 5 A-1. Notes about the materials specified in the title of catalogue.—Advertiser.

Barnstead Patent Water Purifier and Still. Barnstead Still & Sterilizer Co., Forest Hills, Boston, Mass. Pp. 19; 7¾ x 10½ in.; illustrated. Description of the various stills made by the Barnstead company, and the operation of the apparatus.

Coming Meetings

American Mining Congress will hold its annual meeting at Denver, Col., Nov. 15. Secretary, J. F. Callbreath, Munsey Building, Washington, D. C.

American Institute of Mining & Metallurgical Engineers will hold its fall meeting Aug. 20 to Sept. 3. It is proposed to leave Buffalo by steamer and cruise through the Lakes, the first stop being at Houghton, Mich., after which the party will visit Duluth and the Iron Ranges of Minnesota, spending a day or two in Minneapolis on its return. Secretary, Bradley Stoughton, 29 West 38th St., New York City.

New York State Coal Merchants' Association will hold its annual meeting Sept. 9, 10 and 11 at Richfield Springs, N. Y. Treasurer, G. W. F. Woodside, Albany, N. Y.

Mine inspectors' Institute of America will hold its annual meeting July 13, 14 and 15 at Cleveland, Ohio. Secretary, J. W. Paul, Pittsburgh, Pa.

Illinois and Wisconsin Retail Coal Dealers' Association's annual meeting Aug. 4 and 5 at Milwaukee, Wis. Secretary, I. L. Runyan, Chicago, Ill.

Indiana State First Aid Meet at Clinton, Ind., July 5, under the auspices of the Indiana State First Aid Association, with the co-operation of the Clinton First Aid Association, Chamber of Commerce, Indiana Coal Operators' Association, United Mine Workers of America, Bureau of Mines, and State Mine Inspection Department.

The Rocky Mountain Coal Mining Institute, in conjunction with the Colorado Metal Mining Association, the local chapters of the American Mining Congress and the American Institute of Mining & Metallurgical Engineers, and the International First Aid Meet will hold its annual meeting Sept. 9, 10 and 11 at Denver, Col. Secretary, F. W. Whiteside, Denver, Col.

National Safety Council will hold its 1920 congress on Sept. 27 to Oct. 1, inclusive, at Milwaukee, Wis. General Manager, C. W. Price, Chicago, Ill.

Oklahoma Coal Operators' Association will hold its annual meeting Sept. 14 at McAlester, Okla. Secretary, F. F. La Grave, McAlester, Okla.

CURRENT PRICES—MATERIALS & SUPPLIES

IRON AND STEEL

PIG IRON—Quotations compiled by the Matthew Addy Company

	Current	One Month Ago
CINCINNATI		
No. 2 Southern	$45 60	$44 60
Northern Basic	42.80	42.80
Southern Ohio No. 2	46.80	43.80
NEW YORK, Tidewater delivery		
2X Virginia (silicon 2.25 to 2.75)	49.65	47.65
Southern No. 2 (silicon 2.25 to 2.75)	49.70	47.70
BIRMINGHAM		
No. 2 Foundry	42.00@44.00	41.00
PHILADELPHIA		
Eastern Pa., No. 2 x 2.25 2.75 sil.	$46.00@48 25	45.35 46 35*
Virginia No. 2	45 00*	43 25*
Basic	44.50†	43 00†
Grey Forge	43.50*	42.50*
CHICAGO		
No. 2 Foundry Local	44.25	43.25
No. 2 Foundry Southern	47.00	46.60
PITTSBURGH, including freight charge from the Valley		
No. 2 Foundry Valley	45.65	43.65
Basic	44.40	42.90
Bessemer	44.90	43.40
MONTREAL		
Silicon 2.25 to 2.75%	43 25	43.25

* F. o. b. furnace. † Delivered.

STRUCTURAL MATERIAL—The following are the base prices, f.o.b. mill, Pittsburgh, together with the quotations per 100 lb. from warehouses at the places named:

	Mill Pittsburgh	New York Current	New York One Year Ago	St. Louis	Chicago
Beams, 3 to 15 in.	$2.45@$3 75	$4.47	$3 47	$4.04	$3.97
Channels, 3 to 15 in.	2.45@ 3.75	4.47	3.47	4.04	3 97
Angles, 3 to 6 in., ¼ in. thick.	2.45@ 3.75	4 47	3.47	4.04	3.97
Tees, 3 in. and larger	2.45@ 3 75	4 47	3.52	4.04	4 02
Plates	2.65@ 3 75	4 67	3.47	4.24	4 17

BAR IRON—Prices in cents per pound at cities named are as follows:

Pittsburgh	Cincinnati	St. Louis	Birmingham
4.25	4 50	4.50	5.00

NAILS—Prices per keg from warehouse in cities named:

	Mill Pittsburgh	St. Louis	Chicago	Birmingham	San Francisco
Wire	$4.00	None	$4.15	$5.75	$6.00
Cut		None	7.00	....	8.50

TRACK SUPPLIES—The following prices are base per 100 lb. f.o.b. Pittsburgh for carload lots, together with the warehouse prices at the places named:

	Pittsburgh	Chicago	St. Louis	Cincinnati	San Francisco	Birmingham
Standard railroad spikes ⅝-in. and larger	$4.00	$3.62	$5 34	$4.25	$5.65	$6.00
Track bolts	6@6 50	4.62	6 50	5.50	6.65	7.50
Standard section angle bars	3@4	3.02	3.00	....	4.90	....

COLD FINISHED STEEL—Warehouse prices are as follows:

	New York	Chicago	Cincinnati	St. Louis
Round shafting or screw stock, per 100 lb. base	$6.25	$5 80	$6 50	$5.90
Flats, squares and hexagons, per 100 lb. base	6.75	6.30	6 85	6.40

HORSE AND MULE SHOES—Warehouse prices per 100 lb. in cities named:

	Mill Pittsburgh	Chicago	St. Louis	Birmingham
Straight	$5.75	$7.00	$7.00	$7.00
Assorted	5.85	7.15	7.15	7.25

Cincinnati—Horseshoe nails sell for $4.50 to $5 per 25-lb. box.

CAST-IRON PIPE—The following are prices per net ton for carload lots:

	New York Current	New York One Month Ago	New York One Year Ago	Chicago	St. Louis	San Francisco
4 in.	$79 30	$75.30	$53.00	$78.80	$78.00	$97 55
6 in. and over	76 30	72 30	50 00	75 80	75 00	94.55

Gas pipe and 16-ft. lengths are $1 per ton extra.

STEEL RAILS—The following quotations are per ton f.o.b. Pittsburgh and Chicago for carload or larger lots. For less than carload lots 5c. per 100 lb. is charged extra:

	Pittsburgh Current	Pittsburgh One Year Ago	Chicago Current	Chicago One Year Ago
Standard Bessemer rails	$45@60	$45.00	$45.00 @$55 00	$45.00
Standard openhearth rails	47@60	47.00	47.00 @ 57 00	47.00
Light rails, 8 to 10 lb.	50.00@55 00	2.585*	2.585*@ 3 75*	2.835*
Light rails, 12 to 14 lb.	49.00@75 00	2.54*	2.54* @ 3 75*	2.79*
Light rails, 25 to 45 lb.	49.00@75.00	2.45*	2.45* @ 3 75*	2.70*

* Per 100 lb.

OLD MATERIAL—The prices following are per gross ton paid to dealers and producers in New York. In Chicago and St. Louis the quotations are per net ton and cover delivery at the buyer's works, including freight transfer charges.

	New York	Chicago	St. Louis
No. 1 railroad wrought	$29 00	$25 50	$28 00
Stove plate	24 00	28 00	20 50
No. 1 machinery cast	39 00	36 00	37 00
Machine shop turnings	15 00	10 00	13 00
Cast borings	16 50	12 50	15 50
Railroad malleable cast	28 00	25 50	27 00
Rerolling rails	29 00		
Relaying rails	52@54	50@55	50@55

COAL BIT STEEL—Warehouse price per pound is as follows:

New York	Cincinnati	Birmingham	St. Louis	Chicago
$0 10	$0 16½	$0 18	40@45% off	$0 15

DRILL STEEL—Warehouse price per pound:

	New York	St. Louis	Birmingham
Solid	12@14c	13c	15c.
Hollow, ⅞ hex.	17c		

PIPE—The following discounts are to jobbers for carload lots on the Pittsburgh basing card, discounts on steel pipe, applying as from January 14, 1920, and on iron pipe from January 7, 1920.

BUTT WELD

Inches	Steel Black	Steel Galv.	Inches	Iron Black	Iron Galv
⅛ to 3	57½@54	44 @40½	⅛ to 1¼	34½@24½	18½@ 8

LAP WELD

2	50½@47	38 @34½	2	28½@20½	14½@ 6½
2½ to 6	53½@50	41 @37½	2½ to 6	30½@22½	17½@ 9½

BUTT WELD, EXTRA STRONG PLAIN ENDS

⅛ to 1¼	45½@42	35@31½	⅛ to 1¼	34½@24½	19½@ 9½

LAP WELD, EXTRA STRONG PLAIN ENDS

2	48½@45	37½@33½	2	29½@21½	16½@ 3
2½ to 4	51½@48	40 @36½	2½ to 4	31½@23½	19½@11½
4½ to 6	50½@47	39 @35½	4½ to 6	30½@22½	18½@10½

Stocks discounts in cities named are as follows:

	New York Black	New York Galvanized	Cleveland Black	Cleveland Galvanized	Chicago Black	Chicago Galvanized
⅛ to 3 in. steel butt welded	40%	24%	40%	31%	54@40	40½@30½
3½ to 3 in. steel lap welded	35%	20%	42½%	27%	50@40	37½@27½

Malleable fittings. Class B and C, from New York stock sell at list less 43%. Cast iron, standard sizes, net.

WIRE ROPE—Discounts from list price on regular grades of bright and galvanized are as follows:

	New York and St. Louis
Hercules red strand, all constructions	20%
Patent flattened strand, special and cast steel	20%
Patent flattened strand, iron rope	5%
Plow steel round strand rope	30%
Special steel round strand rope	30%
Cast steel round strand rope	22½%
Iron strand and iron tiller	5%
Galvanized iron rigging and guy rope	+12%

San Francisco: Galvanized, less 5%, bright less 25%.
Chicago, +12½ on galvanized, 30 off on bright.

SHEETS—Quotations are in cents per pound in various cities from warehouse also the base quotations from mill:

Blue Annealed	Large Mill Lots Pittsburgh	St. Louis	Chicago	New York Current	New York One Yr Ago
No. 10	$3 55@$7 00	$7 09	$7 02	$6 62@$8 00	$4 57
No. 12	3 60@ 7 05	7 09	7 07	6 67@ 8 05	4 62
No. 14	3 65@ 7 10	7 09	7 12	6 22@ 8 10	4 67
No. 16	3 75@ 7 20	7 09	7 17	6 82@ 8 20	4 77
Black:					
*Nos. 18 and 20	4 15@ 7 30	8 10	7 80	7 80@ 8 80	5 17
*Nos. 22 and 24	4 20@ 7 35	8 10	7 85	7 85@ 8 85	5 22
*No. 26	4 25@ 7 40	8 10	7 90	7 90@ 8 90	5 27
*No. 28	4 35@ 7 50	8 10	8 00	8 00@ 9 00	5 37
Galvanized:					
No. 10	5 80@ 7 50	9 60	8 50	8 25@10 00	5 50
No. 12	4 80@ 7 60	9 60	8 60	8 35@10 10	5 55
No. 14	4 80@ 9 60	9 60	8 60	8 35@10 10	5 60
No. 16	5 10@ 7 90	9 60	8 90	8 65@10 40	5 90
Nos. 18 and 20	5 25@ 8 05	9 60	9 05	8 80@10 55	6 05
Nos. 22 and 24	5 40@ 8 20	9 60	9 20	8 95@10 70	6 20
*No. 26	5 40@ 8 20	9 60	9 20	8 95@10 70	6 20
*No. 28	5 70@ 8 50	9 60	9 50	9 25@11 00	6 50

* For painted corrugated sheets add 30c per 1,000 lb. for 5 to 28 gage, 25c for 19 to 24 gages; for galvanized corrugated sheets add 15c., all gages.

SHOP SUPPLIES

NUTS—From warehouse at the places named, on fair size orders, the following amount is deducted from list:

	New York Current	New York One Year Ago	Chicago Current	Chicago One Year Ago	St. Louis Current
Hot pressed square	+$4 00	$1 28	$ 50	$2.00	$2.25
Hot pressed hexagon	+ 4 00	85	.50	2.00	2.25
Cold punched square	+ 4 00	1 00	.50	1 30	2 25
Cold punched hexagon	+ 4 00	1 00	.50	1 30	2 25

Semi-finished nuts, ⅞ and smaller, sell at the following discounts from list price:

	Current	One Year Ago
New York	30%	50–10%
Chicago	50%	50%
Cleveland	50%	60–10–10%
St. Louis	45%	....

MACHINE BOLTS—Warehouse discounts in the following cities:

	New York	Cleveland	Chicago
½ by 4 in. and smaller	list	20%	20%
Larger and longer up to 1 in. by 30 in.	+20%	20%	20%

WASHERS—From warehouses at the places named the following amount is deducted from list price:

For wrought-iron washers:
New York....list Cleveland....$3.00 Chicago....$3.00

For cast-iron washers the base price per 100 lb. is as follows:
New York....$7.00 Cleveland....$4.50 Chicago....$4.25

RIVETS—The following quotations are allowed for fair sized orders from warehouse:

	New York	Cleveland	Chicago
Steel ⅞ and smaller	30%	30%	30%
Tinned	30%	30%	30%

Boiler, ½, ⅝, 1 in. diameter by 2 in. to 5 in. sell as follows per 100 lb.:
New York....$6.00 base Chicago....$5.62 Pittsburgh....$4.72

Structural, same sizes:
New York....$7.10 Chicago....$5.72 Pittsburgh....$4.82

CONSTRUCTION MATERIALS

LINSEED OIL—These prices are per gallon:

	New York — Current	New York — One Year Ago	Chicago — Current	Chicago — One Year Ago
Raw, 5-bbl. lots	$1.58	$1.90	$2.02	$2.10
5-gal. cans	1.60*	2.03	2.27	2.30

*To this *oil* price must be added the cost of the cans (returnable), which is $2.25 for a case of six

WHITE AND RED LEAD—Base price.

	Red — Current		Red — 1 Year Ago		White — Current	White — 1 Year Ago
	Dry	In Oil	Dry	In Oil	Dry and In Oil	Dry and In Oil
100-lb. keg	15.50	17.00	13.00	14.50	15.50	13.00
25 and 50-lb. kegs	15.75	17.25	13.25	14.75	15.75	13.25
12½-lb. keg	16.00	17.50	13.50	15.00	16.00	15.50
5-lb. cans	18.50	20.00	15.00	16.50	18.50	15.00
1-lb. cans	20.50	22.00	16.00	17.50	20.50	16.00

500 lb. lots less 10% discount. 2000 lb. lots less 10–2½% discount

COMMON BRICK—The prices per 1000 in cargo or carload lots are as follows:

Chicago	$15.00	Cincinnati	$24.00
St. Louis, salmon	20.00	Birmingham	15.00

PREPARED ROOFINGS—Standard grade rubbered surface, complete with nails and cement, costs per square as follows at manufacturing points:

	1-Ply c.l.	2-Ply l.c.l.	3-Ply c.l.
No. 1 grade	$2.40	$2.90	$3.45
No. 2 grade	2.15	2.00	3.10

Slate-surfaced roofing (red and green) in rolls of 108 sq. ft. costs $3.50 per roll in carload lots and $3.75 f.o. smaller quantities.

Shingles, red and green slate finish, cost $7.75 per square in carloads; $8.00 in smaller quantities, in Philadelphia.

ROOFING MATERIALS—Prices per ton f.o.b. New York and Chicago:

Tar felt (14 lb. per square of 100 sq.ft.) per roll	$3.50
Tar pitch (in 400-lb. bbl.) per 100 lb.	1.85
Asphalt pitch (in barrels) per ton	46.50
Asphalt felt (light) per ton	118.00
Asphalt felt (heavy) per ton	119.50

HOLLOW TILE—Price per block in carload lots for hollow building tile:

	4x12x12	8x12x12	12x12x12
Minneapolis	$0.087	$0.158	$0.248
St. Louis		none on market	
Seattle	.09	.175	.30
New Orleans	.238	.304	.43
Chicago	.1516	.2728	.4093
Cincinnati	.125	.2186	.3286
Birmingham	.1265	.232	..

LUMBER—Price of pine per M in carload lots:

	1-In. Rough 10 In. x 16 Ft.	2-In. T. and G. 10 In. x 16 Ft.	8 x 8 In. x 20 Ft.
St. Louis	$32.00	$38.00	$40.00
Birmingham	65.00	54.00	41.00
Cincinnati	55.00	50.00	50.00

EXPLOSIVES—Price per pound of dynamite in small lots and price per 25-lb. keg for black powder

	Low Freezing 20%	Gelatin 40%	Gelatin 60%	Gelatin 80%	Black Powder
New York	....	$0.3425	$0.3425	....	$2.30
Boston	$0.2475	.27	.30	$0.3425	2.45
Kansas City	.235	.26	.385	.3275	2.40
New Orleans	.2375 (50%)	.2275	.2475	....	....
Seattle	.18	.2175	.2475	.29	2.45
Chicago	.2175	.2525	.2975	.34	2.45
St. Paul	.185	.2275	.2525	....	2.25
St. Louis	.2175	.26	.285	.295	1.90
Los Angeles	.25	.30	.35	.275	2.95

MISCELLANEOUS

GREASES—Prices are as follows in the following cities in cents per pound for barrel lots:

	Cincinnati	St. Louis	Birmingham
Cup	8.5	8¼@9½	8.5
Fiber or sponge	9.	8½@9½	8.5
Transmission	10.	12@14	8.5
Axle	5	5½@6½	5.5
Gear	6.5	6½@6½	8.5
Car journal	12.0	8½@9½	4.5

BABBITT METAL—Warehouse prices in cents per pound:

	New York — Current	New York — One Year Ago	Cleveland — Current	Cleveland — One Year Ago	Chicago — Current	Chicago — One Year Ago
Best grade	90.00	87.00	74.50	79.00	60.00	75.00
Commercial	50.00	42.00	21.50	17.50	15.00	15.00

HOSE—Following are prices of various classes of hose:

Fire

	50-Ft. Lengths
Underwriters' 2½-in.	85c. per ft.
Common, 2½-in.	30%

Air

	First Grade	Second Grade	Third Grade
¾-in. per ft.	$0.60	$0.40	$0.30

Steam—Discounts from list

First grade....20% Second grade....30% Third grade....45%

LEATHER BELTING—Present discounts from list in fair quantities (½ doz. rolls):

Light Grade	Medium Grade	Heavy Grade
30%	30%	20%

RAWHIDE LACING—For cut, best grade, 25%, 2nd grade, 30%. For laces in sides, best, 79c. per sq. ft.; 2nd, 75c. Semi-tanned: cut, 20%; sides, 83c. per sq. ft.

PACKING—Prices per pound:

Rubber and duck for low-pressure steam	$1.00
Asbestos for high-pressure steam	1.70
Duck and rubber for piston packing	1.00
Flax, regular	1.20
Flax, waterproofed	1.70
Compressed asbestos sheet	.90
Wire insertion asbestos sheet	1.50
Rubber sheet	.50
Rubber sheet, wire insertion	.70
Rubber sheet, duck insertion	.50
Rubber sheet, cloth insertion	.30
Asbestos packing, twisted or braided, and graphited, for valve stems and stuffing boxes	1.30
Asbestos wick, ½- and 1-lb. balls	.85

MANILA ROPE—For rope smaller than ⅜-in. the price is ½ to 2c. extra; while for quantities amounting to less than 600 ft. there is an extra charge of 1c. The number of feet per pound for the various sizes is as follows: ⅜-in., 8 ft.; ½-in., 6; ⅝-in., 4½; 1 in., 3½; 1¼-in., 2 ft. 10 in.; 1½-in., 2 ft. 4 in. Following is price per pound for ⅜-in. and larger, in 1200-ft. coils:

Boston	$0.30½	Birmingham	$0.324
New York	.29	Atlanta	.295
St. Louis	.265	Kansas City	.30½
Chicago	.275	New Orleans	.31
Minneapolis	.275	Seattle	.28
San Francisco	.27	Los Angeles	.31

PIPE AND BOILER COVERING—Below are discounts and part of standard lists:

PIPE COVERING Pipe Size	Standard List Per Lin.Ft.	BLOCKS AND SHEETS Thickness	Price per Sq.Ft
1-in.	$0.27	½-in.	$0.27
2-in.	.36	1 -in.	.30
3-in.	.45	1½-in.	.45
4-in.	.60	2 -in.	.60
6-in.	.80	2½-in.	.75
8-in.	1.10	3 -in.	.90
10-in.	1.30	3½-in.	1.05

85% magnesia high pressure — List

For low-pressure heating and return lines — 4-ply.... 40% off; 3-ply.... 42% off; 2-ply.... 44% off

WIRING SUPPLIES—New York prices for tape and solder are as follows:

Friction tape, ½-lb. rolls	55c. per lb.
Rubber tape, ½-lb. rolls	60c. per lb.
Wire solder, 50-lb. spools	46c. per lb.
Soldering paste, 2-oz. cans	$1.20 per doz.

COPPER WIRE—Prices per 1000 ft. for rubber-covered wire in following cities:

No.	Birmingham — Single Braid	Birmingham — Double Braid	Birmingham — Duplex	St. Louis — Single Braid	St. Louis — Double Braid	St. Louis — Duplex
14	$12.23	.....	$38.64	$14.85	.....	$37.25
10	27.60	.....	65.57	23.45	.....	57.20
8	38.64	.....	87.33	32.10	.....	..
6	69.12	.....	.....	.....	55.10	..
4	.....	.....	107.42	.....	73.75	....
2	.....	.....	138.46	.....	103.10	....
1	.....	.....	178.52	.....	133.30	....
0	.....	.....	217.09	.....	159.90	....
00	.....	.....	263.57	.....	189.20	....
000	.....	.....	320.44	.....	225.10	.....
0000	.....	.....	389.17	.....	269.30	.....

FREIGHT RATES—On finished steel products in the Pittsburgh district including plates, structural shapes, merchant steel, bars, pipe fittings, plain and galvanized wire nails, rivets, spikes, flat sheets (except planished), chains, etc., the following freight rates per 1000 lb are effective:

Boston	$0.30	New Orleans	$0.385
Buffalo	0.17	New York	0.27
Chicago	0.27	Philadelphia	0.245
Cincinnati	0.23	St. Louis	0.24
Cleveland	0.17	St. Paul	0.495
Kansas City	0.59	Pacific Coast (all rail)	1.25*

Note—Add 3% transportation tax *Minimum carload, 80,000 lb.

COAL AGE

The Weekly Journal of the Coal and Coke Industries

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Survival of the Flivverest

HENRY FORD and his son, Edsel B. Ford, have bought the Detroit, Toledo & Ironton Ry. to protect their coal supply. Thus are essential industries, like transportation, with regulated prices absorbed by the less essential industries that are operated without control.

This purchase is a symbol. The less-needed are absorbing the more-needed at a bargain, for the more-needed are impoverished by regulation and fail to function properly for lack of blood of new capital. Their resulting inefficiency vexes sorely the spirits of the unregulated, who are unaccustomed to have their slightest wishes curbed. As the less-needed industries have the money, they buy and operate the more-needed which have been put to sore straits for lack of capital.

Before the war, when the coal mines were impoverished though without regulation, the less-needed industries purchased coal mines for a song. This is the first railroad that the automobile industry has purchased. More such purchases are likely to follow. We shall soon have railroads owned by all kinds of incidental industry, and victory will ever be with the flivverest.

Not Much Thought for Public

TO REFUSE arbitration regarding the fulfillment of contracts and to restrict the output of commodities in order to gain points in industrial disputes are actions singularly out of place in the United States. Yet threats that resort will be made to both have been made before the U. S. Anthracite Coal Commission that is now sitting in Scranton and is about to pass judgment on the eighteen points at issue between the anthracite operators and the mine workers.

While only one man, Thomas Kennedy, the president of district No. 7, has given expression to such sentiments, his remarks have met with no disclaimers on the part of other representatives of the organization, and for all that the record shows to the contrary they have met with approval.

Mr. Kennedy's first intimation of radical action came at an early meeting in Scranton, when he said that failure to establish a closed shop might mean the abolition of the Board of Conciliation and the settlement of all future disputes by an appeal to force in the shape of a strike, a policy which, he said, the miners were ready to adopt. To quote his expressive phraseology, the mine workers were ready at any time "to go to bat."

His second contribution to a program of radicalism in which the public would be the sufferers was made on July 8, when he opposed an attempt to show that steadier work had rendered the mine workers' pay adequate to meet their living expenses. He declared that the operators were trying to "penalize" the workman for steady work and asked, "If you insist on penalizing the men wouldn't we be justified in issuing an order to revert to the 1914 production?"

He was answered by a dignified statement from S. B. Warriner, president of the Lehigh Coal & Navigation Co., to the effect that such action would be an attack on the public interest, and so it would be. The mine workers, as an organization, have predicated part of their demands upon a statement to the effect that the union has been a potent force in the improvement of general conditions in the anthracite region, that it has won the right to recognition for its service, but Mr. Kennedy's intimations lead to the inference that some of its spokesmen, at least, have visions of mastery rather than service, and are willing to bludgeon the public with strikes and reduced coal allowances if by that means they can prove to their following the merits of their organization as adjunct to wage profiteering.

Who Is Entitled to Coal?

ONE of the first big questions that must be met by the Government and the coal men in any program of distribution is that having to do with preference in supply. The problem in its essentials is no different now than during the war. Geographic distribution on the one hand, exemplified by New England and the Northwest, and use distribution on the other hand, at present typified by the needs of the railroads and the public utilities, are the two aspects of the problem that must be met.

If we proceed on the assumption that there is not sufficient coal for every one and that some must be supplied ahead of others until such time as production is increased, priority in *use* must first be defined and established. The first move on the part of the Interstate Commerce Commission in the present situation was in this direction—on April 16 the railroads were given a priority in the shape of assigned cars for fuel coal. Order No. 8, giving the Philadelphia Electric Co. assigned cars, was the second move in recognition of this principle of use priority.

We do not believe it is safe or proper to go farther in setting up a "preference list" today than to specify transportation and heat, light and food for the comfort and necessity of man and beast. To this list the Government will of course add newspapers. To define and administer preference in coal supply to such a list, simple and obvious as it appears, is no simple task.

Because a consumer of coal manufactures power for sale and therefore falls within the legal definition of a *public utility* is no reason for giving public utilities preference in coal supply. Only so far as the power and gas produced are used for transportation and for the protection of life should preference be recognized.

The Coal Situation in New England

A Statistical Summary of the Position of New England With Regard To Bituminous Coal Supply and Requirements

By C. E. Lesher

BITUMINOUS coal reaches New England by two routes, all rail from the coal fields in Pennsylvania and to some extent from those of Maryland and northern West Virginia, and by rail and water mainly from the coal fields in southern West Virginia and Virginia through the port of Hampton Roads and to a lesser extent from the fields in northern West Virginia, Maryland and Pennsylvania through the ports of Baltimore, Philadelphia and New York. The receipts of bituminous coal in New England in recent years, exclusive of imports from Nova Scotia of about 100,000 net tons, have ranged from 23,500,000 net tons in 1917 to 27,100,000 net tons in 1918. The statistics of receipts in 1919 are not available, but is it conceded that the quantity of soft coal bought by New England in 1919 was below that in any recent year—estimated at about 17,400,000 net tons.

RECEIPTS OF BITUMINOUS COAL IN NEW ENGLAND, 1916-1919 (NET TONS)

Year	By Rail	By Tidewater	Total
1916	9,900,000	14,200,000	24,100,000
1917	10,800,000	12,700,000	23,500,000
1918	11,100,000	16,000,000	27,100,000
1919a	9,000,000	8,400,000	17,400,000

(a) Estimated.

It will be noted that the proportion of the total that was shipped by all rail was 41 per cent in 1916, 46 per cent in 1917, 41 per cent in 1918 and is estimated at 51 per cent in 1919. At the present time receipts are about equally divided between rail and water. From 1916 to date the proportion of all-rail coal bought by New England has increased each year except during the war year of 1918, when the distribution was under the absolute direction of the Fuel Administration.

New England has been compared with the Northwest —the region at the head of the Great Lakes—in respect to urgency of coal supplies, inasmuch as both of these markets are far removed from the coal fields. The Northwest depends for by far the greater part of its coal on Eastern fields shipping via the Lakes, a route that is open at best but eight months of the year. During the war the Fuel Administration recognized the claim of New England to preference in supplies of soft coal in the summer months by providing that 60 per cent of the total allotment for the year should be transported in the six months beginning with April, and the remaining 40 per cent in the six months from October to March. Under normal conditions New England did not receive coal at so much greater a rate in the summer months as the following data indicate:

DIVISION OF SHIPMENTS OF BITUMINOUS COAL TO NEW ENGLAND BETWEEN SUMMER AND WINTER, 1914-1918

	1914-15	1915-16	1916-17	1917-18
Percentage of shipments summer months (April—September)	49	45	52	55 5
Percentage of shipments winter months (October—March)	51	55	48	45 5

In the calendar year 1919 shipments by tide to New England were 54.8 per cent in the six months beginning with April and 45.2 per cent in the months of January to March and October to December. It should be noted that the shipments in the months of November and December were arbitrarily reduced by the Government during the coal miners' strike, because that section of the country had on Nov. 1, 1919, a better stock of soft coal than any other part of the United States.

Shipments of bituminous coal to New England by tidewater for commercial uses as differentiated from railroad fuel and as shipped through the port of Hampton Roads and the three northern Atlantic ports are given in the following table. It will be noted that shipments were at their highest rate in 1918, the war year, and were greatly reduced in 1919, and that the three Northern ports supply the greater proportion of railroad fuel that reaches New England by water. The division of the tonnage in 1919 between commercial and railroad fuel is not at present available.

SHIPMENTS OF BITUMINOUS COAL TO NEW ENGLAND BY TIDEWATER (IN NET TONS)

	Hampton Roads	New York, Philadelphia, Baltimore	Total
1917			
Commercial	6,632,850	2,317,289	8,950,139
Railway fuel	1,325,300	1,993,041	3,318,341
Total	7,958,150	4,310,330	12,268,480
1918			
Commercial	8,261,864	3,991,691	12,253,555
Railway fuel	795,550	2,601,814	3,397,364
Total	9,057,414	6,593,505	15,650,919
1919			
Total	5,550,000	2,835,000	8,385,000

Cargo coal for New England and for foreign countries (exports) represents but a part of the business done in coal over the tidewater piers, bunker supplies for steamships and local requirements as well as the United States Navy taking a large portion of the coal dumped. At New York the main business is bunkering ships, at Hampton Roads the larger portion of the coal is loaded as cargo. The relation of New England and foreign countries to the total tidewater business done in the years 1917, 1918 and 1919 at Hampton Roads and at the three Northern ports is given in the following table. At Hampton Roads 45.8 per cent of the total coal dumped was for New England in 1917, compared with 45 per cent in 1918 and 38 per cent in 1919. From the three Northern ports the percentage of the total shipped to New England increased from 21.6 in 1917 to 27.6 in 1918, but dropped to 22.7 in 1919. New England received about one-third of the total soft coal dumped at these four ports in 1917, 36.5 per cent in 1918 and 31 per cent in 1919.

Exports represent 27 per cent of the total dumped at Hampton Roads in 1917 and 33.5 per cent in 1919, compared with 4.3 per cent in 1917 at the three Northern ports and 27.3 per cent in 1919. During the war year,

1918, exports were greatly reduced below 1917 and were but 8.9 per cent of the total coal dumped at all four ports, compared with 14.8 per cent in 1917 and 30.7 per cent in 1919.

TOTAL TIDEWATER SHIPMENT, COASTWISE MOVEMENT TO NEW ENGLAND, AND EXPORTS AT NORTH ATLANTIC SEAPORTS (IN NET TONS)

Port	New England Tons	New England Per Cent	Exports Tons	Exports Per Cent	Total Dumped at Tide, Tons
1917					
Hampton Roads	7,958,150	45 8	4,659,009	27.0	17,380,075
New York, Philadelphia and Baltimore	4,310,330	21 6	856,625	4.3	19,888,891
Total	12,268,480	33 0	5,515,634	14 8	37,268,966
1918					
Hampton Roads	9,057,414	45 0	3,607,232	19 0	18,951,849
New York, Philadelphia and Baltimore	6,593,505	27 6	220,730	0 9	23,938,105
Total	15,650,919	36.5	3,827,962	8.9	42,889,954
1919					
Hampton Roads	5,550,000	38.0	4,900,000	33.5	14,600,000
New York, Philadelphia and Baltimore	2,835,000	22.7	3,391,000	27.3	12,462,000
Total	8,385,000	31.0	8,291,000	30.7	27,062,000

Hampton Roads is the principal supplier of bituminous coal for cargo, both to New England and for export. The coal fields on the Norfolk & Western, the Chesapeake & Ohio and Virginian railroads are tributary to Hampton Roads, but of these fields the "smokeless" field, including the Pocahontas, Tug River, New River and Winding Gulf districts, furnishes the greater part of the coal that is dumped either for foreign export or for New England. In 1917 the production of coal in the smokeless field was 40,000,000 net tons, of which about 4,200,000 net tons, or 10 per cent, was exported through Hampton Roads.

During the war, and under the control of the Fuel Administration, exports were limited, amounting to about 3,500,000 net tons, or 9.4 per cent of the smokeless output in 1918. Removed from Governmental restrictions in 1919 and with a foreign demand surpassing the domestic call for coal, exports began an upward climb limited throughout the year, first by lack of ships and later by the Government during the miners' strike. Official figures of the production of smokeless coal in 1919 are not yet available, but the output is estimated at 36,000,000 net tons, of which about 4,700,000 net tons, or 13 per cent, were exported through Hampton Roads.

The consumption of bituminous coal in New England in 1917, as reported by the Geological Survey, was 24,744,000 net tons. Railroad fuel represented one quarter of the total, public utility plants and domestic consumers, including coal used in the heating of office buildings, hospitals, etc., took another quarter of the total, and the remaining half was used by industries and for local steamship bunkers.

CONSUMPTION OF BITUMINOUS COAL IN NEW ENGLAND, 1917

Use:	Net Tons	Per Cent of Total
Byproduct coke	738,873	.....
Coal gas	893,488	.....
Electric utilities	2,890,733	.....
Total public utilities	4,523,094	18.3
Domestic	1,655,000	6.7
	6,178,094	25.0
Industries	12,026,293	48.5
Railroads	6,540,000	26.5
Totals	24,744,387	100.0

Consumption of bituminous coal in New England in 1918 has not been officially estimated, but it was much less than the receipts of 27,100,000 net tons, as is indicated by the fact that receipts in the following year, 1919, were less than 18,000,000 tons. The average receipts for the two years ended December, 1919, were about 22,000,000 tons, and this figure probably is not far from the average consumption. In 1919 industry and the railroads used less coal than in 1918 [illegible] because of lessened activity and, in the case of the industrial plants, by reason of increased use of fuel oil.

Stocks of Bituminous Coal in New England

Such information as is available on stocks of bituminous coal in New England indicates that the supply today is much below that at any time in 1918. The railroads are in even greater straits, stocks being lower than in any year at midsummer for which there is record.

STOCKS OF BITUMINOUS COAL IN THE HANDS OF INDUSTRIAL AND GAS PLANTS IN NEW ENGLAND

State	Industrials 1918 No. Plants	Industrials 1918 Week's Supply, Aug. 17	1920 No. Plants	1920 Week's Supply May 1	1920 Week's Supply June 1
Connecticut	1,338	13	84	5	4
Massachusetts	2,843	14	299	6	5
Maine	329	16	23	5	6
New Hampshire	276	20	37	7	5
Rhode Island	496	15	66	6	6
Vermont	240	18	41	7	6
Gas					
Connecticut	6	8	2	7	5
Massachusetts	28	11	9	7	2
Maine	7	29	...	...	...
New Hampshire	3	12	3	11	10
Rhode Island	2	34	2	7	5
Vermont	2	8	...	..	..

Railroads in New England consume an average of 500,000 net tons of bituminous coal a month, or about 6,000,000 tons a year. Stocks on hand on July 1, 1916, were sufficient for about eight weeks; on July 1, 1917, for a little more than eight weeks; on July 1, 1918, stocks were sufficient for between four and five weeks. In the winter months the railroads in New England endeavor to have on hand from ten to twelve weeks' supply, or more than 1,200,000 tons of coal.

On June 15, 1920, that is a month ago, the Boston & Maine and the Maine Central railroads are reported to have had two weeks' stocks of coal, or about 100,000 tons. The New Haven had four days' supply and the Boston & Albany two days' supply.

Receipts of Bituminous Coal in 1920

At the four Atlantic ports, Hampton Roads and north, there was dumped for New England in the first five months of 1920 4,044,000 net tons of soft coal. Rail receipts through the all-rail gateways are estimated at 3,750,000 tons in the same period. In other words, the receipts of bituminous coal in New England are now at the rate of 18,700,000 net tons a year. Although this figure is 1,300,000 tons greater than the estimated receipts in 1919, it should be remembered that New England began 1919 with the largest stocks of soft coal ever held in that section and reached the end of the year with the smallest. Any estimate of requirements for the remainder of this year must take into account the obvious fact that consumption of bituminous coal in New England is now proceeding at a rate greater than current receipts and that stocks are below the usual margin for this time of year and must be increased if industry is not to suffer interruption next winter.

Shipping Board Seeks Bids for Bunker Oil

The Shipping Board has advertised for bids to be opened July 15 for grade C bunker oil for one, three and five years beginning Sept. 1, 1920.

Huge Coal-Storage Plant Completed

A coal-storage plant said to be the largest in the world, for the Clairton Byproduct Coal Co., at Clairton, Pa., has just been completed. The coal storage pile will have a base 600 by 800 feet, or a trifle over 11 acres. This will accommodate 300,000 tons of coal. The coal will be handled from barge to storage and to cars by a traveling crane, 600 feet between centers with a travel of 800 feet. The bridge will be equipped with two hoists, each with 5-ton buckets, which can be operated separately or together, as required.

War Debt Reduced Two Billions from Peak

According to the quarterly debt statement issued recently by the Treasury the public debt decreased by more than a billion dollars during the fiscal year of 1919, just ended, and by more than two billion dollars since last Aug. 31, when the war debt was at its peak. On June 30 the public debt was $24,299,321,467.07, a decline of $2,295,380,180.94 from the peak figure of $26,596,701,648.01 on Aug. 31. The decrease for the period from May 31 to June 30 was $675,641,559.72.

Expect Advance in Freight Rates Within 30 Days

Now that presentation of testimony and argument for advance of freight rates have been completed before the Interstate Commerce Commission, a decision is expected within the next thirty days. It is generally believed the commission will grant increased rates in order that the railroads may receive additional revenue to meet increased labor and other costs.

Wheat Variable, but Corn and Cotton Are Late

In its crop report for the week ending July 3 the American Steel & Wire Co. summarizes conditions as follows: "The effects of late spring not yet overcome. More growing weather needed. Wheat condition in important belt improving; disappointing in localities outside of belt. Corn still late and needs continuous hot days and nights; crop is very clean. Oats show short straw. Grasslands are weedy. Cotton continues late and the boll weevil a great menace. Livestock situation continues unsatisfactory; short pig crop; high price of feed, coupled with low price of animals. Dairying and poultry raising showing unrest. Irish potato acreage being kept up by high prices."

Campaign for Higher Gas Rates

As has been made known to the public in recent suits at law and in equity, and applications heard by public service commissions, the gas companies claim that because of increased prices of gas oil, labor, etc., present prices for illuminating gas are inadequate. Now the American Gas Association has established headquarters in New York, from which a campaign is to be carried on throughout the country for the education of the public in the necessity of higher gas rates.

NEWS BRIEFS

Terse Items Chronicling Events of Interest to the Industry

Foreign Trade Hearings Begun

The Central Foreign Trade Committee, organized by the State Department under an order of President Wilson, dated Feb. 28, 1919, for the purpose of considering and making suggestions concerning questions of foreign trade and commerce with a view to promoting full co-ordination and effort, has resumed its sessions. Hearings have already begun, and at a meeting recently held at the State Department thirteen different governmental departments and commissions, which are concerned directly or indirectly in various ways with foreign trade matters, were represented.

Movement of Coal Through "Soo" Canals

West-bound shipments of coal in net tons through canals at Sault Ste. Marie, Mich., and Ontario for the month of June, 1920, as reported by L. C. Sabin, general superintendent, St. Marys Falls Canal, Mich., were as follows:

	U. S. Canal	Can. Canal	Totals
Coal, soft....	941,894	24,488	966,382
Coal, hard....	263,120	7,900	271,020

American Marine Insurance Pool Nearly Effected

The pool of American insurance companies to underwrite the American merchant marine is now nearly effected. It follows promptly the granting of such authority by the Jones Merchant Marine Bill, recently passed. The pooling will allow the elimination of foreign insurance companies.

Pig Iron Output Larger but Still Below Peak

In its weekly summary of the iron market as of July 8 the *Iron Age* says: "Pig iron output increased in June, showing that the net result of all the shifts in the railroad situation was favorable. At 3,043,540 tons for the thirty days the daily average was 101,451 tons, a gain of about 5,000 tons a day upon the May output, which was 2,985,682 tons for thirty-one days. May in turn showed a gain of 5,000 tons a day over April. But the industry is still nearly 7,500 tons a day below the peak reached in March, when the daily average was 108,900 tons."

Hearing Arranged in Plan to Deepen the St. Lawrence

The international joint commission to report on the question of deepening the St. Lawrence will hold public hearings in New York City beginning October 15. Engineers appointed by the United States and Canadian governments are now making surveys. The idea is to open up a deep sea route to the Middle West.

Says Railroads Ask for More Than They Need

Clifford Thorne, representing Western shippers, told the Interstate Commerce Commission that the $1,000,000,000 increase asked by the railroads is $386,000,000 more than is necessary to give them a 6-per cent standard return as guaranteed under the Transportation Act. He stated that the book value of $20,600,000,000 used by the roads in computing the return was several billions in excess of the true amount.

A Busy Week for Coal Operators

This week promises to be a busy one for coal operators. A general meeting for Monday called by the National Coal Association to discuss the general situation, which is fast becoming critical, was followed by a meeting of the West Virginia operators in Washington. The meeting of the board of directors of the National Association scheduled for Wednesday was to be preceded by that of several special committees.

FIG. 1.

No. 35 Substation

At the right the high-tension power lines may be seen entering the building.

Ventilating an Extensive Thin-Coal Mine

Air Is Forced Into One End of the Mine and Sucked Out at the Other—Rope Drive Between Exhaust Fan and Actuating Motors Forms Excellent Medium of Power Transmission—Fan Shaft Provides Means for a Second Mine Exit and for Boosting Voltage

By Donald J. Baker
Wilkinsburg, Pa.

AT THE No. 35 mine of the Berwind-White Coal Mining Co. the main entries have been driven back for so great a distance from the drift opening that it would be extremely difficult and expensive to properly ventilate the workings by means of a single fan situated at the portal. This is true not only of No. 35 mine but of many others owned by this concern. But as this mine is one of the largest and oldest plants which the company now owns, it may be of interest to note what means have been taken to make certain that the men within the mine shall receive an abundant supply of fresh air.

The coal under development is the "B" or "Miller" bed, as it is called locally. Its thickness averages about 42 in. The problem that officials of this company were confronted with can readily be appreciated. It is practically impossible to force a sufficient quantity of air through air courses that maintain only the height of this coal when the main haulage entries are approximately four miles in length. By installing a larger fan and taking down the roof for the full length of the air course to be traveled the situation could be met. But to do this would mean a large and unprofitable expenditure.

Several years ago this company decided to build a substation on the surface located over a point near the end of the main haulage entries. By sinking a shaft at this point and installing an exhaust fan it was possible to use the shaft for the upcast air currents, which were driven through the mine by a fan situated

FIG. 2.

Fan and Driving Motors

Two motors drive the fan alternately. The steady operation of the rope drive may be judged from this time exposure, which shows practically no blur about the farther rope, which is in rapid motion.

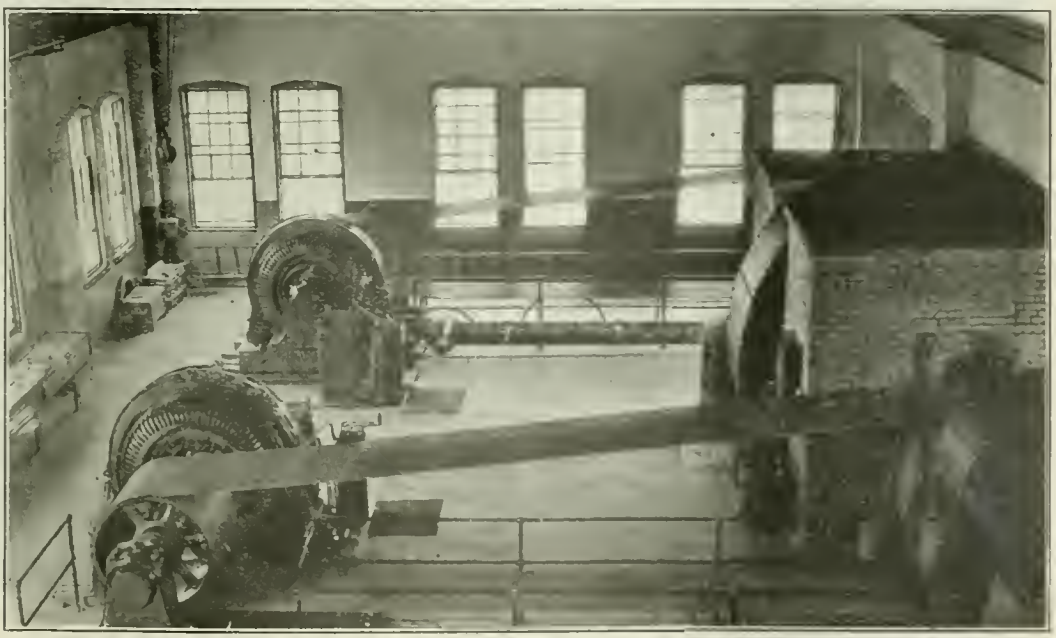
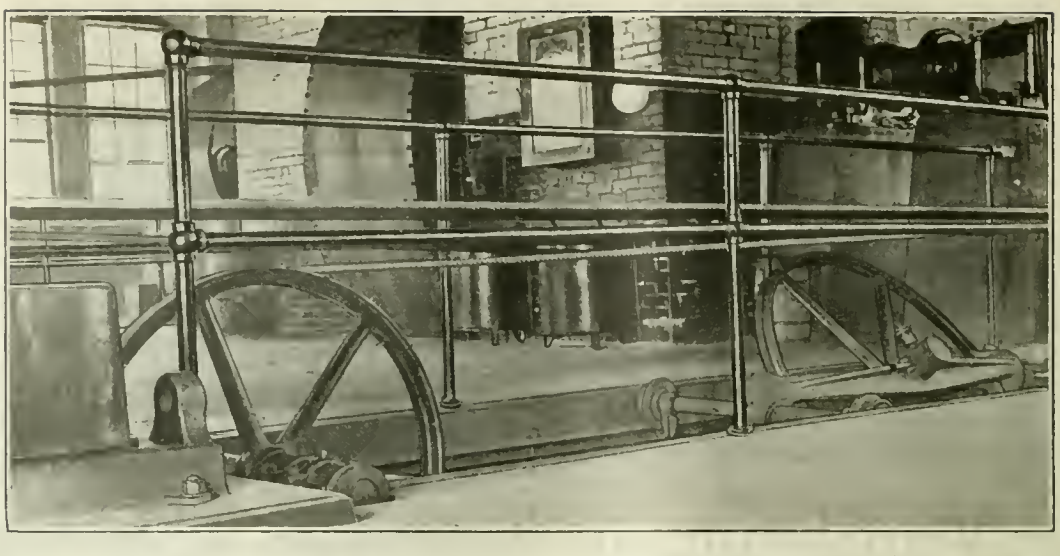


FIG. 3.

Idlers and Tension Carriage

Proper tension on the rope is maintained by the tilted idler on the carriage, which moves back and forth under the action of the rope and an opposing spring.



at the drift mouth, which is located three miles away at the town of Windber.

In this manner a circulation was created that was more than sufficient to assure the miners of an abundance of fresh air. The substation therefore serves a double purpose—to aid ventilation and to generate current wherewith to re-energize the trolley wires at the far end of the mine.

System So Successful, Other Mines Use It

The substation for No. 35 mine, which was the first to be constructed and which serves as a model for others of a similar nature and purpose, is located near the town of Elton on the South Fork Branch of the Pennsylvania R.R. The building is constructed of red brick with steel roof trusses. The equipment at the other substations of the company varies but little from that at No. 35 mine. The general type of construction is similar but varies to a small degree. Some of these buildings are of native stone while others are of buff brick. The purposes of this article will be served by describing the substation at No. 35 mine.

One-half of the building is occupied by the fan and its driving units. Two 450-hp. Allis-Chalmers motors operating on a 6,600-volt current serve to drive the fan. Only one of these is needed at any one time, the other acting as a spare. When either machine is idle it is easy to clean it and place it in good condition for operation when its turn comes.

The fan, a 9 x 3-ft. Jeffrey ventilator, has a large driving pulley on either end of its shaft, or rather upon a shaft detachably connected to the fan shaft. As can be noticed in the illustrations, each motor is connected to its corresponding fan pulley by a rope drive. This drive from motor to fan pulley consists of twenty-two laps of tarred manilla rope. This type of drive is not

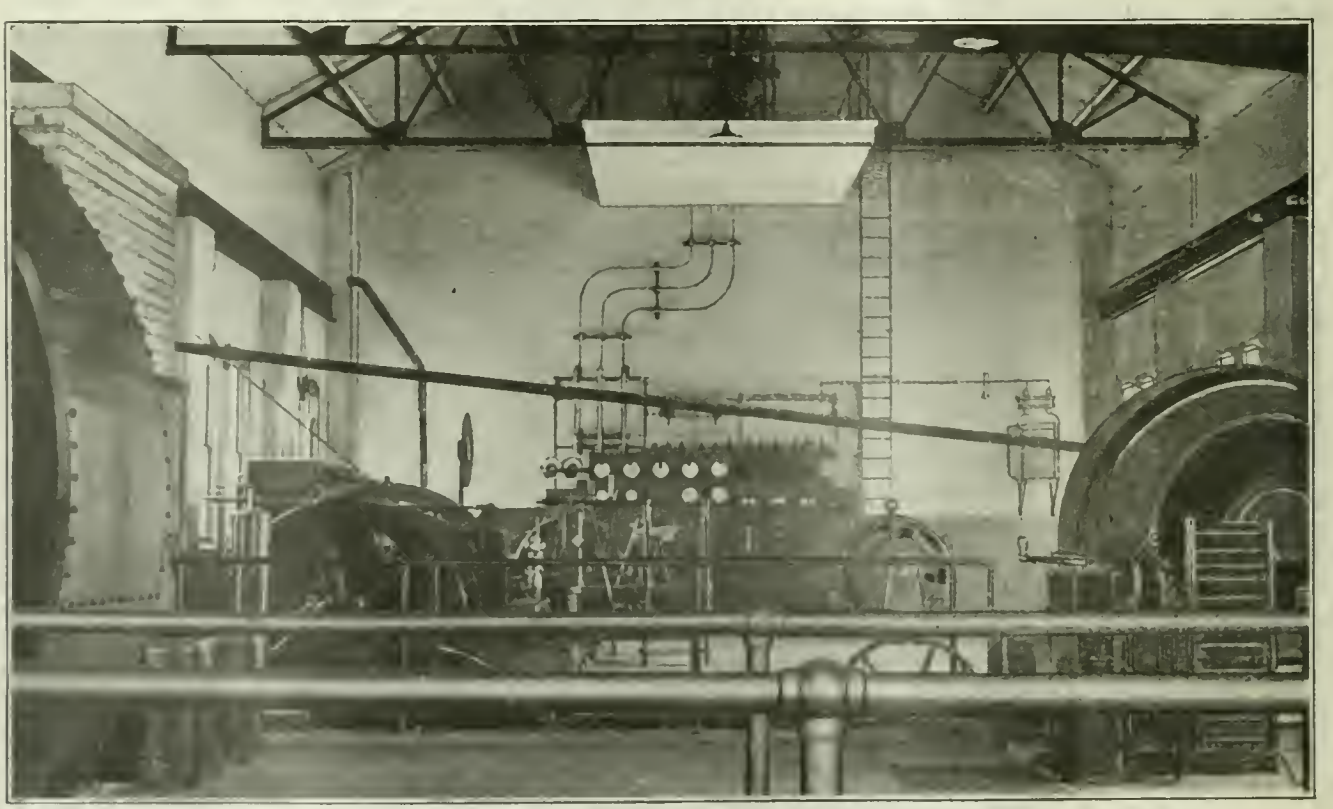


FIG. 4. HOIST AT THE OPPOSITE END OF THE SUBSTATION
Apparatus here installed includes a Vulcan hoist, two rotary converters and the necessary switchboard.

FIG. 5. LIGHT HEADFRAME OVER AIRSHAFT

This shaft serves not only as an air return but in time of need gives a means of entrance or egress to all portions of the mine when access or exit cannot be had via the main opening.

often encountered at American coal mines although it is quite usual at Berwind-White power plants.

The officials of the company speak most highly of the rope drive, regarding it not only as a type of installation lower in first-cost than any other but one to be favored because with it the transmission member can be kept taut at all times without resort to the common form of idler which is employed to depress the belt and thus take up the slack.

In Fig. 3 is shown a close-up view of the stationary and traveling sheave wheels that are used to absorb the slack in or regulate the tension on the belt. One lap of rope coming from the pulley on the fan shaft passes over a stationary wheel sunk in a concrete pit below the belt. From that point the rope is directed to a second idler of the same size. This wheel is mounted on two small trucks and, subject to the action of a spring, has a certain amount of travel on a track. When the motor is running this take-up has a continual yet not extensive movement back and forth.

This arrangement also permits of an easy and quick adjustment when it becomes necessary to install new rope. The substation has been in operation over two years, which means that each rope has been subjected to about one year of continuous service. There is no doubt that this is an economical type of installation, for the rope still shows no sign of wear and tear.

Leaving the traveling sheave, the rope returns to the motor-drive wheel, from which point it forms part of the belt proper until it again leaves the opposite side of the wheel after having made the necessary number of revolutions. The extent to which the belt is kept at proper tension at all times can well be appreciated from an examination of Fig. 2. The belt in the background was running when this photograph—a time exposure of 20 sec.—was taken, yet a clear outline is shown. Had there been appreciable play in the ropes a blur that could be noticed would have appeared on the negative.

The generating equipment, which is placed on the side of the building opposite to that occupied by the exhaust fan, also is installed in duplicate. Here two 400-kw. Westinghouse rotary converters have been installed, only one of which is operated at a time. Three 150-kva. transformers are assigned to each converter.

At the time this substation was constructed the central power plants of the company were located at the No. 35 mine and at No. 40, which is about two miles north of No. 35. In undertaking to ventilate the workings by means of a secondary exhaust fan situated a considerable distance out in the country it was realized that no single high-tension line would form a sufficient guarantee against either the shutting off of power at the central station or the possibility of the line itself being temporarily put out of commission during a storm. A lack of power at the substation would, of course, mean the closing of the mine immediately, as the fan would not be in operation.

Furthermore, as already stated, it was desirable that new energy be fed into the trolley lines. Hence it was imperative that the direct-current generator be kept in operation at all times. As an additional safeguard and in order that high-voltage alternating current might be available continuously, two separate high-tension lines were run to the building. One of these comes from the central power plant of the No. 35 mine at Windber and the other from the generating units of No. 40 mine. Both these lines have been constructed so that either is available to all similar substations at this company's operations.

In case of trouble at No. 35 power plant or on any part of the line itself the line from the plant of No. 40 mine, already connected to the exterior of the building, is at once available. In this case a second set of transformers step the current down for use in the electrical machines. The motors driving the fan are fed over the same lines regardless of the origin of the current.

The shaft in the rear of the building is of the two-compartment type and has been sunk 650 ft. to the coal. One compartment is used for the upcast air current, while the other serves as a manway. A small compartment adjacent to the manway is utilized for the suspension of the feed lines that reach from the building to the outer sections of the mine.

This shaft, situated where it is, provides two ways, each at opposite ends of the mine, for entering or leaving the workings in time of accident. Thus the state law has been admirably complied with. A 75-hp. Vulcan electric hoist engine operating on 550-volt direct current is situated in the substation and is used in raising or lowering the single cage that the shaft contains. This engine winds a 1-in. cable on a 7-ft. drum. A low steel headframe completes the construction.

The substation just described is typical of the construction followed in all the mine buildings at the different operations of the Berwind-White Co. The securing of adequate ventilation of the mines is but one of many problems that operators in the thin beds have to contend with which do not confront those whose good fortune it is to operate thicker beds. Another problem is in the type and construction of mine cars and locomotives. But these are somewhat balanced by the fact that these mines are practically non-gaseous, and safety measures that must be enforced rigidly in many other districts are here unnecessary.

Safe Ways of Using Alternating Current For Coal-Cutting Machinery*

Electric Mining Machine Has Increased Safety in Mining—Five Methods of Conducting Current Arranged in Order of Safety — How Transformers Should Be Protected — A 230-Volt Alternating Current Recommended

By L. C. Ilsley† and E. J. Gleim‡

THE U. S. Bureau of Mines recently completed an investigation in the Henryetta coal fields of Oklahoma, where several deaths had been attributed to the use of electricity. The recommendations made as a result of this investigation have a bearing on the use of alternating current in connection with coal-cutting equipment and are set forth below.

It is the firm belief of the bureau's engineers that the introduction of electrical mining machines, considered in a broad way, has done much to increase safety in mining. There can be no doubt that the substitution of machine mining together with permissible powder for the method of "shooting from the solid" has been the means of saving the lives of many shotfirers. Machine mining also leaves the roof in a better condition, as lighter charges of powder are required to bring down the coal. Thus the danger from falls of roof is lessened.

It is recognized that every effort should be made to prevent all accidents due to the use of electrical machinery, but it is felt that any action tending to limit the use of such machinery would be a backward rather than a forward step in the safety measures laid out to decrease the hazards in coal mining.

Cable reels need improvement. Too prone to injury and being not readily disconnected by the opening of a switch or plug, they introduce dangers that better construction might avoid. Injured cables always should be taken to the surface and dried before repairing. Conductors should be of adequate size, having regard both to duty and length.

Machines Need Better Cable-Reel Equipment

It is recommended that steps be taken to interest the various manufacturers of coal-cutting equipment in the design of a cable reel adapted to meet the conditions found in mining thin seams.

A cable reel should be developed which will reel up and pay out the cable properly and so reduce to a minimum the destruction of the insulation. This reel should be mounted on a truck such as will give the machine runner freedom to exercise full control over his machine, especially when running from place to place. The reel-truck design should be such that there will be no interference betwen the reel and the roof during the loading or unloading of the machine from the power truck.

Switches or plugs should be incorporated in the design of the reel or its truck so that in case the insulation breaks down in either the machine or the cable connecting it with the reel and causes the machine or some of its parts to become charged, the danger can be quickly eliminated by the opening of the switch or plug.

Machine runners or helpers should immediately report defective cables, which should be taken to the surface and thoroughly dried out before repairs are made on them. An extra cable in good condition should be kept in reserve to replace one that is taken out for repairs.

The cable should so enter the frame of the machine as to reduce abrasion and short bends to a minimum. The clamp which takes the strain of the cable should be made of heavy insulating material. The axis of such clamp should preferably be parallel to the longitudinal axis of the machine, so that there will be no short bend in the cable at the clamp when the cable trails behind the machine.

The attachments by which a cable is connected to the power circuit should make firm contact with the lines, but it should be possible to detach the lines by a strong pull on the cable whenever it may be desirable to disconnect the circuit from a distance without traveling the entire length of the cable to the point of connection.

Safety in Installation of Feeder Circuit

It is recommended that great care be exercised and that special attention be given to safety requirements in the installation of machine-feeder circuits along traveling ways. Five different systems of installation may be employed, as suggested below. A number of factors may affect the decision as to the system best suited to meet the individual and special needs of each mine. The methods suggested, however, are given in the order of their safety.

(1) Use lead-sheathed cable armored with steel wire or steel tape and bury it along the rib or support either on the rib or props. Connections to mining machines can be made at suitable junction boxes placed at convenient intervals.

(2) Use rubber-covered wire installed in an iron conduit with junction boxes at convenient intervals. The joints in the conduit should be leaded or otherwise made watertight and the conduit should be so supported as to drain off any moisture that might collect on it. The conduit should be well grounded.

(3) Run separate wires through the gob on the side of the entry, installing them on the roof back of the timbers or props. Such wires should be protected by a narrow board hung on edge from iron hooks wedged in drillholes in the roof.

*Article entitled "Safe Use of Alternating-Current Type of Coal-Cutting Equipment" published in U. S. Bureau of Mines' Reports of Investigations.

†Electrical engineer, U. S. Bureau of Mines.
‡Assistant electrical engineer, U. S. Bureau of Mines.

(4) Use separate wires installed on the edge of the timbers facing the gob. Such lines always should be completely protected by boards, so as to prevent accidental contact.

(5) Use unguarded circuits, either of bare or insulated wire. Such circuits should be placed sufficiently high or far enough to one side of the road or traveling way to eliminate the possibility of accidental contact. Rubber or weatherproof insulation should not be considered as a protection against electric shock.

Armored cables and conduits may be supported by iron hooks attached to the timbers, the roof or the side of an entry. Where separate conductors are used in place of armored cables or conduits they should be supported on porcelain insulators placed at sufficient intervals to keep the lines away from timbers, coal and slate, and from each other.

Larger Conductors for Lengthy Circuits

For 440-volt circuits the minimum size of wire that should be used is No. 4 Brown & Sharpe gage. In case the length of the circuit is in excess of 2,000 ft. or if more than two machines are connected to the circuits the size of conductors should be increased proportionately. For 220-volt circuits the minimum size of the wire that should be used is No. 1 B. & S. gage. In case the length of the circuit is in excess of 2,000 ft. or more than two machines are connected to the circuit the size of conductors should be increased proportionately.

The following recommendations are made with respect to transformer installations:

(1) If transformers are so located as to prevent any hazard due to accidental contact they should be placed in a locked enclosure. (2) Lightning protection and disconnecting switches should be provided on the high-voltage or incoming side of all transformers. (3) The casings of all transformers should be provided with a ground connection separate from that provided for the lightning arresters. (4) Transformers connected in delta or open delta should not have their secondaries grounded.

Switches should be supplied for each branch machine circuit and whenever possible located in a thoroughly dry place. In case the switches cannot be so located an insulated platform should be provided on which the operative will stand when operating the switch.

It is suggested, in the interest of safety, that new installations use, in so far as is practicable, nominal potentials of 230 volts for alternating current and 250 volts for direct current in the operation of coal-cutting and other portable equipment.

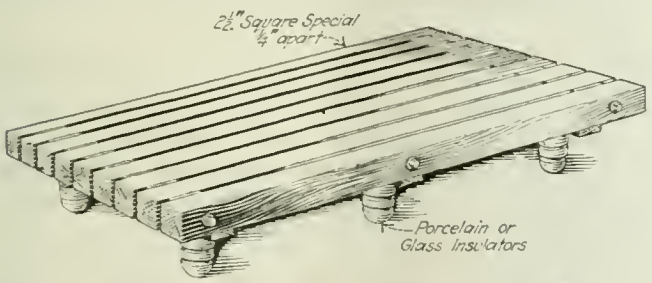
It is believed that thorough first-aid training, including resuscitation from electric shock, would be a great asset to the men in and about the mines. A chart explaining and illustrating the method commonly used in resuscitation, such as is issued by the Bureau of Mines, should be posted in a conspicuous place at all mines.

Platform of Shellacked Oak on Glass Legs Safely Insulates Worker

Elkhorn Coal Corporation Employs Device for Electrical Workers That Is Effective and Less Expensive Than a Rubber Mat

By G. E. Daugherty
Pikeville, Ky.

Some form of insulator between a person working at a switchboard or other piece of electrical equipment and the floor of the power house or substation is a necessity if the necessities for safety are to be scrupulously observed. The most common form of such insulation is the rubber mat. This, while neat and usually effective, has the disadvantage of being somewhat expensive.

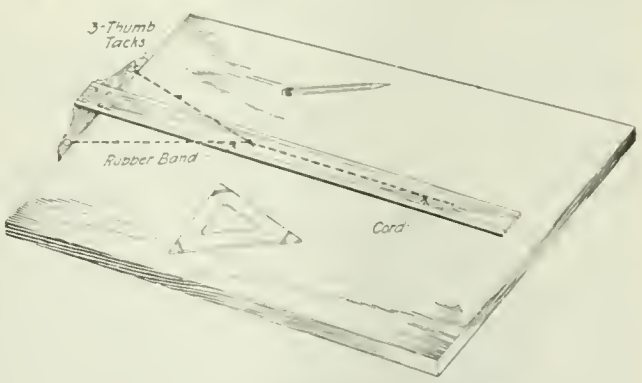


COMPLETED OAK INSULATING PLATFORM

The Elkhorn Coal Corporation, in its substations and power houses, employs an insulated platform in front of switchboards and other electrical devices which consists of oak strips 2½ in. square placed ¼ in. apart, fastened to transverse cleats and the whole treated with shellac. Such platforms are made 2 ft. wide and from 4 to 8 ft. long. They are supported by porcelain or glass legs usually 4 in. high. These insulated platforms form a safe footing for men when working at switchboards or upon other electrical devices or machinery.

Rubber Bands as Draftsman's Aids*

The common rubber band is one of the handiest of a draftsman's accessories. A small band wound around pencils, penholders, etc., will keep them from rolling off the board, and save many a broken point. Three such bands wound around the corners of a triangle,[1] notches having been cut in the wood to hold them from slipping, will raise the triangle above the surface of a tracing and reduce risk of smudging.



METHODS OF USING RUBBER BANDS

A larger band or two, and a piece of cord serve to hold the head of the T-square always in contact with the edge of the drawing board, the device being attached to the under side of the square and board by tacks.

*Henry H. Moore in the *American Machinist*.

[1]A triangle with raised corners would be so much preferable that it is difficult to believe that it has not already been placed on the market.—Editor.

Drying Coke-Oven Coal Centrifugally in One Continuous Automatic Operation

Drying Washed Coal by Draining Is Slow and the Capacity of the Batch Centrifugal Is Small—A Centrifugal Drier with Continuous Feed and a Practically Continuous Discharge Affords Ample Capacity and Gives Desired Results

By Carl Wendell
New York City

CENTRIFUGAL drying of materials is by no means new. It has been practiced for many years, but until recently the machines used have been what were known as "batch" driers. With them it was necessary to charge the container, whirl it for a certain length of time, then stop it and unload. This type of device is quite effective where a large capacity is not required.

In recent years it has become necessary in large coking plants to prepare the coal for the carbonization process by washing out the foreign material. After this process is complete, the coal, of course, contains such a quantity of water as is destructive to the walls of the coke ovens in which it is charged. The problem then arises as to the manner in which the coal may be rid of this excessive moisture. Two distinct methods naturally suggest themselves, namely, removal in bins by gravity drainage and removal by centrifugal force in a drier.

Bins adequate to provide gravity drainage must be of large capacity. A 3,000-ton washery will require bins holding 6,000 tons of coal where the time allowed for drying is twenty-four hours. The cost in many cases is, therefore, prohibitive. Drying bins should be unloaded from the top, and the machinery for this operation, a power crane and a conveyor system, entails heavy expenditures both at the time of its installation and throughout the operation of the plant.

Capacity of Batch Machine Is Too Low

Coke ovens and washery operations naturally turn, therefore, to the more rapid and effective centrifugal drier, for the batch method with its low capacity per machine requires too many units. Before the centrifugal method of drying was introduced it was necessary, however, to devise the machinery for that purpose, as none was available.

Experimental machines were accordingly constructed. The first of these consisted essentially of a cone into which the coal to be dried was introduced and allowed to slide along the conical surface under centrifugal action until it was discharged. It was necessary in this device to have large scrapers or plows within the cone in order to insure the discharge of the fine material.

As, however, there was no method of controlling the time during which the material was held in the machine, and as the action of the scrapers or plows was highly destructive to the screen surface, it became evident that a device that would provide a time control and eliminate the scrapers would be highly advantageous, both from the standpoint of maintenance and of power consumption. A machine was finally developed with the desired characteristics.

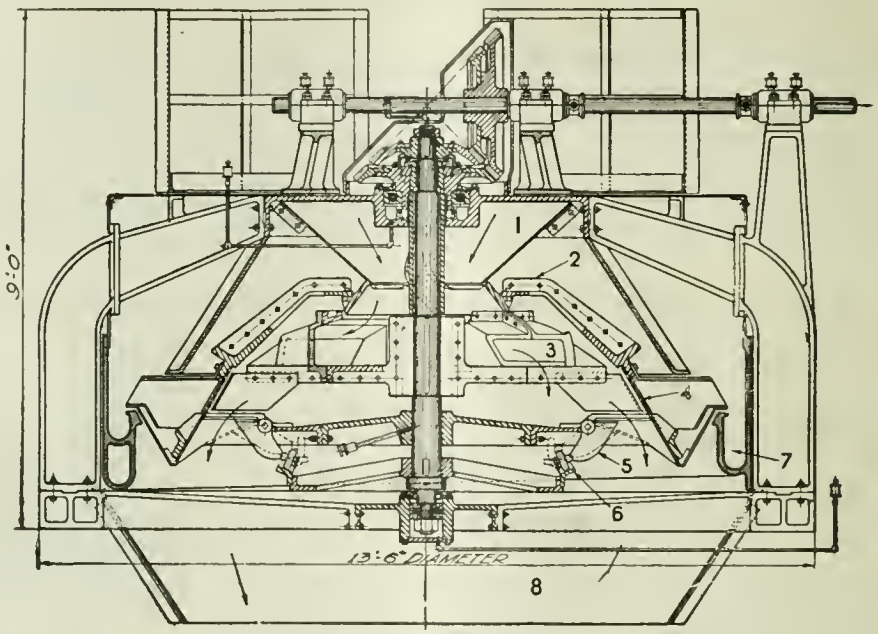


FIG. 1. CROSS-SECTION OF WENDELL CENTRIFUGAL DRIER

Essentially this machine consists of a cone-shaped screen compartment the floor of which is provided with a series of gates periodically opened by means of cams. The feed is continuous and the discharge intermittent.

Fig. 1 shows a cross-section of this machine, known as the Wendell centrifugal drier. Referring to this cross-section, the coal is received from the jigs or conveyors in the receiving hopper (1). It then passes into two distributing chutes (3), which are set diametrically opposite each other in order to secure balance. These distributing chutes throw the coal against the conical screen (4) and over a gate (5) which has just been opened and closed by means of the cam (6). These cams rotate at the same speed as the distributing chute (3).

The distributing chutes and the cam are carried on a shaft which rotates faster than the centrifuge or container (2). This shaft is mounted on a sleeve and is driven by the larger bevel gear, while the shaft is driven by a gear that is slightly smaller. The usual speeds on the 8-ft. machines are 250 r.p.m. for the container and 250.89 to 252 r.p.m. for the cam and

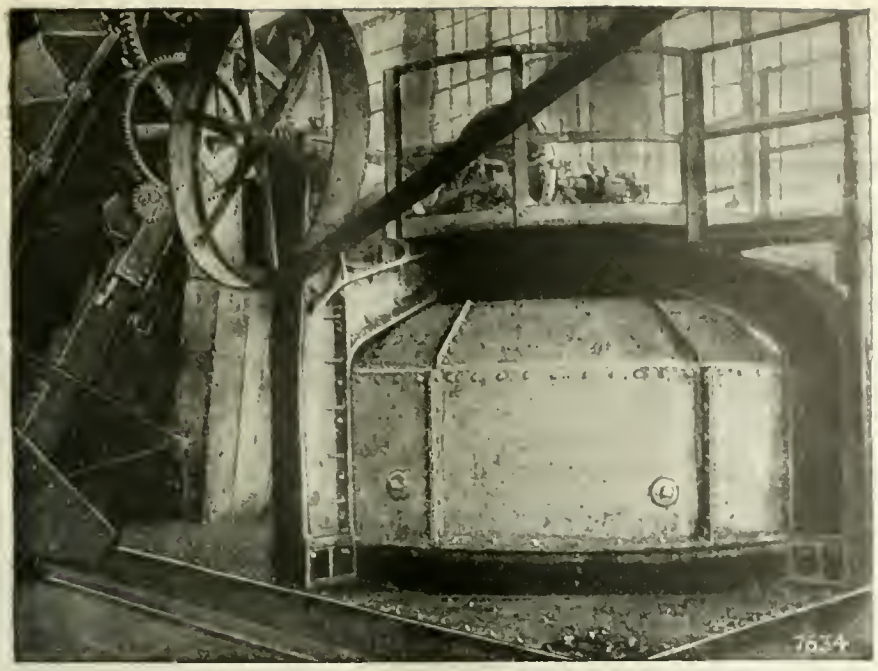


FIG. 2. CENTRIFUGAL DRIER AT THE COKE PLANT OF THE STAG CANON FUEL CO., DAWSON, N. M.

This drier, which, as may be seen, is belt-driven, has been in successful operation at the above plant for some time.

distributing chutes, the revolutions of the latter being fixed by the time during which it is desired to hold the coal in the machine.

After being whirled a suitable length of time two gates open, one opposite the other, and the coal drops into the hopper (8). The water passes through the screen to the sluice (7) and is carried away. The machine is continuous in its action, the discharge, however, being slightly intermittent. It is necessary to hold the material within the machine for a certain length of time, and this is fixed by the time the cam takes to pass from one gate to the next. The relative movement between the screen and cam is only about one or two revolutions per minute, and the wear is, therefore, reduced to a minimum. The slope of the screen surfaces is made small, being, however, sufficient to allow the fine material to flow over it easily.

At the coke plant of the Colorado Fuel & Iron Co. are installed and in operation five of these machines. Three of them are of large size. They operate sixteen hours per day and each handles fifty tons of coal per hour. Since certain improvements were made in the mechanical details of these machines they have dried 2,400 tons of coal per day to an average moisture-content of 7 per cent. The capacity of these centrifugal driers is, as stated above, fifty tons of coal per hour for the No. 8, or large, machine, and about twelve to fifteen tons per hour for the smaller machines. The power required to accelerate the larger machine is from 25 to 30 hp. With less power the acceleration to full speed would take too much time. This same machine uses only about 15 hp. when running at full speed.

The cost of drying coal with these machines ranges at present from 3c. to 4c. per ton. This figure includes power, maintenance, labor and depreciation.

The few paragraphs which follow are condensed from comments made by H. B. Carpenter, in charge of the coke ovens of the Colorado Fuel & Iron Co. As stated above, Mr. Carpenter is using five driers. His comments, based on a careful record of the results of operation, will give an idea of the work they are doing.

"The byproduct-coke plant of the Colorado Fuel & Iron Co. consists of 120 Koppers coke ovens, complete with byproduct and benzol recovery plants. The coals used for coking contain such a high percentage of ash that they must be washed before a satisfactory grade of coke can be produced. This washing process results in the washed product carrying with it an excessive amount of moisture, unless efficient methods are employed for its elimination. The drying of the coal is one of the most difficult problems encountered, chiefly because of the fine crushing necessary to secure highly efficient washing.

Drain the Coal in a Drainage Conveyor

"The washed coal from the jigs is discharged to a drainage conveyor along with the fines or slush from the settling cones. In this conveyor a large part of the moisture is drained from the coal, so that the material enters the driers with a water-content of about 12 per cent. It is highly important that this coal should carry as low a percentage of water as possible, as the amount of moisture in the resultant dried coal is

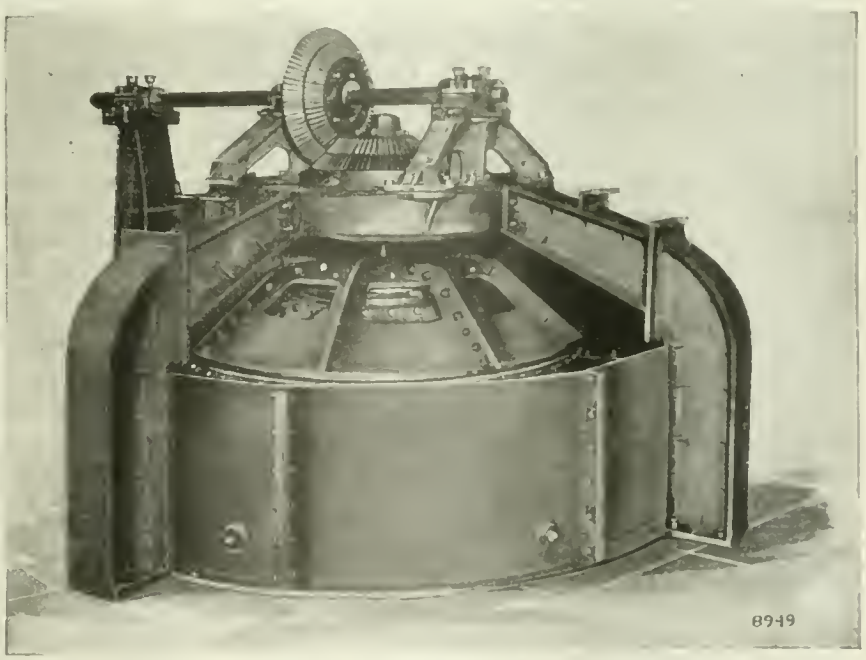


FIG. 3. A NO. 8 DRIER WITH SOME OF THE HEAD WORKS REMOVED

Two sets of bevel gears are plainly visible. These drive the centrifuge and cams at slightly different speeds, thus permitting continuous feed and intermittent discharge.

strongly affected thereby. Aside from mechanical difficulties, no trouble has been encountered in our machines in securing a product sufficiently dry for coking in byproduct ovens.

"The average fines, or coal passing through a one-eighth inch mesh, are sent to the sludge screens, where most of the water is removed from it. The partly dried product then goes to the drainage conveyor with the washed coal. We have experienced no difficulty in drying this fine material. With some types of machines trouble is encountered from the large amount of fines produced by the machines themselves. Practically no fines are made by the Wendell driers, and I attribute, in large measure at least, the success of our installation to this fact. The amount of fine coal that passes through the screens of the driers is only about 2 per cent of the total fed to the machines (coal figured on a dry basis).

"The design of the machines employed enables us to secure a life of approximately 150,000 tons of coal per screen, making the cost of renewal so small as to be almost negligible. Concerning the cost of drying coal by this method, in our practice it does not exceed 4c. per ton, and, by improvement in design, it can be reduced to 3c. per ton. This cost includes labor, power, maintenance, etc."

Water More Easily Removed at First

The drying of coal by centrifugal machines is simply accelerated drainage. The important features to be considered are centrifugal force, the time during which this force acts upon the mass of coal, the size of the coal, the amount of fines, the initial moisture in the coal and the mass of coal on which the force is applied. In considering these items the initial moisture and percentage of fines are the most important, other conditions remaining equal, but the effect of these factors is not always the same in magnitude throughout the entire range of variation.

I have made tests to determine the extent to which washed coal may be dried by centrifugal action, and to establish the effect of the various factors influencing the process as enumerated above. The effect of centrifugal force is not proportional to the amount of it provided. You cannot, by doubling the centrifugal force, double the amount of water extracted from coal of any given initial moisture and fineness. Thus, if you take a coal that passes through a one-eighth inch screen and is retained on a one-sixteenth inch screen with 21 per cent of initial moisture and you whirl it for four minutes in the centrifugal drier runing at a speed giving a centrifugal force of 100 lb. you will drive out 12 per cent of the moisture, leaving 9 per cent in the coal.

Using the machine after it has been speeded up to such a degree as to provide a centrifugal force of 300 lb. the amount of water left after four minutes in the same size coal having the same percentage of moisture, namely, 21 per cent, will be 4½ per cent. Thus an increase in centrifugal force of 200 lb. has reduced the water content only 4½ per cent, whereas the first 100 lb. reduced it 12 per cent. With a lower initial moisture content, say 15 per cent, in coal dried as above, the 100 lb. force acting for four minutes dries the coal to 4.7 per cent, while 200 lb. additional force would remove only 1.5 per cent of additional moisture.

Increasing the time of whirling or the interval during which the force acts on the coal has the same declining effect as an increase in centrifugal force, but with low initial moisture and low centrifugal force the effect of increasing the time from fifteen to thirty seconds is frequently negligible. The difference between thirty seconds and two to four minutes is much more pronounced in all cases. An increase from fifteen to thirty seconds rarely accounts for a decrease of more than 1 per cent in moisture content, while the period of four minutes causes a loss four times as great.

Other factors remaining constant, the difficulty in drying coal increases with a decrease in the size of the material until the fines passing through one-sixteenth inch mesh show an abnormally great retentive power. With 21 per cent of initial moisture and a force of 300 lb. and four minutes of drying time, the moisture is decreased only 5 per cent.

Drains Water as If Its Gravity Were 80

With the Wendell centrifugals, which are manufactured by the Link-Belt Co., of Chicago, the drying time is from 7½ to 15 seconds. This can be raised to 30 seconds if desired. Some of these machines operate with a time of 7½ seconds and others on a time of 15 seconds. The duration of drying may be controlled to suit operating conditions. The effective radius of the machines is 3.75 ft. Wtih a speed of 250 (±5) the centrifugal force obtained amounts to 79.9 (±3.3) lb. The accceleration in these machines is, therefore, practically eighty times that of gravity.

A summary of my experience in coal drying by means of centrifugal machines is about as follows:

1. The amount of moisture remaining in the coal (excluding, of course, in the calculation the moisture not removable by air drying) decreases with increase of centrifugal force, with an increase in the time of whirling, with a reduction in the thickness of coal on the screen, with a decrease in initial moisture and with a decrease in the percentage of fines. This holds true for all ranges that I have investigated.

2. A variation of 10 lb. in force accounts for a change of less than ½ per cent in final moisture, and an increase of 10 per cent in fines means an increase of 1 per cent in final moisture.

3. Unsized mixed coal has been dried to 2.8 per cent of moisture content (excluding here also all moisture not removable by air drying).

Modern byproduct coke ovens are often lined with silica brick. It is well known that this material cannot withstand sudden cooling and contraction such as would be brought about by contact with a coal charge high in moisture.

Dry Coal Doubles Life of Coke Oven

When charged into coke ovens washed coal drained in the usual manner contains approximately 10 per cent of moisture. Such a charge either delays the coking time considerably, or if a short coking time is sought, causes the burning of an excessive amount of gas in the oven flues in order to drive out the excess water. Where coal is charged into an oven still dripping—that is, containing 10 to 12 per cent of moisture—the life of the entire battery is reduced about 50 per cent. The sum necessary to equip a washery with centrifugal driers is, therefore, small, and almost negligible compared with the saving that may be gained by this improvement.

Comparison of Combination and Cable-Reel Locomotives as Gathering Units*

Cutting Off the Cable and the Arcs Formed When Nipping the Trolley Wire Are Counts Alleged Against the Cable-Reel Locomotive—Less Work Is Demanded of Motorman and the Bonding of Room Tracks Is Not Needed with Combination Machines

By John B. Hicks
Jenkins, Ky.

IN THE handling of combination storage-battery and trolley locomotives, as in operation of locomotives driven by storage batteries only, the main problem is to take due care of the accumulator.

The storage battery requires regular and systematic attention. It may be compared to a mule so far as the treatment necessary to keep it in good working condition is concerned. The mule cannot be fed spasmodically and continue to give satisfactory service; nor can the storage battery be charged irregularly and prove a success. The result of neglect in either case is a failure in performance.

In three years over three million tons of coal have been gathered at the Elkton mines of the Consolidation Coal Co. at a charge of under one cent per ton, the gathering being done by combination locomotives. Battery costs each month are about equal to the cost of the feed and the depreciation of one mule, while each locomotive saves enough to pay the feed and depreciation costs of two mules.

The employment of motormen in the mines where the reel-and-cable and the combination locomotives have both been used has afforded the following experience: Where it has been necessary temporarily to transfer a motorman from a cable-and-reel to a combination machine he invariably has quit or taken a job of coupling after the battery locomotive in order to be in line for promotion at its first vacancy to motorman on the locomotive of combination type.

Cable Reels Frequently Cut by Locomotive

In operating the reel-and-cable locomotive the motorman has to take care of both the cable and reel. No matter how carefully this may be done the cable is frequently run over and cut, causing a delay while it is being spliced and insulated. All operators know what delays mean to production. Furthermore, either the transfer switch must be operated twice at each room in order to shift the power to the reel and then back to the trolley circuit, or the motorman must "nip" along the trolley wire from room to room until the trip is gathered. The arcing caused by this "nipping" is hard on the eyes.

When gathering, the trolley pole on the reel-and-cable locomotive must be buckled down, as on the machines of the combination type. On locomotives of this type, however, there is no cable to guard, no transfer switch, and nipping is impossible. The shift from battery to trolley or vice versa is made on the reverse cylinder of the controller. It may thus be readily seen that the work of a motorman is much easier on the combination than on the reel-and-cable locomotive. The objections of the motormen were eliminated by exclusively equipping some of the mines with reel-and-cable locomotives and others with all combination battery-and-trolley machines.

In comparing the expense entailed in the operation and maintenance of these two types of locomotives the cost of labor for operation as well as that of repairs to the equipment must be considered. The labor costs for operating are about the same for the two types of machines, as all motormen are paid the same rate per hour.

The maintenance of the reel and cable, including the cost of new cables, repairs to the reel and the motor which drives it, taken over a period of time equal to the life of the battery, will be found to equal if not to exceed the first cost of the accumulator. Our records show that the reel-and-cable locomotives are subject to more delays than the battery machines. Seldom do we see a battery locomotive come out of the mines because trouble has developed in the battery during working hours. On the other hand, it is not uncommon to see a reel-and-cable locomotive come out for repair of the cable or reel because of injuries sustained during the shift.

Commutators on reel-and-cable locomotives must be turned down oftener than those on battery locomotives. This is because of the commutators being burned by nipping along on the trolley wire. Controllers are much harder to keep in repair on reel-and-cable locomotives than on the combination machines. This also holds true for the other parts of the mechanism. Unless a double-conductor cable is used room tracks must be bonded where reel-and-cable locomotives are operated. It is not necessary to bond room track for the battery locomotive. This obviates the expense incurred in the installation and maintenance of bonds.

On comparing the storage battery with the mule, it is found that each accumulator locomotive replaces one man and three mules. This, however, does not save the full wages of one driver, for drivers are not paid as much as motormen and brakemen. The saving in wages will a little more than cover the cost of the current used in charging the battery, in fact, in addition, it will keep the battery in repair.

*Third installment of an article entitled "Use of Combination Battery and Trolley Mine Locomotives" read before the Kentucky Mining Institute at Lexington, Ky., June 4, 1920. The prior installments, entitled "Changes That Experience Has Dictated in Details of Combination Locomotives" and "How to Operate Combination Storage-Battery and Trolley Locomotives," appeared in the issues of July 1 and July 8 respectively.

†Assistant superintendent, power and mechanical department, Consolidation Coal Co.

Records show that the feed, shoeing, harness and depreciation of one mule exceeds by a small amount the upkeep and depreciation on one battery of the size employed. It must be remembered, however, that these are small-capacity batteries.

In other words, the battery costs each month of its life just about the same as the feed and depreciation of one mule. This leaves a saving equivalent to the feed and depreciation upon two mules for each locomotive in use.

From the mine operator's standpoint the leading qualification of a battery is ruggedness. It should be assembled in the locomotive in such a manner as to withstand the knocks and bumps incident to mine service. Barring accidents the satisfactory battery should not have to be removed from its containing compartments during its life, provided proper care is exercised. Such a battery has a low maintenance cost.

In the first batteries employed it was found that the rubber jars and trays were somewhat too light for the work required of them. The battery manufacturers have overcome this by designing the trays of sufficient strength and by increasing the thickness of the walls of the rubber jars. The jars were further improved by the use of a more flexible and a tougher compound. The most marked improvement, however, is the cell cover of latest design. The new cover fits flush with the top of the jar, thus leaving no space for the collection of dirt and moisture.

The locomotive manufacturers have made great improvement in charging equipment and in the methods of battery control. It is now possible to purchase locomotives that are so designed as to insure the greatest battery efficiency.

There is no question about the success of the battery locomotive under most mining conditions, which conditions should be invariably considered in making the selection of a locomotive.

One can safely say that at most mines a battery locomotive will gather and deliver coal to the parting or side track quicker and cheaper than either mules or a reel-and-cable machine. Where the coal has to be hauled a long distance after it is gathered, the combination battery-and-trolley locomotives are in general well adapted to this service.

After the coal has been gathered to the side tracks or partings, the question might arise as to the best method of delivery to the tipple or shaft. This problem must be worked out for each individual case, keeping the local mining conditions in mind.

The storage-battery locomotive has its own field. It is hardly possible that it will ever compete with the trolley machine on long main-line hauls or where the grades are steep over long distances.

I am convinced from experience, however, that before a storage-battery locomotive is purchased a complete survey should be made of the mine by a competent engineer, in order to ascertain whether the accumulator can be successfully used in the mine; if so, to fix its weight, type and whether a straight storage-battery or a combination battery-and-trolley machine is best adapted to the needs encountered.

The following figures on operation cover only renewals and daily care of batteries (which also includes the flushing as well as all necessary repairs made to the battery).

Over a period of three years some 3,002,361 tons of coal were hauled at a cost of 0.96c. per ton. These figures do not give the battery credit for the recovery of rails in pillar work, the hauling of supplies, or the bailing of water with these locomotives. They cover only the actual coal tonnage handled.

My belief, under conditions as I see them today and with the close association that I have had in several recent years in this business, is that in a majority of instances the proper co-operation does not exist between the operator and the manufacturer of locomotive equipment. It seems to me that far better results are to be obtained if the operator will take more of the initiative than has been the rule. He should be able to a greater extent to work out his own problems, for from experience he knows what kind of equipment he should have with his locomotive. If necessary, he should, with the help of some one properly qualified by a knowledge of the details of mine-haulage problems, prepare information for the locomotive manufacturer. He should not leave to the manufacturer the burden of deciding on equipment, for it may not work out satisfactorily under some conditions that must be met in his mine. In order to obtain the best results from gathering equipment, I submit the following suggestions:

1. Be absolutely sure before installing storage-battery locomotives that operating conditions are suitable to their use.

2. Be sure to select a locomotive built to stand the rough usage that it is bound to receive in mining operations. It should be rugged in construction but simple and easy of operation, and so built as to afford ready access to all working parts.

3. In figuring the battery capacity, it should be assumed that a certain daily cycle must be fulfilled by the locomotive. In addition to this such extra capacity should be specified as will afford an adequate safety margin.

4. After having installed a locomotive, regardless of how good a machine it may be, it will not work satisfactorily unless proper care and attention are given it daily.

In closing I would say that I am firmly convinced that the storage-battery locomotive will fail only under three conditions: (1) lack of adequate battery capacity; (2) misapplication; (3) lack of attention.

One Exchange Urged for Hampton Roads

THOSE who are watching the situation closely at tidewater seem to be very generally of the opinion that to bring out the handling of the maximum tonnage at the coal loading ports the pools must be operated as a unit. If the three pools at Hampton Roads were consolidated it is admitted that a much larger volume of business could be handled there.

It is suggested that some way should be found to induce the three roads to get together in the operation of a single pool. Such an arrangement, it is pointed out, not only would allow diversion of coal for a certain pool when there is congestion at one loading point but would allow a much quicker turn around for ships. Oftentimes ships are delayed because of lack of coal in one pool, which could be avoided if it were possible to allow a completion of cargo at one of the other loading points. Out of the present difficulty, it is believed, will come a clearer realization that one-man control must be established at each port such as was had during the war.

Precautions Taken to Protect Anthracite Breaker from Destruction by Fire

Hand Extinguishers, Fire Barrels, Two Sources of Water Supply and the City Fire-Fighting Force Adequately Defend Kingston Plant Against Fire Loss — Pump Building and Sheds Over Plugs Are Fireproof, Though Breaker, Being Old, Is of Wood

By Dever C. Ashmead
Wilkes-Barre, Pa.

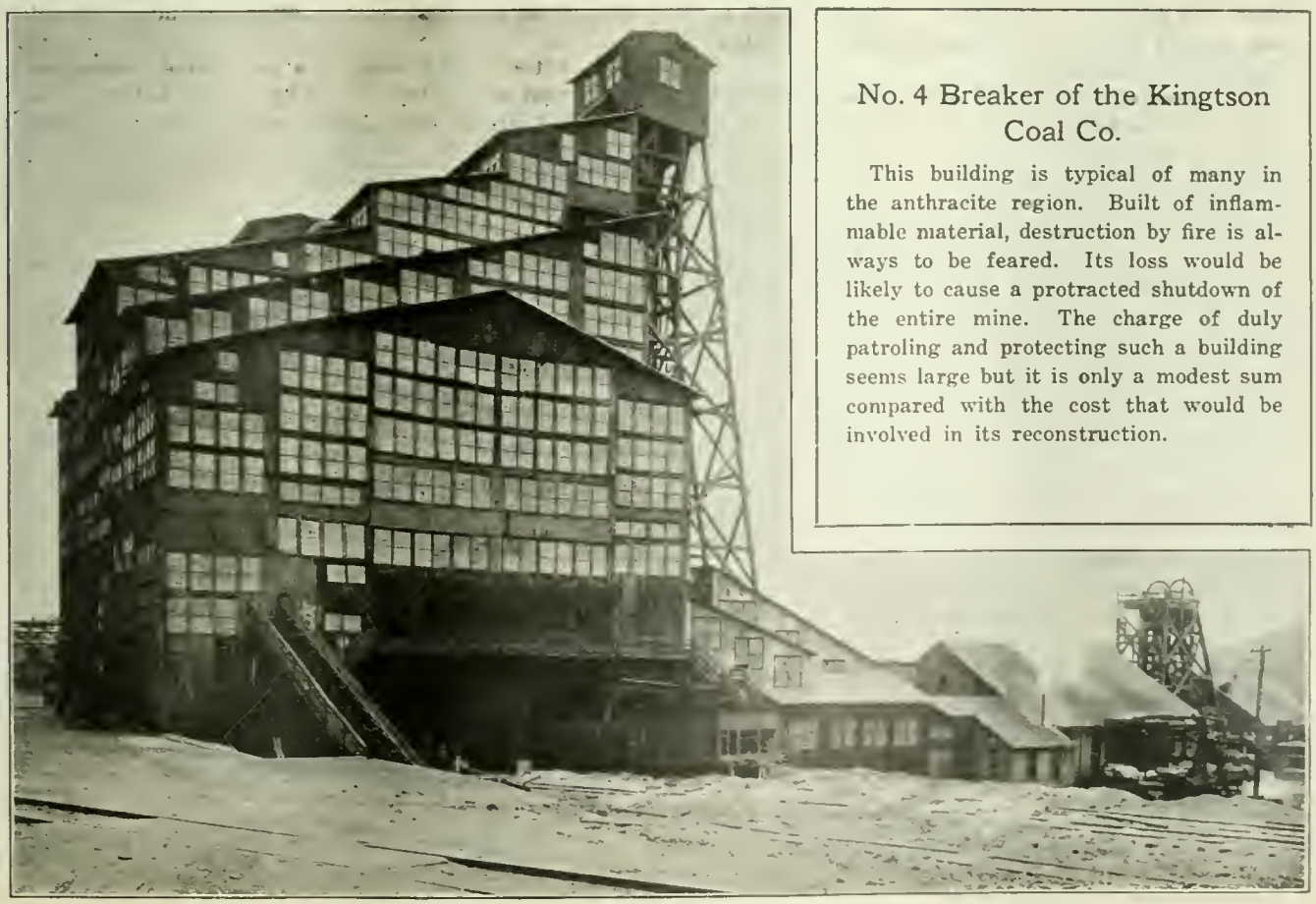
DANGER from fire, both on the surface and underground, continually confronts the anthracite coal operator. At the older plants this danger is much greater than at those that are modern because the less recent installations are built entirely of wood.

Probably one of the best systems of fire protection and fire fighting that have been devised is that now used at colliery No. 4 of the Kingston Coal Co., Kingston, Pa. A good system of fire protection is particularly necessary at this plant because of the large quantities of inflammable material used in its construction. This can be readily appreciated from the accompanying illustration of the breaker. The breaker itself is built entirely of wood, while in the construction of the older buildings still comprising the surface plant much of this material was used.

The Kingston company holds the record of having been one of the few coal producers which had its breaker take fire and yet, owing to its excellent fire protection, was able to extinguish it before the building was completely consumed. The entire top of the structure was destroyed as was also the upper part of the headframe of the shaft. Nevertheless the fire was ultimately brought under control. If it had not been for the excellent fire-protection system that the company had installed at this point the entire breaker and headframe would have been consumed, shutting down the mine for months. As it was it was only necessary to cease operations for a little over two weeks.

The breaker at an anthracite colliery so far as fire hazard is concerned probably is the most vulnerable part of a mine as its partial or total destruction means the entire suspension of the operation until the breaker can be rebuilt. Consequently in the case of the fire above mentioned the expense that the Kingston Coal Co. incurred in the installation of the fire-fighting equipment was amply repaid.

The room in which the fire pump is located at colliery



No. 4 Breaker of the Kingtson Coal Co.

This building is typical of many in the anthracite region. Built of inflammable material, destruction by fire is always to be feared. Its loss would be likely to cause a protracted shutdown of the entire mine. The charge of duly patroling and protecting such a building seems large but it is only a modest sum compared with the cost that would be involved in its reconstruction.

No. 4 is situated at one end of the boiler plant. This pumproom is as near fireproof as it is possible to make it. The pump is of the duplex plunger type, 16 x 10 x 18 in. in size, and discharges its water to a 6-in. main. A man is in constant attendance in the pumproom so as to be ready for an emergency. The fire main delivers the water to seven fire plugs scattered about the surface plant and also to a standpipe in the breaker. The location of these fire plugs is shown in the accompanying plan and one is also visible in the photograph being just to the left of the extreme left-hand corner of the breaker. The plugs are placed in housings made from parts of old smokestacks. Each house has a sheet-iron roof and a steel door and contains 200 ft. of fire hose together with the necessary nozzles and spanners. These houses are painted a bright red to be easily distinguishable.

Hand Extinguishers Located Everywhere

In the breaker there are fourteen fire stations and attached to each plug is fifty feet of hose, with its nozzle. Besides the plugs fifty-seven barrels of water with two fire pails at each barrel are placed at points of vantage throughout the building. A still further protection is afforded by seven Johns-Manville extinguishers and fourteen Alert extinguishers of the soda-acid type. Where oil is used dry-chemical extinguishers are installed.

Throughout the breaker there are scattered eleven watchman's stations employing the Newman Clark system. Every hour in the twenty-four the breaker is patrolled. The fire-fighting apparatus is inspected daily and at regular intervals the hose is tested.

All the engine rooms around the surface plant are furnished with Johns-Manville and Alert extinguishers. There are in the entire surface works, exclusive of the breaker, 14 Alert extinguishers and 24 Johns-Manville. All the oil houses and places where oil is used in quantity are equipped with some form of dry extinguisher and Pyrofoam. At the fire pump in the engine house there is 400 ft. of hose which can be connected to plugs immediately adjacent to the pump itself.

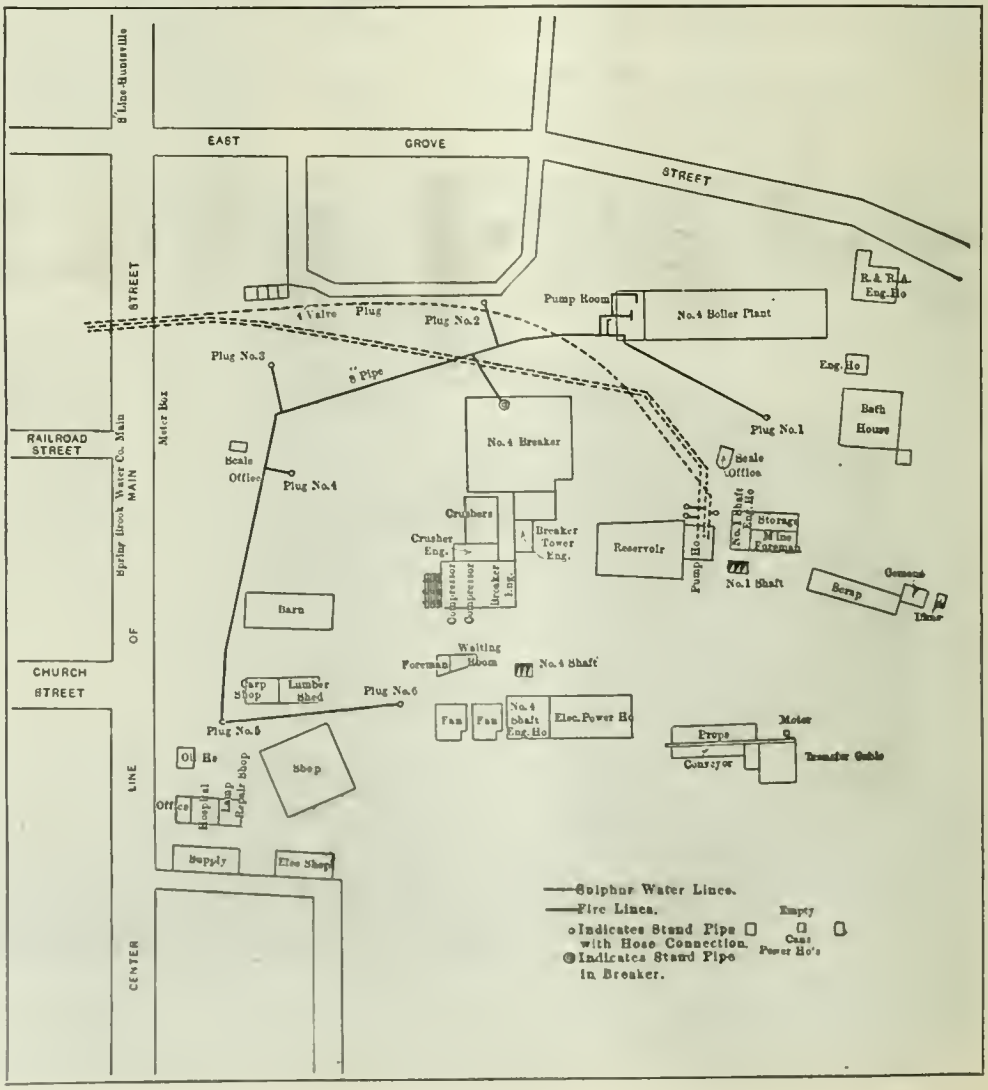
The preceding description covers the main fire-fighting system, but in case this should fail or be insufficient the company has installed an auxiliary system in connection with what are known as the sulphur-water lines. This sulphur water is pumped from the mine and is used in the breakers for the preparation of coal.

Mine Water Can Be Pumped On Fire

The mine water is delivered to a reservoir near the breaker and from this point is pumped to the breaker as needed. The pump used is of the duplex plunger type, 20 x 12 x 24 in. in size. Connections are so arranged that the breaker can be cut off and the hose can be connected direct to the pump, the water being used for fire fighting. Four hundred feet of hose is kept in this pump house for auxiliary fire-fighting purposes.

Plan of Fire Protection System

To protect No. 4 Breaker and the many buildings around it is an 8-in. water line and a reservoir of sulphur water the contents of which can be thrown in a flood onto the breaker from hose lines connected with a pump adjacent to the reservoir. With these conveniences a minute would not elapse before clean water would be playing in quantity on the flames, while in a short time those streams would be augmented by others fed by the water from the reservoir.



The whole surface plant is connected by an excellent telephone system with an operator who is in constant attendance. The exchange is located in the electric shop. In case of fire the telephone operator is called and the fire location given him. He then calls the boiler plant and an alarm is sounded on the main whistle. Each man is thoroughly instructed orally and by practice in what

AN UNDERGROUND FIRE HOUSE

Hose, chemical fire apparatus and tools are stored in a concrete-walled fireproof room.

he is expected to do in case of fire. Tests are made from time to time, the men continually striving to improve upon their previous records.

Besides fire protection already referred to, the company can secure assistance from the city. As one of the Kingston fire engines is stationed within a block of the coal company's plant this assistance is sure to be extremely valuable and timely. The company has in a test had a hose playing on a building in less than one minute from the sounding of the alarm, while the city fire department arrived in about 1½ minutes. The Kingston Coal Co. in the matter of fire protection, as in numerous other affairs, believes that an ounce of prevention is worth a pound of cure.

The fire protection system is not confined to the surface alone but has been extended underground as well. In each of this company's mines there is a fire house built of concrete. Here 200 ft. of hose is kept, together with a complete chemical outfit and all the necessary tools. The men underground as well as those upon the surface receive regular training in fire fighting.

Current Needed for Motor or Lighting Load Depends on Power Factor*

By S. N. Brooks

St. Louis, Mo.

AS A GENERAL proposition it may be stated that no more power is required for a 40-amp. motor load than for a 40-amp. incandescent-lamp load. However, on alternating-current circuits the power factor must be considered.

With an alternating-current circuit of less than 100-per cent power factor a part of the current is "wattless." The power factor of incandescent-lamp loads is quite high, usually in the neighborhood of 100 per cent. The power factor of alternating-current motor loads may be low. Thus, with direct-current, 10 amp. at 100 volts is equivalent to 1,000 watts of power. But with an alternating-current load at, say, 80-per cent power factor, a 10-amp. load at 100 volts would be equivalent to: $10 \times 100 \times 0.8 = 800$ watts of actual power.

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Ring Fire and the Flashing of Commutators and Their Prevention*

Electric Arcs Often Encircle Commutators Passing from Bar to Bar with the Aid of Fine Conducting Material That Becomes Incandescent

By O. P. Forster

St. Louis, Mo.

"RING FIRE" is the designation that has been given to that kind of sparking where rings of "fire" (electric arcs) embrace the circumference of the commutator, either wholly or partly encircling it. Ring fire may be subdivided into two classes: (1) Ordinary ring fire, which is of a reddish tint and may exist to a limited extent on all commutators; (2) Armature-defect ring fire, which is of a bluish-green color and more intense than that of the ordinary variety.

Ring fire is originated ordinarily by minute arcs that form between adjacent commutator bars. Conducting materials that may lodge between the bars in or on the surface of mica insulation aggravate the tendency to arc. Current passing between the bars through these conducting paths renders the particles incandescent. Fine carbon which is ground from the brushes by the normal operation of the machine, or particles of copper from a newly-turned commutator, are the most prolific sources of this difficulty.

Secondary sources of ring fire are the oil, paraffin and commutator compounds sometimes used. Particles of conducting material may lodge upon these lubricants. Furthermore, oil may carbonize on the mica segments, thus forming a conducting path. In cases of trouble where the mica insulation between certain of the segments has been eaten away it is probable that the difficulty arises from the carbonizing of the oil or of some of the other materials enumerated above.

Undercut commutators, particularly those rotating at low peripheral speeds, are particularly subject to ring fire. The reason is that oils, greases and conducting materials can, because of the undercutting, lodge readily between segments. Hence the commutator slots of slow-speed machines should be cleaned frequently with a stiff brush. This is to prevent the lodgment therein of these semi-conducting materials.

In certain types of machines the voltage between adjacent segments under the pole tips may of itself be sufficiently great to produce ring fire. A compensated winding provides an effective corrective for this difficulty. Where the mica segments are thin, ring fire is correspondingly likely to occur. Furthermore, it may be encountered more frequently with slow-speed than with high-speed machines. With a high-peripheral-speed machine, the commutator segments do not remain a sufficient length of time in the zones where ring fire is developed to permit the formation of minute arcs.

Flashing is that species of commutator sparking where an arc attains considerable length and finally leaps viciously between brush-holder studs. Flashing may occur in a normal machine at the instant when an excessively high electromotive force is impressed across its terminals. It may arise, on the other hand, from the cumulative effect of a number of the causes that promote sparking. Flashing is more likely to occur on motors than on generators.

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Commerce Commission Unmoved by Arguments for Modification of Order No. 7

Storm of Protest from Industries Affected Was Anticipated—Cement Association Contends That Preference in Open-Top Cars, by Handicapping Building and Road Construction, Hampers Improvement of Terminal Facilities

JUDGING from the questions asked and the general attitude of members of the Interstate Commerce Commission at its hearing in the matter of supply, exchange, interchange and return of open-top equipment, that body is disposed to stand squarely on its Service Order No. 7. The attitude of the commission, as well as the apparent failure of the opponents of the service order to make an impression with their arguments, leads to the assumption that the commission probably will extend the limiting date of its service order.

It was the desire of the commission that those who oppose the order be heard first. The preponderance of the early testimony at the hearing had as its object modification of the order so as to allow greater use of open-top cars for the handling of commodities other than coal. An extensive array of facts and figures was presented. An effort was made to prove that a large number of men would be thrown out of employment and great losses come to the industries which are large users of open-top cars. The sand, gravel and broken-stone interests; the constructional industries and those interested in road building made the principal presentations.

No Unforeseen Arguments Advanced

It is regarded as doubtful, however, if any points were brought out in the arguments made by these interests with which the commission was not familiar prior to the issuance of Service Order No. 7. Members of the commission have stated that it was realized fully before the order was issued that there would be the greatest pressure brought to bear against it. Practically every witness advocating modification of the order was asked if he regarded it of first importance to keep essential industries going and to supply sufficient fuel for domestic needs. This was admitted by the witnesses, but they questioned that the situation is sufficiently serious to justify the economic losses which they are being called upon to suffer.

Many contended for the return of a priority arrangement. The commissioners asked how these priorities could be administered. There was no effort made to belittle the difficulties which such a policy would entail and some regarded the re-establishment of the Fuel Administration as necessary. It was admitted that some large central organization would have to take charge of the matter.

J. D. A. Morrow, the vice-president of the National Coal Association, as spokesman for 2,100 bituminous operators, commended the wisdom of the commission in isssuing the order and opposed the effort to modify or rescind it. Extracts from Mr. Morrow's testimony follow:

The coal industry, in urging the continuation of Service Order No. 7 or the promulgation of any order which will provide ample transportation for the needed supply of coal, seeks to secure its proportion of available transportation, which it is not now and has not for some time been receiving in many sections of the country, and also to provide the United States, Canada, and to a limited extent other countries, with that supply of coal which is vitally necessary for the welfare of the people.

Our estimate of requirements, which is the opinion of those best posted in the coal industry, and to some extent based upon official and available government statistics, is that a production of 545,000,000 tons for the coal year beginning April 1, 1920, and ending March 31, 1921, is the minimum amount that will carry us through.

The production from April 1, through the week of June 26, according to the Geological Survey figures, was 121,000,000 tons, or at the weekly rate of 9,235,000 tons. To produce 545,000,000 tons for the coal year in question will require a production of 424,000,000 tons for the remaining thirty-nine weeks of the coal year, or an average weekly production of 10,807,000 tons. Production for the week ending July 26 was 10,400,000 tons, and it is estimated the production for the week ending July 3 was approximately the same. The production for both of these weeks came about while Service Order No. 7 was in effect.

The maximum production of 10,400,000 tons a week reached during the present coal year is entirely insufficient to meet the requirements, even though that production was reached each week for the entire remainder of the coal year. It must be borne in mind that transportation during the winter months is at a lower ebb than during the summer months, when the weather is so much more favorable. We estimate the minimum weekly production during the remainder of the open season which will enable the coal operators to fulfill the year's requirements to be 12,000,000 tons.

Lake Shortage Considered Grave

The gravity of today's shortage is strikingly brought to our attention by the Lake Michigan and Lake Superior dock situation. On June 30, 1919, there had been loaded on vessels as cargo coal consigned to the Upper Lake docks 8,813,000 tons, while for the period ending June 30, 1920, the loading was 3,594,000 tons, a shortage of 5,219,000 tons or 104,000 carloads. To this must be added a further shortage of 5,000,000 tons which was carried over from the 1918-1919 season. The New England situation is somewhat parallel to the Upper Lake situation, and while not as acute, is very serious. Similar conditions existing in other parts of the country reflect plainly to any student of the situation the acute shortage confronting us at this time.

The coal operators must stand ready to supply the home needs or domestic requirements of the United States and doubtless also of Canada ahead of overseas export obligations, but they ought not to be asked or forced to withdraw coal from overseas export trade in order to give it to factories which will use it to manufacture products for overseas export. If that were done it would be a discrimination against the right of the coal operator to engage in overseas export trade as compared with the right of any other business man.

The impression that a great volume of overseas export coal business has produced a shortage in the United States is not supported by the facts. The total overseas export of bituminous coal to July 1 was only about 8,000,000 tons, but in that time the total shortage throughout the country is approximately 35,000,000 tons. Thus, if all the overseas exports had been kept within our own borders, we would still be 27,000,000 tons short.

Not only is it rank discrimination against the coal producer to deny him the right to engage in export trade and

use his coal to enable other business men to export their products, but it is not practical to prohibit the overseas movement of coal, even if it were determined upon. Much of the coal which originates upon the Norfolk & Western, Virginian and Chesapeake & Ohio railroads could not be utilized if it were not exported overseas. Tidewater consumption would not absorb it and it could not be diverted inland because, as Mr. Gutheim, of the commission on car service, says, the West bound capacity of the railroads would not permit its shipment West.

The supply of coal available for the coal consuming public is dependent upon the number of coal cars delivered to the mines for loading, and prompt movement therefrom to destination.

The National Coal Association strongly urges a sufficient supply of cars at the mines as the only means of meeting this grave emergency. The carriers themselves having failed, possibly due to conditions beyond their control, to provide the necessary transportation for the movement of coal sufficient to protect the country's needs, the duty of providing the transportation sufficient to carry out the program I have outlined rests with the commission.

Transportation sufficient to meet this program will result in an increased coal supply and at a reduced cost to the consumer.

Public Utilities Want Assigned Cars

Representatives of public utilities made a strong point of the fact that they are able to secure only fifty or sixty per cent of the coal called for by their contracts. The inference was left that the coal which should have been delivered on these contracts is being sold as free coal as to participate in the high prices in the spot market. The public utilities took a determined stand on their contention that nothing less than assigned cars for public utilities would solve their difficulties. They testified that their needs have increased very little over last year, their load factor remaining practically the same. It is declared that because of coal shortage it has been necessary to ration power. Every economy has been exerted to save fuel, it was declared, even to the extent of providing for interconnection between different power companies where the peak load came at different hours. It was denied that the public utilities had gambled on the fact that they would have to be given priority. It was asserted that every effort has been made to accumulate stocks.

In answer to the suggestion that the power companies could cut off supplies of power from non-essential users it was declared that this action could not be taken except on orders from authorities with competent jurisdiction. Only orders of that character could protect them from damage suits which certainly would be brought against them if they should act on their own initiative.

Many of the witnesses appearing against the order laid great emphasis on the volume of exports. It was significant that each time this matter was referred to, Chairman Aitchison would ask if the benefits they anticipated would be obtained when only one car in forty is exported. These witnesses also were asked if they felt the United States owes any moral obligation to furnish some of the coal necessary to keep people of Europe from freezing, and if it is not in the interest of American business to prevent the economic collapse in Europe which would follow if some of its industries were forced to close on account of the lack of fuel.

Typical of the arguments made looking to the abrogation or modification of Service Order No. 7 was that of the Portland Cement Association. Its argument is as follows:

The Portland Cement Association joins with other construction industries in seeking this opportunity to present facts and opinions regarding the traffic situation in the hope that with the new information that may thus be placed at the command of the commission there may result:

(1) Immediate relief to the construction industry through change or abrogation of Service Order No. 7.

(2) The establishment of a fixed policy that will prevent in the future, except in time of war or other extreme emergency, any resort to preferential treatment of shippers or the establishment of priorities.

We are not unmindful of the complicated and grave character of the situation which confronts the commission, in that it is called upon to guide the policy of railroads physically unable to take care of the traffic offered.

Nor are we unmindful of the fact that a serious coal situation faces the country. In certain sections the stocks of coal are low and it becomes necessary for the maintenance of industrial and domestic welfare in those sections that stocks be accumulated. But with the quantities of coal already produced this year, several million tons in excess of that produced during a similar period last year, as we are informed, there would seem to be no insurmountable difficulty to build up stocks of coal in those sections of the country reported to be in distress without general derangement of the traffic facilities of the eastern half of the country.

It hardly appears fair or logical to give priority for the transportation of all coal for all uses and to all parts of the country when an emergency shortage exists in but a few well defined sections of the country, and for certain specific uses only.

Construction Industry Sorely Handicapped

The cement industry has a two-fold interest as regards the effect of Order No. 7. Whatever tends to curtail the construction industry has direct influence on the cement business. Also many cement mills are dependent on open-top cars for raw materials.

Since November, 1918, the construction industry, second only to agriculture, has been continuously handicapped. Governmental restrictions, increased cost, labor shortage, production shortage, lack of transportation facilities, have all combined to prevent construction enterprises. The construction industry is basic. Whatever tends to curtail this industry is certain of far-reaching effect and if carried much further must result in great industrial depression.

The situation is rendered all the more serious as in the past three years there has been a marked deficiency of completed structures. During this time the demand and the need have been increasingly urgent for all classes of buildings, farm structures, roads and railroad construction. There is a deficiency today of not less than one million homes.

At the present time there are actually available for highway construction over seven hundred million dollars, money that cannot be used for other purposes. These roads, if constructed, will be of great help in lessening railroad terminal congestion.

It is recognized that terminal congestion plays a far larger part in the present difficulties of the railroads than the moving of business over the roads out on the lines. Much of the terminal congestion results from the short-haul shipment of necessary food products for the daily subsistence of the people living in our large cities. Therefore not the least among the structures for which need is most pressing are improved roads, in order that motor trucks operating over such roads may in taking over a greater share of short-haul traffic contribute in still greater degree to the relief of terminal congestion. Not only should new roads be built but those now in use must be maintained.

The country over, contractors and contracting organizations find their entire business capital jeopardized and ruin staring them in the face because of inability to secure necessary materials, such as sand, gravel, lime, cement and other basic construction materials.

The structures into which these materials enter add to the permanent wealth of the country. Materials and labor which go into construction work are not consumed but are transformed into a house, industrial building, county highway, or water-power development and in this transforma-

tion become additions to the permanent, taxable wealth of the country and also become tools for production of additional wealth.

It was expected and hoped and there was every prospect at the beginning of the year that construction operations would be active and real progress made in replenishing the depleted plant of the country. Without this construction increased production, a prime necessity the world over, cannot take place.

It should be borne in mind that the results are more than the immediate suspension of construction projects, disastrous as they are. Contractors with equipment lying idle and deteriorating, organizations scattered, and expenses continuing, will of necessity have to recoup and it will be the cause of a continued increase in prices. For every hazard which a contractor must shoulder the public must pay an increased price. This is the insurance the contractors will demand. Therefore, there is seen the importance not only of some immediate relief but of the establishment of a policy that will remove as far as possible such transportation hazards as have been experienced this season.

In this general disturbance to construction activity the cement industry is seriously interested. It is also directly concerned with the movement of raw materials in open-top cars. Many mills are today curtailing production because of non-receipt of raw materials, and in a few instances mills are compelled to close and remain idle, their workmen without pay.

Say Order Fails to Accomplish Purpose

We therefore take this opportunity respectfully to point out to the commission:

(1) That the arbitrary derangement of traffic facilities, first, under order of the Commission on Car Service of the American Railway Association through Circular CCS-33, and later under order of the Interstate Commerce Commission known as Service Order No. 7, has not accomplished what we believe was the intent of the commission, namely, to have coal distributed where needed and to keep down prices; but has caused a most serious condition to be faced by all interested in the construction industry.

(2) That the principle of giving to a single industry arbitrarily an undue proportion of the transportation facilities of the country is wrong and in practice is found to accentuate many-fold the difficulties which it was the intent to correct.

We all recognize there is a shortage of transportation facilities just as there is a shortage of many other essential factors in the industrial progress of the country. But arbitrarily to assign to any given group of shippers an undue share of the restricted facilities creates an unbalanced situation which threatens the whole industrial structure.

We strongly believe and urge that the Interstate Commerce Commission should use its great power to see that transportation facilities are furnished to all shippers, who should share and share alike. That if there is a shortage at any particular point or section of the country of a given commodity, as for example coal, the remedy does not lie in a general derangement of transportation facilities and the curtailment of such facilities to essential industries.

In closing, we submit that to throw the entire burden and responsibility for carrying this burden, due to the shortage of transportation facilities, upon the construction industry is an unsound business policy, is unfair to the public and unjust to the contractors and material producers who now face financial ruin. And we ask that Order No. 7 be modified to correct these conditions and that a fixed policy be established that will prevent in the future priorities and discriminations against or in favor of any industry.

The carriers contend that they are enforcing Order No. 7, despite claims to the contrary. The best proof of this, their representatives say, is the volume of protest which has gone up against it. They also point out that there is agreat deal of talk about plants which are about to close on account of coal shortage, but that none of them has been closed thus far. Even in cases cited of plants being closed on account of shortage of coal it is asserted that the unsatisfactory price situation with regard to product probably was the real reason for cessation of activities.

George H. Cushing, the managing director of the Wholesale Coal Association, stated that his organization is disposed to ask for the cancellation of service orders No. 5, No. 6, and No. 7, "because our information leads us to believe that there is no shortage of coal now, nor is there likely to be a shortage. The people are in a mood now to buy all the coal they are going to want before Arpil 1 next. However, we are not justified in saying there is a shortage merely because that demand exists." Continuing, Mr. Cushing said:

"There has been enough coal produced to satisfy all current needs. There has been very bad distribution of that coal. Some have too much, other have not enough."

Mr. Cushing was asked to indicate what he regarded as a high price for coal. He said anything above $5.50 at the mines is without justification. He expressed the opinion that the reconsignment privilege is not being greatly abused and that its function in allowing the consignor to give coal to those who need it most greatly offsets any use of the reconsignment privilege in selling the coal to the bidder who will pay the highest price.

Eugene MacAuliffe made a specific recommendation to the commission urging that the railroads be given a specific daily stint of coal hauling instead of many detailed orders as to the distribution of open-top cars. His idea is that from now to October 1 there must be two million tons of coal hauled away from the mines each working day. It the roads are required to do this much before they undertake any other revenue freight work they can then do about as they please with the rest of the cars and no harm can come to the fuel supply of the country.

Estimates Country's Coal Requirements

These estimates are based upon the assumption that we shall have a total need of bituminous coal in 1920 of 550,000,000 tons, of which perhaps fifteen million will be to afford a working margin toward the exigencies of winter traffic problems. MacAuliffe would have two million a day provided till Oct. 1, 1,900,000 a day from then to December 1, and then 1,600,000 per day in December. This with the 256,000,000 mined before July 1 would make up the total demand. However he does not suggest just how the Interstate Commerce Commission should go about fixing for each railroad the amount of the coal which it is to be responsible for, nor more particularly how to care for the roads that have no coal traffic originating on them. These problems are believed to be relatively easy, however, it seems.

Among the other points recommended by Mr. MacAuliffe are the following:

(1) Revoke the assigned-car privilege.

(2) Enforce prompt unloading by coal users and reduce the amount of coal which the railways themselves are permitted to store in cars.

(3) Discontinue all joint service of several railways at a single mine as unnecessary duplication of railway effort.

(4) Revoke the privilege of reconsigning coal.

(5) Require the carriers to police the car service and mine ratings so that they will be responsible for reasonable distribution between mines.

(6) Reconsider the enforcement of zones and distribution practice of the Fuel Administration days.

(7) Eliminate, by criminal prosecution if necessary, the practice of discrimination in car switching and placements—the result of tips and fees for preference now known to exist.

(8) Require the loading of only clean coal.

NEWS FROM THE CAPITOL

BY PAUL WOOTON

President Appoints Engineer Officer of Federal Power Commission

LIEUTENANT Colonel Wm. Kelly of the Engineer Corps has been appointed by the President to serve with the Federal Power Commission as engineer officer. Much of Colonel Kelly's experience in the Engineer Corps has been in California, where he has been brought in contact with water-power problems. He took the 117th Engineers to France. Later he was promoted to chief engineer of the Fourth Army Corps. From that post he was promoted to base commanding officer.

Trade Commission Issues Fifth Report on Bituminous Production Costs

THE fifth report of the Federal Trade Commission's series on the cost of producing bituminous coal in the United States, covering the States of Ohio, Indiana and Michigan, has been made public and will be available for general distribution.

This report, like the previous ones of this series, presents information for the period August, 1917–December, 1918, based on monthly cost reports filed by the operators on forms prescribed by the commission and covers about 93 per cent of the output of Ohio during 1918, 86 per cent of the output of Indiana, and practically all of the output of Michigan. Information also is presented for certain districts for 1916, 1917 and 1918, based partly on information obtained by the commission's agents directly from the operators' books and partly on cost sheets submitted by the operator. This latter information covers from 20 to 89 per cent of the total output for the various districts.

Seeks to Enjoin Assignment of Cars By the Pennsylvania R. R.

AS A further step in the programme of the National Coal Association in its effort to have assignment of cars vacated by legal action, an injunction suit has been begun in the central Pennsylvania field.

T. H. Watkins, president of the Pennsylvania Coal & Coke Corporation, has filed a suit in the Court of Common Pleas in Cambria County, Pennsylvania, against the Pennsylvania Railroad Co. to restrain it from resorting to the "assigned-car" practice.

In its bill of complaint the Pennsylvania Coal & Coke Corporation, which mines bituminous coal, alleges that because of the assigned car practice it lost $35,000 during the month of May through lack of cars that it needed to carry out its contracts. While the corporation's mines were obligated to shut down part time, through lack of cars, mines favored by the railroad, the bill alleges, got far more than the proportionate allotment of cars they were entitled to by the rating system.

Because of the shortage of cars at the corporation's mines, with consequent curtailment of coal production, it is alleged, the corporation has experienced difficulty in keeping its men at work. Many of its workers have left the employ of the corporation and have gone to fields where assigned cars are supplied by the Pennsylvania R.R. or to other industries.

Require More Data in Car Relocation

ON JULY 6 the Commission on Car Service of the American Railroad Association issued to the railroads Circular CCS-51, as follows:

At the request of the Interstate Commerce Commission and to guide the Commission on Car Service in the relocation of cars, a report will be required showing the interchange of cars with your connections.

This report will show separately the open cars (exclusive of flat cars) and box cars (including auto, furniture and vent) received from and delivered to each connecting line at each junction point, with a total for the complete interchange with each railroad. The figures will be compiled four times monthly for the periods ending 8th, 15th, 23d and last day of the month.

At points where cars are delivered to a connection through an intermediate switching line the cars should be reported as interchanged with the overhead line and not with the switching line.

The report should be worked up in the car record office daily, based on a check of the interchange reports as received. The report should include all cars for which interchange record is received in the car record office during the period of the report, regardless of the date of movement. This will permit closing the report on the dates mentioned and mailing the information immediately to this office.

Make first report to cover period July 1 to 8 inclusive, making check of reports already in the office to do this. Report should be sent in duplicate.

Form CS-22 will be revised in accordance with the above and future reports will be known as CS-22 (revised). The roads heretofore making reports of coal cars interchanged on Form CS-22 will include additional information requested as to box cars effective at once.

Sumner Smith Resigns from Bureau of Mines

SUMNER SMITH, who has served for a number of years as mine inspector in Alaska for the Bureau of Mines, has resigned to enter the service of the Alaska Engineering Commission. It is understood that he is to take charge of the coal-mining operations which will be done for navy account.

E. A. Holbrook Inducted Into Office

E. A. HOLBROOK took the oath of office as assistant director of the Bureau of Mines on Saturday, July 10.

Modify Form of Weekly Freight Report

CIRCULAR CCS-53 of the Commission on Car Service of the American Railroad Association, issued July 8, apprises the railroads of modifications in weekly reports of revenue freight loaded and received from connections, hereafter to be designated as Form CS-54 (revised), as follows:

(1) Addition of items "Coke" and "Merchandise L.C.L.," which is found to be necessary. It is not expected that you will have a special recount made of the previous years' figures for this report; if such information is now available it will be very helpful if given with the current report.

(2) Special attention is called to directions respecting cars in switching service, both as to intra-terminal movements and cars received from switching roads.

(3) It is essential that the report be mailed before or on Tuesday following the Saturday previous on which day report is closed. If for any reason unusual delay is entailed it will be appreciated if a report is made by telegraph, using code words and letters as provided.

Report on revised form should be rendered beginning with the week ending Saturday, July 17.

Ferry Would Have Government Operate Four Hard-Coal Mines and One Washery

GOVERNMENTAL acquisition and operation of experimental coal mines, both anthracite and bituminous, were urged on July 9 in a proposal laid before the Anthracite Coal Commission by Thomas Kennedy, president of district No. 7, United Mine Workers of America. As precedents for this departure Mr. Kennedy cited the operation of experimental farms and the building of experimental roads by the Department of Agriculture, and as his strongest argument in support of his suggestion he declared that the time had come to let the public know the exact truth about mining—management, equipment, costs and profits.

Mr. Kennedy's suggestion is known as the "Ferry Plan," taking its name from Neal Ferry, chosen by President Wilson to represent the miners on the Anthracite Coal Commission, who first proposed it at the recent tri-district convention of anthracite miners held at Wilkes-Barre. That convention approved and adopted the Ferry Plan, and the Anthracite Coal Commission is now asked to incorporate in its decision in the present case a recommendation to President Wilson that the government go into the coal-mining business.

Lest the operators fear that this would mean a step toward the nationalization of all the mines Mr. Kennedy said he believed the adoption of the plan would be the best insurance against nationalization, provided the operators co-operated in the experiment and profited by the lessons learned therefrom. In his statement to the commission he said:

"As Mr. Ferry told our convention, after thirty years of 'investigations' the government itself does not know the first thing about mining—the cost of getting out one ton of coal. He showed that official figures varied from $1.25 to $7.80 a ton, and he gave in detail the basis of his own calculations as a practical miner that the miner gets 69c. for each ton he mines.

"When this coal sells at $12.75 a ton, or even as high as $14.50, both miners and consumers justly become suspicious of the whole industry, and accordingly he suggested that the Government should take over four anthracite mines and one coal washery, in order that a practical experiment can be conducted to ascertain the exact costs of producing and marketing a ton of coal in small, medium and large veins.

"I add to that the suggestion that a like experiment be made in the bituminous coal industry. Both the United Mine Workers of America and the operators should be represented in the management of such experimental mines, but absolute control should lie in the Government so that there could be no question as to the impartiality and reliability of the results reported from time to time. The Ferry Plan would cost the government nothing, for the money invested would be returned to the Treasury in profits on the coal produced and marketed."

Operators and Railway Executives Will Meet to Solve Coal Problem

COAL operators from every important producing state met in Washington on Monday, July 12, and after an all-day session, during which every angle of the present situation was discussed, adjourned after turning their case over to a select committee. The meeting was called by the officers of the National Association as a result of last week's developments, among the more important of which were definite indications that the administration is seriously considering the oppointment of a Fuel Administrator with all the powers of the Lever Act and that the Interstate Commerce Commission is about to issue an order giving assigned cars to move coal to the Lakes.

So serious is the situation considered by the operators that, to avoid having the industry saddled with Government regulation, this meeting was called to put forth counter proposals. It is generally believed in Washington that there is no real sentiment in favor of reviving the Fuel Administration but it is recognized that the pressure from the Northwest and from public utilities generally in favor of such a solution of the coal question for these particular interests is so strong that unless some method just as effective is found by the operators acting in conjunction with the railroad executives the administration will be forced to transfer the powers of the Lever Act to some agency.

On one point there was unanimity of opinion among the operators assembled at this meeting, and that is that they cannot afford to recognize or be directly party to any step that savors of Government interference with the coal industry.

Many lines of action were discussed but finally all questions were referred to a committee composed of D. B. Wentz, J. P. Walsh, W. L. Andrews, C. P. White, F. C. Honnold, J. G. Bradley and J. D. A. Morrow, which committee was instructed to meet with a committee of American Railway Executives in New York.

Pat Flynn, Miner, Makes $264 in Two Weeks

A SIX-FOOT Irishman, by name Pat Flynn, employed by Roy Brothers in their Highland Mine at Somerset, Pa., made $264 in two weeks. He had no "buddy" to help him turn the trick. Mr. Flynn found time not only to earn the $264 but to take some recreation. It is said this earning establishes a record.

Recommends Opposition to Frelinghuysen Coal Commission Bill

IN RECOMMENDING that the association oppose the Frelinghuysen Coal Commission Bill the Special Coal Shortage Committee of the Merchants' Association of New York City advanced the following reasons:

The bill calls for the appointment of a new set of men, most of whom probably would be ignorant of the industry, as no one competent to fulfill the task, certainly no expert with the necessary knowledge, would take the position at the salary named, in view of the fact that the bill demands that he shall not be engaged in any other business, vocation or employment.

The bill calls for unnecessary experiments at great cost, most of which are being competently carried on at the present time by other governmental agencies, including the Bureau of Mines.

Sections 17 and 24 are an unwarranted interference.

Section 13 provides for the possible establishment of a statutory zoning system, which system proved unfeasible when tried by the Federal Fuel Administrator during the war, while the question of distribution of coal as contained in Section 7 should be entirely beyond the power of any Federal Commissioner.

The act is unnecessary and superfluous in that its object seems only to be the resumption of war-time authority and practice and tends to demoralize industry and trade, already fighting to resume its pre-war condition.

The members of the committee are: William Fellowes Morgan, chairman; J. F. Bermingham, president of the Delaware, Lackawanna & Western Coal Co.; Willard S. Brown, of Willard S. Brown & Co.; Thomas D. Green, president of the Hotel Woodward Co.; Edward E. Loomis, president of the Lehigh Valley Railroad Co.; Thomas S. McLane, president of Jeremiah Skidmore's Sons; Wesley M. Oler, president of the Knickerbocker Ice Co.; R. A. C. Smith, former Dock Commissioner, and Burton F. White.

Commerce Commission Renders Decision on Demurrage Charges

AN IMPORTANT opinion has been handed down by the Interstate Commerce Commission in the case brought by the Wholesale Coal Trade Association of New York, in which demurrage charges and rules are attacked. The commission finds that the

Demurrage charges assessed on tidewater coal from Nov. 11, 1918, to March 2, 1919, both inclusive, were not unreasonable; that the demurrage charges assessed on tidewater coal from March 3, 1919, to March 31, 1919, both inclusive, were unreasonable to the extent that they exceeded charges based upon five days' free time and a demurrage charge of $2 per car per day; that the demurrage charges and free-time rule in effect since March 31, 1919, have been and are reasonable; that the monthly period for adjusting credits and debits under the average agreement was not and is not unreasonable; that the difference in treatment accorded the complainants and the lake-port shippers does not constitute a violation of section 3; that the tidewater regulations are not unduly prejudicial to the smaller tidewater shippers, and that the record does not justify the cancellation of demurrage charges which accrued during the strike.

We have uniformly held that strikes which prevent shippers from loading or unloading cars afford no basis for relief from demurrage charges. Complainants contend that this particular strike, by reason of its duration and widespread effect, should be regarded as an exception to the rule. The record shows that during the period of the strike the demand for coal was light, due to the mild winter and the accumulation of coal in New England. It is clear that a part of the demurrage accrued at the New York piers because of these conditions, as demurrage charges of $203,807 accrued in February, 1919, during which month the movement beyond the piers was unimpeded and relatively large amounts of demurrage accrued at the other tidewater ports which were not affected by strike conditions, or, if so, only to a limited extent. The facts of record do not warrant a departure from the rule that strikes afford no basis for general relief of the character sought by these complainants.

Complainants refer to the failure of defendants promptly to issue embargoes against the shipment of coal to tidewater on account of the strike. One of the complainants asserts that it was erroneously advised by the Pennsylvania R.R. on March 4 that an embargo had been issued. Coal continued to move until an embargo was actually placed on March 12. This complainant also referred to embargoes on coal to South Amboy placed on March 5 and 6 by the Ligonier Valley R.R. at the request of the Pennsylvania R.R. which were cancelled on the same date that they were issued. Shipments continued to be forwarded until the embargo of March 12. The failure of the railroads to declare embargoes does not relieve the shippers from the payment of demurrage charges. A shipper may offer for shipment all he sees fit, but if he makes more shipments than he can handle it is not the carrier's concern. If demurrage then accrues the shipper alone is to blame.

New York Coal Wholesalers Assist in Search for Profiteers

IN an effort to assist the Department of Justice in ferreting out violators of the Lever Law the Board of Directors of the Wholesale Coal Trade Association of New York, Inc., has appointed a committee to tender to that department the co-operation of the coal trade. This committee, consisting of C. Andrade, Jr.; W. A. Marshall, Gibbs L. Baker and Charles S. Allen, was appointed at a special meeting of the Board of Directors held on July 2 and its efforts will be directed "especially to guiding the department to a full development of all the facts to the end that no action be taken by it until the person thought to have violated the law shall have every opportunity to place all facts in the possession of the Attorney General."

The association believes that the Lever Law "is being violated and the trade generally is being brought into disrepute by the fact that a few unscrupulous persons are taking advantage of the present situation" and "it is satisfied that it is the unanimous desire of the vast majority of the trade, all of whom are reputable business men, that assistance be given the department in its efforts to terminate the practices which are not only unlawful but tend to bring opprobrium upon the trade with which they are proud to be connected."

In its first statement the committee says that "it is incumbent upon the trade to purge itself of the element, which it knows to be extremely small, both as to numbers and volume of business done, which is bringing discredit upon that great number who are not turning the present conditions to their pecuniary advantage but are bending every effort to promptly move coal to their customers" and adds that a consistent policy of "refusal to deal in any manner with a person or concern that may reasonably be suspected of abusing the present situation" will be very effective in putting a stop to reprehensible practices.

The members of the association are warned, and non-members are urged, to "scrutinize all transactions with great care, and if there is the slightest ground for suspicion that undue advantage is being taken of the present conditions, that they decline to have any part in the transaction."

The committee will confer with the Attorney General and ask him before any attempt be made to indict a member of the trade that the committee be advised of the facts in his possession and every reasonable opportunity be afforded to the person or concern in question to submit to him, through the committee, a full statement of any facts in extenuation which it may be desired to present, with the further assurance that full consideration will be given such facts before action be taken.

Members of the trade who are in possession of facts which will tend to establish violations of the law are not only invited but are urged to present them to the committee.

Indiana Considers Purchase and Operation of Coal Mine

OPPOSITION to a state-owned coal mine in Indiana is crystallizing rapidly. Coal operators are watching with more than ordinary interest the attempts of the state purchasing committee and Governor James P. Goodrich to induce the State Legislature to purchase a mine and sufficient coal cars to provide the state institutions with coal. In the meantime the state contracts have expired and the state is in the open market, buying from hand to mouth, as it were. Operators are saying little about the project and what little they are saying is not for publication.

Opposition to the proposition first began with some of the state officials themselves. Many prominent citizens in Indiana have expressed doubt as to the wisdom of the scheme, saying it savors too much of socialism and would result as disastrously as the "government-ownership of railroads." The United Mine Workers will object strenuously to any attempt on the part of the state to employ convict labor in the mine. Many are of the opinion that the purchase of a mine would open the way for the use of such labor and it is believed that they will have to be convinced that no prisoners from state institutions will be employed in operating the mine before they will withdraw their objections.

Coal Mining Classed as Extra Hazardous

The United Mine Workers point to the fact that the State Workmen's Compensation Law provides a separate classification for coal mining on the ground that it is the most hazardous occupation in Indiana. The courts have upheld this contention and the monthly reports of the board usually indicate more accidents in coal mines, particularly fatalities, than in any other industry.

It is not certain that the state joint purchasing committee at present has any legal standing and therefore it might be involved in litigation should it attempt to buy and operate a mine.

After extra institutional appropriations are made by the legislature at the special session only $500,000 will be left in the treasury, or the amount that the mine and coal car project would require. Meanwhile members of the joint purchasing committee are inspecting various mines in the western part of the state with a view to purchase. The opposition, however, is getting set for a fight on the floor of the legislature when the proposition is introduced.

The purchasing committee was created by a rider on the regular appropriation bill of 1919 and it is believed by some legislative students that the Legislature must enact a specific measure to give the committee full authority and qualify it to act as a state department. The committee is not mentioned in the title of the appropriation act. The question raised does not affect the legal status of the committee to act as a purchasing agent for state institutions, it is said, but makes it doubtful whether it can serve as an official branch of state government to the extent the mine project involves.

Recently the committee visited Vandalia coal mine No. 74 in Vigo County, but, according to Cairy Littlejohn, state mine inspector, and David N. Curry, state representative, a report advising against its purchase will be made. They say the mine is in an unfavorable condition. Other mines will be visited, however.

Mine operators have not shown any inclination to enter into a contract with the state to provide the state institutions with coal. The coal situation in Indiana is entirely too precarious. Mr. Littlejohn said he talked with an operator just before the expiration of the present contract, July 1, and the operator told him he would not enter into a contract with anybody to provide coal for a year at $5 a ton.

Governor Goodrich believes that were it not for a passage in the Esch-Cummins Federal Transportation Act the state would not now find itself in the pinched condition resulting from inability to get coal at reasonable prices. The federal law provides for the allocation of available coal cars to coal mines on a strict proportion basis, the only exception being in the cases of mines supplying railroads with coal. These mines are to receive 100 per cent supply, if available.

Arbitrary Interpretation by Commission

The state officials first attempted to arrange with the Interstate Commerce Commission to provide state-owned cars so that mines supplying the state should receive cars sufficient to keep them in operation at least long enough to fill the state coal requirements. The commission, however, interprets the law to mean that whoever may own the cars, the mines can receive no more than their proportionate allocation.

Governor Goodrich said: "Of course, if the Interstate Commerce Commission takes that position, it would be folly for the state to buy its own cars. If the commission maintains this attitude it will compel Indiana to pay at least $150,000 more for its coal this year than it could buy it for otherwise, and it won't help the situation one bit. It permits railroads where a mine sells its entire output to railroads to supply 100-per cent service. Why can they not where the state operates a mine, permit the railroads to supply 100 per cent car service? If the commission will do that, it will solve our difficulty. Everyone understands the state would have this coal. It is in the preferred list. It would not affect the general result one bit to put us on the same level with the railroads themselves and it would enable us to get a steady supply of coal at a much lower price than we could possibly buy it for if they are to maintain that position."

John W. McCardle, vice-chairman of the Public Service Commission, and Senator James E. Watson, from Indiana, are to take up the proposal again with the commission this week.

Warriner Shows Up Many Misinterpretations of Fact in Lauck's Voluminous Exhibits

Slow Working Time Is a Thing of the Past and Cannot Recur—Lauck's Estimate of Number of Working Days in 1919 Is Nearly a Full Month Too Low—Pennsylvania Works More Steadily Than the Average Coal-Mining State

AFTER an adjournment of over a week the Anthracite Coal Commission met at Scranton July 7, and, after the usual formalities, Jett Lauck discussed two of the exhibits that he had presented without comment at the prior meeting of June 28. The titles of these exhibits were Exhibit 24, "The Sanction of the Eight-Hour day," and Exhibit 26, "The Occupation Hazard of Anthracite Mines."

Lauck's ill-advised attempt to prove that the demand for anthracite during the war was unusual landed him in many absurd positions and the climax was reached when he tried to explain how in a short while the mines would be glutted with men—from the culm banks.

Mr. Lauck desired to show by the first of these exhibits that the eight-hour day tends to increase output, the men working more diligently and effectively when less fatigued by the previous day's stint. He gave examples which seemed to him to prove the truth of his assertions. He also stated that extra hours were a primary cause of accidents and when asked by Chairman Thompson to support that statement by actual figures he replied that he could not do so, but he affirmed that it was the consensus of opinion that shorter hours meant a shorter casualty list, which was ever an important desideratum.

Long Hours Keep Mine Worker from Family

He then argued that any working day longer than eight hours kept a man too long from his family and from that recreation which he needed and was entitled to enjoy. The longer working day prevented the foreigner from studying English and therefore incapacitated him from qualifying for effective citizenship. Moreover any greater number of working hours than eight per day was detrimental to the worker's health.

Mr. Connell, the operators' representative on the commission, pointed out that the anthracite industry is already on an eight-hour day basis except in the case of a few of the employees. This Thomas Kennedy admitted, but he declared that the miners wanted the eight-hour day extended to all employees and sought to have the matter made a general stipulation in the next agreement.

After Mr. Lauck had finished the presentation of his case it was agreed that the operators should cross-examine him as to the exhibits he had presented. In order that the discussion may not be too much involved it will be taken up in regular order point by point, though the cross-examination led back and forth from item to item.

S. D. Warriner commenced with Exhibit 3, which discusses the irregularity of employment in the anthracite industry. Mr. Warriner criticized the figures that the mine workers presented as to the number of working days per year. In particular he objected to what he regarded as an unsubstantiated estimate regarding the activity of the mines in 1919. Mr. Lauck had the figure as 252 days whereas the anthracite managers claimed 273 days as the average working time, which, by the way, is 90 per cent instead of 83 per cent of full working time. Mr. Warriner brought out the fact that Mr. Lauck's figure permeated almost every exhibit and rendered most of the calculations entirely misleading.

Mr. Lauck then said that he did not claim that the figure 252 was exact but that as far as he could estimate the figure was correct. He could not see that it mattered what the figure was. Even if it was as high as the operators claimed, it would do no damage to the mine workers' argument. At this point it was brought out that if the mine workers' figures were merely estimates it was foolish to take up the time of the commission with them, especially as they were not only estimates but wildly erroneous estimates at that.

Mr. Warriner took up the table showing the number of days worked from 1881 to date and wanted to know why the average number of days for the anthracite region was calculated on a basis of forty years whereas for the bituminous region a period of only thirty years was taken. He added that if the basis of thirty years for each industry had been used the figure for the anthracite region would appear better than that which Mr. Lauck had obtained.

Why Consider Only Pennsylvania Mines?

Mr. Warriner also wanted to know why the figures for the anthracite region were compared with those of the bituminous regions of Pennsylvania. Why not compare them with the figures for the whole bituminous industry of the United States? Mr. Lauck declared that he chose to compare the two sections of the state with one another, for he contended that they were more closely parallel. Mr. Warriner said that the Pennsylvania bituminous field was in a class by itself.

He urged that if a comparison had been made by taking the average number of days worked in the anthracite industry during the 40-year period and comparing it with the average number of days worked in the whole bituminous region, in Pennsylvania and its sister states, during the 30-year period, it would have been found that the anthracite mines had the advantage of steadier work.

Mr. Warriner then wanted to know what a record of the number of days worked in 1881-1890 had to do with

present conditions. Mr. Lauck declared that the period immediately before the war was the most important, and that the present period was abnormal and should be given no consideration. He stated that since the war there had been an abnormal demand for anthracite and that the industry could not look for a continuation of this demand.

What Will Reduce Demand for Anthracite?

Mr. Warriner wanted to know of Mr. Lauck on what grounds he based this contention. Mr. Lauck asserted that the bituminous industry was not able just now to fill the demands upon it owing to the war needs and to the present car shortage which today reduced the output of coal, and therefore the anthracite industry had to make good the losses of the bituminous industry. Further Mr. Kennedy stated that the bituminous operators as soon as they could catch up would probably resume the sale of sized coke in competition with anthracite and further reduce the sales of the latter. Therefore the industry would be apt to resume its pre-war status.

Mr. Warriner then pointed out that by Mr. Lauck's own figures the anthracite industry was becoming stable and that each year there were being more and more days worked, whereas in the same period the number of days worked in the bituminous regions had remained stationary and was now lower than in the anthracite field. Mr. Warriner added that the conditions at the present time were not abnormal and that for the time that the agreement was to be in effect conditions could be expected to remain the same and he elicited the admission from Mr. Lauck that this probably would be true at least until next spring.

Mr. Lauck then pointed out that the return of men to the mines would reduce the number of days worked, as the larger number then available would be able to produce the required output in less running days. But Mr. Warriner stated that the industry could absorb all the men it could obtain and still give them sufficient or full-time work, as the operators were unable to fill the demands of the market.

Culm-Bank Coal Cause of Large Output

Mr. Lauck tried to show that the men had increased their output per man during the war period, but Mr. Warriner was able to contradict this by showing that the increase in production per man was due to the culm-bank coal that had been shipped during the war and was still being shipped. Mr. Lauck then said that if this culm-bank coal were no longer produced the men now employed at the culm banks would have to be employed in the mines.

Mr. Warriner immediately showed the fallacy of assuming that this would flood the mines with men and increase the output by stating that there were only 4,000 men employed at the culm banks, which is approximately 3 per cent of the total number of men employed in the anthracite industry, and of this 3 per cent less than 5 per cent are miners and hold miners' certificates. Hence these men would increase the force available for work in the mine by less than fifteen-hundredths of one per cent.

Mr. Dempsey then stated that the shortage at the mines at the present time was not in miners but in mine laborers and that one company with which he was well acquainted needed at least 1,200 men of this class, and if it could get them they would increase the output of the same number of miners, enabling each of them to double his output. Mr. Warriner then showed that the production from culm banks was 10 per cent of the total output and that this was produced by 3 per cent of the total men employed.

Mr. Lauck then asked Mr. Warriner if it were not a fact that during the rush work of the war the machinery and mines had been allowed to run down so that in the future many delays due to breakdowns and repairs might be expected. Mr. Warriner answered him by stating that during the past seventeen years the anthracite industry had been installing the best types of machinery and safety devices and had reduced the dangers incident to mining. He declared that the repairs had been kept up and that no more delays than usual might be expected.

Conditions in the Two Fields Reversed

Mr. Warriner then presented Fig. 1, which showed diagrammatically from figures presented by Mr. Lauck on page 8 of exhibit 3, "Irregularity of Employment in the Anthracite Industry," that, although the bituminous field worked in the past more days per year than did the anthracite region, conditions are now reversed, and have been reversed in all the years, with one exception, since 1914. Mr. Lauck represented as a fact that the conditions in the anthracite field were abnormal for that period. Then Mr. Warriner referred to Fig. 2 and explained that it had been plotted by averaging each year with the preceding and the succeeding year, using the figures from the same table. He pointed out that in the bituminous field for the past seventeen years the number of days worked had been practically stationary, while in the anthracite field the increase was healthy and continuous and that the last few years were not abnormal but what might have been expected from the indications in the industry in the years previous to the war.

Having completed the discussion on Exhibit No. 3, Mr. Warriner took up exhibit No. 5, entitled "Average Full-Time Weekly Earnings in the Anthracite Coal Mines of Pennsylvania."

To him it seemed neither fair nor reasonable to show the weekly earnings of one hundred men as if such figures were significant of the returns received by the 150,000 men employed in the mining of anthracite. Certainly such a method of analysis was apt to be rendered valueless by the obtaining of figures of wholly unrepresentative men. Mr. Lauck acknowledged the incompleteness of his figures and stated that they were based on the data that he had at hand, but Mr. Warriner pointed out that Mr. Lauck had figures available from which to secure the wages of over 7,000 men each year.

He could have obtained such information from the Workingmen's Compensation Commission of Pennsylvania, the source from which he had obtained the figures regarding the one hundred men. Mr. Lauck acknowledged that he would like to have the figures from the company's payroll but that he did the best he could with the figures obtainable and that although he could have used the wages of more men he did not have the time nor did he feel like going to that unnecessary expense.

During the day the question of admitting the miners' exhibits on profits, etc., was brought up, but final action on it was postponed. The meeting then adjourned until Thursday morning at 10 o'clock.

Mr. Warriner then discussed miners' exhibit No. 4. This exhibit is entitled "A Comparison of Earnings and Wage Rates in the Anthracite and Bituminous Mines of Pennsylvania." Mr. Warriner took exception to Table I, in which are compared the earnings for the two fields, and asked Mr. Lauck to explain the source of his figures. As a result of Mr. Lauck's statement Mr. Warriner then showed that the figures for none of the years were comparable as the proportion of employees

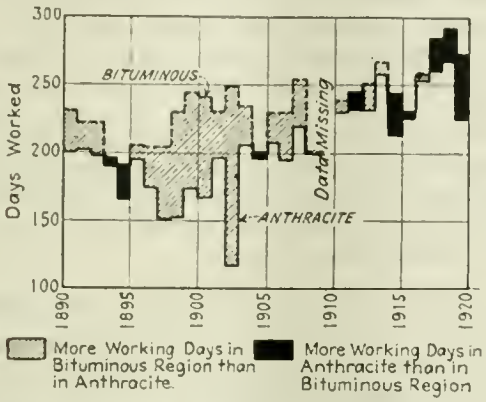


FIG. 1. SHOWS HOW MEAGER WORKING TIME SHIFTED FROM HARD- TO SOFT-COAL REGION

The black shows how the anthracite men are still in the grime of work when the bituminous men are resting.

in various types of employment differed in the two fields. For example, more boys are employed in the anthracite field than in the bituminous. As a result the wages of the boys reduced the per-capita earnings of the mining force. Average earnings can never be compared unless the character of the labor employed is taken into consideration, and in this case a simple comparison would be particularly misleading.

Exaggerated Bituminous and Understated Anthracite Working Days

Mr. Warriner showed that in drawing up his figures for 1919 Mr. Lauck had used different methods for calculating the wages of the men employed in the one field from that which he had used in estimating the wages in the other. In consequence the figures he obtained were not comparable. He showed also that Mr. Lauck used 252 as the number of working days per year in the anthracite field and 246 days in the bituminous field, whereas the correct figures are 273 for the anthracite and 225 for the bituminous.

This declaration caused much discussion, the mine workers' representatives declaring that the operators ventured to claim that Lauck's statements were incorrect without presenting any other figures to substitute for them. Mr. Warriner then stated that if Mr. Lauck had used the correct method of determining the earnings he would have shown that the anthracite miners earned more money in 1919 than did the bituminous miners.

Table VIII of this same exhibit, No. 4, which was captioned "Comparison of Daily Earnings in 1918 of Anthracite and Bituminous Mine Workers," caused a further disagreement between the operators and mine workers. This table gives the earnings by occupation of the two fields and shows by what percentage the wages of bituminous miners exceed those of anthracite miners. Mr. Warriner says that this table is not a fair reflection of conditions in the year 1918, as the rate does not take into consideration the $1 per day increase granted by the Fuel Administration in November. It is not, therefore, a proper comparison between the two fields. Mr. Lauck then pointed out that on the following page this fact was stated.

Mr. Warriner again asserted that the table was incorrect. It did not serve any useful purpose to put things that were not facts in the tables and then correct them in the text. Mr. Kennedy then asserted that the operators were trying to show that the miners were concealing facts and appealed to the commission and asked them to have Mr. Warriner answer his (Mr. Kennedy's) question which was to the effect "Are you not implying that you think that we deliberately falsified the table to conceal facts?" Mr. Warriner then said he was not.

Comparative Day Rates Misrepresented

Another part of this exhibit that aroused no little animated discussion was the table (numbered XIV in the *Coal Age* reprint) which showed the basic daily rates as fixed by the agreements. It was Mr. Warriner's privilege to show that these were not the basic daily rates but were selected rates and that in some cases they did not even approximate to averages. Yet more in one case, namely that for outside common labor, the figure given was below the lowest rate paid.

He showed that outside common labor, which according to Mr. Lauck was paid $3.31 per day, included some boys who were doing work that in general was performed by men. These boys, he declared, were under 21 years old and therefore the companies that employed them in accordance with the agreement paid them only boys' wages. Before closing the discussion of this exhibit Mr. Warriner pressed his opponent, Mr. Lauck, until he reluctantly admitted that if his figures as to the number of days worked were incorrect, a statement which Mr. Lauck doggedly denied, it would to some extent destroy the value of his deductions.

Mr. Warriner then subjected Exhibit 7, entitled "Wages in Various Industries and Occupations," to his

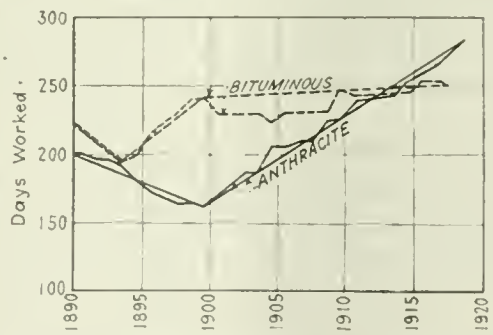


FIG. 2. OBTAINED BY PLOTTING WORKING-DAY AVERAGES FOR THREE YEARS OF OPERATION

Shows rapid growth in steadiness of run in anthracite region

searching analysis. It was credited to the "Bureau of Applied Economics, Inc." Mr. Lauck was asked if he was not a stockholder in this bureau and he had to admit that he was.

Mr. Lauck was then asked to give the sources of the figures appearing in the exhibit. He declared they were official. Mr. Warriner replied that they were not the figures as furnished by the anthracite operators especially for the year 1914.

The discussion shifted to Exhibit 12, on "The Relationship Between Rates of Pay and Earnings and the Cost of Living in the Anthracite Industry of Pennsylvania," which is reprinted at length in this issue of *Coal Age*, and the argument that resulted was at times most animated. Table I, which shows the relative wage rates since 1902, was the first point to be attacked. Mr. Warriner stated that if a similar table had been compiled for the bituminous industry prior to the recent wage settlement it would have shown a rate of only 168.50, whereas the rate shown by Mr. Lauck for the anthracite industry was 181.30. Thus the percentage rate of increase of the anthracite region exceeded the percentage rate of increase of the bituminous region by 12.8.

No Right to Consider Steadiness of Work

A table which would indicate the present rate for the bituminous region would show a figure of 214. The figure, therefore, by which the wages of the anthracite mine worker should be increased is 32.70, and it would represent the percentage as applied on the wage paid before the strike settlements in 1902. Based on the present wage the increase would be not quite 18 per cent. The figure given by Mr. Warriner, based probably on other calculations, was 19.9 per cent. Mr. Warriner declared that during the war the rate of pay of anthracite miners had advanced 49.8 per cent, whereas bituminous miners' rates had increased only 34.6 per cent.

Fig. 1 of Exhibit 12 shows a comparison between the increase in the wage scale and the increase in the cost of living. As this exhibit with chart is shown in this issue of *Coal Age* it will be easy to follow Mr. Warriner's reasoning. On this chart is plotted a curve showing that the cost of living has increased 104 points. The stepped line below the curve of living cost shows the rates of pay during the same periods, and the difference between them is what Mr. Lauck declared the miner stood to lose due to the fact that the increased cost of living exceeded the increased pay.

Mr. Warriner then brought out the fact that the purchasing power of the earnings of the miner workers did not actually decrease by this amount. Steadier work had been provided them so that they were always able to earn sufficient money to meet the high cost of living. From now on the anthracite miner would have steady work as the anthracite industry has now been completely stabilized.

Mr. Warriner pointed out the fact that this table is misleading in that it does not take into consideration the working-time factor, and the only way to exhibit that earnings did not keep up with the cost of living would be to show that the product of the days worked and the rate of pay did not increase as much as the cost of living.

Good Argument When Making Soft-Coal Pact

During this discussion Mr. Kennedy said that in fixing wages the question of working time should not be considered. If the men worked more steadily, they produced more coal, and if their rate was to be reduced accordingly they would be penalized for the offense of producing that larger tonnage. There was no reason, said Mr. Kennedy, why men who worked more days should not be rewarded for it. Did not the operator gain enough by steady work? Why should he seek also the further gains that a wage concession would give?

He contended that steady work for the operation meant less overhead to the operator and should mean larger prosperity for the workman. Mr. Kennedy, growing warm, made the statement that if steady work only meant more work and no more pay for the worker he would advise the men in his district to reduce production to the level of 1914.

Mr. Kennedy probably remembers that the contention of the bituminous mine workers was that they should be paid a larger rate because of the irregularity of their opportunity to work. They wanted more pay per hour than they would have asked had they been given steady time. Thus they wanted the pay in any event whether they had or did not have the work. But now the anthracite mine workers come into a court of arbitration and declare that the bituminous mine workers of the international organization are all wrong—working time is not a factor and a man's pay should not be based in any way on opportunity to labor.

Show Me the Penury These Figures Denote

Mr. Warriner's response to Mr. Kennedy was to the effect that the operators were ever ready to meet honest effort with honest treatment. They did not wish to penalize the mine workers for their steady working time and increased production. But when a chart is produced and it is represented graphically on that chart that the mine workers were not allowed to maintain their standard of living but were being progressively crowded to the wall, he thought it necessary to protest and to show that increased opportunity to work had materially assisted the mine worker in meeting the situation.

Mr. Warriner added that if there were such a falling off in the purchasing power of the yearly earnings of the anthracite mine worker it should show in the scale of living, and he inquired of Mr. Lauck if he had made a survey of the anthracite field with the purpose of determining that point. Mr. Lauck said he had not, but he knew that previous to the war the conditions of the anthracite mine worker were deplorable and that the mine worker had been helped by the increased regularity with which he now worked.

To clinch his argument Mr. Warriner offered a table showing how advancing wage rates and increased steadiness of occupation had met the high cost of living, but the mine workers' representatives objected as the operators would not consent to be cross-examined at this time. The operators will present this table, however, when they give their testimony.

Miner Should Be Paid as Skilled Mechanic

Throughout the day the representatives of the mine workers took exception to the way in which the operators interweaved their examination of Mr. Lauck with argument for the operators' contentions. The chairman, however, did not view the operators' conduct of the case as in any way violative of proper procedure.

The session of July 9 opened with an inquiry by Mr. Warriner as to the reason for presenting Exhibit 9, entitled "Wage Rates in New York, Philadelphia, Pittsburgh and Buffalo." Mr. Lauck stated that the object was to show the rates of similar classes of work in near-by localities. Mr. Warriner asked why nearer cities than those chosen had not been given. Mr. Lauck thought that the rates supplied were typical of the rates of the region of which the anthracite field formed a part.

Leaving this point, Mr. Warriner referred to the inequality of the rates for the same class of labor. Mr. Lauck said that the rate depended on the industry in which the man was employed and added—what must Mr. Kennedy have thought of the explanation?—that a boilermaker might have steadier work than a man in some other industry and the wage be determined in part by the irregularity of the employment. Mr. Lauck declared that a skilled miner was comparable with a skilled mechanic and that he had presented the rates paid to such a man so that the commission might have that information as a guide to a settlement of what constitutes a fair wage for the anthracite miner.

Village vs. City Increases in Living Costs

Exhibit 8, "Changes in Cost of Living and Prices," next fell under Mr. Warriner's critical examination. He roughly assessed the town and country population as being equal in numbers and said that if, as Mr. Lauck asserted, the cost of living had gone up 110 per cent in the larger cities and 100 per cent in the country as a whole, the rural population could have suffered from only a 90-per cent increase in the cost of living.

In reply Mr. Lauck said that the figures quoted were but introductory and that the actual figures were to be found at the bottom of the page. The increase was 111 per cent for eighteen large industrial centers and 104 per cent for the country as a whole. Mr. Warriner countered with the statement that the increase in cost of living in smaller cities must then be less than 100 per cent.

Mr. Lauck did not agree with Mr. Warriner. He asserted that the eighteen larger cities amounted to only a small part of the whole population of the United States, far less than 50 per cent. Mr. Warriner then pointed out that these figures for the increased cost of living were higher than many individual estimates. Mr. Lauck replied that these figures were official Government statistics and were for the whole of the country whereas the other figures were only for parts of the United States.

Scranton Not Typical; Few Miners There

When Exhibit 10, entitled "Food Prices in Scranton in 1920 Compared with Prices in Other Cities," was introduced by Mr. Warriner he said that Scranton had been taken as one of the larger industrial cities in this country, but that being so Scranton is not typical of the anthracite region, though Mr. Lauck makes this claim in his exhibit, stating at the same time that Scranton is among the most expensive communities in the United States. Mr. Lauck acknowledged that this exhibit showed only a tendency. It did not attempt to establish a fact. The claims of the mine workers were not based on the prices in Scranton, but on the increase in the country generally, which was 104 per cent.

But if the Scranton exhibit were incidental and not primary, how shall we explain this second exhibit, entitled "Income and Expenditures of Anthracite Mine Workers in Scranton, Pa., 1920"? Mr. Warriner elicited from Mr. Lauck acknowledgement that the anthracite industry was not the predominant industry of Scranton. Mr. Dempsey agreed also that this was so, but added that the conditions were at least significant.

Mr. Warriner then cross-examined Mr. Lauck as to the manner in which the factors used in establishing the cost of living were obtained and urged that men in different occupations and localities required different factors to suit their conditions. For this reason the figures were inapplicable to the anthracite field.

Have Miners a Yearly Deficit of $288?

Mr. Warriner called attention to the fact that the mine workers' exhibit showed a deficit in the income of the mine worker of $24 per month. He asked how this deficit was made up, and Mr. Kennedy replied that it was being carried by the stores, whereupon Mr. Warriner said that if the deficit really existed it would bankrupt every store in the anthracite region.

Mr. Lauck said that there were two ways of meeting the deficit—decreasing the standard of living or going into debt. Furthermore, he added, the earnings of wives and children and the income from boarders helped to make up the deficit. Mr. Warriner then pointed out that this income had been taken into consideration by Mr. Lauck when he made his computation by which the mine worker was found to face a deficit of $24 per month.

The deficit seemed to Mr. Warriner more than improbable, for it was a fact that savings-bank deposits had increased and not decreased, as would have been the case if outgo had been larger than earnings. In reply to this argument Mr. Lauck credited the bachelors who did not need so much for a living wage with swelling the saving-bank funds, and gave credit also to those foreigners who had not been able to send money to foreign countries since the war broke out.

Lauck's Myth—A Coming Flood of Hard Coal

So much for the morning. The afternoon was like a catechismal class in social economics, Mr. Warriner acting as professor and Mr. Lauck as catechumen. The first questions were as to the exhibit entitled "The Sanction for a Living Wage." Mr. Warriner called Mr. Lauck's attention to the fact that he had said that the call for anthracite was abnormal, being the outcome of the war. Suppose, Mr. Warriner said, the conditions of irregularity of employment in the anthracite industry did return, would that return not be accompanied by a decrease in demand in other industries and in a fall in prices, which would make the irregularity of employment no occasion for distress, or would it be necessary to meet the slow time with a further increase in wage?

To this Mr. Lauck replied that the depression in the anthracite industry would inevitably come and that the pre-war conditions of irregular work would be re-established. They were intolerable before; they will not be less intolerable when they recur, and the need of the anthracite worker is that he be given a scale equal to that paid the bituminous mine worker.

Mr. Lauck was not always recalcitrant. He even agreed with Mr. Warriner that an increase in the per-capita investment of capital increased the production per employee. Mr. Warriner did not find him so gracious when he was asked if men can receive more than they produce, and if it is true that it has been proved by figures that if everyone were paid what has been described as a "living wage" there would not be enough to go around. Mr. Lauck said that figures of that kind were incorrect and had been calculated improperly. However, duly pressed, Mr. Lauck admitted that, living wage or no living wage, one cannot possibly divide more than is produced.

Bulking exhibits 18 to 21 together as they all related to the budgets, being entitled respectively "Standard of Living," "Cost of Living in Coal Towns," "What a Living Wage Should Be" and "The Practicability of Living Wage." Mr. Warriner declared that a budget might be properly drawn up, but no one budget could possibly be representative of the whole country with conditions varying as they do with respect to localities and industries.

For considerably over an hour Mr. Warriner tried to induce Mr. Lauck to admit that the later budgets that had been prepared included items which did not appear in earlier budgets, and that the standard of living had increased at the same time as the cost of living. Mr. Lauck avoided answering this question as Mr. Warriner put it, but he did admit that the present budgets were minimum-comfort budgets whereas the old budget was a bare-subsistence budget.

Mr. Lauck then pointed out that these budgets were not to determine the wage rate but to show that the miners' demands of $6 per day were extremely reasonable, as they were even below the subsistence level. Mr. Warriner then wanted to know if the miners wanted the same increase to apply to all other wage earners as to common labor. Mr. Murray said "No, but we want a flat increase of $1 a day for all men now earning more than the $6." Mr. Warriner then asked Mr. Lauck if he did not believe in differentials between skilled and unskilled labor, and he said he did and did not want to destroy the differentials. Mr. Warriner then pointed out that the mine workers' demand tended to decrease these differentials unless the same ratio of increase were applied.

Mr. Warriner then wanted to know whether the increase of income did not increase the expenditure of money, and if an increase in spending does not in turn cause an increase of prices. Mr. Lauck said that if the production stayed stationary an increase of spending would cause an advance in price, but if the quantity of commodities produced increased in proportion the price would not increase, even though the amount spent were increased.

This ended the cross-examination for the time being and a short recess was taken for a conference of the commission. After the recess the commission stated that on Monday it would hear the argument as to the jurisdiction of the commission regarding the introduction of the disputed exhibits. The commission then adjourned until Monday at 11 a.m.

Monthly Production of Coal During First Half of 1920

IN response to many requests the Geological Survey has issued estimates of the monthly production of anthracite and bituminous coal in the United States from January to June, 1920. The monthly figures, based on weekly reports of cars loaded by 137 bituminous and 9 anthracite carriers, are as follows:

	Anthracite	Bituminous	Totals
January	7,366,000	48,689,000	56,055,000
February	6,335,000	40,127,000	46,462,000
March	7,240,000a	46,792,000	54,032,000a
April	6,513,000a	37,939,000	44,392,000a
May	7,745,000a	39,753,000	47,498,000a
June	7,641,000a	43,710,000a	51,351,000a
Totals first six months	42,780,000	257,010,000	299,790,000

(a) Subject to revision.

Mingo Grand Jury Indicts Hatfield, Miners and Detectives for Matewan Shooting

ON JULY 3, when the Mingo County grand jury completed its investigation of the Matewan (W. Va.) shooting of May 19, in which ten men were killed, and submitted its report to the Mingo Circuit Court, it was found to have returned seven indictments charging murder against Sid Hatfield, chief of police at Matewan, and against twenty-two other persons. The jury also returned an indictment against the twenty-three men for the malicious wounding of a Baldwin-Felts detective. Indictments were returned by the grand jury against the six Baldwin-Felts men who escaped from the shooting affray, charging them with the killing of Mayor C. C. Testerman and a boy named Otto Kingsley. A large number of indictments charging the unlawful eviction of miners from their homes also were returned by the jury.

In addition to the indictments already enumerated the grand jury returned indictments charging bribery against G. R. C. Wiles, state public-service commission chairman; W. A. Williams and J. M. Tulley. It is charged in the indictments that the men offered bribes to Deputy Sheriff J. F. Webb and Constable Dave Phillips conditioned on their resigning their positions, but the fact seems to be that Wiles had done no more than to endeavor to induce Webb to ask the organizers to leave the Mingo field and had not offered a bribe to him or to any other official.

Deputy Sheriff Webb, however, was indicted on a charge of accepting a bribe to cause Ezra Fry, an organizer, to be removed from the county. Fry also was indicted on seven counts for murder in connection with the Matewan tragedy.

The July term of the Circuit Court in Mingo County was scheduled to be opened on Monday, July 12, and all those indicted in connection with the Matewan affair have been called upon to be present to answer the charges made against them for participation in that affair.

Mine Workers Fined for Saturday Idleness

PHIL H. PENNA, secretary of the Indiana Bituminous Coal Operators' Association, and Ed Stewart, president of district No. 11, United Mine Workers, heard twenty-five cases last week in which miners were charged with violation of the Saturday work-day clause in the mine workers' contract. The hearings resemble a regular court with the exception that there are fewer suspended sentences and more convictions. About seventy-five cases remain to be heard.

Mine workers have been complaining all over the state because a Saturday holiday clause was not included in the last contract and a five-day week adopted. Since the adoption of the contract the miners in Indiana have taken matters into their own hands to a great extent and have laid off on their own accord. The contract provides for a fine in this case, and the operators over the state have been assessing it.

The cases coming before the two organization heads are cases where an appeal is made against the imposition of the fine. Four or five cases a day are being disposed of and in the large majority of cases the fines are being upheld because the miner cannot provide a reasonable excuse for his failure to work on the Saturday in question.

Indiana Holds First-Aid Contest

Thirty Teams Compete in First-Aid Meet, While Twenty Enter Stretcher Drill—The Two Teams Receiving the Highest Rating Will Represent the State in the Contest at Denver Next Fall

THE fifth annual Indiana State First-Aid Meet, which was held at Clinton under the auspices of the Indiana State First-Aid Association on July 5 in conjunction with an Independence Day celebration, proved the fact that Indiana is still intensely interested in first aid. Excepting the international contests to be held by the Bureau of Mines at Denver in September, this meet will in all probability be the largest occurring this year. Other states might well emulate the interest shown by Indiana in the safety movement.

But this state is not doing first-aid work primarily to rival the first-aid men in other states. A whole-hearted interest in the work in hand is the actuating motive. It was a grim-faced group that assembled after a street parade in the rain on a vacant lot on South Main Street in Clinton for the problems this year. Out of thirty-four teams entered thirty arrived in time to participate in the contest. While the two winning teams were to be sent to Denver in the fall, such rewards appeared to be of secondary importance to the participants, who seemed to be concerned only with the saving of lives.

Approximately one thousand spectators, including many from all points of the state, lined the roped arena and heard the initial gong that started the contest. Rain apparently failed to dampen their ardor, for though the showers continued for an hour and a half, practically all remained for the finish.

The first problem was handed to the team captains at 1.45 p.m. Dr. A. F. Knoefel, a surgeon of Terre Haute and one of the fathers of the first-aid contest in Indiana, acted as chief judge. He was assisted by an able staff of judges drawn from the physicians of Terre Haute; William B. Hice and Frank L. Gilbert, Terre Haute business men, served as recorders, while Donald J. Baker was the announcer.

Five problems were scheduled to be run off, but because of the persistence of the rain, only three were actually contested. These were as follows:

1. Right thumb lacerated, blood oozing; simple fracture of middle right arm; compound fracture of left ankle, no bleeding; unconscious. Treat for suffocation. Time, 12 min.
2. Foreign body in right eye, make no attempt to remove. Simple fracture of left collar bone; compound fracture of middle third of right thigh, active bright red hemorrhage; conscious. Patient is in shock. Treat. Time, 15 min.
3. Right foot mangled, active hemorrhage; severe scalp wound on top of head, no hemorrhage; simple fracture of left wrist; unconscious. Patient is in shock. Load on stretcher and carry for 20 ft. Time, 12 min.

Note the second problem, the correct solution of which carries a practical lesson—"Foreign body in right eye." Here is a type of accident that is often encountered, yet how seldom are first-aid teams instructed to meet the emergency! Instead of the team members attempting to remove the body from the eye of the patient, the eye is bandaged untouched. This prevents any infection that might lead to "iritis," that may require months of treatment to prevent blindness.

Some important decisions were made at this meet. One was the adoption of a discount that it is hoped will eventually be universal, while another was the use of a standard type of surgical dressing. In this connection Indiana goes on record as being the first state to hold a meet in which these new standards were followed. The rules of the contest were those adopted by the U. S. Bureau of Mines and set forth in that body's new booklet, "Advanced First-Aid." They are the ones that will prevail at Denver.

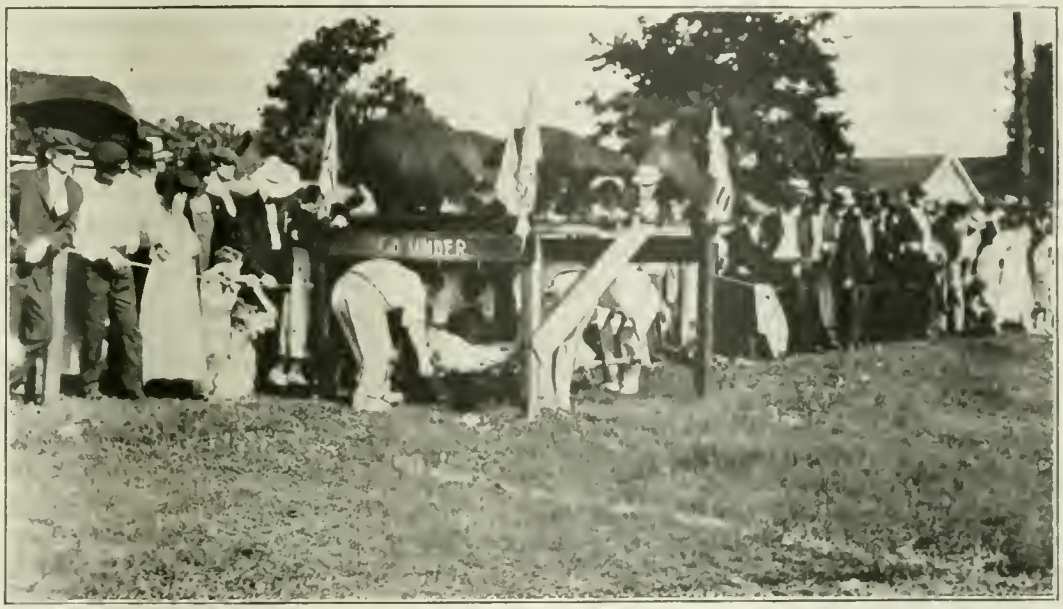
When the discounts had been summed up against the teams for the three problems, it was found that several teams were tied, although first and second places were undisputed. Another problem was given the contestants. It was as follows:

Patient lying face downward across live wire, right wrist and left side of chest are on the wire; unconscious, with right wrist burned. Treat. Time, 12 min.

This problem settled all ties.

Stretcher Drill

This drill was one of the leading features of the Clinton Meet, yet one that many first-aid contests omit. The team is seen carefully carrying the patient under an obstacle in such a manner as to save him any unnecessary pain from the transportation.



By this time the rain, which had been coming down steadily, ceased, and the sun broke through the clouds. Twenty teams were entered in the stretcher-drill contest. This was a separate event and similar to the one conducted by the Bureau of Mines for artificial resuscitation. The teams were judged according to bureau standards. Obstacles were placed in the path of the contestants and the men were discounted according to their handling of the patient. The recorders worked in secrecy, and no announcement was made on the field regarding the ultimate standing of the teams. This news was saved as an entertainment feature for the annual banquet held in the evening.

At 6:30 p.m. all team members and meet officials, to the number of 300, assembled in the basement of the First Methodist Church for the annual banquet. M. M. Scott, chairman of the Clinton Chamber of Commerce, was toastmaster. W. D. Ryan, of the Bureau of Mines, was then introduced by Dr. Knoefel and he made a speech praising the work of the mine workers during the war.

Others to speak during the evening included Cairy Littlejohn, chief mine inspector of the State of Indiana; William Mitch, secretary-treasurer, district 11, U. M. W. of A., and H. M. Ferguson, representing the operators of the Clinton district. Vocal music was furnished by a quartette chosen from the diners and by Sam Wilton, deputy mine inspector. At the close of the music and addresses Dr. Knoefel brought the festivities to an end by announcing the standing of the teams in the first-aid contest and the winner of the stretcher drill.

First place in the first-aid competition was won by the team representing the No. 6 mine of the J. K. Dering Coal Co., of Clinton, with a final average of 93⅓ per cent. With the winning of the meet goes a trip to Denver in the autumn, which the Indiana Bituminous Coal Operators' Association will finance; also the state championship cup, donated by the Lynch Coal Operators' Reciprocal Insurance Association. This team, under the captaincy of Matthew Kerr, has the following personnel: Charles McWethy, Martin Hutchinson, David Wilson, Louis Slatterly and William Reed. Usually there is some dissatisfaction manifested by defeated contestants over the decision of the judges, but there was none of this bad feeling at the Indiana meet. The captain of the team—Mr. Kerr—had already proven, and at a point far removed from the contest, his right to the honor bestowed upon him, for he had been personally responsible some years ago for the saving of a life through artificial respiration at an Indiana catastrophe. Consequently the decision of the judges was well received.

Second place was won by the No. 4 team of the Jackson Hill Coal & Coke Co., of Shelburn. This team also will make the trip to Colorado as guests of District 11, United Mine Workers of America. Personal prizes in the form of gold and blue enameled watch fobs were given each member by *Coal Age*. This team is composed of James Harkess, captain; Rias Brooke, Charles Southwood, William Gregg, Herbert Wence and Clay Meeke. A percentage of 92⅔ was registered. This shows less than one point of difference between this team and the winners of the meet.

Third place was captured by the team from the No. 8 mine of the Miami Coal Co., of Clinton, with an average of 92 per cent. This team is captained by George McNair. Each member received an alarm clock besides a watch chain donated by the Clinton First-Aid Association. There were prizes of some sort for all contestants. This was the result of the generosity of Clinton and Terre Haute merchants.

The state championship silver loving cup for the best drilled team in stretcher manipulation was won by the No. 1 team of the Tecumseh Coal & Mining Co., of Bicknell. This team ranked eighth in the first-aid contest. It is captained by Gerald W. Landis. Second place in stretcher drill was captured by a team from the Indiana & Illinois Coal Corporation, of Clinton, which stood sixteenth in the other competition. Third place went to the team from the No. 8 mine of the Miami Coal Co., of Clinton. Here is a team that deserves to be commended, for its standing in both contests was high, being just outside of the big awards. It also won third place in the first-aid meet, as has been previously stated.

Before the men departed Dr. Knoefel announced the award of a safety lamp to Huge Rice, a member of one of the contesting teams, who took part in the first state meet at Linton in 1911 and who has been in every subsequent contest. Mr. Rice was one of three men present at the banquet who had competed in the initial contest. A fine sentiment is displayed in such an award. Mr. Rice's activity in first-aid had not been spurred on by the receipt of prizes, for never had his team finished first, yet year after year he has devoted both time and effort to first-aid training. The coal industry needs more men of his caliber, for devotion to duty cannot always be gaged by the awards received.

By the unanimous vote of all present it was decided to hold the next contest at Bicknell.

Declaring Jurors Were Bribed, Union Seeks New Trial in $300,000 Arkansas Case

AS THE result of a trial in the U. S. District Court at Fort Smith, Ark., the jury awarded $300,000 damages to the Pennsylvania Mining Co., the United Mine Workers of America being called on to foot the bill. Now T. W. Davis, a member of the jury, declares that Paul McKennon, of Clarksville, attorney for the plaintiff corporation, promised to see that the jurors would receive more than the $3 allowed them by law.

McKennon denies Davis' statement and declares that when Davis approached him on the subject he advised him that the matter could only be considered in open court. It is alleged also that E. W. Scott, another juryman, who owned an oil lease, met McKennon in the federal building during the trial and asked him whether he could tear down a derrick which the leaseholder had erected and which threatened to fall and kill his cattle. McKennon asked a few questions and told Scott that the leaseholder no longer had a rightful lease, thus without compensation rendering a legal opinion to a juror in a case in which the juror was interested.

Powell is said to have reported that James K. Gearhart, president of the company, declared that three jurors—Mays, Paschal and Vestus Jeffers—visited him and his associates at the hotel and that "they were satisfied." Powell is in California. Gearhart declares that he does not remember making the remark, but that if he made it he meant that the Pennsylvania Mining Co. was satisfied with the verdict. Judge Youmans is considering this testimony as a basis for a new trial.

Defining the Status and Scope of the Executive in Engineering*

Capacity to See Things Constructively and to Command the Support and Confidence of Others Essential to a Big Executive—Commercial Knowledge Indispensable—Resuscitation from War's Ravages Is the Engineer's Work

By Samuel M. Vauclain†
Philadelphia, Pa.

WHAT is an executive? You must find out and definitely determine what an executive may be. An executive is a man who does things; a man who can see his way clearly to accomplish anything that he sees fit to undertake. Therefore we not only have executives in engineering but we have executives in banking and in commercial life. We have executives in Washington in the various branches of the Government, fully capable of looking after any question which may come up, with the fullest confidence in themselves, and can therefore be given credit for being real executives. But executives are not always big men, because the world is full of executives. No executive can be an executive of huge dimensions unless he has an army of minor executives supporting him who believe in him and his capacity to point the way for them to follow, and each in turn exact with promptness, decision and creditableness that share of the total work which may be assigned to him or to a department which may be under him. I do not think that I can give you any clearer idea of my conception of an executive than to say that he is one who can command. In other words, he must be able to command the support of other men. The man who undertakes to do everything himself is sure to fail. The man who is an executive decides to do as little as possible himself, and if he does that he is sure to succeed.

The Definition of an Engineer

We will now turn to the engineer. What is an engineer? Is an engineer a man who plods away patiently at a drawing board to produce a design of some machine, of some engineering problem, perhaps a railway proposition or a tunnel, either through a mountain or under a river; a great bridge, a steamship, a locomotive, or even a wheelbarrow? Is he an engineer, or is he simply a draughtsman? Is he a toiler? Is he a man sufficiently educated to transfer to paper the ideas of others and under instructions to produce something that will guide the average workman in its construction? I do not regard men with those qualifications as engineers.

An engineer is a man who can see things, who is constructive in his thoughts, who can impart this knowledge to others, who can work not only one man on a drawing board but twenty men at drawing boards, and who can pass his ideas to them in a manner so satisfactory that they can be easily grasped. When these details are assembled from the many draughtsmen who are employed you have a great and a successful machine; you have a great or a successful proposition for building a railroad, for building a tunnel or a bridge; and on the number of men that such an engineer has got to handle depends the rapidity with which this project can be put before the people to whom it must be submitted before it can be constructed; because all engineers, such as we are, before we can do anything must have the money bags in our organization agree to find the cash to do it with. Therefore if we get the right idea of an engineer, an engineer who can not only conceive how things shall be done but can instruct assistants and subordinates clearly and thoroughly in such a manner that they can grasp his ideas and make them of record, then we can easily proceed to a short discussion of the executive in engineering.

Importance of the Commercial Feature

The true executive in engineering usually is called an optimist. It is very pleasant to be called an optimist. I have been referred to for years as an optimist. Now I am far from an optimist. I simply believe not so much in myself but in the other fellow. I have confidence in the engineers of this country. I have confidence in the engineers of Europe. I believe that these engineers can do things quite as well as I can, and perhaps a little better, so far as the scheming out of any particular contrivance may be concerned. But even should they not be capable of doing such, I feel that it is my duty to permit those men to enjoy and see successfully produced the results of their engineering skill, of their engineering knowledge, and not to undertake to change their views by substituting views of my own which would be counted as being even as good, perhaps far worse, after they have been put in actual practice.

Mistakes of Self-Appointed Executives

The executive in engineering has another thing to deal with, and that is the commercial side of engineering. To be an executive in engineering regardless of the pocketbook is a simple matter. We have had illustrations of this sort of executive ability during the two years that we were at war with Germany. Those of us who spent the entire time in Washington and who were sufficiently wise to mind their own business and do as their superior officers here—the tried and competent engineers in the Government service—had an opportunity to observe the many mistakes that were made by men who came from the private walks of life and who in a short time imagined they were executives in engineering, and that they could dictate to and advise those who had served years of apprenticeship in this particular type of engineering, and who were,

*Address delivered under the title "The Executive in Engineering" at the organizing conference of the Federated American Engineering Societies, Washington, D. C., June 4, 1920.

†President Baldwin Locomotive Works.

in the judgment of those who were willing to think so, wholly competent for the demands that the Nation must make upon them.

The true executive in engineering hates nothing more than he hates red tape. The man who must get through, who sees the point here and his goal yonder—if he is a true executive—knows that a straight line is the shortest distance between two points. And notwithstanding legal restrictions and Government restrictions during the war, those men, men of courage, executives in engineering, put the ball of red tape in the closet and struck the line, and we who followed, we who are here to serve and to do as we are told, here to be subordinates to these men and give them the advantage of our executive ability in the engineering entrusted to us, can testify to it, and also can testify to their greatness.

If you want to be successful in engineering, do as the shoemaker does, stick to your last, and don't attempt to do all the engineering in the world. If you are an electrical engineer, be an electrical engineer, and become an executive in electrical engineering. If you are an engineer in any other branch of industry, apply yourself to that, because, if you scatter your brains over all the various engineering problems of the country, you will spread out like a drop of water on a pane of glass and, I am afraid, never amount to very much. Concentration in engineering is just as desirable and necessary as concentration in any other business that you may engage in.

Greater Cause for Work Than During War

You may be an engineer, but you must be a practical engineer. You may be an executive, but you must be a practical executive. The commercial side of the engineering problem must be considered, and a man cannot be a true executive in engineering unless he gives immediate consideration to the commercial side of this problem, and that is the task that I have given most attention to.

Now, in this day, with you gentlemen more than any others in the United States, the war—that is, the real fighting war we have had, where we have been shooting at each other once in awhile—is over. The worst has happened. There is no cause to worry any more. But there is cause and necessity now to work more than there ever was. The whole world must be taught to work, and the work that is to be done is engineering work. And we here in America must not only work as engineers and as executives—executives in engineering—but also as executives in engineering from a commercial standpoint.

The devastated countries of Europe must be rehabilitated, and we can talk about sending millions and millions of dollars worth of food and supplies to the devastated sections of Europe for their relief, but that will never relieve them. They must have the engineer there. They must have the executive there to advise these people and, more than that, they must have both of them there in a commercial sense. They must teach these people and show these people how to utilize those things which are in the nation to enable them themselves to go to work and by their own hands earn a livelihood, to relieve themselves from the necessity of charity, to earn their own food, to make their own clothes, to attend to their own wants in every respect. It must be accomplished through America and through the engineering profession of America, because the engineering profession of America is really the manufacturing element of America.

I made up my mind that something had to be done several months ago, and instead of sending my boy around I went myself to find out what was necessary, and I found out we must lend these people not money but manufactured articles and raw materials with which to repair the machinery which they now have and which they need so badly, and we must give them time to pay for it. We must find some way in this country to get credit for ourselves, not for these people abroad but credit for ourselves, so that we can lend our manufactures to these people. This procedure is going to require the greatest skill from the standpoint of an executive in engineering, and he must be guided by commercial difficulties, by commercial necessities and by the commercial requirements of these people.

Advocates Battering Without Money

Forget about the money. The money in states such as Roumania is not worth much more than firewood today. The price of fuel oil, as you know, has advanced thirteen cents a gallon. When you use fuel oil in France today it is like using up German marks or Roumanian leu. And therefore the oil in Roumania is as good as the oil in the United States. The wood of Roumania is as good as the wood of the United States. The lumber in Roumania is the finest in the world. As fine salt as is found in Roumania is not found in any other part of the world, nor is it as cheaply mined as it is in the salt mines in Roumania.

When William Penn came to Philadelphia, instead of offering the Indians money he brought them beads and jewelry and fine linens for their squaws, and was very successful in negotiating for land. And one of these quiet Philadelphians went to Roumania and sold Roumania locomotives for oil. Why not oil? Oil is just as good as money. It is barter, I agree with you; but money is a sort of a barter. But oil is more reliable than money, because oil is always oil and money is not always money.

Europe in Need of Machine Tools and Pumps

Now I am not going to tell you just how to do it; but if you want to do it, if you will come up to Philadelphia I will give you a pointer or two; I will tell you. But I am sure if you go over there to sell machine tools and pumping apparatus, electrical machinery, oil machinery—and they need hundreds of thousands of dollars worth of oil machinery, because the Germans shot theirs all to pieces—you must do it not for money—they haven't got any—but for barter. Sell it for glass beads if necessary. Glass beads are worth something in this country, and the freight on glass beads is no more than on anything else. But barter with these countries which have such a depreciated currency. Barter is the way to do business. And therefore we need an executive in engineering who is selling the product of his brain and his factory upon a commercial basis that is suitable to a country that has no money; and if he can educate himself as to how to do it, not only will he be successful and the United States be successful but the people on the other side of the water will be helped tenfold more than they will by any means of supplying them food and clothing without work, that could be conceived in this country.

Discussion by Readers

Edited by
James T. Beard

What a Certificate of Competency Means in Scotland

CERTIFICATES of competency are not to be bought in Scotland, as was intimated by a writer in *Coal Age* not long since. I heartily agree with the suggestion of J. H. McMillan, in the issue, March 18, p. 556, where he says that such a thing is absurd and adds that the holder of a certificate of competency in Scotland, has always obtained it through his own individual efforts.

Any statement that reflects on the efficiency of Scotch mine managers is false and without foundation. Most of the mine managers in that country are trained men who have worked their way up from the bottom and understand the work of mining coal and the operation of a mine in all its branches. Only their own ability and earnestness to improve their condition has enabled those men to procure the certificates they hold.

Anyone who will examine the list of questions asked at any mining examination held at Edinburgh, will be convinced that the men who pass such an examination are capable of filling the office of mine manager. They are all-round capable men. I state this in the belief that it will enlighten some American mine foremen who are frequently led to underrate the mining ability of Scotchmen. Much more could be said along that line, but this should be sufficient.

TOM JOHNSTONE.

———, Pa.

Advantage of Building Overcasts

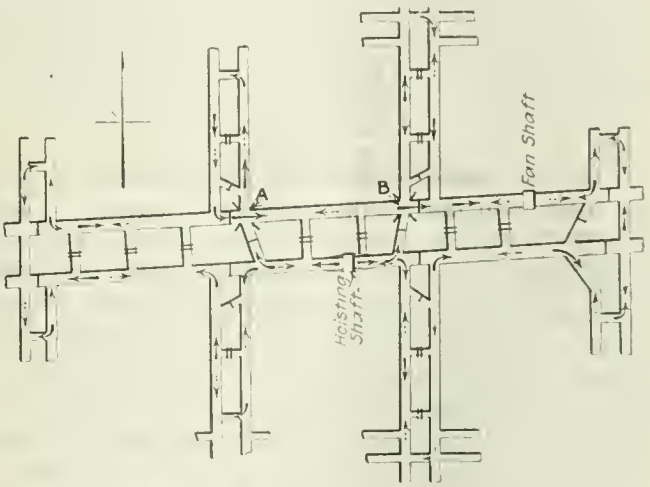
READING the inquiry of a Pennsylvania superintendent, regarding the proper ventilation of a mine, a plan of which he submitted in *Coal Age*, May 27, p. 1109, has reminded me of a suggestion made recently in these columns, that overcasts ought to be constructed so as to cut out the use of doors wherever practicable. The reply made to the inquiry showed an excellent plan of ventilation, using overcasts and regulators at the mouth of each pair of cross-entries.

While it is true an overcast should not be built until the development of the cross-entries is sufficient to warrant the expense of its construction, it will generally be found that the saving in ventilating power alone, to say nothing of the more efficient ventilation secured together with the elimination of the annoyance and cost for repairs due to doors on the haulage road, will more than cover the expense of the overcast.

In this connection, I want to submit a plan of one mine that is ventilated by a continuous current and is badly in need of at least two overcasts. These I suggest should be constructed at the points marked A and B in the figure, at the mouth of the two pairs of north entries on the west side of the shaft. At this mine, the main entries were not driven directly east and west, but run about five degrees north of east and to the south of west. In order to square up the work with the boundary line, the first butt-headings were driven at varying distances from the main entries, leaving seven or eight rooms on the first pair of entries and about nine or ten rooms on the second pair of entries. For the same reason, on the south side of the mine the first butt-headings were driven at distances such as to allow for seven or eight rooms on the first-pair of entries and six or seven rooms on the second pair of entries.

In the plan shown, the light dotted arrows indicate the direction of the present air currents, while the heavy full arrows indicate the circulation of the air after the proposed overcasts are built at A and B. From the viewpoint of economy and efficiency, the building of these overcasts would be of great advantage, in my opinion, particularly as the mine is very gassy and is ventilated by a good blower fan, which would make it possible to change the circulation in the manner suggested.

In the present system, it will be observed that the hoisting shaft is the upcast, which means that haulage is being performed on the return air current. I would suggest that this plan be changed and the fan made to



PLAN SHOWING PRESENT AND PROPOSED CIRCULATIONS

exhaust the air from the mine, thus making the hoisting shaft the downcast and the haulage road the intake airway, as I have indicated by the heavy arrows showing the proposed course of the ventilating current.

Another season will mean a greater development in this mine, and the increased difference between the outside and inside temperatures, in the winter, will undoubtedly increase the danger in the mine and make it all the more important to change the system of ventilation in the manner proposed. The erection of each overcast will have the further advantage of cutting out two doors, one on the main entry and the other on the crosscut. These doors would be taken out as they will be no longer needed after the overcasts are built.

One other condition should also be considered; namely, the improvement that such a change would make in the mine. The men would be more satisfied and there would

be less difficulty in holding them during the dull season. It is always an advantage to keep a satisfied lot of men working in a mine, which will insure a steady output of coal and lessen the chance of labor troubles.

In closing, let me say that most of us have learned some costly lessons in regard to trapdoors being carelessly set open, and causing accidents by reason of a local explosion of gas accumulated in the rooms if, fortunately, it did not result in a mine explosion causing loss of life and destruction of property. The suggestion has been made that firebosses were a necessary evil; but it is certainly true that trapdoors are more often a necessary evil, which can be eliminated by the building of overcasts. W. H. LUXTON.

Linton, Ind.

Regulating the Distribution of Air in Rise Workings in Mines

RECENTLY, a question was presented in an inquiry on the subject of "Removing Gas from Rise Workings," *Coal Age*, May 13, p. 1013, which it was claimed had been asked at a recent mine foreman's examination. That being so, the question was probably intended to test the candidates' actual knowledge or experience in the practical ventilation of mines.

The question assumed a large gob area to the rise of the air shaft where gas was generated, during periods of falling barometer, in such quantities as to foul the air in the rise workings. In this mine, it was said, a half-inch water gage gave all the air required in other sections, but this was not enough to clear the gas out of the rise portion of the mine; and the question asked, what should be done to keep the rise workings clear of gas at such times, without increasing the circulation in parts where no increase was needed.

PRACTICAL VENTILATION OF DIP WORKINGS

It would appear that anyone having practical experience, whether or not they understood the theory of ventilation, would know that either dip or level workings will always take a larger proportion of the air, provided the size and extent of the airways is the same both to the rise and to the dip of the shaft. Now, if those workings take naturally a larger proportion of the air that is passing down the shaft and is split at the shaft bottom, it is necesasry to place a regulator at that point to control the quantity of air passing to the dip, as was plainly stated in the reply to this inquiry.

The effect of thus controlling the flow of air to the dip will be to increase the quantity passing to the rise. The regulator will also increase both the mine resistance and the pressure required to produce the circulation. But, for the same power applied to the fan shaft, the total quantity of air in circulation will be decreased, owing to the increase of pressure caused by the regulator.

During a period of falling barometer there will naturally be an increase of gas given off in the rise workings, especially if these contain a considerable gob area. This increase of gas to the rise must be taken care of by regulating the distribution of the air by changing the regulator so as to give more air to the rise and less to the dip.

However, if there is a similar increase of gas in the dip workings, due to the fall of the barometer, it may be necessary to speed up the fan. But, if the trouble is in the rise workings only, the increase in the percentage of gas can be regulated by moving the slide in the regulator at the foot of the shaft, so as to give a larger proportion of air in the rise workings.

As stated in the reply to this inquiry, any needed distribution of air between the rise and dip workings in a mine is controlled by the proper adjustment of the regulator, and this must always be made to comply with the conditions existing in the several sections of the mine. ANDREW O. BAIN.

McKeesport, Pa.

Why Does Promotion So Often Go Where It Is Not Earned

PROMOTION is the cherished goal of every ambitious worker. The gaining of promotion is, therefore, a subject that appeals to every man of intelligence and energy. The truly ambitious man is desirous to learn and grow by experience, in whatever industry he may be employed, and this is particularly true in coal mining practice and requirements.

One cannot fail to appreciate what it costs the ambitious miner to make the necessary effort to fit himself for promotion and, at the same time, perform his daily duties faithfully and in a manner to give satisfaction to his employers. Such a one well deserves promotion when opportunity offers and a place is open for which he has striven hard to prepare himself and is now competent to fill. How often it happens, however, that another man, perhaps fifty per cent proficient, is appointed to the place and the deserving one not recognized. Well may we ask the question, Why is this true? Why does not the promotion go where it has been earned?

Daily experience and observation in mines proves there are many men who study hard to prepare themselves for better work or fit themselves for higher positions only to be disappointed. They study the various subjects relating to mines; train themselves in the handling of men; look carefully after the welfare and safety of the workers in their charge; and in many other ways make themselves competent to assume greater responsibilities.

WHAT A SUCCESSFUL CANDIDATE IN EXAMINATION MUST OFTEN EXPECT

Having passed the examination required and having received a certificate of competency from the Board of Examiners, let me ask, Is not a man then assured of promotion when a vacancy occurs in the position he has desired? In nine cases out of ten I fear the answer to this question is, No! and we ask, Why?

There are many reasons why the promotion so generally goes to another man who is often less fitted for the position. In the first place, the official who has the power to appoint a man for the place may have another in view, and some trifling excuse is given for the selection, which is often due to sect, denomination, membership in a secret order, politics or other outside influence. The pressure brought to bear on appointments, from outside sources too often prevails.

In view of these facts, one is led to wonder, when seeking promotion of a higher official, if he is to be trusted. There are, I am glad to say, men who can be trusted although they form perhaps not 50 per cent of our mine officials. Many officials hold their positions by reason of their dogmatic way of handling men.

Others have a pull with the management, are good talkers and can hold their own in an argument by pulling the wool over the eyes of an employer when that is necessary for their own protection.

An instance, not uncommon in coal-mining practice, was given in a recent letter published in *Coal Age*. It told of a mine foreman who was let out in order to make room for a new superintendent's friend. Everything went along all right for awhile when, to the amazement of the officials, there was a continuous decrease in the daily tonnage of the mine. What was the trouble? Investigation showed that the discharged foreman had made developments providing for future tonnage, and this had enabled the new foreman to make a good showing as long as that lasted.

The new foreman had not the same foresight to provide for the future, however, and there naturally resulted a falling off of the tonnage, which showed the incompetency of the man who was given the place through the friendship of the superintendent. A new superintendent often means a new mine foreman, and other new men all down the line.

Sound Advice to Workers and to All Officials Alike

Notwithstanding this unpromising outlook, I want to say to the ambitious worker, Be faithful to your employers; never betray a confidence and trust placed in you; do your duty always, although it may seem hard at times, but be sure your opportunity will come; look up and do not be discouraged. Success and happiness rest mainly on the improvement of small opportunities. Let us remember that the kind, unselfish deeds of men are their most enduring monument. Therefore, cherish good deeds; live in your highest thoughts, which like stars will shine brighter when the day of prosperity gives place to the night of adversity.

Let me add, in closing, one of our greatest hindrances in life is the desire to rule others. Put this desire aside and strive for brotherhood. Forget differences that arouse enmity. Regard neither race, sect or condition other than capability and merit. The man who can do this possesses a great soul and little things do not trouble him. No matter how honest one may be in his conviction that he is right, he is liable to do a fellowman a great wrong by reason of imperfect judgment. Therefore, in the words of Lincoln, "Have charity toward all and malice toward none" and one will not go far wrong.

Fairmont, W. Va. John E. Ambrose.

Mutual Confidence the Key to Successful Operation

MUCH that is of interest has been said in regard to the need of co-operation among mine officials; and I have read the letters on this subject with pleasure. However, I am compelled to admit that my thirty years of observation and practice in and around coal mines do not enable me to say that the kind of co-operation needed to insure success exists very largely among mine officials.

What is needed along this line is the co-operation that will tie the cords of confidence about the hearts of men and build up a mining industry that will mean both pleasure and profit to all concerned. This will include among other things the education and training of the children in our mining towns and camps.

Instead of this sort of co-operation, however, it is more common to find mine officials displaying a defiant attitude that keeps the workers at a distance and breeds trouble in the end, although it may seem for the time to be the proper discipline required in the management of large bodies of men. In the heart of every worker there is sure to spring up and grow either a confidence or distrust in the management, according to the treatment he receives. Confidence leads to success, while distrust insures ultimate failure.

We often read of a "modern mining town" and "up-to-date mine;" but when we visit the place, we are frequently impressed with the feeling that something is lacking; namely, the natural confidence of the mine officials in their men and a similar confidence on the part of the men in their employers.

Mutual Confidence the Supreme Factor

If I may be permitted to say a word here, it would be to bring home to the mind of the reader the fact that a general manager should have confidence in his superintendents; the superintendents the same confidence in their foremen, and the foremen likewise trust their men. Confidence should be in evidence between man and man, all down the line, from the general manager to the door-boy. When you lose confidence in a man you have lost the man. The man who has no confidence in another seldom has any in himself.

While we should not be fault finders, close observation reveals many points that need correction and many mistakes for which we should find a remedy. Too often, mine foremen and firebosses are called before the superintendent to receive a reprimand, or to have their attention called to an error they have made. It may be and often is a trifling matter, a mere oversight on the part of the worker.

Lack of Confidence in the Word of an Honest and Faithful Worker

Not long ago, I witnessed a fireboss called to the superintendent's office and taken to task for not leaving the date of his examination in a certain working place on his route. The fireboss described the true condition of the place by naming the objects he had observed there. He assured the superintendent that he had actually visited the place and made the examination, as well in that as in all other places in his section. The superintendent replied that the only evidence he would consider was his mark, and if that was not there it was evident he had not examined the place. He said further that he had no confidence in a man that would do such work and promptly discharged him.

Let me ask, Would a banker accuse a clerk of stealing money because he had failed to make the entry in the ledger, though the clerk showed him the money was in the drawer? Certain it is that no business can exist without confidence between man and man. It has been a lifelong rule with me not to work for the man who had no confidence in my word, and if I should lose confidence in one of my men I would discharge him at once.

Confidence then is the key to prosperity, while distrust is the road to failure. There is no efficiency without confidence between employer and employed. To this end, let all mine officials meet with their men once a month and co-operate with them as a means of gaining their confidence, which is so necessary to the success of the work in every branch of the industry.

Welch, W. Va. C. W. Atkins.

Inquiries of General Interest

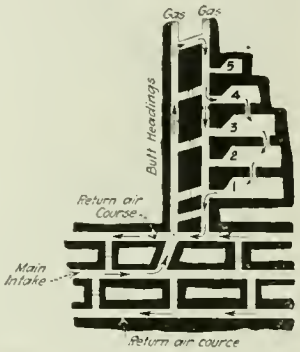
Answered by

James T. Beard

Use of Open Lights Allowed Under the Bituminous Mine Law

LATELY, we have had quite an argument here at the mines, regarding Section 3 of Article 10, of the Bituminous Mine Law of this state. I am now enclosing a sketch showing an entry and air course. As indicated by the arrows, the five rooms turned off the entry are ventilated by the return air, which is first conducted to the head of the entries and then made to pass out through the rooms before reaching the main return air-course.

As marked in my sketch, gas is generated at the face of each of the entries. This gas is diluted and carried away by the air current. No gas is generated in the rooms.



In our argument, A claims that it would not be necessary for the miners to use locked safety lamps in rooms 1, 2, 3, 4 and 5, according to the reading of the mine law (Art. 10, Sec. 3). On the other hand, B claims that in order to comply with the law it would be necessary for the workmen to use locked safety lamps in these rooms. I want to ask *Coal Age* and its readers, Who is right?

Article 10, Section 3 of the Bituminous Mine Law of Pennsylvania, relating to the use of open lights in mines generating explosive gas in sufficient quantity to be detected on the flame of an approved safety lamp, reads as follows:

> The use of open lights is strictly prohibited in the return air current of any portion of the mine that is ventilated by the same continuous air current that ventilates any other portion of said mine in which locked safety lamps are used. The provisions of this section shall not apply to any mine wherein explosive gas is generated only at the face of active entries.

Kindly explain the meaning of this section.

Pittsburgh Terminal R. R. & Coal Co. FIREBOSS.

The intention of the lawmakers who framed this section was, evidently, to safeguard mines against the use of open lights in a return air current coming from places where gas is generated in quantities sufficient to require the use of locked safety lamps. Unfortunately, the provisions of the section are annulled by its closing sentence, owing to the use of the somewhat indefinite term "active entries."

The accepted meaning of the expression "active entries" will generally be taken as applying to entries that are being *driven* without regard as to whether any rooms are turned off the entries and are working. In the latter case, however, such entries would be better described as "producing entries."

We cannot understand that the lawmakers had in mind permitting the use of open lights on the return current, in cases where rooms turned off the return entry are being worked, if gas is generated at the face of the entries in such quantities that locked safety lamps are required by the men driving those entries. In our opinion, the meaning of the law must be taken as prohibiting the use of open lights on the return air current, after that current has passed a place or places requiring the use of locked safety lamps. What do others say?

Theoretical Water Gage Due to the Action of a Fan

THE following question was asked in the first-class examination recently held in Alberta province:

What pressure measured by the water gage should a fan that is theoretically perfect and twelve and one-half feet in diameter make at a speed of 85 r.p.m. when running in a closed space?

I shall esteem it a favor if you will answer this question through the columns of *Coal Age*. It seems to me an indeterminate, theoretical question and, under any circumstances, of little value. INQUIRER.

Coalhurst, Alberta.

It is customary, in fan practice, to estimate the theoretical water gage produced by the action of a centrifugal fan on the basis that the theoretical head of air column is one-half the head due to the velocity of the blade tips of the fan. Calling the theoretical head, in feet of air column, h, and the velocity of the blade tips, in feet per second, u; and indicating the force of gravity by $g = 32.16$ ft. per sec., we have for the theoretical head of air due to the action of the fan,

$$h = \frac{u^2}{g}$$

In this case, the blade-tip velocity is $85(3.1416 \times 12.5) \div 60 = 55.64$ ft. per sec. Then, substituting this and the value of the force of gravity in the above formula, we have for the resulting head of air column,

$$h = \frac{55.64^2}{32.16} = 96.25 \text{ ft.}$$

Finally, taking the weight of a cubic foot of air as 0.0766 and multiplying this by the head of air column just found and dividing by 5.2, the pressure per square foot due to one inch of water gage, we have for the theoretical gage due to the action of this fan

$$w.g. = \frac{0.0766 \times 96.25}{5.2} = 1.4, \text{ say } 1\tfrac{3}{8} \text{ in.}$$

The actual water gage produced will depend primarily, however, on the mine resistance against which the fan operates; and the best results are obtained when the fan is working under conditions that will produce a water gage of about $\frac{3}{4}$ of its theoretical value; or say in this case $\frac{3}{4} \times 1\frac{3}{8} = 1$ in.

Examination Questions

Answered by

James T. Beard

Mine Foremen's Examination Held at Pittsburg, Kan., March 20, 1920

(Selected Questions)

Ques.—What form of an airway will give the most air with the same power, and why?

Ans.—The circular form presents the least rubbing surface for the same sectional area and length of the airway. In other words, for the same length, the ratio of the rubbing surface to the sectional area of a circular airway is less than that of any other form of cross-section. For that reason, the quantity of air circulated by a given pressure or a given power is largest in a circular airway.

However, the circle is not a practical form of cross-section in mining practice. An arched airway will generally pass more air than a square airway; and a square airway will likewise pass more air than one of a rectangular form having the same length and sectional area, under the same power, or pressure.

Ques.—The sectional area of an airway is 48 sq.ft., the total ventilating pressure is 374.4 lb. What would be the water-gage reading?

Ans.—In this case, the unit of ventilating pressure is 374.4 ÷ 48 = 7.8 lb. per sq.ft. The corresponding water-gage reading is 7.8 ÷ 5.2 = 1.5 inches.

Ques.—Is there an advantage or a loss in having the air travel at a high velocity, and why?

Ans.—There is a large loss in ventilating power when an air current is made to travel at a high velocity. The reason is that the power required to produce the circulation of air in a mine varies with the cube of the velocity of the air current, for the same extent of rubbing surface. Therefore, if the velocity is doubled in a mine, the power required to produce the circulation will be eight times the original power.

Ques.—Which, if either, should be the larger, the main intake or the main return airway, and why?

Ans.—Considering the conditions regarding temperature and pressure, which cause the expansion of the return air current, and the increase in volume by reason of the presence, in the current, of the gases generated in the mine, the return airway should have a larger sectional area than the intake. .

Aside from these considerations, however, where haulage is performed on the intake current, as is common in gaseous mines, it may be necessary to make the intake road the larger, for practical reasons. The loaded cars and empty trips passing to and fro on the haulage road form more or less of an obstruction to the flow of the air. Besides, there is the further reason for giving that airway a larger sectional area, so that a sufficient clearance space can be provided at the side of the track to enable men and animals to pass the cars with safety.

Ques.—What is the most economical way to increase the quantity of air in a coal mine? Explain fully.

Ans.—Clean up the airways and remove every obstruction to the passage of the air. Wherever practicable, straighten the air-courses and shorten the distance the air must travel, enlarge all breakthroughs or crosscuts and, finally, reduce the mine resistance as much as practicable, by splitting the air current, thereby reducing its velocity and saving the power required for the necessary circulation, or increasing the quantity of air circulated by the same power.

Ques.—In opening a new mine, what would be the essential point to consider in locating and sinking the shaft and laying out the mine workings?

Ans.—Regard must be had to the extent of the property, thickness and inclination of the coal, the character of the surface and the shipping facilities afforded, together with a suitable site for the plant and water supply. The location of the shaft must be such as to avoid any danger from excessive floods, while providing easy loading facilities and opportunity for the necessary cleaning and sizing of the coal, in its preparation for the market. At the same time, due regard must be had for the drainage and ventilation of the mine and the underground haulage, so that both the coal and the water will gravitate to the shaft bottom, as far as this is possible. The location of the shaft should be central in the property, but having due regard to the conditions previously mentioned, the purpose being to establish a minimum length of haul in the development of the mine.

Ques.—State how you would build and erect a trapdoor in a coal mine?

Ans.—A trapdoor should not be placed at the foot of a sharp grade, where there is danger of the passing cars not being under safe control. The roof where a door is to be located should be well supported, the sides trimmed and any loose pieces of slate taken down or made secure. A substantial timber frame must then be set so as to make a solid base for the door. The latter must now be hung so as to open against the air and be given a slight fall to enable it to close automatically.

The fall of the door can be arranged by giving its edge, on the hinge side, a slight inclination so that the upper hinge will be an inch or two nearer the center of the entry than the lower hinge. This position of the hinge hangers will cause the door to rise slightly as it opens and fall shut when released. The door must be substantially made of double planks, cut on the bias and securely nailed together to give greater strength to resist sagging. Canvas flaps should be provided around the edges of the door to prevent the leakage of air when the door is closed.

Ques.—What kind of haulage would you recommend to replace animal haulage when a mine has been extensively developed and why?

Ans.—Some form of mechanical haulage, either rope or motor haulage by electric or compressed-air locomotives. The use of either of these types will depend largely on whether the mine is equipped with electricity or compressed air. The former should not be used if the mine is generating much gas.

Wages and Earnings in Anthracite Mines Lag Behind Cost of Living, Declares Jett Lauck in Exhibit 12*

Statistician Argues That Compensation Should Be Given for the Period When Cost of Living Outstripped Wages and That Day and Other Rates Need the Standardization Which They Have Received in the Bituminous Regions

The contract miners form by far the largest single group of employees in the anthracite mines, constituting as they do about 30 per cent of the entire number of employees. The rates of these men vary from colliery to colliery and even from vein to vein. No attempt has ever been made to classify or standardize their rates, and all wage adjustments made since the great strike of 1902 have accepted the old rates as they stood and added thereto a specified percentage increase. Thus rates exist today the bases of which probably were first established twenty years ago or more.

The Table I gives the relative rates since 1902, that is the rates based on the pre-strike rate of 100.

TABLE I. RELATIVE WAGE RATES SINCE 1902

1902 pre-strike	100 00
1903	114.40
1904	114 95
1905	114.31
1906	114.58
1907	114 22
1908	114 40
1909	114.49
1910	114 40
1911	114.95
1912 after April	121.00
1913	121 00
1914	121 00
1915	121 00
1916 after April	129 50
1917 after April	142.50
1917 after November	161.96
1918 after November	181.30
1919	181.30
1920 to April	181.30

The award of the Anthracite Coal Strike Commission gave these employees a 10-per cent increase in rates. It also provided that for each 5-cent advance in the wholesale price of coal at New York City the miners should have a 1-per cent increase in rate over the new base established by the commission.

This agreement remained in effect nine years. During that time the sliding scale was responsible for increases in rate above the 1902 rate varying from 4.22 per cent in 1907 to 4.95 per cent in 1904 and 1911. The average increase for the nine years was 4.2 per cent. A new agreement was entered into on May 20, 1912. Under this agreement the sliding scale was abolished and in its place was granted an increase of 10 per cent over the rate of 1911. This increased the basic relative from 110, which it had been from 1903 to 1911, to 121.

*Reprint of Exhibit 4, entitled "The Relationship Between Rates of Pay and Earnings and the Cost of Living in the Anthracite Industry of Pennsylvania," presented by Jett Lauck to the Anthracite Coal Commission on behalf of the United Mine Workers of America.

The basic rate for 1911 plus the additional wage received under the sliding scale made the index number for that year 114.95. Therefore the actual increase brought about by the agreement of 1912 was 6.05 points. The wage of 1912 therefore shows an increase of 5.2 per cent over that of 1911, and a total increase of 21 per cent over the pre-strike rate of 1902. On May 5, 1916, a new agreement was entered into under which tonnage rates were raised 7 per cent above the rates in 1915. This made a total increase of 29.5 per cent over the rate of 1902.

Three Advances Since 1916

Since 1916 three new voluntary agreements have been entered into, each of which provided an increase in rates. These increases, however, were given not in the form of rate increases but in the form of additions to gross earnings. Thus the agreement of April 26, 1917, provided for the addition of 10 per cent to the gross earnings of each miner as determined by the agreement of May 5, 1916.

On Nov. 17, 1917, this was superseded by an agreement giving a 25-per cent increase on gross earnings, based on the agreement of 1916. Finally, on Nov. 15, 1918, the percentage bonus was raised to 40 per cent. Under these last three agreements it will be seen that the net increase in miners' rates above the 1902 base has been 42.5, 61.9 and 81.3 per cent.

The agreement of Nov. 15, 1918, according to its terms, was to remain in effect until the declaration of peace, or until March 31, 1920, if peace was not declared before that day. By a subsequent agreement entered into September 29, 1919, the conditional clause was eliminated and the duration of the agreement until March 31, 1920, made unconditional.

No satisfactory figures exist for changes in the cost of living prior to the studies made by the U. S. Bureau of Labor Statistics. As explained elsewhere, these figures do not go back of the war period, so in order to compare them with the wage rates of contract miners it is necessary to take the rates that existed in 1914 as a base (that is, as equal to 100) and compute from that the relatives since. These rates are recorded in Table II.

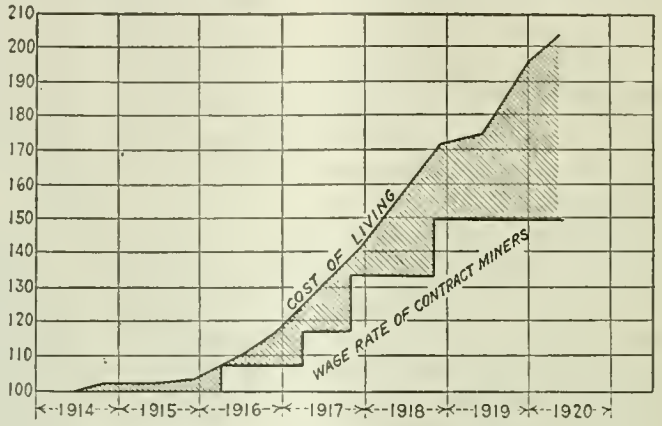


FIG. 1. CONTRASTING LIVING-COST INCREASES WITH THE RISES IN CONTRACT RATES FOR THE MINING OF ANTHRACITE

Both increases are given as percentages of the prices and rates respectively which obtained in 1914. Mr. Lauck argues that the delay in confirming wage rates of contract miners to the cost of living and the inadequate degree to which the confirmation was in each case made caused the contract miners the loss indicated by the shaded area.

TABLE II. RELATIVE WAGE RATES OF CONTRACT MINERS SINCE 1914

1914	100 0
1915	100 0
1916 after April	107 0
1917 after April	117 7
1917 after November	133.75
1918 after November	149 8
1919	149 8
1920 to April	149 8

As the cost of living from 1914 up to May, 1920, has risen 104 per cent, while the contract rates have risen only 49.8 per cent, it is evident that the contract miners are not today as well off as they were at the beginning of the war in 1914.

TABLE III. DATA FOR CHART ON RATES OF CONTRACT MINERS AND ON COST OF LIVING

	Wage Rates of Contract Miners Per Cent		Cost of Living Per Cent
1914	100 0	July, 1914	100
		Dec., 1914	102
1915	100 0	June, 1915	102
		Dec., 1915	103
1916 after April	107 0	June, 1916	109
		Dec., 1916	117
1917 after April	117 7	June, 1917	129
1917 after Nov.	133 75	Dec., 1917	141
		June, 1918	156
1918 after Nov.	149 8	Dec., 1918	172
1919	149 8	June, 1919	175
		Dec., 1919	195
1920 to April	149 8	May, 1920	204

This is shown graphically in Fig. 1. In order to restore the rates of the contract miner to the same relationship to the cost of living that was established by the wage adjustment in 1912 it would be necessary to increase the present rates by 36.2 per cent.

Should Have $2.04 Per Car

A common rate for coal (gangway and airway) in 1914, established in 1912, was close to $1 per car. This rate, with the subsequent increases, has now become $1.498, but in order to raise it up to the point where the day's earnings will buy the same necessities of life that they would buy in 1914 it would have to be increased now to $2.04 per car, an increase amounting, as explained above, to 36.2 per cent.

But simply increasing the rate up to the cost of living at infrequent intervals does not result in even approximate justice to the worker on account of the amount of purchasing power that he has lost in the past through the fact that his earnings have lagged behind the cost of living. As an illustration, assume that the wage is so adjusted at the start of a period that one day's earnings will be sufficient to purchase, say, 100 lb. of flour.

During the period, and before the next adjustment, if flour rises in price 50 per cent, the worker will find that he can purchase with one day's earnings only 66.67 lb. of flour, and that he is obliged to work a day and a half in order to obtain the needed 100 lb. The result must be that he and his family go without something they formerly enjoyed, or else he runs into debt.

When the next wage adjustment comes, even if his rate is increased 50 per cent so that he can once more purchase his 100 lb. of flour with one day's earnings, he is not recompensed for his forced self-denial during the period, nor is he able to pay the debts he has contracted.

Loss by Adjustment Delay

Another way of expressing this is as follows: At any wage fixation, both parties to the fixation have their attentions focused, consciously or unconsciously, upon the purchasing power of the wage as fixed. The number of dollars is important only as compared with the amount of commodities that may be purchased. At the wage fixation of 1916 (which forms the basis of all subsequent increases) a certain definite purchasing power was given to the mine workers.

It was, of course, the intention that the mine workers should continue to receive this purchasing power. It was decided that they needed at least this purchasing power in order to pay their bills. But, owing to the great increase in prices, the mine workers have not received what the wage fixation decreed they should receive. No one of the subsequent increases has been sufficient even to bring their wage back to the purchasing power fixed in 1916. The result is, then, that the mine workers have actually lost.

The shaded area in Fig. 1 shows the amount that has been lost by the contract miner through this failure of his rate to keep pace with the cost of living. A glance at the chart shows that in April, 1916, the rate was raised just up to the cost of living line, but not above it, so although he could then purchase all that he could in 1914, he was not repaid for his losses already incurred. Since April, 1916, none of the increases has brought the rate within a reasonable distance of the cost of living, and the increase of November, 1918, was notably inadequate.

If we disregard all losses incurred by the miner prior to the increase of November, 1917, we can compute his loss per car by taking any one of the rates and subtracting it from what it should have been in each of the succeeding months. Thus if we take the rate that was $1 per car in 1914 and is $1.498 per car now, his losses per car have been for each month as follows:

TABLE IV. LOSS TO CONTRACT MINER PER CAR THROUGH FAILURE OF WAGE RATE TO KEEP PACE WITH THE COST OF LIVING

November, 1917	$0.05
December	.07
January, 1918	.09
February	.12
March	.14
April	.17
May	.19
June	.22
July	.24
August	.27
September	.30
October	.32
November	.19
December	.22
January, 1919	.22
February	.23
March	.23
April	.24
May	.24
June	.25
July	.28
August	.31
September	.35
October	.38
November	.41
December	.45
January, 1920	.47
February	.49
March	.50
April	.52
May	.54
Total	$8.70
Average—31 months	0.281
One twenty-fourth of total	0.362

If it were intended to repay the miner for these accumulated losses within one month, it would be necessary to add the above total to his rate per car during that month. This, however, manifestly is far too much to ask.

If, on the other hand, a wage agreement is signed up for the twenty-four months commencing April 1, 1920, there should be added to his rate one-twenty-fourth of the above total, or $0.362 per car.

This amount added to the rate as brought up to the cost of living ($2.04) gives the rate of $2.402 per car as a fair and equitable rate superseding the rate that was $1 in 1912 and is $1.498 now. This is an increase amounting to 60.3 per cent of the present rates.

In precisely a similar way the losses incurred by any contract miner working at any rate may be computed, and if these losses are pro-rated through a period of twenty-four months from April, 1920, an increase amounting to 60.3 per cent must be made to each and every contract rate.

TABLE V. AVERAGE NUMBER OF DAYS WORKED 1913 1919, INCLUSIVE

	Days		Days
1913	257	1917	285
1914	245	1918	293
1915	230	1919	252
1916	253		

In this connection also it will be well to remember that no losses incurred before November, 1917, are taken into account in the above calculation, and also that it is assumed that the rise in the cost of living that may take place in the future will be compensated at some future adjustment.

Elsewhere is shown, in the exhibit on the irregularity of employment, the average days worked during the past year by the anthracite mines. As explained there, no one definitely knows what the average for the year 1919 was, but the indications are that it was not far from 252. Using this figure, the opportunity to work during the past few years has been as in Table V.

With the exception of the abnormal years of 1917 and 1918, the year 1919 does not appear to have been out of the ordinary except, perhaps, to the extent of a few per cent. It is shown elsewhere that at present the outlook seems to indicate that about 245 to 255 will be the average number of days worked per year during the future, and therefore it is fair to expect that the rates of wage, both contract and day, should be increased from time to time at least enough to balance the effect of rising prices and the compensate for losses already suffered.

No Increase for Short Day

The fact must not be lost sight of that in 1916 there was a reduction in hours from nine to eight per working day. This was a reduction of time amounting to 11 per cent, but it is not claimed that the rates should be increased by that amount in comparing the wage rate with the cost of living because the reduction of hours brought about such an increase in productive efficiency that the actual daily output per man day was greater under the eight-hour day than under the nine-hour day.*

The Pennsylvania Department of Internal Affairs reported the distribution of employees at the anthracite mines from 1908 to 1912 to be as in Table VI and no report of distribution has been made since.

From this table it appears that about half the total employees of the industry are contract miners and their laborers, and about half are engaged in miscellaneous occupations in and outside the mines. These other occupations are many, and no one is comparable in regard to numbers of men employed to that of contract miners. Most of them are paid by the day.

The wage rates of these occupations

*See Monthly Review, Bureau of Labor Statistics, August, 1917.

TABLE VI AVERAGE NUMBER OF WAGE EARNERS

	1912	1911	1910	1909	1908
Miners	42,201	44,290	42,897	43,343	43,482
Miners—laborers	33,292	32,691	32,536	32,778	38,896
Other inside—men	48,024	46,784	44,750	46,034	45,485
Other inside—boys	7	201	5	315	160
Outside—men	29,554	28,082	28,092	27,217	27,323
Outside—boys	135	1,310	1,044	2,794	3,432
Breaker employees	16,238	16,271	16,310	16,855	17,600
Totals	170,451	169,629	165,634	169,336	176,377

are extremely numerous, each company, and even each colliery, having its own set of rates which differs from all other sets of rates in effect elsewhere. To show the variation in rates among men engaged in practically identical work Table VII has been prepared, giving the rates in effect after the application of the November, 1918, increase, for the principal occupations in the larger collieries of District 1.

Table VII illustrates at once the great need of some standardization of rates within the industry and also the practicability of such standardization. The ashmen, to take a single instance, have an average rate of $3.61 per day, and this also is the rate at four out of the eight collieries. Manifestly, inasmuch as all are performing the same work, all should be brought to one rate.

While there may be considerable difference between the work of a miner in the anthracite field and the work of a miner in the bituminous field, there is no great difference between the two industries in the work of the miscellaneous men—that is, of the day men employed at such occupations as blacksmiths, bratticemen, trackmen, engineers, firemen, carpenters, laborers and the like. The bituminous industry has for some years standardized its employees within broad areas, fixing rates effectively for all blacksmiths, for all engineers, for all trackmen and so forth.

Standardization Feasible

It is evident that if this was possible in the bituminous industry it is trebly possible in the anthracite industry, because here (1) the geographical area covered is smaller, insuring greater uniformity of living conditions, competing wage rates of other industries and prices of commodities; (2) the control of the anthracite industry is much more highly concentrated than the control of the bituminous industry; (3) the working conditions of the different collieries are more nearly similar each to each than is the case in the bituminous industry.

The increase that these miscellaneous occupations have received since 1912 has been greater than the increase that took place in the cost of living; though even so their present rates are below what they should be for the maintenance of a proper standard. Of course this is because the rates they received before 1912 were so fearfully inadequate that even with the comparatively large increases they are not receiving a living wage.

Table VIII gives the daily wage for inside and outside day labor for district 7, in effect in April, 1912, and in November, 1918.

The increase in per cent since the 1912 rate has been 81.1 for the day wage miner and 175.9 per cent for semi-skilled outside labor. The inside workers have not in general received quite the increase in the cost of living (which has been about 100 per cent or a little more) but they have very nearly done so. The outside workers, on the other hand, have received considerably in excess of this cost of living increase.

In more detail Table IX shows the increases received in the more important occupations of the collieries of district 1 and 9.

It will be noticed that in Table X and in Table VIII the inside workers and the higher-paid outside workers received an increase averaging a little over $2 per day, while the lower-paid outside workers received an increase averaging only about $1.85 per day. In spite of this difference in the amounts of the increase, the lower-paid workers figure out a larger per cent increase because the $1.85 forms a larger proportion of their former wage than the $2 of the higher-paid men forms of theirs.

It might well be urged that clothing, food and other necessities have advanced as much more for the lower-paid men as for the higher, and that therefore all should receive the same flat increase, but in addition to that something is due the lower paid men as recompense for losses during the past few years, and this is true in spite of the fact that their percentage increases have been greater than the percentage increases of the cost of living.

TABLE IX. COMPARISON OF DAY WAGES IN DISTRICTS 1 AND 9, AFTER APRIL, 1912

	District 1	District 9
Company miner	$2.654	$2 499
Company miner laborer	2.374	2.129
Inside laborer	2 101	2.064
Outside laborer	1 745	1.812
First-class carpenters	2.575	2.562
First-class blacksmiths	2.653	2 636
Ashmen	1 760	1 638
Slaters, men	1 289	1 287
Bratticemen	2.332	2 448

TABLE X. AVERAGE RATES IN LARGER COLLIERIES OF DISTRICTS 1 AND 9

	1912 (After April)	1918 (After Nov.)	Increase in Dollars	Increase in Per Cent
Company miner	$2.654	$4.73	2.08	80.1
Compaoy miner, laborer	2.374	4.38	2.01	84.5
Inside laborer	2.101	4 236	2.13	101.6
Outside laborer	1 745	3.567	1 82	104.4
First-class carpenter	2.575	4.633	2.06	79.9
Carpenter—helper	1.891	3 727	1 83	97.1
First-class blacksmitb	2 653	4.732	2.08	78.3
Blacksmith—helper	1.811	3.688	1 87	103.6
Ashmen	1.760	3 611	1.85	105.2
First-clas sslate pickers	1 289	2 713	1.52	110.5
Bratticemen	2 332	4.401	2.07	88 7
Trackmen (inside)	2.661	4 737	2.07	78 0
Trackmen—helpers	2 115	4 167	2.05	96 7

The operators frequently claim that the rate for common labor outside the mines is the "yard-stick" by which all other rates have been measured and

TABLE VII. DAY RATES FOR PRINCIPAL OCCUPATIONS IN THE LARGER COLLIERIES OF DISTRICIT 1 IN EFFECT IN NOVEMBER, 1918

	Company Miner	Company Miner's Laborers	Laborers Inside	Laborers Outside	First-Class Carpenters	Ash Men
Old Forge Colliery—Penn. Coal Co.	$4.40	.....	$4 09	$3.84	$4.855	$3.635
National Colliery—D. L. & W.	.....	.....	4 40	3.61	4 53	3.61
Van Storch Colliery	4.47	.....	4 11	3 61	4 685	3.61
Boston Colliery—D. & H. Coal Co.	4.47	$4 11	4 11	3 61	.....	3.61
So. Wilkes-Barre Colliery—L. & W. B.	4 80	4.34	.....	3.67	4.62	3.67
Pine Brook Colliery—Scranton Coal Co.	5 48	4 85	.....	3.49	4.64	3.61
Westmoreland Colliery—L. V. Coal Co.	4 74	4 47	4 47	3 35	4 48	3.47
No. 5 Colliery—Susquehanna Coal Co.	4.78	4.12	.....	3.355	4 62	3.67
Averages	$4 73	$4.38	$4.236	$3.567	$4.633	$3.611

	First Class Slate Pickers	Bratticemen	First Class Blacksmiths	Blacksmiths Helpers	Carpenter Helpers	Trackmen (Inside)	Trackmen Helpers
Old Forge Colliery—Penn. Coal Co.	$3 43	$4 09	$4 855	$3 635	$3 84	$4 855	$4 09
National Colliery—D. L. & W.	2 42	4 77	4 685	3 61	3 79	4 775	4 40
Van Storch Colliey	2.45	4 11	4 685	3 78	3 78	4 685	4 11
Boston Colliery—D. & H. Coal Co.	.....	4 47	4.685	3 61	.....	4 73	4.11
So. Wilkes-Barre Colliery—L. & W. B.	2 45	4.49	4.67	3.67	3.67	4 80	4.34
Pine Brook Colliery—Scranton C. C.	2 45	4 39	4.69	3 93	3.79	4 78	4 02
Westmoreland Colliery—L. V. Coal Co.	2 44	.....	4 79	3.67	3 62	4 51	4 10
No 5 Colliery—Susquehanna Coal Co.	3.355	4 49	4 80	3.60	3.60	4 78	4 17
Averages	$2 713	$4 401	$4 732	$3.688	$3.727	$4.737	$4 167

TABLE VIII. DAILY WAGE FOR INSIDE AND OUTSIDE DAY LABOR FOR DISTRICT 7

	Daily Wage 1913	Daily Wage 1920	Increase in Dollars	Relative Wage 1913	Relative Wage 1920	Increase in Per Cent
Inside:						
Day wage miners	$2 54	$4 60	2 06	100 0	181 1	81 1
Day wage laborers	2.20	4 25	2 05	100.0	193 2	93 2
Skilled labor	2.45	4 50	2 05	100 0	183 7	83 7
Semi-skilled labor	2.30	4 35	2.05	100 0	189 1	89 1
Outside:						
Common labor	1.54	3 31	1 77	100.0	214 9	114 9
Semi-skilled	1 54	4 25	2 71	100.0	275 9	175 9
Skilled	2 20	4.25	2.05	100.0	193.2	93.2

fixed. This, of course, is by no means the case, any more than the rate of building laborers determines the rate paid to brick masons and carpenters. There is no objection, however, to this method of determination provided the rate for common labor is set with due regard to the necessary standard of living, and that the differentials to be paid for added experience and skill are sufficiently high.

The present rate for common labor is on the average about 41 to 44c. per hour for an eight-hour day. This rate was set by the adjustment made in November, 1918, and, of course, is far too low under present conditions of prices. The minimum wage rate established by the National War Labor Board in June, 1918, was for localities similar to Pennsylvania either 42 or 42.5c. per hour, assuming an average ten-hour day.

Minimum To Be $5.61 Per Day

The ruling in the street railway cases, for instance, was that "The intent of the award is to give every adult male employee affected engaged in an occupation essential to the operation of the company and whose rate is not specifically fixed by the award a daily wage of at least $4.25 for ten hours' work." With an increased cost of living of about 32 per cent since June, 1918, this daily wage should be increased as of today to $5.61.

This minimum rate fixed by the War Labor Board was not intended to give common labor an unusual rate but was granted in accordance with the ruling of the board that, "The period of the war is not a normal period of industrial expansion from which the employer should expect unusual profits or the employees abnormal wages; that it is an interregnum in which industry is pursued only for common cause and common ends."

The most recent investigation into the earnings of anthracite mine workers was made in January, 1919, by the U. S. Bureau of Labor Statistics. A half-month payroll period ended Jan. 31, 1919, was selected. In its report the bureau says "The ideal method of arranging the field work of a survey of this kind would be to have all the schedules cover the same payroll period. It was possible to carry this out in the anthracite field.

"All schedules in that branch of the industry are for the payroll period ended Jan. 31, 1919." . . . "In January mines were still running full time, though with diminished intensity. Thus all the mines included in the anthracite field were running full time on the date of the survey." . . . "No mines working less than full time were included in the survey" [in the antharcite field].

The half-month period of the survey included fourteen working days. Therefore in order to compute the average earnings of the year all that is necessary is to divide the total average earnings of the half-month period by fourteen in order to obtain the average daily wage, and then multiply the resulting figure by 252, which was the average number of days worked during the year 1919.

TABLE XI AVERAGE FULL-TIME AND ACTUAL YEARLY EARNINGS BASED ON ONE-HALF MONTH PERIOD IN JANUARY, 1919

Occupation	Number of Employees	Full-time Daily Earnings A	Estimated Full-time Yearly Earnings 252 Days B	Actual Daily Earnings C	Estimated Actual Yearly Earnings D
Inside:					
Blacksmiths	30	$4 733	$1,193	$5 254	$1,324
Brattiemen	116	4 488	1,131	4 486	1,130
Cagers	234	4 160	1,048	4 699	1,184
Car runners	342	4 061	1,023	3 973	1,001
Company miners	656	4 651	1,172	3 914	987
Company miners, laborers	632	4 208	1,060	3 876	977
Consideration miners	498	5 085	1,281	4 586	1,156
Contract miners	4,887	6 735	1,697	5 683	1,432
Contract miners, laborers	1,855	5 112	1,288	3 571	900
Door tenders (boys)	247	2 509	632	2 404	606
Drivers	479	3 990	1,006	3 761	948
Engineers	121	4 518	1,138	5 024	1,266
Laborers	1,200	4 200	1,058	3 939	993
Machinists	67	4 985	1,256	4 592	1,157
Masons	41	4 614	1,162	4 611	1,162
Motormen	247	4 462	1,124	5 199	1,310
Motor brakemen	190	4 014	1,012	4 274	1,077
Pumpmen	104	5 221	1,315	5 030	1,267
Timbermen	170	5 562	1,402	4 250	1,071
Trackmen	163	4 564	1,150	4 674	1,177
Total inside occupations	12,279	$5 407	$1363	$4 655	$1173
Outside:					
Ashmen	72	$3 886	$ 979	$4 059	$1,023
Blacksmiths	60	4 573	1,152	5 140	1,295
Cagers	119	3 701	932	4 332	1,092
Carpenters	250	4 516	1,138	5 306	1,337
Car runners	83	3 629	915	3 552	895
Dumpers	88	3 591	905	3 559	897
Engineers	248	4 500	1,134	5 271	1,328
Firemen	314	4 570	1,151	4 616	1,163
Laborers	1,211	3 549	894	3 710	935
Loaders	199	3 581	902	3 923	989
Machinists	112	4 132	1,041	5 200	1,310
Oilers	77	3 470	874	4 041	1,018
Repairmen	113	3 879	977	4 279	1,079
Timber cutters	115	3 619	912	4 208	1,060
Trackmen	28	3 814	961	3 947	995
Outside—Breaker:					
Jig runners	81	3 281	827	3 837	966
Platemen	180	3 441	867	3 652	920
Slaters (boys)	580	2 386	601	2 139	539
Total outside occupations	3,930	$3 629	$914	$3 884	$979
Grand total—Inside and outside occupations	16,209	$4 976	$1,254	$4.467	$1,126

In table XI is shown for each of the occupations the full-time daily earnings (column A). This is the average wage that would be earned per day while the mine was open if the employee worked. Column C gives the average actual daily wage—that is, the average wage earned per week day.

It is found, as explained above, by dividing the total average earnings for the 14-day period by 14. Where the figures in column C are lower than column A it means that the workers in that occupation did not work the full time for every day. Where C is higher than A it means that overtime was worked.

Column B is the estimated full-time earnings for the year 1919. It is found by multiplying the full-time daily earnings by 252, which was the estimated average number of days worked in the year.

Column D is the estimated actual yearly earnings for the year 1919. It is found by multiplying the actual daily earnings by 252.

While it is probable that 252 working days a year is rather more than can reasonably be expected for an average of the future, it is a less number than was worked during 1918 and 1917. This matter is fully discussed in the exhibit on the irregularities of employment.

Table XI shows the average yearly earnings for anthracite mine workers to be as in Table XII.

Note that the average actual earnings for outside occupations are larger than the full-time earnings. This is because of the large amount of overtime put in by the outside men. The chief difference between full time and actual earnings comes in the case of contract miners and their laborers, that is to say these two occupations apparently worked a smaller proportion of the full time than any other occupations.

TABLE XII AVERAGE YEARLY EARNINGS ANTHRACITE MINE WORK

	1919 Full-Time Earnings 252 Days	1919 Actual Earnings 252 Days
Inside occupations	$1,363	$1,173
Outside occupations	914	979
All occupations	1,254	1,126

These figures are really meaningless, however, as these two occupations depend not on hours but on tonnage. If the contract miners had worked the full time, the number of days worked by the mines would have been cut down, and the outside occupations would also have been forced to put in more overtime during the days worked than was actually the case.

While I have included earnings for overtime in the above table, I have done so simply because I had no data whereby I could segregate these earnings

and show what the daily and yearly earnings would be without overtime.

It seems but fair and in accordance with the best thought of economists and with recent decisions of arbitration boards and commissions to base wage rates upon possible earnings during a reasonable number of hours per day and a reasonable number of days per year. "The amount of money to be earned by anticipated overtime should not be included in the amount to be established as a fair return to the worker."

The distribution of the weekly earnings is shown by Table XV. This table shows the number of employees receiving weekly wages below $10, and in groups of $2 increments, for 1916, 1917 and 1918. Fig 2 shows the same figures graphically.

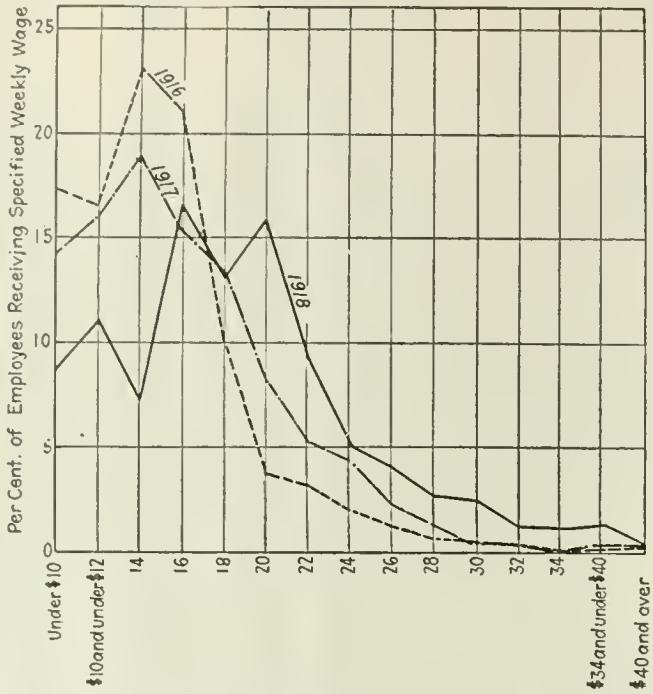


FIG. 2. PERCENTAGE OF ANTHRACITE EMPLOYEES RECEIVING ANY SPECIFIED WEEKLY WAGE

Average Weekly Earnings

The Pennsylvania Workmen's Compensation Commission in a report compiled jointly by the Insurance Department of Pennsylvania and the statistical department of the Pennsylvania Compensation Rating and Inspection Bureau give the average weekly earnings of all employees in the anthracite industry as in Table XIII.

TABLE XIII. AVERAGE WEEKLY EARNINGS

Year	Average Weekly Earnings
1916	$13 98
1917	15 02
1918	17 69

These earnings, however, are full-time earnings, assuming the mines to be open. They are computed by taking the six months' actual earnings and dividing by the days worked during the period. On this basis, taking the days worked from the reports of the U. S. Geological Survey, the actual average yearly earnings would be as in Table XIV.

TABLE XIV. AVERAGE YEARLY EARNINGS

Year	Average Yearly Earnings
1916	$590
1917	713
1918	863

The Pennsylvania Department of Internal Affairs reported average yearly earnings for anthracite workers for the years from 1903 to 1912, inclusive. Table XVI shows these earnings. The figures, however, are not as reliable as the figures computed from the survey of the U. S. Bureau of Labor Statistics nor are they as reliable as the figures reported by the Workmen's Compensation Commission.

Local Demands Electric Lights Instead of Flame Safeties

Phalen local, at Glace Bay, N. S., is demanding that oil safety lamps be replaced by electric lamps. The coal company wants the miners to contribute $7.89 toward their cost and also to supply caps and belts, but the men refuse to pay any part of the cost, and are steadfastly determined not to use the old oil safety lamps.

Broad-Top Field Goes on Strike To Keep Its Differential

During the war the Broad-Top field secured a differential of 10c. a ton over the rest of the operations in the central Pennsylvania, or No. 2, district. This differential the Broad-Top mine workers believe is part of the scale ordered by the Bituminous Coal Commission and a provision not to be denied now that the increase in wage has been granted. The International officials have the same opinion and on July 11 on call of International President Lewis 3,000 mine workers went on strike.

Alex Howat, District President, May Be Denied Voting Rights

Alex Howat, of Pittsburg, Kan., Socialist leader of the Kansas mine workers, who was born in Scotland, will be denied a vote unless he can produce proof that he or his father have taken out second naturalization papers. If he has no papers it will be hard for him to get them from Judge Andrew J. Curran, who recently sent him to jail for his contempt of the Kansas Industrial Court in the coal strike case. Andrew Howat, the brother of Alex, has not been allowed to register because he could not prove his citizenship individually or through his father's naturalization. Alex Howat is almost certainly similarly embarrassed.

TABLE XV. ANTHRACITE EARNINGS REPORTED BY PENNSYLVANIA WORKMEN'S COMPENSATION COMMISSION

Employees Receiving	1916 Number	1916 Per Cent	1917 Number	1917 Per Cent	1918 Number	1918 Per Cent
Under $10	289	17.2	279	14 3	133	8 5
$10 and under $12	277	16.5	311	15.9	172	11.1
$12 and under $14	387	23.1	372	19.1	111	7.1
$14 and under $16	348	20.8	297	15.2	260	16.7
$16 and under $18	172	10 3	263	13.5	203	13.1
$18 and under $20	63	3.8	144	7.4	246	15.8
$20 and under $22	53	3.2	102	5.2	144	9.3
$22 and under $24	33	2.0	84	4.3	79	5.1
$24 and under $26	21	1.2	44	2.3	64	4.1
$26 and under $28	11	0.7	25	1.3	41	2.6
$28 and under $30	9	0.5	7	0.3	38	2.4
$30 and under $32	5	0.3	9	0.4	19	1.2
$32 and under $34	0	0.0	3	0.1	18	1.2
$34 and under $40	4	0.2	9	0.5	21	1.3
$40 and over	4	0.2	4	0.2	6	0.4
Totals	1,696	100.0	1,953	100.0	1,555	100.0

TABLE XVI. AVERAGE YEARLY EARNINGS PENNSYLVANIA ANTHRACITE MINES

	1912	1911	1910	1909	1908	1907	1906	1905	1904	1903	1902
Miners	729	744	711	651	673	717	641	690	685	701	496
Miners' laborers	496	510	468	441	387	489	421	458	462	447	
Other inside men	541	558	526	489	505	574	463	530	781	461	363
Boys, inside	286	272	182	220	229	267	241	242	241		
Outside workmen	527	535	541	482	500	558	494	543	542	480	306
Breaker employees	358	374	329	323	329	422	351	287	277	284	..
Boys, outside	242	232	209	192	206	278					
Average	560	573	544	498	496	574	494	521	574	491	...

Yearly Earnings in Anthracite Mines Much Lower than in Bituminous Says Statistician Jett Lauck*

Bituminous Mine Workers Formerly Got Lower Pay than Anthracite Men —Day Rates of Hard-Coal Daymen Should Be Raised 40 to 50 Per Cent —Anthracite Miner Should Get 27 Per Cent to 65 Per Cent Advance

The present yearly earnings in the anthracite mines are considerably lower than those in the bituminous mines of Pennsylvania, although in former years there was little difference between the two industries. This is shown in Table I.

TABLE I. COMPARISON OF YEARLY EARNINGS OF ALL EMPLOYEES IN THE ANTHRACITE AND BITUMINOUS MINES OF PENNSYLVANIA

	Average Earnings Anthracite Employees	Average Earnings Bituminous Employees
1903	$491	$541
1904	574	452
1905	521	503
1906	494	545
1907	574	604
1908	496	458
1909	498	524
1910	544	574
1911	573	584
1912	560	663
1913	No data	No data
1914	No data	No data
1915	No data	No data
1916	590	689
1917	713	877
1918	863	1,216
1919	1,126	1,337

The sources from which Table I is compiled are as follows: The figures for the years 1903 to 1912, inclusive, are taken from the reports of the Pennsylvania State Department of Internal Affairs, and are computed by the statistical bureau of that department by dividing the total yearly payroll by the average number of total employees.

The basic figures upon which this Statistical Bureau made its report were furnished by the operators of the coal mines, and it is to be presumed, therefore, that the figures are accurate. Of course, the resulting earnings in Table I cannot be compared from year to year—that is, the year 1903 cannot be compared with the year 1916, nor the year 1916 with the year 1919, because, as shown below, the source is different and the method of computing the figures is different.

Comparable Figures

But each year presents comparable figures as between the anthracite and the Pennsylvania bituminous fields, because in each year the figures for the two fields are derived from the same source and the same method of computation is used. It is doubtless true, moreover, that the figures from the Department of Internal Affairs reflect accurately the relative conditions as to earnings between the two fields, though the absolute earnings cannot be so confidently relied upon.

*Employees' Exhibit No. 4 before the U. S. Anthracite Coal Commission, entitled "Comparison of Earnings and Wage Rates in the Anthracite and Bituminous Mines of Pennsylvania," presented by Jett Lauck.

The figures for 1916 to 1918, inclusive, are derived from a report of the Pennsylvania State Workmen's Compensation Commission, compiled jointly by the Insurance Department of Pennsylvania and the statistical department of the Pennsylvania Compensation Rating and Inspection Bureau. These figures are published as average full-time weekly earnings, from which the yearly earnings are derived by first finding the daily earnings and then multiplying by the number of days worked in the respective fields in Pennsylvania as reported by the U. S. Geological Survey.

Here again the same method of computation is followed for both anthracite and bituminous earnings, so a comparison between the two fields for any one year presents the relative difference during that year.

This from Labor Bureau

The figures for 1919 are based upon a survey made by the U. S. Bureau of Labor Statistics. The survey of the anthracite mines was made at a time when all the mines covered by the survey were working full time, and the yearly earnings given in Table I are the average daily earnings found by the survey multiplied by the average number of days worked (252) in the anthracite field during 1919. These figures include a large amount of overtime earnings that should preferably be omitted. The survey of the bituminous mines was made at a time when the mines were operating from one-half to full time, the actual proportion of full time that the mines were in operation being 73.3 per cent. The figures in Table I are twenty-four times the weighted average of the actual earnings for Pennsylvania found for a half month payroll period by the survey, and correspond to an average of 246 days worked during the year.

TABLE II. DAYS WORKED FIRST 10 MONTHS OF 1919

Pittsburgh thick vein district	217
Pittsburgh thin vein district	197

During the year 1919 there was a strike in the bituminous field of Pennsylvania that disorganized the industry for about two months. In making the comparison of yearly earnings between anthracite and bituminous workers it is thought preferable to eliminate this strike from the computations. Before the President's Bituminous Coal Commission the soft coal operators produced figures of days worked in the Pittsburgh thick-vein district and the Pittsburgh thin-vein district for the first ten months of 1919 as given in Table II.

At this rate, the days worked during a year of twelve months would be for 1919 from 261 to 236, the simple average of which is 248, or substantially the same as the 246 figure in which our computation results.

Coke Workers Included

The bituminous earnings in Table I include also in the years 1904 to 1912, inclusive, a small number of coke workers, an occupation that has no parallel in the anthracite industry. The effect of this inclusion is minute, however, as the coke workers form less than 7 per cent of the total number of bituminous workers, and, as their average wage is not far from the average wage of all the employees, the maximum variation being from 7.16 per cent higher to 7.99 per cent lower than the average wage. The effect of the inclusion of the coke workers is, therefore, less than one-half of 1 per cent.

Attention is called to the fact that the anthracite average earnings include those of boys to a greater extent than do the bituminous earnings. This fact makes Table I a conservative one, because the fact that is brought out below is that in the early years the anthracite earnings were on an average about the same as the bituminous earnings, whereas in the recent years the bituminous earnings have become considerably greater than the anthracite earnings.

Boys Being Dropped

The number of boys employed during the early years was much greater than now, and their age (and proportionate earnings) was formerly lower than it now is. Thus if the boys had been omitted from Table I the change that has taken place in the relation between anthracite and bituminous earnings would be shown to be greater than Table I exhibits. In support of this statement Table III gives the percentage of boys employed in the year 1902 (in the collieries of the Lehigh Coal & Navigation Co., according to the report of the Anthracite Strike Commission) and for the year 1919 (from the report of the Bureau of Labor Statistics of its survey in January, 1919):

TABLE III. NUMBER OF BOYS AND PERCENTAGE OF BOYS TO ALL EMPLOYEES IN LEHIGH COAL & NAVIGATION CO.

	Number of Boys		Per Cent of Total Employees	
	1902	1919	1902	1919
Inside mines	114	247	2 227	1 524
Outside mines	761	580	14 864	3 578
Totals	875	827	17.091	5 102

Thus during the years when the number of boys was relatively high the earnings of the two fields were about

the same, while for the years when the number of boys was low the anthracite earnings (which include the earnings of these boys) was lower than the bituminous earnings, so if the boys were omitted from the total average the relative change that has taken place would be, as stated above, greater than is shown in the table.

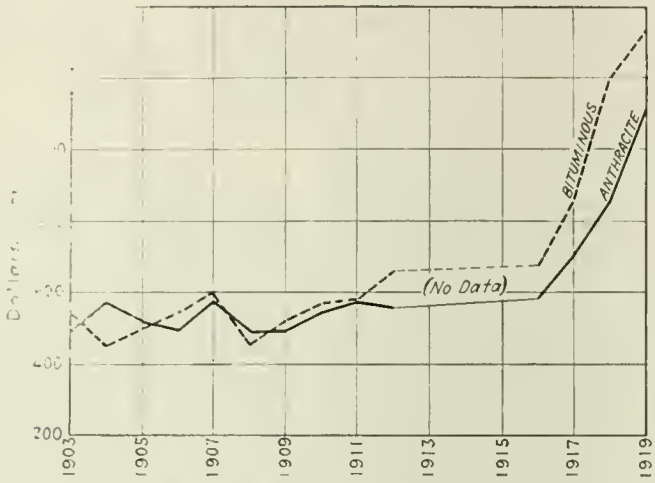


FIG. 1. COMPARISON OF YEARLY EARNINGS IN ANTHRACITE AND BITUMINOUS MINES OF PENNSYLVANIA

Jett Lauck would urge on the Anthracite Coal Commission that, whereas in earlier years the anthracite wage earner made more than the bituminous, he is now no longer so privileged but looks on his bituminous fellow worker as better paid than himself.

The figures in Table I are shown graphically in Fig. 1.

It is evident that from 1903 to 1911 the earnings in the anthracite mines were approximately the same as they were in the bituminous mines of Pennsylvania. Sometimes one is higher, and sometimes the other. In recent years, however, the bituminous earnings have been considerably higher than in the anthracite mines, the average exceeding the anthracite average by the following yearly amounts:

TABLE IV. AMOUNTS AND PERCENTAGES BY WHICH YEARLY AVERAGE EARNINGS IN THE BITUMINOUS MINES OF PENNSYLVANIA EXCEED THE YEARLY AVERAGE EARNINGS IN THE ANTHRACITE MINES

	Amounts	Percentage
1916	$ 99	16.8
1917	164	23 0
1918	353	40.9
1919	211	18 7

Thus in order to raise the earnings of the anthracite workers to the same level as that of the bituminous workers, on the basis of the number of days worked in the respective fields during 1919, it would be necessary to increase the basic rates in the anthracite mines of 18.7 per cent.

Fifty Per Cent to Even Up

The recent increase awarded to the bituminous mine workers by the President's Bituminous Coal Commission was stated by that commission to be an average of about 27 per cent (the award amounted to between 27 per cent and 34 per cent for the miners and to 20 per cent for the daymen). In order, then, to bring the existing anthracite rates up to the level of the bituminous rates as thus increased, it would be necessary to increase the present anthracite rates by 18.7 per cent, and then by 27 per cent on top of that, or a total increase of 50.74 per cent.

Subdividing the mine workers into groups of occupations, the average yearly earnings for each group from 1903 to 1912 is shown by the Tables V and VI.

The figures in Tables V and VI are from the reports of the Pennsylvania State Department of Internal Affairs. It should be noted that the earnings of the anthracite miners exceeded each year the earnings of the bituminous miners, both those that worked with the pick and those who operated a machine, the percentage difference being as shown in Table VII.

If the work done by the anthracite contract miner and the bituminous pick miner is at all comparable, it seems as though the anthracite miner necessarily requires more experience and skill. Nevertheless the anthracite miner has lost the differential in earnings that he formerly possessed, as is shown by a study made by the U. S. Bureau of Labor Statistics in June, July and August of 1918.

TABLE VII. PERCENTAGE BY WHICH YEARLY EARNINGS OF ANTHRACITE MINER FORMERLY EXCEEDED YEARLY EARNINGS OF BITUMINOUS PICK MINER

1903	30 3	1908	50 5
1904	54 6	1909	24 2
1905	40 5	1910	20 9
1906	23 5	1911	29 8
1907	19 1	1912	10 0
Simple average			30.3

Miners Get $6.26 Per Start

At that time it was found that the average earnings per day that the mine is open (per "start") of the anthracite contract miner was $5.62. The correctness of this figure was checked by inquiries made of the principal anthracite companies of Pennsylvania, asking for a statement of the number of contract miners employed in all the collieries of each company and the average net earnings per "start"—that is, earnings after deductions for mine supplies and blacksmithing. Returns were received from sixty-nine companies, representing 33,395 contract miners. The average earnings for all of these sixty-nine companies was $5.59, against $5.62, as shown by the data collected by the bureau's agents.

In November, 1918, an increase was granted in the contract rates of the anthracite mines amounting to 12 per cent, and this 12 per cent raised the average earnings of $5.59 to $6.26.

The study of the bureau was extended also to the bituminous field of Pennsylvania, and it was found that the average earnings of the bituminous pick miner was $6.22, or substantially the same as the earnings of the anthracite contract miner after the increase of November, 1918, so the anthracite contract miner, instead of receiving greater earnings than the bituminous miner, as he did through all the years from 1903 to 1912, was in 1919 on substantially the same basis per day, while, owing to the award of the Pres-

TABLE V. AVERAGE YEARLY EARNINGS IN PENNSYLVANIA ANTHRACITE MINES

	1912	1911	1910	1909	1908	1907	1906	1905	1904	1903	1902
Miners	$729	$744	$711	$651	$673	$717	$641	$690	$685	$701	$496
Miners' laborers	496	510	468	441	387	489	421	458	462	447	
Other inside men	541	558	526	489	505	574	463	530	781	461	363
Boys—inside	286	272	182	220	229	267	241	242	241		
Outside workmen	527	535	541	482	500	558	494	543	542	480	306
Breaker employees	358	374	329	323	329	422					
Boys—outside	242	232	209	192	206	278	351	287	277	284	
Averages	$560	$573	$544	$498	$496	$574	$494	$521	$574	$491	

TABLE VI. AVERAGE YEARLY EARNINGS IN PENNSYLVANIA BITUMINOUS MINES

	1912	1911	1910	1909	1908	1907	1906	1905	1904	1903	1902
Miners—pick	$674	$573	$588	$524	$447	$602	$519	$491	$443	$538	$504
Miners—machine	654	554	537	507	447	540	496	495			
Other inside men (over 16)	709	659	641	564	592	721	666	525	488	474	547
Other inside boys (under 16)	421	293	254	251	275	256	223	221	173	223	
Outside men (over 16)	631	615	518	529	539	650	624	525	488	530	454
Outside boys (under 16)	314	259	277	216	169	425	212	222	176	240	
Coke workers	610	553	538	501	424	586	570	539	445		
Averages	$663	$584	$574	$524	$458	$604	$545	$503	$452	$541	

ident's Coal Commission, he is now considerably behind the bituminous miner.

The study of the bureau in 1918 showed the amounts given in Table VIII were those by which the daymen in the bituminous mines exceeded the daymen in the anthracite mines. In considering Table VIII it should be noted that in the anthracite region there is a larger proportion of unskilled outside workers than in the bituminous industry, and that it is these men who are the most behind the bituminous scale, though formerly their yearly earnings were about on an equality.

Not Properly Weighted

Table VIII of the Bureau of Labor Statistics is not a weighted average but it is a mean between the high and the low rates. The correctness of the bureau's figures, however, is evidenced by the estimate it made of the 1918 earnings of the contract miner, which later investigation checked, as stated above, within 3c. per day.

The above differences between the daily earnings in the two industries fully explain the difference of 40.9 per cent that was shown above to exist in 1918 by the figures of the State Workmen's Compensation Commission. In this connection it is well to remember that the daymen in the anthracite and in the bituminous industries are fairly comparable in their work, though, of course, little comparison can be made between the occupations of the miners of the two fields.

Thus there is every reason why the anthracite daymen should expect to receive as high a wage as the daymen in the bituminous field, and at the same time it is entirely reasonable for the anthracite contract miner to feel that he is entitled to receive as much higher earnings than the bituminous pick miner as he was accustomed to get during the pre-war years from 1903 to 1912.

The wage adjustment that was made in November, 1918, added about a dollar a day to the earnings of the anthracite daymen. This reduces, as of the year 1919, the amounts by which the bituminous earnings exceed the anthracite earnings by an equal amount. This cuts down the per cent excess of the bituminous men and accounts for the reduction, found above, in the excess that bituminous yearly earnings exceeded anthracite yearly earnings (this reduction was from 40.9 per cent in 1918 to 18.7 per cent in 1919).

Before the start of the war in 1914 the average days worked in the Pennsylvania bituminous mines exceeded the days worked in the anthracite mines. This is shown in Table IX, and graphically in the Fig. 2. The figures are taken from reports of the U. S. Geological Survey.

It is probable that with the coming of normal conditions the pre-war comparison between the two fields will once more be restored, though it is not to be expected that the difference will be as great as existed prior to 1903 (that is, prior to the introduction of the summer discount in the anthracite market). If this is the case, then, the average number of days worked in the anthracite field may be expected to be lower than in the bituminous field by from 3 per cent to 11 per cent.

The day rates in the anthracite field, then, should be from 3 per cent to 11 per cent higher than in the bituminous field. Formerly they were higher, but now they are decidedly lower.

Table X gives the average daily wages in the two fields from 1903 to 1912, inclusive, as reported by the

TABLE VIII COMPARISON OF DAILY EARNINGS IN 1918 OF ANTHRACITE AND BITUMINOUS MINE WORKERS

	Anthracite Average	Bituminous Average	Average Bituminous Exceeds Average Anthracite Amount	Average Bituminous Exceeds Average Anthracite Percentage
Outside:				
Blacksmiths	$3 44	$4 96	$1 52	44
Carpenters	3 39	4 89	1 50	44
Hoisting engineers	3 55	4 80	1 25	35
Stationary engineers	3 03	4 93	1 90	63
Power engineers	3 53	4 93	1 40	40
Locomotive engineers	3 25	4 90	1 65	51
Firemen	3 12	4 60	1 48	48
Footmen and headmen	2 77	5 00	2 23	81
Jig runners	2 52	4 67	2 15	85
Laborers	2 78	4 24	1 46	53
Machine repairmen	3 43	4 67	1 24	36
Slaters (boys)	1 89	2 65	76	40
Stablemen	3 02	4 10	1 08	36
Teamsters	2 82	3 86	1 04	37
Trackmen	2 95	4 89	1 94	65
Drivers	2 47	5 00	2 53	102
Inside:				
Blacksmiths	3 66	4 96	1 30	35
Bratticemen and carpenters	3 46	5 00	1 54	45
Door boys	1 95	2 68	73	37
Drivers	2 87	5 00	2 13	74
Engineers, locomotive	3 46	5 10	1 64	47
Slope engineers	3 26	5 10	1 84	56
Footmen and headmen	3 05	5 00	1 95	64
Laborers	3 22	4 77	1 55	48
Machine repairmen	3 48	4 67	1 19	34
Company miners	3 71	5 00	1 29	35
Pipemen	3 38	4 92	1 54	46
Pumpmen	3 45	5 51	2 06	60
Car runner	3 11	4 77	1 66	53
Stablemen	3 41	4 10	69	21
Timbermen	3 60	5 00	1 40	39
Track layers	3 55	5 00	1 45	41

TABLE IX. DAYS WORKED IN ANTHRACITE AND BITUMINOUS FIELDS

	Pennsylvania Anthracite	Pennsylvania Bituminous	Per Cent by Which Anthracite Days Worked is Lower than Bituminous
1890	200	232	...
1891	203	223	...
1892	198	223	...
Average for period	200 3	226 0	13
1893	197	190	...
1794	190	165	...
1995	196	206	...
1896	174	206	...
1897	150	205	..
Average for period	181 4	194 2	7
1898	152	229	..
1899	173	245	..
1900	166	242	...
1901	196	230	...
1902	116	248	.
Average for period	160 6	238 8	49
1903	206	235	
1904	200	196	
1905	215	231	
1906	195	231	..
1907	220	255	.
Average for period	207 2	229 6	11
1908	200	201	...
1910	229	238	...
1911	246	233	...
1912	231	252	...
1913	257	267	.
Average for period	232 6	238 2	3
1914	245	214	..
1915	230	226	...
1916	253	259	...
1917	285	261	...
1918	293	269	...
Average for period	261 2	245 8	...
1919 Estimated	252	....	...

TABLE X. AVERAGE DAILY WAGE OF PENNSYLVANIA ANTHRACITE MINERS

	1912	1911	1910	1909	1908	1907	1906	1905	1904	1903	1902
Miners	$3 54	$3 19	$3.15	$3.06	$3 03	$2 95	$3 09	$2 97	$2 96	$2 96	$2 83
Miners' laborers	2 40	2.19	2.07	2.07	1.74	2 01	2 03	1 97	2 00	1 89	
Other inside men	2.63	2 40	2.33	2.30	2 27	2 36	2 24	2 29	3 38	1 94	2.10
Boys—inside mine	1 39	1.17	.81	1.03	1.03	1 10	1 16	1.07	1 05		
Outside workmen	2 56	2.30	2.40	2 26	2 25	2 30	2.38	2.34	2 34	2 03	1.73
Breaker employees	1.74	1.61	1 45	1 52	1 48	1.74	1 69	1.24	1 20	1 20	...
Boys—outside	1.17	1.00	.93	.90	.93	1.15					
Averages	$2 72	$2.46	$2.41	$2 34	$2.23	$2.36	$2 39	$2 24	$2.48	$2.07	....

TABLE XI. AVERAGE DAILY WAGE OF PENNSYLVANIA BITUMINOUS MINERS

	1912	1911	1910	1909	1908	1907	1906	1905	1904	1903	1902
Miners—pick	$2.52	$2.31	$2.26	$2 01	$1 90	$2 24	$2.53	$2 18	2 17	2 29	2.16
Miners—machine	2 44	2.24	2 04	2 01	1 88	2 01	2 41	2 20			
Other inside men (over 16)	2.65	2 66	2.24	2 16	2 49	2 31	3 25	2 33	2.39	2 45	2 24
Other inside boys (under 16)	1 57	1 18	.96	.96	1.15	.95	1 09	.93	85	95	
Outside men (over 16)	2 35	2 48	1.97	2.07	2 26	2.42	3.04	2 33	2.39	2 26	1 87
Outside boys (under 16)	1.17	1 04	1 04	.83	.71	1.58	1.03	.98	.86	1.02	....
Coke workers	2.07	2 23	2 23	1.92	1.78	2.19	2.04	2.06	2.05	....	....
Averages	$2.48	$2 35	$2 19	$2 00	$1 93	$2 25	$2.66	$2.21	$2.26	$2.31	....

Pennsylvania State Department of Internal Affairs.

As seen in Tables X and XI, the daily wage of the anthracite miner was higher than that of the bituminous miner, while in the other occupations the anthracite wage is either higher or else fluctuates.

As contrasted with this, the average hourly earnings, as found in 1919 by the survey of the U. S. Bureau of Labor Statistics are given in Table XII.

In every occupation given the bituminous hourly earnings are considerably higher than the anthracite. The basic day rates from the agreements of the two industries are as in Table XIV, while Table XV shows the rates in more detail.

As it is probable, judging the future by the past, that the average days worked in the anthracite field will be from 3 per cent to 11 per cent lower than the average number of days worked in the Pennsylvania bituminous field, the anthracite worker, on this basis alone, should receive a wage rate from 3 per cent to 11 per cent higher than the bituminous wage rate for the corresponding occupation in order that his yearly earnings may equal the yearly earnings in the bituminous field.

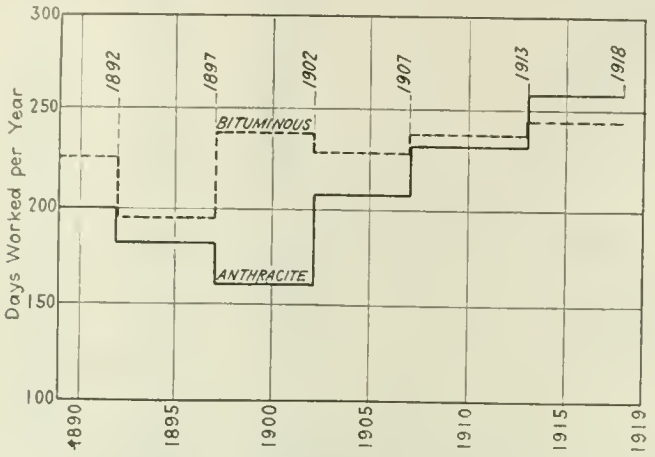


FIG. 2. SHOWING THE NUMBER OF DAYS WORKED BY FIVE-YEAR AVERAGES IN ANTHRACITE AND BITUMINOUS REGIONS

The period 1907-1913 covers six years, but one year, 1919, is omitted, as the data obtainable for that year are not accurate. Mr. Lauck would show by this chart that on the whole the Pennsylvania bituminous mines work more steadily than the anthracite mines and he declares that the showing in the last quinquennial period is abnormal and the result of the war.

The occupations that are the more nearly comparable in the two fields are those of the daymen, especially outside the mines. In the years from 1903 to 1912 the yearly earnings of these men in the two fields were substantially the same, sometimes the one field being higher, sometimes the other. From 1916 on the yearly earnings of the daymen in the bituminous field increased faster than did those in the anthracite field.

In 1918 the bituminous rate was 40 per cent or more in excess of the anthracite rate. This difference in rates was somewhat balanced by the fact that in 1918 the anthracite men worked an abnormal number of days. The November, 1918, anthracite adjustment reduced the difference between the two fields to about 15 per cent or 20 per cent, but this difference has been recently increased by the bituminous award of 20 per cent to the daymen to a total difference between the two fields of about 40 to 50 per cent.

With the bituminous rates for daymen betwen 40 per cent and 50 per cent higher than anthracite day rates, and with the probability that the days worked per year will be slightly lower in the anthracite fields than in the Pennsylvania bituminous field, it is evident that the present anthracite day rates should be increased a substantial amount if the old equality between the two fields is to be restored and the anthracite daymen be allowed yearly earnings somewhat similar in amount to those of the bituminous daymen.

TABLE XII. AVERAGE EARNINGS PER HOUR, ANTHRACITE FIELD

Occupation	
Inside:	
Blacksmiths	$0.592
Brattice men	.561
Cagers	.517
Car runners	.507
Company miners	.581
Company miners' laborers	.526
Consideration miners	.636
Contract miners	.842
Contract miners' laborers	.639
Door tenders (boys)	.315
Drivers	.499
Engineers	.542
Laborers	.518
Machinists	.568
Masons	.577
Motormen	.558
Motor brakemen	.502
Pumpmen	.413
Timbermen	.695
Trackmen	.570
Total inside occupations	.673
Outside:	
Ashmen	.444
Blacksmiths	.572
Cagers	.458
Carpenters	.560
Car runners	.454
Dumpers	.449
Engineers	.532
Firemen	.503
Laborers	.434
Loaders	.448
Machinists	.517
Oilers	.434
Repairmen	.485
Timber cutters	.452
Trackmen	.477
Outside Breaker.	
Jig runners	.410
Platemen	.430
Slaters (boys)	.298
Total outside occupations	.442
Grand total inside and outside occupations	.617

TABLE XIII. AVERAGE EARNINGS PER HOUR, PENNSYLVANIA BITUMINOUS

Drivers	$0.634
Laborers, inside	.599
Laborers, outside	.516
Loaders	.835
Miners, hand	.902
Miners, machine	.913
Trackman	.628

TABLE XIV. BASIC DAY RATES IN THE TWO INDUSTRIES

Occupation	Anthracite	Bituminous (1919 Rates)
Inside:		
Semi-skilled	$4.00 to $4 50	$4.75
Skilled	4.50	5.00
Company miners	4.75	....
Company miners' laborers	4.50	....
Outside:		
Common labor	3.31	4.10
Semi-skilled	4.25	4.75
Skilled	4 25	5.10

TABLE XV. RATES BY ANTHRACITE LABOR DISTRICTS

Occupation	Percentage
Districts 1 and 9:	
Company miner	4.73
Company miner-laborer	4.38
Inside laborer	4.236
Outside laborer	3.567
Carpenter, first class	4.633
Carpenter helper	3.727
Blacksmith, first class	4 732
Blacksmith, helper	3.688
Ashmen	3.611
Slate pickers, first class, men	2.713
Bratticemen	4.401
Trackmen, inside	4.737
Trackmen, helpers	4.167
District 7:	
Inside—	
Day wage miners	4.60
Day wage laborers	4.25
Skilled labor	4.50
Semi-skilled	4.35
Outside:	
Common labor	3.31
Semi-skilled	4.25
Skilled	4.25

TABLE XVI. RATES IN BITUMINOUS DISTRICTS OF PENNSYLVANIA, 1919

Occupation	Percentage
Inside:	
Track layers	5.00
Track layer helpers	4 75
Trappers	2.65
Drivers	5.00
Timbermen	5.00
Pipemen	4.92
Wiremen	5.00
Motormen	5.10
Bottom eagers	5.00
Trip riders	5.00
Water and machine haulers	5.00
All other inside	4.75
Outside:	
Dumpers	4 42
Trimmers	4 36
Ram operators	4 60
Pushers	4 18
Car cleaners	4 10

The anthracite miner during the years 1903 to 1912 received yearly earnings considerably in excess of the yearly earnings of the bituminous miner, the average (unweighted) excess during the year in question being about 30 per cent. His daily earnings in 1918 amounted to about 12 per cent less than the daily earnings of the bituminous pick miner (which was, however, nearly balanced by the abnormal number of days during that year that the anthracite mines worked). The November, 1918, anthracite wage adjustment placed the daily earnings of the miners in the two fields about equal, but the bituminous award, which amounted to about 27 per cent to the Pennsylvania pick miner, has again placed the bituminous miner ahead.

Production and the Market

Weekly Review

Universal Agreement That Lack of Transportation Hampers Industrial Prosperity Centers Interest in Decision on Request for Revision of Order No. 7—N. Y. Central Confiscates Coal—Production Decreases.

EVENTS have crowded the forefront in the realm of coal the past week. The hearings at Washington before the Interstate Commerce Commission developed a singular unanimity of opinion that the coal situation is acute throughout the country and that lack of transportation is the one factor affecting the production of coal and the prosperity of many other industries. Interest now centers in the decision of the commission, which may take the form of a revision of Order No. 7, giving preference to coal in the use of open-top cars, or, as the coal industry and the public utilities have asked, the order will be extended beyond the original thirty days that expire July 21. The hearings were attended by coal men from all over the country, most of whom remained for the meetings of this week called by the National Coal Association to discuss ways and means of putting the coal industry at the service of the country in the present crisis.

Rumors are current that the President will re-establish the Fuel Administration by the authority that still remains under the Lever Act. Coal men are endeavoring to work out a plan that will give New England and the Northwest the coal that they require and that will curb high prices without having the industry straddled with Government regulation again.

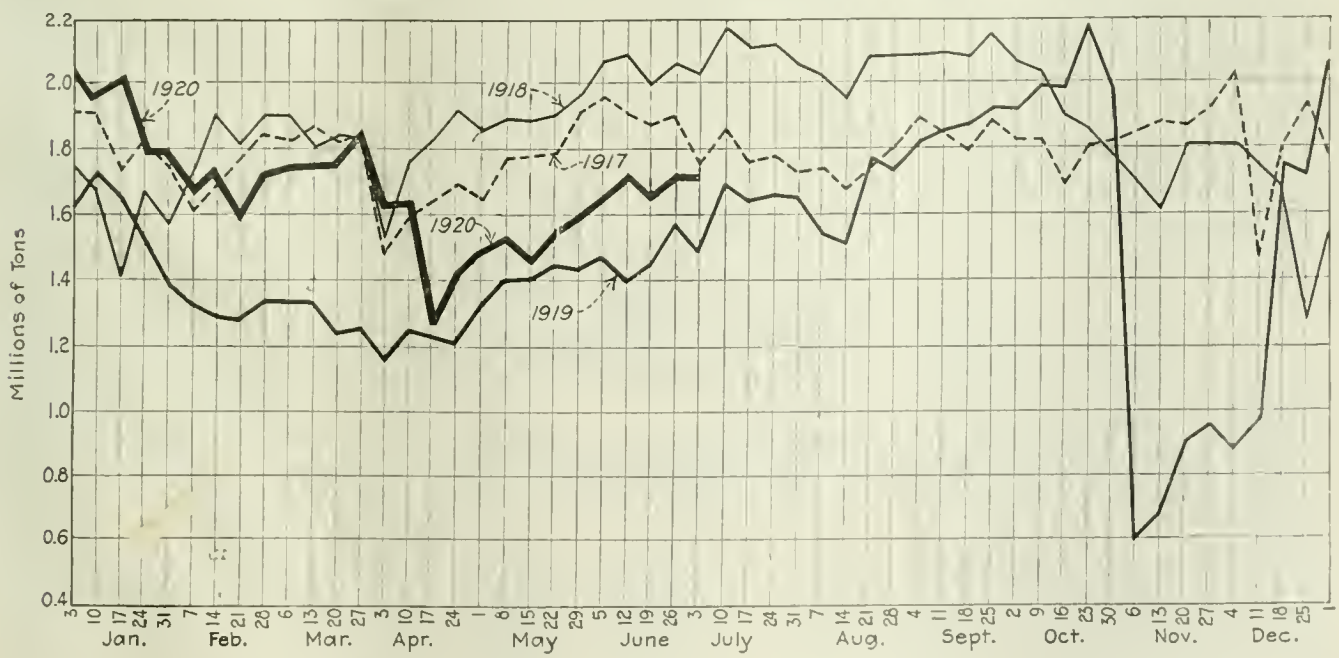
Production of bituminous coal dropped again in the week ending July 3 and of course was low the week of the holiday. So serious is the lack of output that the New York Central has been confiscating coal. When this road has to resort to such means to maintain fuel supply, conditions are indeed bad. The reports of the Geological Survey show that stocks are very low in some sections and that the movement of soft coal to the Lakes is not gaining. Production of both anthracite and beehive coke also decreased.

Lake Coal Dumped Season to July 10

(NET TONS)

	Cargo	Fuel	Total
1919.....	10,497,770	469,370	10,967,140
1920.....	4,660,895	372,482	5,033,377

Average Daily Production of Bituminous Coal*



*From weekly report of Geological Survey.

Reports From the Market Centers

New England

BOSTON

Spot Market Continues Active — Increase in Stocks Due to Reduced Consumption — Price Holds Firm or Higher — Slow Despatch at Hampton Roads — Anthracite Shipments Are Crippled by Trainmen's Strike.

Bituminous—There is no recession in prices. The spot market continues with the same buoyancy that was characteristic through June. Whether buyers have more or less coal on hand seems to make no difference; the demand is insistent and all offerings, almost regardless of price or grade, are readily absorbed. It is not at all surprising that prices keep on soaring.

It is understood, as the result of a careful survey, that the average amount on hand among the larger consumers is slightly over 30 days supply. It has been noted in several industrial centres here that stocks have somewhat increased during the past month, but much of this is due to reduced consumption. However, there is no let-up in the demand. Producers are still in a position to exact the limit on price.

During the current week, $12 and upward has been paid for coal at first hands. These prices are f.o.b. mines in central Pennsylvania for July shipment. Conservative interests who, because of traffic embargoes find themselves with small tonnages of free coal to dispose of, have made sales either at contract prices or at only a slight advance.

The Hampton Roads situation shows no real improvement. Despatch is slow, although it varies materially with different shippers. We see no indication of increased movement to New England. It is likely this month that those buyers who have contracts with Hampton Roads shippers will receive a somewhat increased quota.

Prices at wholesale now range about as follows:

	Clearfields	Cambrias and Somersets
F.o.b. mines, net tons	$10 75@$12 25	$10 75@$12 25
F.o.b. Philadelphia, gross tons	14 00@ 15 65	14 00@ 15 6
F.o.b. New York, gross tons	14 35@ 16 00	14 35@ 16 00

On cars, Boston and Portland, there have been recent sales from $17@$22 per gross ton.

Anthracite — The Philadelphia & Reading Railway has been suffering severely from the strike of freight trainmen that has been effective since June 19. Coal movement to the Philadelphia and New York piers has been much crippled, and so light were the receipts of empties from connecting lines that domestic sizes have been distributed largely to local points, this to prevent collieries from shutting down.

Only slow progress is being made at the Tidewater piers. It takes days instead of hours to load barges under these conditions. Until more trainmen get back to work, however, there is small chance of any real improvement.

Tidewater

NEW YORK

Rail and Towing Conditions Improve and Anthracite Situation Is Easier—Demand Is Strong—Bituminous Moves Slowly, but Prices Change Little If Any—Local Supply Is Short.

Anthracite—The situation is easier although production and shipments were curtailed the early part of the week because of the holiday and railroad conditions. More coal has come into the city, due, in part, to the resumption of the regular towing service from Perth Amboy and a betterment in towing from some of the other ports.

Conditions at Port Reading are far from normal due to an embargo which was still on the latter part of the week.

There has been a noticeable change for the better in railroad service which, with an improvement in car supply as a result of the Interstate Commerce Commission order, tends to increase receipts of coal here.

Demand is strong in all directions and independents are beseiged by bidders for shipments. Offers of as high as $11.50 for the domestic sizes at the mines are said to have been made.

The steam sizes continue to occupy nearly the same position as last week, though they are easier. Buckwheat is not rushed with orders but there is no accumulation. Considerable of it is being used by bituminous consumers. Rice and barley are easier.

Quotations for the independent product at the mines range about as follows: Buckwheat, $5.75; rice, $4.50 and barley $3.50.

Current quotations for company coals, per gross ton at the mine and f.o.b., New York Tidewater, lower ports, are as follows:

	Mine.	Tidewater.
Broken	$7.40@$7.55	$9.25@$9.40
Egg	7.40@ 7.55	9.25@ 9.40
Stove	7.65@ 7.90	9.50@ 9.75
Chestnut	7.70@ 7.90	9.55@ 9.75
Pea	5.95@ 6.35	7.70@ 8.10
Buckwheat	4.00@ 4.10	5.75@ 5.85
Rice	3.00@ 3.50	4.75@ 5.25
Barley	2.25@ 2.50	4.00@ 4.25
Boiler	2.50	4.25

Quotations for the domestic coals at the upper ports are generally 5c. higher on account of the difference in freight rates.

Bituminous—The permit regulations have resulted in less action here. Comparatively little coal is being moved from the local docks for local consumption unless it be on permit and for use by the public utility corporation. Demand is lighter but the average price is about as it was a week back.

Reports show that New York City was hard hit over the holiday period of three days, only 329 cars or a little over 16,000 tons having reached here, due to the lack of handlers at the docks. Because of a shortage the city was represented at the conferences held with the Interstate Commerce Commission at Washington the latter part of the week.

Car supply shows little change. Quotations vary according to supply and demand. Offers at the mine for Pool 10 coals range around $12, while Pool 9 coals were slightly higher.

Considerable Pennsylvania coal is finding its way into New England by rail. With the towing situation improving larger shipments are expected to be made from this tidewater port.

Local quotations range from $14 to $15 at the piers with a couple of dollars added for loaded bottoms. Towing men report a growing demand for empty vessels.

PHILADELPHIA

Anthracite Situation Improves Slightly with Rail Betterment and Embargo Removal—Retail Prices Hold Firm—Steam Coal Is in Strong Demand, Especially Buckwheat—Local Bituminous Market Improves but Little — Price Varies Greatly—Longshoremen's Strike Ends and Large Tonnages Are Received for Export.

Anthracite—With an improvement of rail conditions, incident to the strike of freight men, the number of embargoes against shipments has decreased, but that against the city proper still prevails to those dealers located on the Reading tracks. A large number of the more extensive dealers are still without coal, a condition which has now lasted a month.

Some of the suburban dealers have been getting light shipments.

There is little likelihood that any heavy tonnage will be sent to local dealers, and the larger share of the production is going and will continue to go to more distant points. The situation on the Pennsylvania R.R. has so improved that all embargoes have been removed.

Despite the 10c advances made by the producing companies there has been little change in the retail prices, although with regular monthly increases, the full increase will amount to 50c on Sept. 1. The general scale is about $13.50 for egg, stove and nut and $10.50 for pea.

There is no particular activity among the consumers but the bulk of the order-

ing centers on stove; however, the consumers take a fair share of chestnut. There is still a light tonnage of pea coal in the yards.

The steam sizes are in a particularly favorable position. No doubt the high prices asked for soft coal have affected anthracite steam coals until buckwheat is difficult to obtain. Consumers with contracts are stocking up for winter. Rice grows in strength with each week, and now a fairly active market for barley has started up; but this latter size can stand almost unlimited demand before the stocks in storage need be called upon.

Bituminous—With the lifting of the various embargoes it was naturally expected that a larger tonnage of coal would arrive for the local market, but there has not thus far been any appreciable increase in receipts. The demand from local industries is not near so strong as it was earlier in the spring, as a number of plants are still curtailing production.

The variations in price are quite extensive and it cannot be said that there is really a market figure, although of late there is a tendency to market coal according to pool grades, with prices accordingly. Often pools 10 and 11 are grouped, with prices quoted for spot delivery from $11.50@$12.50. We have heard of sales of pool 18 at $10.50 and at times a trifle lower.

The above figures refer specifically to Pennsylvania coals, whereas Fairmont grades have been subject to more frequent variations, quotations running from $8.50 up to $12.75, but with most sales closer to $11.75.

With the longshoremen's strike called off and the men going back to work almost as a unit, the effect on tide shipments is rapidly being felt. Despite the fact that the permit system for exporting coal is effective the yards are receiving increasingly large tonnages of coal, which is being allowed to go forward to foreign countries.

BALTIMORE

Federal Investigators Look Into Price Situation Here — Price Goes Up — Reserve Is Light and Big Fleet Awaits Tonnage—Permits Are Granted—New Retail Anthracite Schedule Becomes Effective—Receipts Are Light.

Bituminous—Armed with credentials of the Department of Justice, several Federal investigators are now at work here in the coal trade. In soft-coal lines, shippers and agents are being asked questions as to what they sell coal for, what they pay for coal at the mines, etc. Just what will come of it is a problem, but the coal trade does not look upon it over seriously.

There are many customers willing to take coal at high prices, and the operator does not have to quote prices, he merely asks what the consumer or other purchaser is willing to pay and accepts the proffer. The trade can see nothing illegal in that in a hotly competitive market. The farmer does the same with his wheat, for instance, and no one says "No."

Prices are now around $10 to $11 f.o.b. mines on most sales of best coals that can be promised for quick delivery. But there is a wide range of the market, and sales much higher have been made; one noted here of Pool 10 (by no means the best classification) was at $12.50 f.o.b. mines the net ton. Gas coals are selling possibly a little lower than steam coals just now, although quite strong.

The reserve at the pool is quite light, being around 1,500 cars at this writing, and that with more than 50 ships here waiting to take on close to 300,000 tons of coal. Relief in this direction is expected shortly as shippers are being granted permits.

Anthracite—The new schedule for retail sales of hard coal has become effective here. Sales are now being made as follows: Hard white ash—No. 1 (broken), $13.75; No. 2 (egg), $13.75; No. 3 (stove), $14; No. 4 (chestnut), $14.10; pea coal, $11.25; buckwheat, $8.70.

Lykens Valley—No. 2 (egg), $14.70; No. 3 (stove), $15.10 and No. 4 (chestnut), $15.10.

Receipts here recently have been quite light. The embargo on the Reading has not been lifted as expected, and even the run of independent coal has fallen back in disheartening fashion to dealers who need supplies.

Lake

BUFFALO

Soft-Coal Situation Changes Little—Uneasiness Is Felt Over Possibility of Prosecution for Profiteering—Anthracite Situation Is Fair—Total Lake Shipments Are About Normal—Coke Still Goes Up.

Bituminous—The situation does not change as fast as one could hope; any change ought to be for the better, since what seems to be the bottom has been reached. Top notch prices have probably been asked. The consumer manages as a rule to get about what he needs by contract and bids high for the rest without much hesitation.

Much uneasiness is expressed over the possibility of trouble coming out of asking high prices for coal. Prosecution of Buffalo merchants has taken place where the provocation was much less than is sometimes the case in the coal trade.

It is held that the Government ought to define a fair profit quite as much as what a fair original price is. And now comes forward the shipper who asks why some of the public energy is not thrown into the building of cars, which would settle many difficulties. A shipper with a mine behind him says that he can get plenty of cars for rail coal, but next to none for commercial shipments.

The price of bituminous is all the way from $9 to $11 at the mines for mine-run, which is now about all that is offering. To this should be added $1.75 freight from Pittsburgh to Buffalo.

Anthracite—About the only feature of the trade is the continuous complaints of local consumers of the shortage. Coal in good amount is selling in the city and the prospect of a supply that is adequate for the city needs is at least fair. It will not do to allow the coal to remain here at the expense of the upper-lake trade. The Canadian consumer and dealer are also quite insistent.

The Lake shipments of anthracite for the week were 100,800 net tons, of which 34,400 tons cleared for Chicago, 21,700 tons for Milwaukee, 1,200 tons for Racine, 3,300 tons for the Sault and 40,200 tons for Duluth-Superior. Freight rates were $1.50 to Racine, 65c. to Chicago, 60c. to Milwaukee and the Sault and 50c. to Duluth.

Shipments for June were 558,421 tons, which were about an even 100,000 tons over June last season. For the season to July the shipments were 1,019,542 tons, as against 1,247,000 tons to the same date last season.

Coke—Coke is still going up. Local jobbers report that they can get no foundry at the ovens short of $18 and sometimes $18.50 is asked, with $17 for furnace. The small amount they can sell affords them little profit, so that they do not try to handle it, unless asked to by the consumer whose contracts do not turn him out what he needs.

Inland West

COLUMBUS

Strong Demand for All Grades Causes Prices to Mount Still Higher—Lake Trade Is Slow, Half Usual Tonnage Shipped.

The feature of the Ohio coal trade is the continued strong demand for all grades which has the tendency to make prices mount to still higher levels. Some of the larger operators and more conservative shippers are trying to hold the market in check but so far their efforts have been unavailing.

Prices are almost anything that the purchaser is willing to give and as a result there is a wide range. In the Hocking Valley prices range from about $5 to $8 and even higher on all grades. In the West Virginia fields prices for gas coal range around $7.50 to $9 and splints about $8.50 to $9.50. Kentucky prices are about at the same level.

Steam users are in the market for large tonnage and that is the principal reason for the high prices. There is a general scramble for all coal as soon as mined and purchasers are given instructions to get coal at any price. Railroads are taking a large tonnage for freight movement.

Retailers are also in the market as consumers are becoming anxious of their winter's fuel supply. Price with them is not the question as their customers are clamoring for coal. Retail prices have ben exceedingly strong because of the higher prices at the mines.

The Lake trade is still slow and requisitions from the Northwest are far from being filled. Only about half of the tonnage usual for the time of the year is being shipped and there is little chance for an increase in the tonnage under present equipment conditions. Lake shippers are frantic and it is freely predicted that there will be an acute shortage.

Prices for coal at the mines are:

Hocking lump	$5.00@$8.00
Hocking mine-run	5 00@ 7 50
Hocking screenings	4 50@ 7 50
Pomeroy lump	5 50@ 8 50
Pomeroy mine-run	5 00@ 8 00
Pomeroy screenings	5 00@ 7 50
West Virginia splints lump	7 00@ 9 00
West Virginia mine-run	7 00@ 8 75
West Virginia screenings	6 50@ 8 50
Pocahontas lump	7 50@10 00
Pocahontas mine-run	7 00@ 9 50

MILWAUKEE

Desperate Coal Situation Leads to Appointment of Commission to Appeal to I. C. C. for Relief—Competitive Bidding Keeps Prices Up—Receipts Are Far Behind Those of Last Year.

The coal outlook for this section of the country has become a desperate that, as Senator Irvine I. Lenroot's suggestion, a committee was named to go to Washington and make an appeal to the Interstate Commerce Commission for relief. The Commission will be urged to place an embargo on the export of coal.

The gravity of the situation cannot be exaggerated. The docks in the Northwest hold 5,000,000 tons of coal less than they did a year ago, and unless reserve stocks can be accumulated before the close of Lake navigation, then all factories must close.

Coal that could be bought for $2 at the mines a year ago now commands $3.50. Eastern dealers are invading the Illinois and Indiana coal fields with certified checks ready to bid against the Northwest and against buyers of export coal. This results in keeping prices steady.

Much interest is being given to the important conferences held at Washington.

The competitive bidding by buyers for export is also a serious menace to northwestern dealers. Coal is being refused to Lake boats because it cannot be spared by the large public utilities of the East and Middle West.

Hard coal is being delivered in Milyaukee quite freely by the dockmen, but the small dealers find it hard to supply their customers, as they are allotted only about ten tons each per week. The car situation continues bad and but little coal is coming by rail.

Receipts by Lake thus far this season aggregate 302,371 tons of anthracite and 283,299 tons of soft coal, against 306,099 tons of the former and 1,423,552 tons of the latter during the same period last year, making a falling off against last year of 2,099 tons of anthracite and 1,025,257 tons of soft coal.

CHICAGO

Market Stiffens on Northern and Central Illinois Coals Due to Poor Car Supply—Southern Illinois Fuel Moves Under Contract—Indiana Coals Advance on Abnormal Demand—But Little Eastern Fuel Reaches Chicago—Arkansas and Oklahoma Coals Are a Factor Here.

The Chicago coal market continues to absorb whatever coal it is offered and premiums are being paid for spot coal. Current prices on spot coal are ranging from $5.25 to $6.50 per ton f.o.b. mines on central and northern Illinois coals with no differential between the price of lump, screenings or mine-run. Owing to the poor car supply in these Illinois fields the market on such coals has stiffened considerably during the past week.

Not much change has been noted on the current sales of the higher-grade fuels from Franklin, Saline, and Williamson counties, as prices are ranging from $5.50 to $7 per ton mines, according to the grade, quality and local condition of the market. Southern Illinois fuel continues in great demand with but little coal to take care of the markets; the bulk of the southern Illinois tonnage moving under contract.

There have been some advances on Indiana coals for current shipment. Indiana third-vein screenings are selling on the market at from $4.50 to $5, while mine-run has been selling at from $5.25 to $6. Coal from the fourth-vein districts continues to get top prices, as screenings are being sold at from $5.75 to $6.25; mine-run at from $6.25 to $6.75 and 1¼-in. lump at from $6.50 to $7 per ton f.o.b. mines.

The byproduct people, as well as those engaged in the iron and steel business are responsible for the abnormal demand for Indiana No. 4 coals. Indiana fourth-vein coal is perhaps the best known byproduct coal coming into Chicago from either the Illinois or Indiana fields.

But little eastern coal is being brought into Chicago at the present time. It is understood that some West Virginia splint as well as Kentucky block were sold last week at prices ranging from $7 to $9.50 per ton f.o.b. mines, according to the grade and quality. What little Pocahontas comes in moves on contract, the price ranging from $4.50 to $6 for mine-run.

Oklahoma and Arkansas smokeless coals are becoming a factor in the Chicago retail trade as the producers of these grades hope to replace West Virginia smokeless fuels.

A careful inquiry into the retail situation in Chicago reveals the fact that the retailers have more coal on hand at the present time than they have had during the past 90 days. This is quite encouraging and it is hoped within a short time the same statement will be made in regard to manufacturing plants.

MIDWEST REVIEW

Demand for Coal Continues Strong, the Car Supply Being Erratic—Extension Is Urged for 30-Day Coal-Car Order—Diversion of Fuel to Michigan Disturbs Midwest Markets.

The demand for coal continues strong, without the slightest sign of weakening, in fact, some grades of coal have, during the past few days, shown an advance of 25c. to 50c. per ton. The car supply apparently is improving to some extent, but the Middle West is so coal hungry that the extra tonnage derived from the improvement in the car situation is absorbed without affecting market conditions in the least.

The mines in the central Illinois field have not been receiving as good a car supply as heretofore; during the past sixty days, this field has been receiving a little better supply than the southern district, while now the southern field appears to have a temporary advantage.

In Indiana, reports from practically all of the producing fields show a little improvement. But the continuation of the car shortage is quite disappointing to the trade. Undoubtedly the Interstate Commerce Commission will see the necessity of extending the 30-day period. A number of prominent operators have gone to Washington to argue for this extension of time.

Some of the coal-carrying roads have lifted their embargoes against shipping coal into Michigan from Illinois and Indiana mines, and a large tonnage is being diverted into that state more or less at the expense of its neighbors, who, under ordinary conditions, furnish a market for Indiana and Illinois coals. Under ordinary circumstances Michigan buys its coal from West Virginia, Ohio and a little from Indiana.

Today the state of the market is so unsatisfactory to all concerned—producer, retailer and consumer—that the trade is doing everything it possibly can toward getting relief on the car question. The great cry of the Middle West coal trade today is—"Give the mines cars and the market will take care of itself."

ST. LOUIS

High Prices Still Prevail with a Shortage That Is Growing—Steam Sizes Are Most in Demand, and the Country Call for Coal Is Urgent—Railroad Service Is Poor and the Car Shortage Acute—Assigned Cars Cause Much Trouble and Dissatisfaction.

The greatest trouble right now in the Standard field is the assigned-car abuse. Some mines are hardly able to work at all on account of no cars and other mines are running four days a week. Some of the assigned cars are for railroad fuel and others for commercial coal and the carriers seem powerless to check the local condition. The railroads continue to take a good tonnage from the field.

All steam sizes are in the greatest demand, especially for outside territory.

The local steam trade is pretty well supplied at the present time, with no storage ahead.

The local domestic situation is going to be tense in a short time. The public is not buying right now and the dealers are unable to get a sufficient tonnage for storage.

In the western part of the state usually depending upon Arkansas and Kansas coal, there is a call for Illinois coal for harvesting, and this is general throughout the territory west of the river.

Outside buyers still continue to pay from $4.75@$5.50 for steam and domestic sizes in the Standard field.

In the Mt. Olive field conditions are much better. The assigned-car evil is not prevalent here, with the exception of one short line road. The prices on this coal are being maintained at a circular as a rule from $3 in St. Louis up to $3.75 for outside equipment. Transportation in both fields is bad.

In the Franklin County field the circular prices, with a few exceptions, are well maintained. These average $3.80 for domestic sizes. In the Williamson County field there is some difference in prices, some operators taking what the market offers.

In a general way the demand far outstrips the supply with indications pointing to conditions growing worse. No anthracite or smokeless coal is coming into the St. Louis market and nothing from Arkansas. Coke is entirely out of the market.

Retail prices are:

Carterville coal	$7 50@$7 75
Mt. Olive	6 25
Standard	5 50@$5.75
Anthracite egg and grate	14 45
Stove and chestnut	14 70

CINCINNATI

Rail Transportation Improves and Ohio River Favors Good Supply from W. Va.—Domestic Coal Sells at Comparatively Fair Price Here—Large Plants Delay Stocking at Present Market.

The way empties are rolling through the Cincinnati terminals (1,000 daily) for the coal fields, there is every indication that transportation difficulties are due for a change in this district. These cars right now are pretty important.

In Cincinnati, furthermore, there is a feeling of optimism over the fact that the present stage of the Ohio River will permit of a good quantity of coal being brought down from the West Virginia fields, which might delay a further advance in price.

Coal men in general have commended the Fair Price Commission for its efforts to have the people of the community buy coal at this time. Coal is selling in Cincinnati at a price that the public should take advantage of. Mine operators view with much satisfaction the efforts being made by the terminal officials here to hustle empties back to the mines.

Prices in all fields supplying the Cincinnati district continue on a high level, owing to the scarcity of fuel available, and little or no efforts have been made by large plants to secure reserve supplies. Better conditions are noticeable in Kentucky and West Virginia fields but in the Ohio district there is much to be desired.

DETROIT

Governor Sleeper Secures Extension of Order—Michigan Retail Coal Merchants' Association Is Organized To Bring Fuel Relief—Soft and Hard Coal Arrive in Small Volume.

Bituminous—Replying to the request from Governor A. E. Sleeper for an extension of the application of order 7, the Interstate Commerce Commission advises that coal from the eastern mining districts will be sent to Michigan in as liberal amount as possible.

Further developments in the effort to bring relief for the existing shortage of coal in Michigan, included the organization, during the week, of the Michigan Retail Coal Merchants' Association. This body was formed July 8 at a meeting of coal dealers in Lansing, Mich., nearly all the principal towns of the state having been represented.

This organization will try to influence the restoration to service in coal transportation the many cars built for that trade, which are being employed in moving other commodities.

The supply of bituminous arriving in Detroit is little more than adequate to meet current demands for supplying manufacturing plants. The quantity is insufficient to permit accumulation of reserves or to provide for requirements of retail dealers.

Anthracite—Shipments of anthracite are of small volume and arrive irregularly. Retail dealers are unable to obtain prepared sizes in sufficient amount to provide for the wants of their customers. Orders from household consumers booked months ago are still unfilled.

South

BIRMINGHAM

Car Supply on Southern and Frisco Is Now 100 Per Cent, but Holiday Season Causes Heavy Loss in Output—Market Shows Sustained Strength.

While there has been a bountiful supply of cars on the Southern and Frisco lines the past week, all mines being furnished a 100 per cent supply, there has been no material improvement in production; in fact the output is very much off from the previous week, labor being badly demoralized by the holiday season, working forces being much depleted and irregular in reporting.

The shortage of coal is quite acute throughout Southern territory and industrial plants, railroads and utilities have little coal ahead of daily needs. The output from the mines is moved more promptly than in the past but the supply is utterly inadequate to meet actual requirements due to the aforesaid operating difficulties.

Spot coal is practically an unknown quantity, the supply available coming from small operations and being negligible in its effect upon the market. A strong and active demand prevails for both domestic and steam grades, and but little new business can be taken on under existing conditions.

LOUISVILLE

Prices Are Firm on Good Grades of Coal—Inferior Fuels Find Decreased Demand—But Little Stocking at High Prices.

Slightly higher prices noted on some of the cheaper grades of fuel, but prices as a whole showing no material change. Demand steady, but producers of low grade steam coals not finding market quite as ready for fuel at present high levels.

Prices on gas coals and good non-gas steam coal continue steady, there being practically no change in the general situation. Strikes in some sections of Eastern Kentucky are affecting only a few mines, and as a result of the car shortage continuing severe, production is not being influenced, as such mines as are not affected by strikes are able to load all the cars they can secure.

Retailers report quite light stocking orders, and many inquiries for information as to when a price drop can be expected.

Quotations show Eastern Kentucky gas coal at $8.75@$9.50 a ton for mine-run; non-gas mine-run, $8@$8.50 a ton; Western Kentucky, block, $6.25; mine-run, $5.50@$5.75; nut and slack, $5.25.

Western

SAN FRANCISCO

Local Association Issues Announcement Urging Consumers To Buy Coal Now, While the Buying Is Good.

The Retail Coal Dealers' Association of San Francisco has issued a warning to all consumers of coal hereabouts to "buy now," thus making sure of a supply of the necessary fuel for next winter and saving on their bills.

The dealers announce: "A coal shortage is imminent. It will be more staggering in its consequences than any previous one. Immediate action is necessary to avert it. The best way to be sure of getting your coal supply is to buy now. This association does not say this in any spirit of forcing business, or from a purely selfish standpoint. But we know the dealers of San Francisco can give you coal now, and it is extremely doubtful if they will be able to give it to you later on."

The bituminous prices, f.o.b., mines, wholesale, Utah and Wyoming, per net ton, are as follows:

Stove and lump, $4.50. The bunker price is $13.55.

News From the Coal Fields

Northern Appalachian

FAIRMONT

Serious Transportation Conditions Prevail in Northern Fields of the State—Western Md. and B. & O. Railroad Strikes Cause Freight Congestion—Coal Shipped East Used by Railroad and Public Utilities.

Transportation conditions in the Fairmont and other northern West Virginia fields were by all odds much worse than in any other part of the state. Indeed, during the latter part of the week there was not more than a 25 per cent car supply and many mines were in idleness.

The principal reason for the reduced supply was found in strikes at various points on the Baltimore & Ohio and on the Western Maryland which had precluded the possibility of moving either loads or empties. As a result of the serious freight congestion on these railroads it is impossible to move empties into the northern West Virginia coal fields from the east.

Distribution of cars in and around Fairmont was also affected at the beginning of the week as the result of a strike covering a day or so among the yardsmen at Fairmont.

As a result of the scarcity of cars, approximately 10 mines or more in the Fairmont region alone were not working during the greater part of the week. Equal difficulty was experienced by mines in the Upper Potomac region and on the Monongahela.

Owing to the freight congestion such coal as the Baltimore & Ohio was able to handle eastward was for railroad use and for public utilities. Also there was not as heavy a delivery either to Inland West points or to the Lakes because cars were unavailable for such shipments.

CONNELLSVILLE

Production Is Practically Stationary—Byproduct Ovens Increase Output—There Is Now Little Contracting for Coke—Fancy Prices Rule in Spot Market.

Car supplies in the Connellsville region on the day after Independence Day were quite heavy, on account of there being a two days' accumulation, and exceeded the number that could be loaded; but later in the week there was a decline again, and it is doubtful whether the week as a whole scored any gain.

As a matter of fact, despite various claims of improvement and counter claims that car supplies have grown much worse, the supplies week by week have averaged approximately the same for a month or more past, and production continues at a fairly even rate, or about 70 per cent of the rate obtaining for several weeks prior to the inception of the series of rail strikes.

The byproduct ovens have been working much better in the past week or two, being fairly well supplied with coal, and several if not the majority have been operating practically full. The increased supply of coke has operated to increase the production of pig iron, and, thus far at least, has not reduced the demand in the open market for spot lots of Connellsville coke.

Predictions are made, however, that some of the recent buyers in the spot market are going to withdraw and confine their consumption to such coke as they secure without having to pay such fancy prices.

There has been little contracting for foundry coke of late, nearly all the business having been done some time ago. Reports are that a few small contracts have been made at about $13, for the half-year, but these would hardly be representative of the market, since most of the business now in force was done some time ago at $10@$11.

There is little interest in furnace coke contracts, on which about $12 is now quoted. Spot prices are $17@$18 for furnace and $18@$18.50 for foundry, per net ton at ovens.

The Connellsville *Courier* reports production in the Connellsville and Lower Connellsville region in the week ended July 3 at 178,290 tons, a decrease of 7,320 tons.

PITTSBURGH

June Production Is Heavier Than in May—River Mines Did Well—Full Car Supply Order Practically Not Yet of Benefit—Spot Prices Remain High.

Coal production in the Pittsburgh coal district in June was at the rate of about 58 per cent of rated capacity, showing a fair increase over production in May. The railroad ratings total about two-thirds of the equipped capacity, the rating being made by proportioning actual production in the preceding month to the ratio that actual working time constituted to full time (counting eight hours to a day).

Both the river mines and the combination rail and river mines did well. The river mines, however, did not work at capacity, on account of labor shortage, and the case furnishes a good test of how much work miners in the district are disposed to do, the time put in by men at river mines in June being approximately 70 per cent of full working time.

Coal operators insist that thus far at least they have derived little observable benefit from Order 7 of the Interstate Commerce Commission requiring the railroads to give them full car supplies.

Spot coal prices are substantially as high as ever, open market transactions in the past few days showing the following spot market: Steam coal, $8@$10; gas coal, $10@$11; byproduct, $9@$10, per net ton at mine, Pittsburgh district.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

BITUMINOUS COAL.

	1920 Week	1920 Calendar Year to Date	1919 (a) Week	1919 (a) Calendar Year to Date
June 19b	10,095,000	241,517,000	8,681,000	201,170,000
Daily average	1,683,000	1,659,000	1,447,000	1,382,000
June 26b	10,530,000	252,047,000	9,470,000	210,640,000
Daily average	1,755,000	1,663,000	1,578,000	1,389,000
July 3c	10,225,000	262,272,000	7,459,000	218,099,000
Daily average	1,704,000	1,664,000	1,492,000d	1,384,000

ANTHRACITE

	1920 Week	1920 Calendar Year to Date	1919(a) Week	1919(a) Calendar Year to Date
June 19	1,803,000	40,092,000	1,753,000	36,800,000
June 25	1,820,000	41,912,000	1,855,000	38,655,000
July 3	1,730,000	43,642,000	1,394,000	40,049,000

BEEHIVE COKE

United States Total

Week Ended July 3	Week Ended June 26	Week Ended July 5	1920 to Date	1919 to Date a
378,000	406,000	264,000	10,910,000	9,773,000

(a) Less one day's production during New Year's week to equalize number of days covered for the two years. (b) Revised from last report. (c) Subject to revision. All figures in net tons.

NORTHERN PAN HANDLE

Order of I. C. C. Supplies Cars and Permits Output To Improve—Market Is Strong and Prices Hold—Eastern Ohio Increases Output.

Further impetus was given to production in the Northern Pan Handle of West Virginia during the period ended July 3, there was a car suppuly during the greater part of the week well in excess of 50 per cent, as compared with only about a 40 per cent supply during the previous week. Better transportation service was due to Order 7 of the Interstate Commerce Commission. Had the labor supply kept pace with the increased car supply, greater output would have resulted.

There was still an unceasing demand for the Northern Pan Handle product from every quarter, the market was still stong and there was no recession of prices.

Also in the eastern Ohio fields there was a much better run of cars during the week than usual, and mines in this section were able to increase their output.

Middle Appalachian

KANAWHA AND CABELL COUNTIES

Suits Are Brought Against the Chesapeake & Ohio R.R. to Stop Assigning of Cars.

Legal action was recently taken in the circuit courts of both Kanawha and Cabell counties, W. Va., looking toward the issuance of an injunction or restraining order to stop the Chesapeake & Ohio R.R. from assigning cars. However, on July 6 notice was given that the Chesapeake & Ohio (made a defendant in both suits) would seek to transfer the suits to the jurisdiction of the Federal courts.

In Cabell County the Litz-Smith Coal Co. appeared as the plaintiff in conjunction with the Shamrork Coal Co., Litz-Smith Island Creek Co., Logan Mining Co., Buffalo Eagle Mining Co., Eagle Creek Coal Co., Sunbeam Coal Co., Aracoma Coal Co., and the E. R. Johnson Coal Mining Co. The plaintiff also seeks to restrain the use of privately-owned cars.

In the Kanawha field action against the Chesapeake & Ohio was taken by the Leevalle Coal Co., which has a plant on Coal River, the plaintiff company having the moral backing of all the companies in the region except those owned by the Chesapeake & Ohio.

KANAWHA

Kanawha Established Production Record on June 28—Open-Top Car Order Produces Results on C. & O.—Tide Is Again Reopened to High-Volatile—Middle West and Lake Shipments Increase.

The record for the present year was established in the Kanawha field, from the standpoint of production, on Monday, June 28, when the mines supplied by the Chesapeake & Ohio in the field named had a 104 per cent car supply, production on that day reaching 40,000 tons, a gain of 13,000 tons over the previous Monday.

When throughout the week cars continued to flow into the field at an unprecedented rate, coal men began to believe at last that the long deferred improvement in the transportation situation had been brought about, and that the Interstate Commerce Commission order, having to do with the use of open-top cars, had become productive of results at last.

While C. & O. mines were making gains, the same was not true as to plants on the north side of the Kanawha, the Kanawha & Michigan having a very poor supply for its mines.

Enlarged transportation facilities came just in time to permit producers to take advantage of the reopening of tidewater terminals to their coal, an embargo of more than a week's duration being removed as to high-volatile coal, at least to the extent of utilizing permits previously issued.

It was the opinion of a number of operators that there was an increased western movement to Ohio, Michigan and other markets in the Middle West and possibly to the Lakes, though it is the opinion that red-tape requirements at the Lakes is putting a damper on Lake shipments.

POCAHONTAS AND TUG RIVER

Production Improves in All N. & W. Fields, Due to Improved Car Supply—Tug River Has Best Run of year, Increasing Shipments to Tide for Export—Mines Work Regularly in Pocahontas Region and Discourage Labor Agitators—Coal Flows West and to Tide in Fair Volume.

There was a rather marked improvement in all Norfolk & Western fields during the closing days of June in production, in so far as transportation facilities were concerned, the increase in the car supply being especially observable in the Pocahontas region.

As June came to an end there was (it is estimated) a car supply equal to between 60 and 70 per cent of allotment. Some districts on the N. & W. fared better than others, owing to the fact that the N. & W. was equalizing the supply for the month.

The West was furnishing a larger run of cars, apparently as the result of the Interstate Commerce Commission order governing the use of open-top cars for coal loading. While the tonnage shipped to tide was not as large as usual, embargoes were sufficiently modified to permit some coal to be consigned to tidewater terminals for export.

Tug River mines had an encouragingly large run of cars and the week was one of the best of the year from a production standpoint. Strikes at various points apparently had little effect on the Norfolk & Western.

Bunkerage and coastwise priority regulations were lightened somewhat during the week and consequently Tug River producers found it possible to somewhat increase tonnage to tide for foreign shipment. Western markets also shared in the increase in production from this field. Production in the Pocahontas region was little affected by labor agitation. The car supply for the week ended July 3 enabled Pocahontas mines to work between 60 and 70 per cent of full time capacity.

Since miners are able to work with a great degree of regularity and hence to earn more, organizers are not finding it easy to induce them to join the United Mine Workers organization; hence the increased car supply has stiffened the opposition to the organization of the Pocahontas region.

Somewhat more coal was flowing westward than in previous weeks, not only because of an increased supply of open tops from the West but also because of New England priority regulations. Also the recent priority order had been sufficiently modified to enable mines to send a fairly large tonnage to tidewater for foreign shipment.

LOGAN AND THACKER

Cars Are More Plentiful in Both Fields—Labor Trouble Slows Up Output in Thacker Field—Banner Week for Logan Field—Removal of Embargoes Gives Wide Distribution to High-Volatile.

While Logan mines were increasing production during the week ended July 3, Williamson fields mines were slowing up somewhat due to labor trouble, yet not to the extent predicted by organizers and officials of the United Mine Workers. On both the Norfolk & Western, which supplies the Thacker field, and the Chesapeake & Ohio, which supplies the Logan field, cars were more plentiful than had been true as to previous weeks. Shippers in both fields were able to secure a wider distribution of their product, owing to the removal of embargoes on high-volaltile fuel.

Naturally with a strike in effect it was impossible for Williamson field mines to keep up to the total of about 90,000 tons produced during the week ended June 26, but there was not more than a reduction of 25,000 tons.

Of the 80 miles in the field, operated by 55 different companies, 29 mines were said to be operating full. At many other plants, operations were continued after the strike became effective on July 1, though not with a full force of men. Still the field produced 227 railroad car loads of coal on July 1 (or 11,350 tons), and 219 loads on July 2.

Practically all the mines in the Williamson field on the Kentucky side of Tug River, and more especially those on Pond Creek, were running full.

The six-day period ended July 3 was a banner week in the Logan field in point of production as compared with other like periods since the middle of April, the output going over the 200,000-ton mark. The additional car sup-

ply seemed to come from the West. There was an unusually large number of Chesapeake & Ohio cars coming back to the field.

With the opening of seaboard points to high-volatile coal, Logan fuel began tc flow to tidewater again. Still the bulk of the output of the field was going to the West under contract, Lake shipments being comparatively small.

VIRGINIA

Production Improves in the Virginia Fields—One-Fifth of the Output Is Coked.

Figures indicate that there was, during the last half of June, a ten per cent improvement in car service in the Virginia coal fields, as toward the end of the month production was climbing upward. During the last weekly period of June there was an output of 151,658 tons as compared with 136,262 tons for the previous week, a gain of approximately 15,000 tons. However, 30,000 tons out of the total output were used for the manufacture of coke.

The port of Charleston, S. C., was still embargoed so that export shipments were practically at a standstill. Spot coal was moving as nearly as could be estimated at $9 per ton.

NEW RIVER AND WINDING GULF

Car Supply Makes Increased Production Possible—Smokeless Shipments to Tide Embargoed on June 28 on C. & O. —Large Tonnage Goes West — Restricted High-Volatile Shipments Move East.

With a larger flow of cars than usual into the New River and Winding Gulf regions at the end of June and during the first three days of July, it was possible to increase production in these fields to a rather material extent; but the increased production availed little, so far as eastern shipments were concerned, because smokeless shipments to tidewater were under the ban after June 28, at least from mines located on the Chesapeake & Ohio R.R. It was the larger supply on the C. & O., however, which made the increase in production possible.

Gains were recorded in the New River field, as compared with the period ended June 26, by virtue of the increased car supply. Production showed a decided upward trend, it being estimated that the output reached about 50 per cent of potential capacity.

As far as tidewater was concerned however, there was no increase in shipments. In fact there was a very small tonnage of New River smokeless shipped to tide because of an embargo imposed as the week began. Anticipating such an embargo, operators, before it became effective, began increasing their western shipments, so that during the week there was an unusually large tonnage of smokeless coal consigned to the West.

Although high-volatile coal was permitted to move eastward before the end of the week under certain restrictions, such was not the case as to smokeless fuel.

Winding Gulf mines fared exceedingly well at the hands of both the railroads penetrating that field. There was to start with less than the usual excellent supply of cars available for mines located on the Virginian Ry., mines on that road being able to operate to only about 30 per cent of full time capacity. In a measure, however, the Chesapeake & Ohio succeeded in catching up with the Virginian in point of cars furnished, though none of the coal produced on its line could be shipped to tidewater; however, there was nothing to prevent Inland East shipments.

NORTHEAST KENTUCKY

A Slight Gain Is Made in Production—Most of Output Goes to the Lakes and to Inland Points—Demand Is Good and Prices Firm.

A gain of five per cent was scored in the production of coal in the Northeast Kentucky field during the week ended July 3. The total output for that week was 136,985 tons, or about 46 per cent of capacity, representing a gain of about 14,000 tons over the previous week.

While it would have been possible to have shipped a larger tonnage eastward, owing to the fact that the tidewater embargo had been lifted, yet (as has been the case in recent weeks) the largest market for northeast Kentucky coal has been in the West, and hence little effort was made to augment eastern shipments. The major portion of the output was consigned to points on the Lakes and to Inland markets in Ohio, Illinois, Indiana, etc.

Owing to the fact that production was still low, or at least curtailed, and that the demand was still as pronounced as ever, particularly for gas and steam coal, prices were as firm as ever.

Middle Western

INDIANA

Demand Far Exceeds Supply and Price May Be Increased—All Co-operate To Supply Threshers with Coal — State Has Great Difficulty To Get Fuel for Institutions.

The demand for coal in Indiana continues, with the supply entirely inadequate to supply the needs. Coal operators are not signing contracts because of the unsettled condition in the production field. The car supply is bad with little hope of it improving before fall. Retail dealers report that coal is almost impossible to get and as a result a further increase in price is looked for.

However, the general shortage will not affect wheat threshing in Indiana. Officials of the retailers' organization have stated that retailers have sufficient coal on hand to take care of this work in their various communities and coal for threshing purposes will be given preference in sales. Recent correspondence shows the operators cooperating with dealers in all parts of the state and making a special effort to deliver coal that has been contracted for to serve threshers.

Some idea of the acute situation may be had from the fact that daily bids are being asked for by the State Purchasing Committee to supply coal for state institutions and only six have been received since the expiration of last year's contracts (July 1). Of this number, the state has been able to purchase only 21 cars.

Missouri Valley

THE SOUTHWEST

Present Car Shortage Threatens Texas, Oklahoma and Arkansas with Coal Famine Next Winter — Midwest and Northwest Now Bidding for Coal in Oklahoma and Arkansas.

Texas and Oklahoma are facing the most acute coal shortage yet experienced, according to coal men throughout these states, and the same opinion is expressed by miners, shippers and wholesale and retail dealers. The shortage is due directly to the present car shortage.

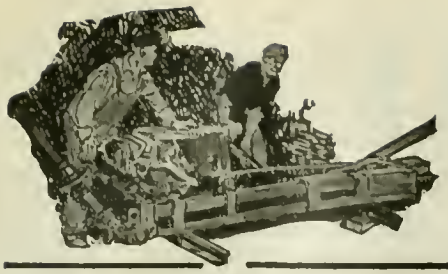
Whether Texas, Oklahoma and Arkansas have sufficient coal to keep warm next winter depends upon whether the present car shortage (which threatens to become worse) is relieved. Texas gets most of its coal from Oklahoma and Arkansas. Mines in those states now can not get enough coal cars to ship more than one-third to one-half their usual production. Texas can not hope to get much coal from distant fields, because the other fields, are, in varying degree, behind with their "home orders" also.

Chicago and St. Louis dealers are now bidding for coal on the Dallas market—an unprecedented situation. Nebraska, Minnesota and the Northwest have been for some time actively bidding for coal in the Oklahoma and Arkansas fields. Unless enough railroad cars are forthcoming to move coal contracted for by Texas dealers, Texas will face a most acute coal shortage next winter.

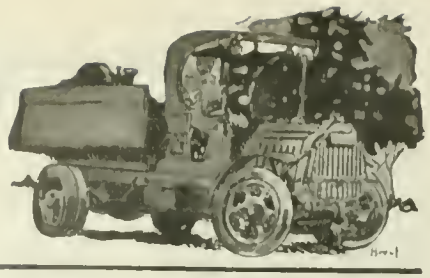
Regarding the country's coal production, R. W. Gardiner, a Pittsburgh operator, has prepared a statement pointing out that at the beginning of 1919 there were large stocks of coal on hand, while at the beginning of this year there was none.

R. W. Gardiner shows that the Pittsburgh district has produced much less this year than last, the following being the percentages of operation for the two quarters and the half year as a whole:

	1919	1920
First quarter	50	52
Second quarter	66	34
Half year	57	43



Mine and Company News



ILLINOIS

Carlinville—The Standard Oil Co. is now putting on the finishing touches at its two mines near this place in Macoupin County, which have been under construction for the past two years. A number of Standard Oil officials recently inspected the two properties with Mr. Manbeck, general manager. The development work is to be done by the Hunt Engineering Co., of Chicago, and engineers are expected to arrive soon at the two mines to start the different entries from the shaft bottoms. The Standard Oil Co., is also erecting a large power plant near the site of one of the mines which will furnish power for both plants. The cost of these two operations will run high into the millions of dollars as each mine is equipped with the most modern equipment.

INDIANA

Evansville — The tipple and engine house of the Sargeant coal mine No. 2 at Newburg, Ind., ten miles east of here, were destroyed by fire on June 8, with a loss of about $20,000. Only the washhouse and blacksmith shop were saved. The fire originated in the engine room.

KENTUCKY

Louisville—A tipple and power plant of the Louisville Gas & Electric Co.'s mines at Echols, Ky., was destroyed by fire on June 16, throwing the operation out of commission, and putting over 100 men out of work. The plant was producing an average of 12 to 14 cars of coal a day, which was shipped in company cars. The plant will be rebuilt at once.

Ashland—A $500,000 corporation has been organized to develop coal land here. It is known as the Porter Mining Co., and its officers are J. E. King, president; M. M. Collins, vice president; S. S. Porter, secretary-treasurer and general manager. The new development will cover a tract of 1,000 acres of virgin coal land leased from the Beaver Creek Consolidated Coal Co., Huntington, W. Va. The plant will have a daily tonnage of from about 1,500 to 2,000.

OHIO

Piney Fork — The Piney Fork Coal Co., which has been a stripping operation pure and simple since its start several years ago, will soon open a drift mine. A part of the acreage, which is along the Wheeling & Lake Erie R.R., is covered with a rather heavy overburden, and it was believed best to mine underground. The drift mine will be opened within a few weeks and it is expected eventually to secure a daily capacity of about 1,500 tons from the plant.

PENNSYLVANIA

Wilkes-Barre—A pocket of gas was ignited recently in one of the workings of the No. 9 colliery of the Lehigh & Wilkes-Barre Coal Co., at Sugar Notch, shortly after eight o'clock in the morning and two men were painfully burned. Although some damage was done by the explosion it was not sufficient to force the mine to close down.

A rather bad disaster visited the village of Inkerman near here last Saturday when an explosion took place in the mines of the Pennsylvania Coal Co., at that place. The explosion occurred in the Marcy seam of the No. 6 shaft. Three men were killed and a number were overcome. The men that were affected were mainly on the rescue crew that tried to save the lives of those that were killed. A thorough investigation is being made as to the cause of the disaster.

Mauch Chunk—One hundred years ago, in this section, was the beginning of the great anthracite coal industry, which led to the formation of the Lehigh Coal Co. and the Lehigh Navigation Co., which corporations were later merged in the Lehigh Coal & Navigation Co., at present holding more than 12,000 acres of coal lands in Carbon, Luzerne and Schuylkill counties, and which mines and ships to market some 5,000,000 tons of coal annually.

The Carbon County Historical Society is making arrangements to commemorate this event. The exact date has not yet been fixed, but will take place late in the autumn.

It is said that anthracite was discovered at what is now Summit Hill (nine miles from here), brought down on wagons, and later over the famous Switchback Railroad to Mauch Chunk, where it was loaded into boats and taken to market by way of the Lehigh Canal.

Pottsville—The new outlaw strike of the yardmen of the railroads in this section affected the operation of the mines in the district. The mines were forced to shut down and were closed at last accounts. This badly affected the mines of the Philadelphia & Reading Coal & Iron Co., particularly those surrounding Pottsville.

Uniontown—H. A. Davis, Uniontown, has acquired a tract of coal property aggregating about 532 acres, formerly held by W. Y. Humphries, for a consideration said to be about $1,000 an acre. The land is located along Ten-Mile Creek, Greene County, and the seam is byproduct coal. The new owner plans to operate the tract.

Waynesburg—A deed was placed on record here recently for the transfer of almost 8,000 acres of coal in the vicinity of Clarksville, Green County, from J. G. Patterson, of Pittsburgh to the W. J. Rainey interests. Most of the coal lies in Green township between the forks of Ten Mill Creek. The consideration in the deed is $1; but the deed contained $3,000 in revenue stamps, indicating that the real consideration was $3,000,000. The coal underlies twenty-seven different farms.

WEST VIRGINIA

Fayetteville — Holdings of the New River & Pocahontas Coal Co., in the New River field, have been materially increased by the purchase of two tracts of coal land aggregating 1,443 acres from the Low Moor Iron Co., the purchase price being close to $235,000, it is said. Both tracts are on Wolf Creek, close to what is known as the Thurmond Coal Co.'s holdings.

One of the largest companies organized in the New River field in recent months is the New River Consolidation Coal Co., a million dollar corporation. While it is rather indicated that this company will operate in Shady Spring district of Raleigh County, the company is not yet in a position to announce the details of its organization and its plans for the future. The leading spirits in the company, it is known, however, are: G. A. McLaughlin, M. J. Moon, F. X. Carmody, Thomas F. Walsh and Thomas F. Casey, all of No. 2 Rector Street, New York, N. Y.

Brush Creek—The Easley Coal Co., recently incorporated with a capital of $75,000, is planning for the development of over 1,000 acres of coal lands in this district. Considerable machinery for mining and general operation will be installed at an early date, and it is proposed to arrange for an output of close to 2,000 tons per day. Frederick Easley is president and general manager. R. J. Moss is construction engineer.

Huntington—At a cost of $150,000, 100 four-room houses will be erected by the Glogora Coal Co., of this city. It is proposed to build 50 of such houses at one of the company's plants near Wayland, Ky., and the other 50 at the same company's plant on Coal River near Whitesville, W. Va.

Industrial News

Chicago, Ill.—The Mikesell Brothers Co., of this place, has recently purchased the asbestos and rubber factory, located at Wabash, Ind., of the Perfection Tire & Rubber Co. This is said to be the only asbestos textile plant located west of Philadelphia and includes 130,000 sq.ft. of floor space and in addition 34 acres of land available for expansion purposes. The brattice-cloth factory of the Mikesell company will be located at that point by the latter part of the year, in which will be made the following materials used in and around coal mines: Brattice cloth water-proof duck; pipe covering and asbestos cements; asbestos and rubber packings; gaskets and pump valves; also insulating tapes and other items.

New York, N. Y.—An unusual affiliation of engineering firms took place some time ago, when the combination of the Westinghouse, Church, Kerr & Co., and Dwight P. Robinson & Co., Inc., was effected. In the newest announcement the statement is made that upon the completion of the merger with Dwight P. Robinson & Co., the new firm will be called the Westinghouse, Church, Kerr & Co., Inc., and its offices will be moved from 37 Wall St. to 125 East 46th St.

Kenosha, Wis.—The Winther Motor Truck Co., of this place, has broken ground for a large addition to its present plant. The new structure is 60 x 400 ft. on the ground and will be of modern saw-tooth construction, with concrete floors and brick walls. No labor-saving device or safety appliances have been overlooked in equipping this new addition, the entire plant being laid out for high-speed production. Chassis construction will still be carried on in the present plant, and the new building will be used only for final assembly, painting and inspection of Winther trucks and the Winther Six—the new passenger car. It is thought that the extra manufacturing space will permit the Winther company to more than double its present output.

Personals

Joseph Osler has been appointed as manager of the operations of the Hump Mountain Smokeless Coal Co., with headquarters at Humoco, W. Va., in the place of R. C. Taylor, resigned.

G. H. Martnig, it is announced, has been made general manager of the Williams Creek Colleries Co., with headquarters at Harlan, Ky. Mr. Martnig has been general manager of the plant of the Milburn By-Product Coal Co., on Paint Creek, W. Va.

Alex Hereford has been designated as the manager of the plants of the Milburn By-Products Coal Co. on Paint Creek, W. Va., succeeding G. H. Martnig, resigned.

James Sferrati, for some time general manager of the Main Island Creek Coal Co., has severed his connection with that company to become the manager of the Fire Creek Smokeless Coal Co., with headquarters at Leggo, W. Va., located on the Virginian Ry. in the Raleigh County, W. Va., field.

E. Y. Warren, formerly with the Ender Coal & Coke Co., has joined the sales department of the Northwestern Coal & Coke Co.

Alexander W. Robertson, president of the Energy Coal & Supply Co., of St. Louis, operating several yards in Missouri and Illinois, was recently married to Miss Freda Hasslinger, daughter of Mr. and Mrs. Geo. C. Hasslinger. He was formerly in the offices of the Taylor Coal Co.

John F. Keenan, general manager of the Denny-Renton Coal & Clay Co., was elected president of the Manufacturers' Association of the State of Washington, by the board of trustees at a meeting held in Seattle, Wash.

A. J. Davis, of Tacoma, Wash., was elected president of the Washington State Fuel Merchants' Association, and **Roy Bungay**, of Spokane, was chosen vice-president. **W. B. Monks**, of Seattle, was the retiring president.

M. S. Leopold, 1316 Park Road, Washington, safety engineer for the Bureau of Mines, and J. E. Monaghan, of Frostburg, Md., had a narrow escape from death recently when the motor car in which they were riding backed through a fence and fell 20 ft. into Coal Lick Run near Uniontown, Md. Mr. Leopold jumped from the machine, but Mr. Monaghan was pinned under the car, injuring one of his legs. Mr. Leopold was mainly instrumental in getting out the film, "The Story of Coal," for the Bureau of Mines and the National Coal Association.

Association Activities

Monongahela Coal Association

The Monongahela Coal Association has been organized by the operators of the Monongahela field, whose mines are on the Monongahela, the Morgantown & Wheeling and the Morgantown & Kingwood railroads. While a number of operators who constitute the new association were and are still affiliated with the Northern West Virginia Coal Operators' Association, it was felt a smaller and more local association should be organized for the purpose of dealing with car shortages and other problems of a rather local nature. It is also believed that the small organization will be more compact than one covering a larger field would be.

The officers of the new association are: W. H. Soper, of the Soper-Mitchell Coal Co., president; S. F. Elkins, of the Arana Coal Co., secretary.

Wheeling District Motor Coal Association

An order of the Baltimore & Ohio R.R. requiring all open-top cars on team tracks to be loaded from platforms has aroused the opposition of the Wheeling District Motor Coal Association, of Wheeling, W. Va., a special meeting of the association having been held on June 19 to consider the order requiring coal to be dumped from an elevation.

The new regulation of the Baltimore & Ohio, in the Wheeling district, affects loading (it is estimated) at 25 different motor coal mines, from which a large part of the domestic supply of fuel for Wheeling and its environs is derived.

Anything that affects the distribution of coal such as it is claimed the latest order of the B. & O. does, of course, affects the Wheeling supply and also makes it impossible to keep miners engaged.

As the new order was characterized as unfair and discriminatory in its nature, the Association reached a decision to resist it and to make a demand for fairer treatment. With that end in view it was decided to file a protest with the Baltimore & Ohio and with the Interstate Commerce Commission, and in the event no relief was secured to take the matter into the courts.

Northern West Virginia Coal Operators' Association

The suit brought in the Circuit Court of Marion County, by the Lamberts Run Coal Co., with the Northern West Virginia Coal Operators' Association acting as intervener, to restrain the Baltimore & Ohio R.R. from assigning cars, has been removed to the Federal Court.

When the case came up for a hearing before Judge William S. Haymond on June 19 at Fairmont, W. Va., attorneys representing the railroad company made the plea that the suit involved an interpretation of the Federal law and that the railroad was only acting under authority of the Interstate Commerce Commission; on such a plea the railroad succeeded in having the suit transferred to the jurisdiction of a Federal Court. Judge Haymond entered an order for a transfer of the case to the district court of the Northern district of West Virginia.

Winding Gulf Operators' Association

Representatives of the Winding Gulf Operators' Association were present in force at Charleston, W. Va., during most of the week ended July 19, for the purpose of contesting the application of the Appalachian Power Co. for an increase in rates on the power furnished by it, upon which Winding Gulf mines largely depend. A public hearing was held by the Public Service Commission of West Virginia in connection with the Appalachian company's request for an increase. Although the Virginian Power Co. received a 40 per cent increase in rates less than a year ago, it is now asking for a 10 per cent additional increase. The Virginian company furnishes power to the mines in the Kanawha and New River, W. Va., fields.

Obituary

George Nester, for many years president of the Big Four Coal Co., Booneville, Ind., died at his home in that city on June 17, following a lingering illness. Mr. Nester was 58 years of age.

Thomas M. Clark, a resident of Highland Park, Ill., and one of the oldest coal men known in Illinois, died the first week in June at his home.

James Murphy, 54 years of age, retired coal operator of Belleville, Ill., recently took his own life when he hung himself in his barn behind his residence.

William Wayland, a pioneer coal mine operator, is dead after an illness of three years with miner's asthma. He was 78 years of age and resided in St. Louis from 1870 to 1882, at which time he moved to Danville, Ill.

Trade Catalogs

Railroad—Mining—Industrial

Catalog No. 6. Electric Service Supplies Co., Philadelphia — Chicago — New York. Pp. 607; 6 x 9 in.; illustrated. This cloth-bound catalogue covers electrical material for railroads, mines and industrial haulage systems. The main office, warehouse and factory of this company is located in Philadelphia; a warehouse and sales office is in Chicago; a branch sales office is in New York and there are additional sales offices in other cities.—Advertiser.

Welding and Cutting Equipment.—Davis-Bournonville Co., Jersey City, N. J. Catalogue. Pp. 15; 3¾ x 6¼ in.; illustrated. A description of oxy-acetylene and oxy-hydrogen welding and cutting equipment in the manufacture of which this company has been exclusively engaged.—Advertiser.

Roller Bearings, Trucks and Mine Cars. Railway & Mine Supply Co., Chicago, Ill. Bulletin 191. Pp. 24; 8½ x 11 in.; illustrated. A description of the equipment noted in the title of the catalogue together with drawings of cars, on which provision is made for filling in dimensions of equipment desired by possible purchasers.—Advertiser.

Coming Meetings

American Mining Congress will hold its annual meeting at Denver, Col., Nov. 15. Secretary, J. F. Callbreath, Munsey Building, Washington, D. C.

American Institute of Mining & Metallurgical Engineers will hold its fall meeting Aug. 20 to Sept. 3. It is proposed to leave Buffalo by steamer and cruise through the Lakes, the first stop being at Houghton, Mich., after which the party will visit Duluth and the Iron Ranges of Minnesota, spending a day or two in Minneapolis on its return. Secretary, Bradley Stoughton, 29 West 38th St., New York City.

New York State Coal Merchants' Association will hold its annual meeting Sept. 9, 10 and 11 at Richfield Springs, N. Y. Treasurer, G. W. F. Woodside, Albany, N. Y.

Illinois and Wisconsin Retail Coal Dealers' Association's annual meeting Aug. 4 and 5 at Milwaukee, Wis. Secretary, I. L. Runyan, Chicago, Ill.

The Rocky Mountain Coal Mining Institute, in conjunction with the Colorado Metal Mining Association, the local chapters of the American Mining Congress and the American Institute of Mining & Metallurgical Engineers, and the International First Aid Meet will hold its annual meeting Sept. 9, 10 and 11 at Denver, Col. Secretary, F. W. Whiteside, Denver, Col.

National Safety Council will hold its 1920 congress on Sept. 27 to Oct. 1, inclusive, at Milwaukee, Wis. General Manager, C. W. Price, Chicago, Ill.

Oklahoma Coal Operators' Association will hold its annual meeting Sept. 14 at McAlester, Okla. Secretary, F. F. La Grave, McAlester, Okla.

COAL AGE

The Weekly Journal of the Coal and Coke Industries

Volume 18 NEW YORK, THURSDAY, JULY 22, 1920 Number 4

Events and Progress of the Week

PROGRESS through co-operation has marked the course of events in the coal situation the past week. The coal operators and the railroads, who supply and move the coal; the Northwest and New England, representing the sections of the country in greatest need of fuel, and the Interstate Commerce Commission, for the Government, have been working together to find a solution of the most serious condition as regards coal that has ever confronted the country. The source of the trouble has been definitely placed as lack of railroad transportation, the spots most seriously affected located, the inequalities in distribution defined and studied, and through the energetic and determined stand of the coal men a solution is being worked out and perhaps by the time this is published the details of the plan will have been agreed upon by all concerned and made public.

The first and most difficult task confronting the representatives of the coal industry has been to bring the various interests to a common understanding of the problem. The last few weeks have seen the railroads accusing the coal operators of upsetting distribution in their desire for profits, the New England interests charging the National Coal Association with bad faith, the coal men saying that the fault is all with the carriers and the Interstate Commerce Commission watching this "buck passing" and wondering what to do next. The public has seen the evidence of trouble in the high prices and shortage of coal and is willing to believe almost anything that is said about the coal operators, the railroads and the Government.

Real progress was therefore made last week when the representatives of coal producers and the railroads got together on a program to increase production and correct distribution. Two days of conference among the soft-coal operators of the country, called together by the president of the National Coal Association, served to bring in line this element in the situation, and led to the appointment of a committee with full power to act for the industry in the conferences with the railroad executives that followed. Three days, from Wednesday to Friday, were spent by the representatives of coal and the roads in their New York discussion, as a result of which a definite proposal was made to the Interstate Commerce Commission on Monday, July 19. As this is written the details of the plan have not been announced and it is not known what action the Government has taken or will take. We have reason to believe, however, that unless the lawyers for the commission find some difficulty with the order that is proposed, not foreseen by counsel for the operators and the railroads, the method offered will be accepted and followed. It is understood that the solution will satisfy the Northwest and it is hoped that New England will accept it as a way to obtain coal needed in that market.

It is now the duty of every shipper of coal, every railroad official and every consumer to acquaint himself with the details of the plan and the orders, to believe in the good faith and wisdom of those who have labored so diligently to find this solution and to support with might and main, in spirit and in letter, such orders as are issued from time to time to make effective this solution of our coal problem. If you are a shipper of coal, have in mind the urgent needs of the Northwest and the Northeast and anticipate the situation by increasing the movement in those directions. If you are a coal consumer, unload your cars in record time, and buy your coal in the field that will involve the least transportation to get it your plant. And if you are in New England, buy your coal before you complain that you are not getting what is coming to you.

Service Order No. 9 was issued Tuesday, July 13, by the Interstate Commerce Commission as a result of hearings conducted the previous week on the effect of Order No. 7, giving preference to coal in the use of open-top cars. The latest order extends the priority from thirty to sixty days from June 21, thereby meeting the wish of the coal industry for better car supply in order to meet the demand for coal. The order went further, however, and provides that assigned cars be given public utilities and other public institutions to insure a supply of coal sufficient for current requirements. It is reported that applications for assigned cars already made under the provision of this order in some fields have so reduced the supply of coal available for other commercial consumers that the spot price has advanced from one to two dollars within the week.

Getting at the Root of the Trouble

INCREASED production of bituminous coal as soon as it can be attained and better distribution at once are the two aspects of the coal situation urged for consideration by *Coal Age* a month ago. We said then that there are these two problems and no better way could be found than to call the coal operators into the game and let them work with the railroads and the Government. Just this has come to pass, and we believe that conditions are on the way to improvement as a result.

Deficiency in production in the large producing fields of Pennsylvania, Ohio, Maryland, West Virginia, Virginia, and eastern Kentucky—the Eastern fields—since April 1 is the primary cause of the coal shortage, the effects of which are felt everywhere, but more acutely in the East. Because coal in sufficient quantities has not been produced in the East, the Northwest is behind in its receipts, New England is short and every consuming section east of the Mississippi River is feeling the pinch. High prices are not the cause, but the effect—the "fever" indicating that something is wrong.

Compared with 1919 the production of bituminous coal in the whole United States has this year shown

an increase of about 21 per cent. The Eastern fields have increased but 15.6 per cent, however, compared with an increase in the remainder of the country, including the large fields in Illinois, Indiana, Alabama and the far West, of 33 per cent. Comparison of this year with last is not particularly significant, because last year, 1919, the demand for bituminous coal was below consumption by reason of the large stocks held over from the war year, and consumption was below the present level as a result of the general slump of from six to eight months that followed the armistice. It is a palpable mistake to infer that because more coal has been produced so far in 1920 than in the same period in 1919 there is no shortage.

The year 1918 recorded the greatest production of bituminous coal and Pennsylvania, West Virginia, Illinois, Ohio, Kentucky and Indiana, the six leading states, were among the fifteen out of the thirty states producing coal that set new high records in output in that year. Comparing 1918 with 1917, the increase in production was largely in the Eastern fields and each section of the country was plentifully supplied with fuel at the end of 1918. Comparing 1917 with 1916, however, the increase in total from 501,000,000 to 551,000,000 tons was largely in the Middle and Western states. The East suffered a real shortage in the autumn and winter of 1917 as a result. The condition today is similar to if not almost identical with that of 1917.

Production in the Eastern fields this year has been 9 per cent below 1918, in the remainder of the country less than 5 per cent lower, and the country as a whole has shown a drop of 7 per cent compared with the maximum of 1918. Whereas the Eastern fields should now be producing not less than 28,000,000 tons of bituminous coal a month, which is the rate reached in January and again in March of this year before the strike on the railroads, production from these fields in April, May and June was at the rate of only 22,000,000 to 23,000,000 tons per month. There is a real shortage here of about 5,000,000 tons a month, and production must be increased between 20 and 25 per cent in these Eastern fields.

This increased output in the East must not be obtained at the expense of the rest of the country, as for instance by taking cars from the West for the East. The rate of production in the Middle West, West and South is not now more than is required for normal markets and not sufficient if Illinois is to help supply the deficiency in the northwest by all-rail shipment. The output from Illinois mines since April 1 has been at the rate of about 5,000,000 tons a month, the mines working only from twelve to fourteen days a month, as against a production of better than 7,000,000 tons per month with mines working more than twenty days, if what is considered the normal requirements are to be met.

The situation may be more clearly understood by stating that no estimate of requirements for bituminous coal in the calendar year 1920 exceeds 550,000,000 net tons, or about equal to what was produced in 1917. The rate of production now for every group of states except Pennsylvania, Maryland and West Virginia is approximately equal to that of 1917, and the deficiency, amounting to an annual rate of about 40,000,000 tons, falls in the coal fields of those states.

It is understood that the railroad executives are now fully cognizant of these facts and that they are of the belief that production in the East can be increased to the necessary 28,000,000 tons per month, particularly as the wage board will report its findings in a few days and the men are expected to go back to work again. Unless the men do return to work in numbers and with a good spirit it is useless to hope for very great improvement in transportation, for the officials of themselves are powerless without the co-operation of labor.

Unequal distribution is indicated by the fact that in the first five months of this year less than 1.5 per cent of the shipments from the Eastern fields have gone to the Lakes, compared with nearly 5 per cent last year. Shipments to tidewater from these fields averaged from 11 to 13 per cent of the total in 1917, 1918 and 1919; in the first five months of last year they were about 12 per cent, compared with 15 per cent from January to May this year.

With a production as great as in 1917, mines in Ohio have this year shipped coal to consumers in Michigan and Ohio at a rate greatly in excess of 1917, and it is understood have this year nearly equalled the shipments of the banner year, 1918. This increase must have been at the expense of the Lake movement. Under these circumstances we can appreciate the necessity for and ultimate effectiveness of a system of embargoes to force coal to the Lakes, which it is reported is the foundation of the plan which the coal operators and railroad officials will suggest for the solution of the problem.

The program of intensive service announced by the railroad executives last week, together with the correction of unequal distribution through the proposed partial embargo plan of the coal operators, is expected to relieve the situation. Just what the effect will be on spot prices is yet a matter of speculation. Much will depend on the increase in production the railroads can bring about and on the details, as yet unannounced, of the embargoes.

Will They Never Learn?

APPARENTLY the advocates of Government ownership die hard. The Ferry Plan, under which the United States would operate four anthracite mines, one washery and Heaven alone knows how many bituminous mines, washeries and coal yards, shows that the former advocates of Government ownership are not yet all convinced that this measure does not serve workman, employer or consumer. How can the public learn? Apparently Mr. Ferry has not learned, and he should be reasonably well informed, for has he not been chosen by the mine workers as their representative?

If Mr. Ferry had wandered on the sad history of Government ownership in his extensive reading he could not have ventured to call it *his* plan after it had been tried out so often and failed so ignominiously. He cannot sustain letters patent or copyright, for they cannot be filed for two good reasons, both sufficient—first, that somebody invented it before him; and second, that it is not within the limits of reason to believe it workable. This Garabed Girgossian cannot by any possibility get even a fraudulent title to the doubtful honor of discovering Government ownership.

The U. S. Government has tried to mine coal at mines located at Williston, N. D., and at Eska, Alaska. We do not pretend to know anything of the latter mine—whether successful or not—except that the mines were

run till lately by an exceedingly competent man, Sumner S. Smith. The Williston plant, however, was run at a high cost and not in accordance with the plans advocated by other branches of the Government. It was conducted in violation of the enlightened laws of many states. Coal was shot off the solid and the ventilation was inadequate; moreover, coal was left in the roof. Nevertheless it was found that the fuel was produced at an abnormally high cost, owing, among other matters, to heavy overhead.

Surely we have learned that Ferry plans or rather "Fourier" plans, for with the Socialists do they originate, do not work. Mr. Ferry says the Government does not know what coal costs, but it has the most accurate of figures as obtained from returns made to the Federal Trade Commission. If there is any lack of knowledge it is because the returns made are below the real cost production, which on any honest return would include interest on investment. That item is left out in the present returns, though if the industry were Government-owned the interest on the investment would have to be paid. If, however, by Mr. Ferry's statement we are to infer that there should be one standard cost of producing all coal, whether from strip pit or from deep pitching beds, then Mr. Ferry is never going to be satisfied. The variations in production cost are immense, even in the anthracite region, and still more variant if both anthracite and bituminous are considered together.

As for the relationship between mining and selling price, Mr. Ferry's story looks interesting but unconvincing. Today we do not buy run-of-the-mine for domestic use; we insist on lump, and from the anthracite region stove and egg. If we will not take the "whole critter" we must pay more for the steaks.

Unfair Criticism in the Newspapers

FROM time to time unfair, distorted and incorrect statements are printed in the public press concerning the methods of operation, the production and the profits arising from the mining and sale of anthracite.

For the past two weeks during the sessions of the Anthracite Coal Commission in Scranton statements have been made in the editorial columns of the newspapers as to the profits of the coal-mining companies. These declarations have been based on some exhibits that the United Mine Workers of America desire, but have not been allowed as yet, to place before the commission No mention should have been made concerning these exhibits, as they have not yet been accepted as evidence, and surely common courtesy should cause the newspapers to refrain from publishing them or the information they contain until they have been accepted. It is much to be feared that the intention is to force the hands of the commission into accepting the exhibits as testimony.

But to make matters worse, the exhibits have been grossly misquoted. If they had been studied carefully the erroneous statements that have appeared in the editorials in question would not have been made. Thus two papers state that the coal companies are earning profits as high as 500 per cent. If the editors, or the writers of the editorials, had studied these exhibits they would have found that the union merely stated in its exhibit that the profits of one of the coal companies had increased approximately 500 per cent. It did not state that the profit received attained that figure or anywhere near it. There is all the difference in the world between that assumption and the truth.

For in the case quoted the mine workers' exhibit shows that in the years 1912-14 the company made a profit of 6.8c. per ton and in the period 1916-18 made a profit of 36.4c. per ton. Thus the increase in profit was 435.3 per cent as against an actual profit of 2.4 per cent in the first period and a profit of 7 per cent in the latter period. There is a considerable difference between a profit of 7 per cent and one of 500 per cent, which is the profit which the editorials quoted would establish as the good fortune of the coal companies.

Interfering with Supply and Demand

SUPPLY and demand, the law by which business in this country is presumed to operate, may be interfered with in more than one way. During the war the fixed prices for coal and arbitrary distribution completely set aside this favored law of action. Today, as William B. Colver ably pointed out in his address at Atlantic City recently, the law of supply and demand cannot function because transportation, which normally brings the supply to the demand, has failed. As long as the railroads cannot haul more coal there is no point in high prices as a means of bringing production up to meet the ever-increasing needs of the consumer. No matter what the price inducement offered, more cars of coal will not be produced, because transportation is the limiting factor and not mine capacity. Under these circumstances there is no economic justification for prices such as are current today for free coal.

The coal industry knows this and were there a way by which the real men in the trade could curb such reckless bidding for coal, it would be done. The one glorious example of voluntary price fixing indulged in by the soft-coal industry, the famous Lane-Peabody agreement of 1917, had such an unhappy ending that no one can blame the coal men for hesitating before trying the experiment again.

There is another factor interfering with the law of supply and demand that is not generally recognized as yet. We refer to the manifestos of the Attorney General warning of prosecutions of profiteers in coal. His agents are busy in the large cities going through the books of the larger companies, where nothing will be found amiss. No evidence has yet come to hand of visits to the small one-night-stand producer in the hills, who is the real offender.

The announced intention of the Department of Justice to seek out and prosecute those charging excessive prices for coal has operated not to lower the price to one section of the country really in need of coal, that is, New England, but is operating to prevent coal moving there. Shippers of coal at Hampton Roads and Baltimore have no objection to charging a foreign buyer $10 or more for coal, but will not transact business with a New England buyer at that figure because of the profiteering clause in the Lever Act. In other words, the law of supply and demand is again upset and there is no open market for coal at these ports as far as New England is concerned. New England is urged to enter the market and pay the price, but her money is no good. We thus see one department of the Government interfering with the flow of coal to New England while another is trying by priority order to increase the movement.

Robbers Flee with Coal Mine's $7,000 Payroll

In a mine of the Vesta Coal Co. at Ritcheyville, Pa., four robbers held up the paymaster and mine foreman July 13 and fled with the $7,000 payroll. Frederick Sayo, paymaster, and Thomas Woods, foreman, met the robbers in the opening of the mine. Woods drew a revolver, but one of the highwaymen knocked it from his hand with a club. Sayo and Woods were then covered with revolvers, bound with heavy ropes, and carried into a side passage in the mine. An employee of the mine has been arrested.

Conditions Now Normal on New York Piers

Normal conditions have been restored on the coastwise steamship piers of New York City through the creation and operation of the Citizens Trucking Company, Inc.

Corporation Blanks Available

Forms for filing returns of capital stock of domestic and foreign corporations on or before July 31, 1920, are now available at offices of collectors of internal revenue.

Editor of League of Nations Labor Bulletin Chosen

The Department of Labor has officially announced that Dr. Royal Meeker, U. S. Commissioner of Labor Statistics, has resigned and will leave for Geneva, Switzerland, July 31, to take up the duties of editor in chief of the monthly bulletin of the international labor office of the League of Nations.

Switzerland to Get German Coal

Switzerland has concluded a new commercial treaty with Germany, under which Switzerland will get about 40,000 tons of German coal monthly.

Steamship Company Buys Coal Mines

For the purpose of obtaining a reliable and cheap source of supplies for bunkers for the company's steamers and to provide cargoes for its vessels, the Oriental Navigation Co. has purchased the Williams Pocahontas Coal Co., with mines in West Virginia. The company was induced to take this step because of the difficulty of obtaining a reliable and sufficient supply of coal.

Advises Labor How to Vote

Frank Morrison, secretary of the American Federation of Labor, in addressing the convention of the American Flint Glass Workers' Union at Atlantic City, admonished the delegates to go out and "elect our friends and defeat our enemies." "We have a wonderful chance this fall to put the right men in," he said. "Labor today is a power to be reckoned with. Twenty-two years ago we had a membership of 265,000, and today we have 4,078,000. There are enough votes there to swing a Presidential election."

Pig-Iron Producers Urge Return of Government Fuel Control

In its weekly summary of conditions in the iron market as of July 15 the *Iron Age* says: "It remains to be seen how far the shutdowns will go which steel companies said were inevitable if an extension of Service Order No. 7 came. Some relief is given by exempting from the order all flat-bottom gondola cars or cars which on June 19 had been definitely taken from coal-carrying service, this being one modification asked by iron and steel interests. In some districts, however, this interpretation has already been in effect. So far as the merchant pig-iron trade is concerned, the soaring of fuel prices has caused as much concern in the past week as the car troubles to which high fuel is chiefly laid. There is an urgent call in some quarters for a return of the Government control of fuel that was given up on April 1, producers of pig iron viewing with dismay sales of prompt coke at $19 this week, while bituminous coal has brought from $10 to $12 at the mines. The effect of such prices on dependent industries will be serious as corresponding levels are reached in pig iron."

NEWS BRIEFS

Terse Items Chronicling Events of Interest to the Industry

New Loans to Railroads

New loans to railroads of the country amounting to $17,022,273 have been approved by the Interstate Commerce Commission, making an aggregate of $22,086,875 so far certified to the Secretary of the Treasury for payment out of the $300,000,000 "revolving fund" provided by the Transportation Act. The loans include: Illinois Central, $4,511,750; C., B. & Q., $4,446,523, and A., T. & S. F., $5,493,600.

Textile Manufacturers Curtail Production

In its weekly review of conditions in textiles and allied lines as of July 17 the *Dry Goods Economist* says: "Manufacturers of textiles are curtailing their output and making goods only for orders. Transportation continues to be hampered by shortage of rolling stock and by lack of labor. New cars and locomotives are in course of construction, but no material increase in the movement of commodities is expected during the next six months or more."

Lignite Fuel To Be Used in Making Paper from Straw

Plans are reported to be under way for the establishment of a large paper mill in southern Saskatchewan to utilize vast quantities of straw in the province. Lignite fields in this section, it is said, will provide the necessary fuel.

Coal Shortage Darkens Hornell

With its last pound of coal exhausted, the Hornell (N. Y.) Electric Co. on the afternoon of July 13 shut off all but one circuit in the city. Streets cars were stopped and only a few essential industries kept going. They were expected to be cut off and the city to be in darkness that night. Inability to obtain coal at any price is given as the reason for the suspension of service.

Commission on Car Service Rearranged

R. H. Aishton, president of the American Railroad Association, has announced a new plan of organization of the Commission on Car Service under which each commissioner is to have charge of a specific feature of the work and the commission as a whole is to report to the Special Committee on Car Service Matters of the Association of Railway Executives, of which Daniel Willard is chairman, through W. L. Barnes, special assistant.

New York Public Utilities Get More Coal

During the week ending July 17 the Brooklyn Edison Company received 32,000 tons of soft coal and gains were made by several other companies which resulted in placing New York public utilities above any immediate fear of a shutdown. The weekly report of the utilities filed with the Public Service Commission shows that under the pooling system all of them have enough coal to continue normal operation for about fifteen days, with the prospect that improvement in the situation will continue.

How Gob Fires Are Fought and Prevented In Pictou County, Nova Scotia*

Crushed Pillars in Thick Seams Cause Many Gob Fires—Should Smoke Be Seen, No Time Is Lost in Sealing Up—In Reopening Care Is Taken to Keep Air from the Heated Area Which Might Cause a Rekindling of the Fire

By F. E. Notebaert†
Stellarton, N. S.

A LARGE portion of the Pictou County coal field of Nova Scotia is underlaid with thick coal beds, some of which have been known and worked for many years. These include Foord bed, 40 ft. thick; the Cage Pit bed, 18 ft. thick; the Third Seam, which varies from 14 to 17 ft. in thickness, and the McGregor, the thickness of which at certain places exceeds 22 ft. These four are the older measures and are known as the beds of the Stellarton district. Some of them have been worked for over one hundred years.

In some mining regions the main problem is how to "bleed" the gobs of gas and ventilate them so as to lower the gas percentage. In the Stellarton country the gob must not be ventilated but must be kept air-free or otherwise progress will be rapid from gob-stink to gob-smoke and thence to a gob fire.

When, in the winter of 1915, a borehole was sunk by the Acadia Coal Co., a series of thirteen new beds were added to those already known. These as well as the upper ones are as a rule comparatively thick. They include one 21 ft. bed, one 28½ ft. bed, one bed 20 ft. 4 in. in thickness, one bed 24 ft. 2 in. thick and one 23 ft. thick. These beds were found intermingled with thinner ones, which have a thickness of 3 ft. 6 in., 5 ft., 6 ft. 2 in. and 4 ft. 11 in.

Thirteen Seams Have 232 Ft. of Coal

Undoubtedly had this hole been sunk further, other beds would have been discovered, and had boring been continued still further on, the drill probably would have entered the Westville coal measures. These have often been considered as being of the same geological horizon as those of the Stellarton district but thrown in a southwesterly direction by a displacement of great amplitude, known as the McCullouch fault. The existence of this disturbance has never been proved. Without certain knowledge, although equally without doubt, the existence of the much discussed McCullouch fault may be denied and the Westville seams accepted as being only a regular continuation of the series of Stellarton beds, thus adding an enormous tonnage of coal to that already known to exist in this district.

The angle of dip of what might be called the main coal field of Pictou County is steep in comparison with that of the majority of the Cape Breton measures. At the southern end of the Stellarton field the beds outcrop at an angle which varies from 21 to 23 deg., and dip northwardly until they reach a basin line. From that point they rise in a northerly direction at inclinations varying from level up to 90 deg., and in certain disturbed sections of the northern portion of the field they are completely reversed, the footwall resting on top and the hanging wall lying beneath the coal bed.

The angle of dip, the thickness of the bed, the fact that the space left open by the working out of the coal is not flushed or filled require, almost necessarily a method of working by room and pillar, retreating from the limit of the field toward the main slope, leaving a crushed area behind the working faces.

As an immediate consequence of such a system a more or less important tonnage of coal is abandoned in the gob. This coal, being subjected to the heavy pressure of the roof, is crushed, and if the oxygen of the air is permitted to come in contact with this loose material for a sufficient length of time, much heat is sure to be generated. This ultimately will produce a gob fire. Such fires are frequent in the beds of the Stellarton district, or, more correctly, they would be frequent if special precautions were not taken.

These precautions are of three kinds, namely: (1) Reduction in the quantity of combustible matter left crushed in the gob, the presence of which is the primary source of the fire; (2) reduction of the time of contact between the air (oxygen) and the crushed coal in the gob; (3) emergency measures consisting of heavy stoppings that will permit of the isolation and sealing off of any sections or parts of sections threatened with or affected by fire. Such emergency measures naturally are expensive. Experience, however, has shown that they may be after all the cheapest and safest means of preventing gob fires or of extinguishing them when once they have started.

Would Flush Gob If Cost Were Moderate

The amount of combustible matter left in the gob when working out thick beds can be reduced to an unimportant quantity only by flushing or hydraulic stowage. At the present time, however, it is questionable if in long slopes with an abnormally high cost of labor as compared with the selling price of coal the time has yet arrived when hydraulic gob flushing can be introduced in the Nova Scotia mines with financial profit. In the mines of Pictou County, however, the flushing system is and will be the only one by which, if all the

*Abstract of a paper read before the Mining Society of Nova Scotia, Glace Bay, N. S., and entitled "Fighting Mine Fires in Pictou County, Nova Scotia."

†Acting general manager, Acadia Coal Co.

coal is recovered, gob fires can be completely avoided. It might be mentioned also, incidentally, that with hydraulic flushing, dust explosions will be things of the past.

Two Means of Lessening Gob Fires

The most efficient means of reducing the contact of air with the crushed coal in the gob is to advance the working faces as rapidly as possible so as to bring the

FIG. 1. F. E. NOTEBAERT
Acting General Manager, Acadia Coal Co., Stellarton, N. S.

roof down. This also avoids filtration of air through the gob. It can be most advantageously accomplished by retreating toward the slope. By ascensional ventilation, in which the air is carried directly to the bottom of the pillar section and exhausted from its upper end without passage, through the gob, further assurance of freedom from gob fires is secured.

To reduce a prolonged contact of the air with the gob requires also that the gob resulting from the working out of a pillar section be properly and completely sealed off so as to avoid, so far as possible, filtration of air into the gob and passage through it, with oxidation of the crushed coal found therein.

It might be interesting to point out that although commonly described as being strongly liable to spontaneous combustion, the coals of Pictou County, particularly those of the Stellarton district, are only slightly subject to self-ignition. This is because of their low percentage of sulphur, which in most cases, does not exceed one per cent.

Smoke Shows That Conditions Are Serious

Yet, though all precautions are taken against gob fires, they nevertheless will occur sometimes. Usually the first indication of fire is a slight odor of coal distillation. According to the nature of the bed and the general conditions causing the fire, the odor will persist for hours or for days, and cases have been known where it has persisted for weeks without showing any increase of temperature or any sign of smoke, which are the next indications of a gob fire.

When smoke appears, conditions are always serious, because even if the bed is not liberating explosive gas, the distillation of coal with restricted amount of air will generate carbon monoxide, which is poisonous and explosive. It is at this stage that good judgment should be exercised and a quick decision made.

When smoke has made its appearance the tendency usually is to continue carrying out the dispositions which have been adopted in the earlier phases when the only indication of a gob fire was the odor of distillation. In many instances this plan may have been successful.

Frequently, however, the fire has already been allowed to smolder too long. The heat has increased, and flames have made their appearance. Conditions then may be termed highly dangerous, as all the elements necessary to provoke an explosion are present. If conditions have unfortunately been allowed to develop thus far, two remedies yet remain, either one of which has a large element of chance. The natural antidote for flames is water, applied by sprinkling or by flooding. Flooding the section where the fire is located usually will take much time, during which the fire continues to progress, kept alive by the action of the fan. Furthermore flooding can be adopted only as an extreme measure.

As a matter of fact it is almost always worse than a complete and forced abandonment, except in those cases where the flooding may be restricted to a small area. This is true because to the damage resulting from fire is added the destruction caused by the water, and after all the fire is not rapidly controlled.

Sprinkling will in almost every case be a failure because the water will reach only the outside manifestations of the fire (the flames) without gaining access to the heart of the trouble, which is well inside the gob. Flaming gob fires have been successfully extinguished by sprinkling with water, and the officials supervising the work doubtless are still wondering why it was that the water put the fire out. A closer study might have shown that the steam generated when the water was thrown on the fire, as well as the carbon dioxide formed, were the deciding factors.

Fire Is Rarely Suppressed by Sprinkling

In most instances where sprinkling is employed fire will continue to gain in violence and make its appearance in many places throughout the affected district until conditions are so alarming that the mine has to be abandoned. This abandonment means the stopping of the fan, but the natural ventilation, probably augmented by the heat from the heated zone, will still continue to carry a current of air through the mine to the vicinity of the fire.

Then the only plan available is to seal off the mine at the main intake and to return and await developments. This is naturally a serious and anxious time since all conditions and factors present favor the occurrence of a destructive explosion, which may result in loss of life even of those working on the surface around the mine mouth.

It is the part of wisdom, therefore, to control conditions as soon as the first smoke makes its appearance. Even then danger is present, and a radical decision should be taken without hesitation, and the mine sealed off as tight as possible at the main intake and return. The purpose of this measure is the total exclusion of air, not only in the fire district but in the whole mine, and its replacement by gases, explosive or otherwise, the mixture of which will after a short time become inexplosive because of the lack of oxygen.

As an illustration of how a mine atmosphere degenerates after being sealed an analysis of gas may

FIG. 2. GENERAL VIEW OF THE BANKHEAD OF THE ALBION COLLIERY
This mine, which has been in operation for nearly forty years, has been the scene of many dangerous fires underground arising from spontaneous combustion. Only by sealing off old workings with unusual completeness can assurance be felt that a fire will not occur in the crushed pillars.

be given which was taken from the slope mouth of one of the mines of the Acadia Coal Co. a few days after it had been sealed. This analysis was as follows: Carbon dioxide, 7.2 per cent; oxygen, 3.1 per cent; marsh gas (CH_4) 31.4 per cent; nitrogen, 58.4 per cent. No carbon monoxide was found. A few days later the content of oxygen had fallen to 0.86 per cent and a little later still to 0.42 per cent.

The operation here referred to is the Albion Mine, which ever since its opening, away back in 1881, has been frequently afflicted with serious fires, almost all having arisen from one of the causes mentioned above.

Pillars or Concrete Stoppings Leaked

The analyses just given were taken at a fire that occurred in 1917-1918. An old abandoned section of the Third Seam had been entirely isolated by a line of substantial concrete stoppings. Unfortunately, because of a special disposition of the ventilating current, these were subjected to a heavy water gage, and if it had not been for these stoppings the ventilation would have been short-circuited in large volume through the old section.

Workings in an underlying bed had disturbed the stoppings in question and at almost every one of them an odor of distilling coal was perceived. This showed conclusively that most of the coal face in the section was affected by the heat arising from the oxidation of the coal. The air was penetrating the stoppings and even the coal itself.

Naturally the first step taken was to reinforce all the concrete stoppings, and later to further strengthen and tighten the weaker ones. The odor of distillation would disappear for a few days, or even weeks, and then suddenly reappear at some other point. Finally, after about eight weeks of special watching without result, a slight cloud of smoke made its appearance at one of the bottom stoppings which was in process of reinforcement.

The section affected had an area of 1,410,000 sq.ft., and much crushed coal had been left in it. The moment

FIG. 3.

Albion Helmet Crew

Information secured by these men in one day as to the lack of oxygen near the fire and the failure of the air to mix with the methane and form an explosive mixture well repaid the company for their organization and training.

smoke was seen, decision was made to suspend any further reinforcement of the stoppings, to isolate the section and to surround with an atmosphere entirely deprived of oxygen, this body of smoldering coal, slowly but unquestionably developing into a fire.

Oxygen Soon Fell Below One Per Cent

An analysis of the mine atmosphere already has been given, and it is now only necessary to state that after a short time the content of oxygen in the mine became less than one per cent, that of marsh gas amounted to about 36 per cent and that of carbon dioxide rose to between 7 and 8 per cent. Such a mixture made the extension or even the existence of fire impossible.

But this mixture, efficient as it was to smother a fire and prevent its extension, could not neutralize or overcome the heat that had been generated by the first stage of the oxidation of the coal. The extent and importance of this heat was not and could not be known, as, for reasons already explained, at the first appearance of light smoke it had been decided to seal off the mine.

It was considered, however, that the fire zone was of small extent, and after the reinforcement of the stoppings warmth could be located at but one point and that was near the stopping where smoke had been observed. Basing a decision on similar experiences in the past, it was decided that, the mine having been closed for over thirty-six days, the temperature of any heated point had been brought down to the natural temperature of the strata surrounding the mine and the whole atmosphere in it. Apparently, however, the area of the zone that had been affected by the heat was far greater than had been estimated. That this was so may be judged from what follows.

First, however, let a few words be said by the way of introduction. During the past six years conditions in the Pictou County coal fields have five times necessitated the reopening of mines that had been abandoned, either on account of fires which got beyond control or because of explosions and the fires that followed them.

When re-entering mine workings under such conditions the Acadia Coal Co. has never made use of a fan. Each mine has had several outlets, all of which have been sealed up as tightly as possible, with the exception of the one by which the management purposed to re-enter the mine. A current of air or gas is certain to be set up in the burning mine regardless of the fact that there is but one opening. The slightest leakage in the stoppings in the return airway if the intake be open, or in the intake if the return is open, will cause the cold and therefore heavy atmospheric air to drive off the light warm gas inclosed within the mine.

Natural Ventilation Occurs in Any Event

Even in the event that all the openings could be kept theoretically tight, with the exception of the one through which re-entry is to be made, a current will be set up. The cold air will travel down along the floor of the slope, displacing the warmer gas, which will escape by following the roof.

During the re-opening operation, which is now to be described, we made an experiment. We reinforced all the surface stoppings, covering them with sand and clay, and we even covered part of the surface with the same material. Then we opened the main return-air slope lying alongside of the main airshaft.

The first effect of this procedure was the emission of a large quantity of gas which flowed out of the full section of the slope. After a short time a regular current was noted going in at the floor of the slope and coming out at the roof.

After some hours the cold air gradually found its way into the mine, the whole section of the slope becoming an intake. A connection existed between the main return-air slope and the airshaft. A wood stopping was built below this point for the purpose of stopping the movement of the air. It had the effect of reducing the amount of fresh air coming down, but did not entirely stop it.

In order to still further counteract this tendency, an opening with a cross section of 16 sq.ft. was made in the fan shaft with the expectation that the air instead of keeping on toward the mine would return up this shaft. Of a total quantity of 8,400 cu.ft. of air, the major portion went on into the mine, and men without apparatus could reach the stoppings that had been built in the main return slope.

Finally, in a last effort to prevent the air from going down, the fan was started at 14 r.p.m. in order to draw the air up the fan shaft. Of a total quantity of 5,148 cu.ft. of air at the slope mouth, 4,500 cu.ft. was found to be passing a point 25 ft. below the cross-cut between the main slope and the main airshaft. All this air was entering the mine.

This experiment shows the effect of natural ventilation in pitching beds. At first sight it would be evident that a state of equilibrium does not exist when light warm gases and cold heavy air are placed in contact. The quantities involved being large, with considerable difference in temperature and density, a heavy exchange current or natural ventilation is certain to be set up and this will persist for a long time.

Have to Consider Natural Ventilation

Consequently, when reopening mines the question of natural ventilation must be given serious consideration, especially in those cases where it is important that fresh air shall not gain access to places where fire may exist, because under such circumstances the fires will be apt to restart immediately. In such cases it is highly important to direct the natural current by short-circuit or new circuit away from any point where the oxygen in the air could and would cause damage.

At the time of re-entering the Albion Mine in January, 1918, the first inrush of air, arising entirely from natural ventilation, amounted to 50,000 cu.ft. per minute. Both fans were then standing idle and every opening was closed except the main slope, through which re-entry was made. There were also a few boards taken off the fan shaft.

In order to prevent this flow passing anywhere near the heated or burning area all fresh air had, by short-circuiting the main intake to the main return, to be deflected before it came near the fire zone. In this instance this had already been done when closing down the slope at the time of abandoning the mine. The short-circuit of the air current was established at a distance of 1,300 ft. from the fire. A short distance below this point a blanket of gas existed through which no one could pass without the aid of breathing apparatus.

The mine was then allowed for three or four hours to clear itself of the great bulk of the gas which lay on the circuit just established which, as has been stated, was at every point at least 1,300 ft. above the fire zone. The ventilation being much reduced because of the

cooling effect of the circuit, and also because of the dilution of the gas in the return, the short-circuit at this point was shut off and another short circuit established farther down, only 460 ft. from the fire.

The men, following the air circuit, reached a point where light smoke had been seen before the mine was sealed up. Here a strong odor of distillation was detected, and soon afterward this was followed by the smell of coal smoke. This discovery was most disappointing, because it left no doubt that the smoldering gob fire which had been surrounded by an atmosphere, carrying for thirty-six days less than one per cent of oxygen, had not been extinguished. A few hours later smoke again made its appearance, and for the same reason as before it was decided to close the mine and let it again fill with inert gas.

Had to Give Fire More Time to Die Out

The mine had been opened for only eighteen hours, and all the different phases of re-entry had been carried out as scheduled. This attempt was somewhat disappointing, since it followed four other successful re-openings carried on in exactly the same manner. In each of these cases one month of sealing had been considered sufficient not only to extinguish the fire but also to cool down the surrounding coal and strata. In some cases less than one month had sufficed for this purpose.

Finally, after considering every contingency, such as the possibility of the section being connected with workings of some other bed, through subsidence which might have taken place between this seam and that underlying it, it was decided to proceed according to the same method as had been previously adopted but to keep a close control of the natural ventilation. Since the first attempt had shown that thirty-six days was not sufficient to cool down the fire zone, the new entry was made almost three months after the first one, and contrary to what had been done in that case the second attempt was made in several stages.

The first of these included the establishment of a ventilation circuit as far as No. 4 level, 1,900 ft., and from there upward toward the surface in a separate ventilation slope, the idea being to keep the air current as far as possible from the fire zone. Instead of starting with a large amount of air, the current given by the natural ventilation at the start was only 10,000 cu.ft. per minute. This was ultimately increased to 21,000 cu.ft. The composition of the mine atmosphere at the time of the start was: Carbon dioxide, 9.98 per cent; carbon monoxide, 0.89 per cent; oxygen, 1 per cent; methane, 42.6 per cent; nitrogen, 45.9 per cent. This atmosphere was highly favorable to fire extinction.

Open Door To Keep Air From Fire Zone

The program of the first day included the opening of a door on No. 5 level, 260 ft. from the seat of the fire. This door, having been previously left closed by mistake, allowed any ventilation passing below No. 4 level to reach the fire zone. In order to avoid sending the ventilation beyond No. 4 level, for we had determined to keep this part of the mine under gas, the door in question had to be opened by men in artificial breathing apparatus. The distance down the slope from the air station to the door was 940 ft. The men went down as far as the door, but found that a fall which had taken place prevented its being opened.

At this stage a sample of gas taken from the slope at No. 5 level, 2,800 ft. from the portal, showed 17 per cent of oxygen. The mine having been opened for almost ten hours, dilution of the gas by the air current was taking place. It was decided to end here this first stage of the operation and to let the mine fill up again with gas for a few days. This was done and after a short time a gas sample taken through the pipe at the slope mouth gave this analysis: Carbon dioxide, 10.9 per cent; carbon monoxide, 0.42 per cent; oxygen, 0.62 per cent; methane, 30 per cent; nitrogen, 59 per cent.

A few days later we proceeded with the second stage of the program. This consisted in leveling off the fall which prevented the opening of the door at No. 5 level, also the closing by temporary wood partition of a small ventilation head next to the fire stopping. Natural ventilation was then established, 20,000 cu.ft. of fresh air per minute being admitted through the slope, but only down as far as No. 4 level. From this point the work which had been planned was accomplished by helmet men in an atmosphere containing only a small percentage of oxygen. These men worked 940 ft. from No. 4 level, which was the air station. This was practically all that was done the first day, at the end of which the helmet men had levelled off the fall, opened the door referred to and closed up the ventilation head. After the mine had been opened for nearly twelve hours they took a sample of the gas almost against the fire stopping. This sample, being analyzed, much reassured us, because it was found to include carbon dioxide, 5½ per cent; oxygen, 10 per cent, and methane, 24.5 per cent.

Fresh Air Did Not Mix With Methane

The value of this information alone would fully justify the organization and training of a corps of apparatus men. This valuable information meant that all our previous work had been successful in keeping an explosive mixture away from the fire zone. Also that it was possible to work with restricted ventilation in close vicinity to the fire stopping for about twelve hours without permitting a mixing of air and methane such as would constitute an explosive mixture.

At this stage it would have been quite possible to complete the program which included the building of a temporary stopping outside the one where on two different occasions we had noted smoke, but before proceeding to this last measure the whole mine was once more allowed to fill up with gas. Finally the last reentry was made. Through the same procedure as before the air was permitted to enter the mine, and this time allowed to pass to No. 4 level, traveling down toward No. 5. Men without breathing apparatus, following the air, built the temporary stopping above mentioned. The old stopping and all its surroundings were found to be perfectly cool, giving no indication of heat and no odor of distillation. The building of the temporary stopping was rapidly completed and immediately afterward the permanent concrete stopping was started. Success had been secured and once more the mine officials felt that their confidence in this system of smothering a fire was well justified.

Seal Off Gob With a Water Seal

In order to remedy the real cause for the fire, namely, infiltration of air through the coal in which the stoppings are set which seal off the lower portion of the section, a system of pipes connected to a natural water supply keeps a head of a few of water all over the bottom portion of the section. The overflow taking place through the coal is the best proof that the air cannot again enter to feed the gob with oxygen.

How to Secure Life and Duty from Frame and Mechanism of Mine Locomotives

Proper Care and Maintenance Greatly Reduce Operating Costs and Increase the Life of Locomotives—Details of Operation and Inspection Are Highly Important in Securing Maximum Life and Satisfactory Service

By W. T. Clark*

MINE operators who have electric locomotives in service for any length of time soon learn that proper care and maintenance will greatly reduce the cost of operation as well as the loss in production which is suffered whenever locomotives are out of service. As there are a large number of types and makes, the suggestions here set forth may not apply to all, but they will be found applicable to most mine locomotives.

It is advisable to give the locomotive a thorough inspection once a week and supplement this with a daily inspection of those parts which need most frequent attention, such as the brakes, journal boxes, trolley poles, controllers and reels, if these latter devices are employed. It has been found desirable at a number of mines to appoint a regular oiler, whose duty it is to see that all parts of the locomotive are properly lubricated. It is better to make this the specific task of some one man than to leave it to the motorman. Such a definite assignment of duty results in a considerable saving in oil and lessens the likelihood that the insulation will be injured.

As a locomotive has no bedplate, the frame must perform the function that usually falls to that highly important part of any mechanism. For this reason its cracks must be mended and its joints kept tight. To avoid any coning effect and to divide equally the tractive effort between wheels, the drivers must be kept equal in diameter. Pinions and gears should be kept tight on the axles and the motor suspension should be carefully watched, lest the motor fall on the track.

Locomotive Frame Must Be Kept in Repair

Except in a wreck locomotive frames require little attention. The frame joints should be kept tight. Bolts finished all over should be used in reamed holes and the nuts should be kept tight. Any crack in the frame caused by a wreck should be repaired immediately. A crack if not repaired is apt to enlarge and allow movement of the frame, which will cause more rapid wear on other parts of the locomotive, such as wheel flanges, journal boxes and axles. If a crack caused by a wreck is large it is usually better to procure a new frame. If the frame is made of cast iron it can be repaired by using steel plates machine-bolted, cap-screwed or patch-bolted in place. If the frame is of cast steel, it is advisable to weld any crack that may develop, care being taken to clean it thoroughly before welding and to see that the frame is not distorted in the welding.

If cast-iron wheels are used they should be replaced by new ones as soon as the chill is worn through at any point, as a wheel in this condition causes damage to tracks, switches and curves. If steel tires or rolled-steel wheels are employed, they should be trued up in a lathe when the tread becomes worn flat or grooved, as otherwise they will damage the track. By careful electric welding flat spots or grooves can often be filled in without removing the wheels from the locomotive.

On machines where the end-thrust of the axle is taken between the wheel-hub and the journal-box, the wear at this point should be carefully watched. If the wheel-hub is badly worn at the time the tire is changed, a new center should be used or the hub of the old center built up by applying a steel-plate washer so as to reduce the lost motion to one-sixteenth of an inch. If the journal-box is badly worn it should be replaced at the same time. If the journal-box is not worn too thin for safety, it may be shimmed.

To Save Wear Keep Wheels of Equal Radius

The life of wheels will depend on the character of the track, method of operation, manner of braking and quantity of sand used. The wheels on any axle should always be kept of equal diameter, for the cone effect of unequal wheels will cause rapid wear of the flanges and the track. If the wheels on the two driving axles are not of the same diameter the load will be divided unequally between the motors, the motor driving the larger pair doing more than its share of the work. It may happen that the service is such that sand is used principally in one direction of travel. In this case the leading wheels in that direction of operation will wear more rapidly and it is advisable to change the axles after each wheel turning so as to make the leading drivers of a slightly larger diameter.

The axle diameter should be measured occasionally, as the axle may become worn in the bearing as a result of improper lubrication or worn brasses. The bearings should be kept smooth and the axle replaced before it gets so worn as to present danger of bending or breaking.

What to Watch in Lubrication of Bearings

Journal boxes usually are designed for oil and waste lubrication. High-grade wool waste should be exclusively employed for packing, as cheaper grades do not

*General engineer, Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa.

possess the proper resilience and consequently do not keep in close contact with the bearing surface. Furthermore the capillary action is not as pronounced in the poorer grades and they will not carry as much oil to the bearing. Before packing the box the waste should be soaked in oil for twenty-four hours. Care should be taken not to use too much waste and not to pack it too tight in the box.

The journal boxes should be examined daily to see that the waste bears against the axle and that it is not dirty or glazed. Dirty or glazed waste will not carry the oil to the rubbing surfaces. The journal brasses should be replaced before they wear thin enough to split. No definite rule can be given for oiling journal boxes because of the large variety of types and capacities of oil cellars and the variation in service conditions.

Sufficient oil should be employed to give proper lubrication, but the use of more oil than necessary is wasteful. Where the thrust of the axle is taken between the wheel hubs and journal boxes, these bearing surfaces should be oiled occasionally to reduce the wear. It is also advisable to oil between the box and the pedestal gibs.

On locomotives with the frame outside the wheel the journal boxes are more accessible for inspection and oiling. Furthermore outside frames permit the use of a type of box in which the thrust is taken between the end of the axle and the journal box lid instead of between wheel hub and end of box. This greatly increases the life of both the wheel hub and journal box. (See Figs. 1 and 2).

One of the most important details of operation is the daily inspection of the brakes, as the safety of the operator of the locomotive, its brakeman and frequently that of the miner depends on their reliability. The brakes should be examined each morning to see that they are in condition for the day's run and that they are properly aligned with the wheel tread. On the screw-type brake the slack at the dead lever should be taken up so that when the brakes are set the brake shaft will project at least an inch beyond the nut in the brake. When a turnbuckle is employed between levers, daily adjustments may be made thereon without adjusting the dead lever for some time.

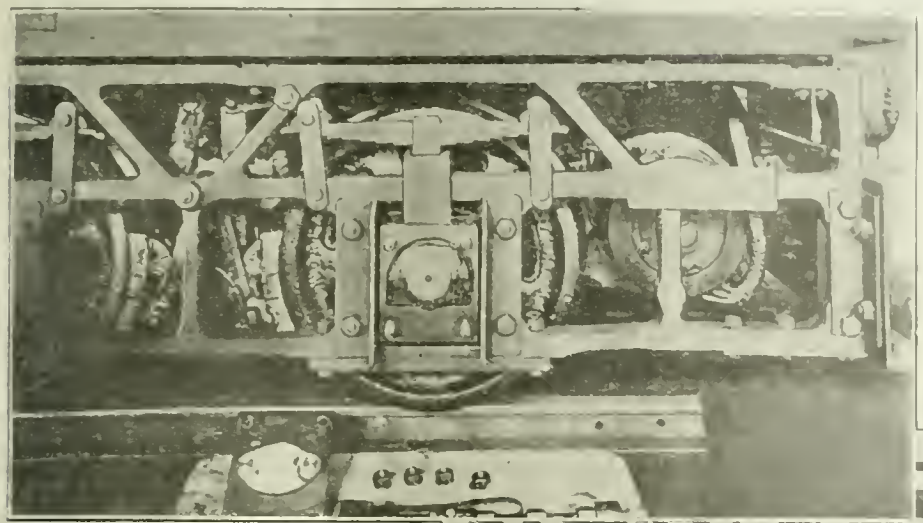


FIG. 1

Journal Box Cover Removed

This cover takes the end thrust of the axle directly and so relieves the inner end of the journal box from stress and wear. This convenience is rendered possible by the use of the outside frame.

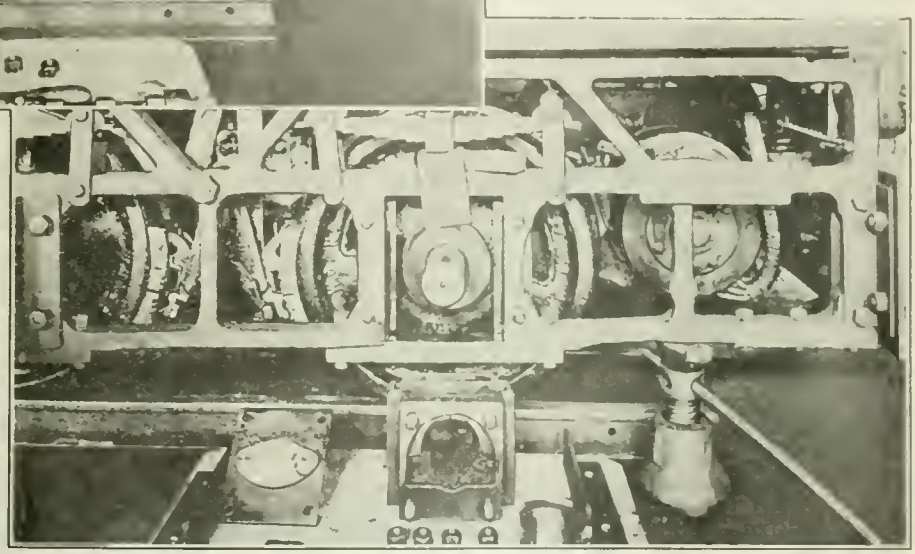


FIG. 2

Journal Box Entirely Removed

Removal of the box is easy, and when that is done an inspection or a renewal of the packing or of a worn brass can be made without inconvenience or prolonged delay.

Threads on the shaft and nut should be examined to determine whether they are worn and in danger of stripping. Pins and levers should be kept free from mud, which may clog the action of the brake sufficiently to cause uneven wear on the brake shoes. When the brake shoes become worn and require renewal it is preferable to replace all the shoes at once. In case one or two are much more worn than the others, the shoes should be replaced in pairs—that is, the new shoes should be put on one pair of wheels and the partly worn ones on the other. If the shoes on a pair of wheels are not worn evenly the brake will not operate properly.

When operating a brake pressure should be applied according to the locomotive speed—high speed requiring heavy pressure. The pressure should be reduced as the locomotive slows down. Otherwise the brake will lock the wheels, causing them to skid. Skidding reduces the braking effect and also wears flat spots on the treads. Sand increases the braking effect, but if the wheels lock and skid, it causes much more rapid wear.

The springs of the journal boxes are designed to protect the equipment from shock and afford comfort

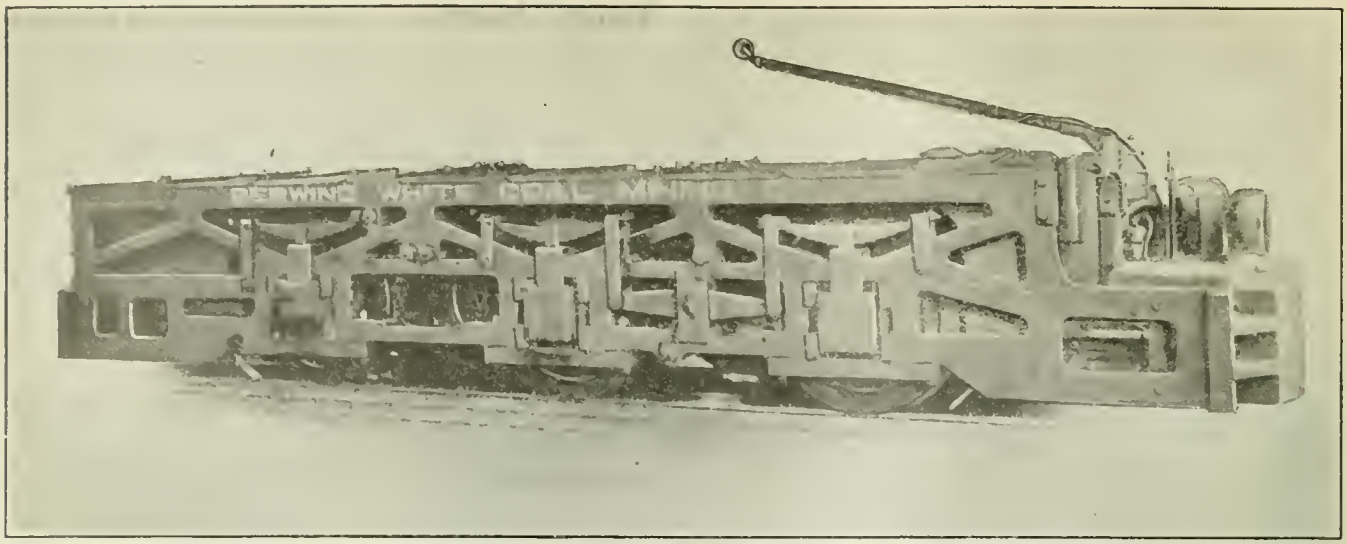


FIG. 3. A HEAVY SIX-DRIVER TROLLEY LOCOMOTIVE FOR USE WHERE HEADWAY IS LOW
The spring arrangement is such as to put equal pressure upon all wheels. A broken spring destroys this balance.

to the operator. A broken spring should be replaced immediately, as a locomotive thus crippled will not ride smoothly and has a greater tendency to jump the track. Furthermore the breakage of one spring throws greater stress on those remaining and makes them more likely to fail.

Only clean, dry sand should be used in the sand boxes, if trouble from clogging valves and sand pipes is to be avoided. If for any reason the sand in the box gets wet, it should be immediately cleaned out and replaced with dry sand. The sand pipe should be kept in proper place so that the sand will fall on the rail in front of the wheel. Sand should be used only when necessary to accelerate a heavy load or in hauling on a steep grade.

Excessive use of sand has a tendency to cause dust and grit to work into the bearings of the locomotive and motors, causing rapid wear. Care should be taken in filling sand boxes to avoid spilling the sand over the journal boxes, gear cases, motors, etc., as sand so spilled may reach the bearing surfaces and cause damage.

Sand Should Be Clean and in Place

One-half of the gear case should be removed at frequent intervals and the gear and pinion inspected. It will depend on the locomotive construction and on the conditions in the mine as to whether it is better to remove the upper or the lower half of the case. If the pinion is worn unevenly it is a sign that the axle caps need tightening or that the axle bearings need renewal.

Replace Pinions by Boiling Water Method

Pinions should be replaced as soon as they become badly worn, as in this condition they cause increased wear on the gears and are likely to strip. The best method of obtaining a tight fit of the pinion is to use the hot-water method in its application. The following precautions should be taken, whether the pinion is to be driven to place or applied by the hot-water method.

Both shaft and pinion bore should be cleaned and freed from burrs or swelling. The pinion bore should be in contact with at least three-fourths of the surface of the shaft and should fit properly over the key. The hot-water method consists of heating the pinion in boiling water for from thirty to sixty minutes, depending on the bore of the pinion. When the pinion has reached the temperature of the boiling water, it should be removed and the bore quickly wiped clean. Before the pinion has had time to cool it should be tapped to place with a heavy copper hammer or with a 6 to 8-lb. sledge, using a wood or copper block between it and the pinion. This sledging is not resorted to in order to secure a driving fit but to make sure that the pinion is home and well seated. Three or four taps around the pinion should be sufficient. The pinion nut with its lock washer should then be screwed on tight. To prevent rusting and to assure a clean surface of contact, washing soda should be added to the heating bath—a quarter of a pound of soda to five gallons of water.

Loose Gear May Do Locomotive Much Damage

Gears whether split or solid should be kept tight on the axle. Unless the gear is kept rigidly in place it will rapidly ruin the key and axle, and may break the pinion and cause further damage. In putting on a split gear care should be taken to have the key fit tight in the axle and in the sides of the gear keyway, but there should be $\frac{1}{64}$- to $\frac{1}{32}$-in. clearance between the top of key and bottom of gear keyway.

The sharp edges of the key should be removed with a file, so that they will not interfere with the fillet in the bottom of the keyway. If the gear is placed as tightly as possible on axle and key, and the bolts after a few days' operations are tightened a second time, little difficulty from loose gears will be experienced. However, trouble is always likely to occur from split gears. Solid gears are preferable, as they have a much longer life and do not come loose on the axle. They will outlast at least two sets of tires or rolled-steel wheels.

Gear cases should be kept supplied with a liberal amount of heavy oil or grease. Joints in such cases should be kept tight and if broken repaired immediately. It is better to run without gear cases than to operate with loose or broken ones, as the dirt which gets between the gear teeth because of loose or broken cases will cause more rapid wear than that which gets into the mesh when no cases are used. The practice of running without gear cases shortens the life of the gears, as without them gears cannot be lubricated properly.

The motor suspension should be inspected regularly.

Any failure in the suspension, which drops a motor to the track, is likely to cause a serious accident. Any broken suspension springs should be replaced at once. Such breakage usually results from an open circuit in the resistance on one or two notches, loose gears, or improper handling of the controller.

Iron Conductors for Interior Wiring*

By S. T. Harley
St. Louis, Mo.

GENERAL opinion appears to be that there is no probability of iron ever being considered as a material for conductors for interior wiring in the United States; at least not for some time to come. An iron conductor is difficult to solder effectively and even if protected by the best-known methods may be subject to corrosion. This would be fatal in concealed work.

Iron wire is being used to some extent in America for high-voltage transmission lines and in this service is apparently satisfactory. Where used for high-tension transmission conductors it can always be inspected readily and is invariably of such large section that failure by corrosion is not likely to occur until the conductors have been in service for a long period. If iron wires were used for inside work, in order to provide the same conductivity—that is, afford the same voltage drop—they probably would have to be at least seven times the size of the copper conductors now used.

*Copyrighted 1920.

Rosedale Mine Submits This Entry-Driving —Let Us Have Yours

AT the Cambria Steel Co.'s Rosedale Mine (Nos. 5 and 6) between Jan. 6 and June 15 two headings 7 x 10 ft. in cross section were driven an aggregate of 2,976 ft. The coal is 3 ft. thick and consequently 4 ft. of rock had to be removed. The only machinery used was a Goodman shortwall mining machine and two jackhamers. The average advance per entry per week for the 23 weeks was 64.7 ft. or 21.56 yd. From June 8 to June 15 a distance of 88 ft. was driven in one heading and 90 ft. in the other.

Mine Door Set Automatically Into Action by Weight of Trip

A Mule, Two Men, a Mine Car or a Locomotive Passing Over the Approach Platform of the Door Will Depress It and Throw the Door Open

LIKE many another mechanical device, the automatic mine door has been much criticised because of lack of simplicity and of rigid construction. An improved type of automatic mine door, recently patented by J. J. Sabin, of Coupeville, Wash., was installed during January, 1920, in the mine of the Sabin Coal Mining Co. at Herrin, Ill.

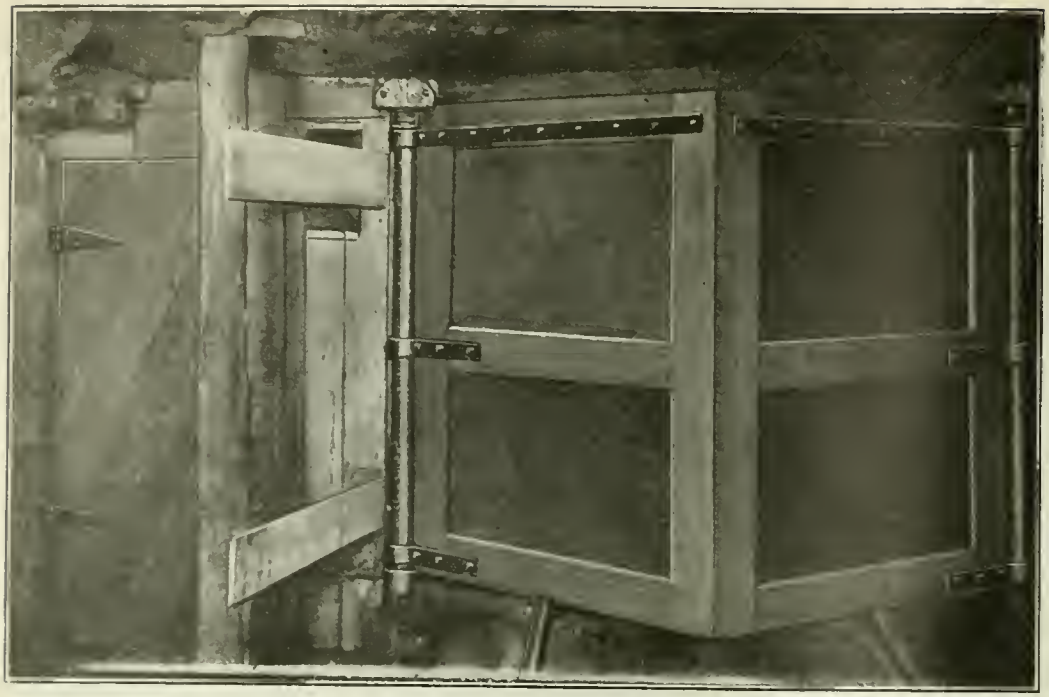
The accompanying illustrations show this device in some detail and give an idea of its rugged construction and the small amount of attention which its maintenance demands. The doors are operated by gravity. When a locomotive, mine car or other sufficiently heavy weight approaches the door the mine track is depressed. For this purpose, the track approach upon either side of the door is well floored with heavy oak planking. A mule or two men approaching the door have sufficient weight to depress the elevated track and cause the door to open.

The mechanism operating this door consists of a pair of right- and left-hand spirally slotted extra-heavy pipe columns. The spirals are placed in the lower end of the uprights, and through them passes a 3-in. horizontal shaft, supporting the track. This is clearly shown in one of the cuts. To the end of this shaft is attached a ½-in. flexible wire cable which passes over a differential sheave supported by the door frame. From this sheave are suspended counterbalance weights. When the doors are closed these weights raise the tracks approximately 6 in. The rail approaches to the door are 24 ft. long on one side and 30 ft. on the other. The inclination of the track floor, therefore, is almost negligible.

When a motor or mule approaches the door the weight on the elevated track depresses the horizontal crossbar, causing the doors to open and remain in this position until the moving weight passes through and leaves the

Locomotive Opening Doors

The weight of a moving trip upon the track approach causes the doors to open. After the trip has passed, the doors close under the action of a counterweight. Any weight sufficiently heavy to raise the counterweights will open the doors.



Doors Closed

The two doors meet in a V and open outward, in this case toward the observer. An auxiliary or man door may be seen to the left of the main or trip doors. The operating mechanism is on the opposite side of the door and concealed by the jambs.

platform on the far side. When the track is depressed it rests upon a solid support. The track is thus able to carry the heaviest mine locomotive. As soon as the weight is removed from the track, the counterbalance weights lift it to its original position and close the doors.

Dispenses With Levers and Springs

It will be clearly seen that in the throwing of these doors it is unnecessary to operate levers, springs or any other mechanical devices, and the human element is not relied upon in the least. This renders the door automatic in every sense of the word. The rails are securely held in place by the use of heavy steel ties placed about 2 ft. apart, making the track markedly rigid and safe. On top of these ties, which extend about 12 in., outside of the rail, a heavy oak floor is placed. Coal or other material is thus prevented from getting under the track and interfering with the proper operation of the door. A cone is placed in the lower portion of each of the spiraled columns, and this prevents coal from accumulating in them.

On account of the nice balancing of this door a locomotive at slow speed will throw it wide open by the time it has traveled a distance of 6 or 8 ft. upon the track approach. At a speed of twelve to fifteen miles per hour a locomotive has a clearance of 5 or 6 ft. on the opened door. The operation of the doors depends upon gravity only and the weight does not have to be great. Hence a mule, either drawing cars or without them, can depress the track and pass through safely.

This device, as above stated, has been patented by the inventor and is manufactured by the Egyptian Iron Works at Murphysboro, Ill.

Locomotive Not Needed

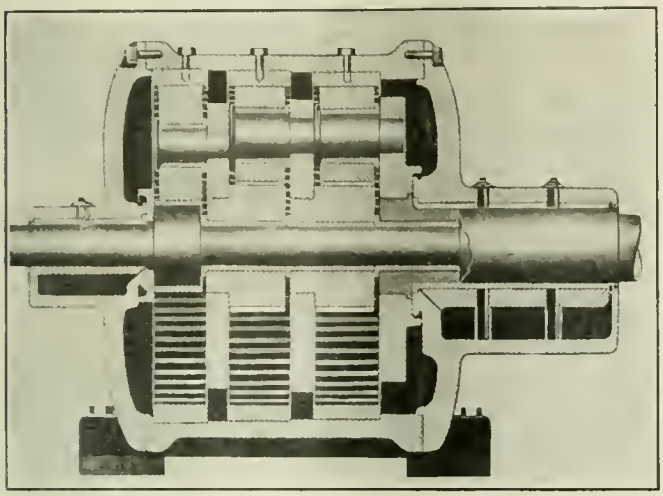
Two men are heavy enough to operate the opening mechanism at least far enough to permit their passage. A mule is sufficiently heavy to open the doors wide. This view, being taken from the rear of the door, shows the counterweights on which operation depends.

Speed-Reduction Gear Regulates Speed of Machine to Fit Need

By This Device a Motor Shaft Can Be Made to Drive Shaft of a Machine in Direct Line with It at Any Predetermined Speed Ratio

WITH equipment of various kinds in and about the mine a gear reduction is often found necessary. Such gears must often be introduced between the ventilating fan and the motor which drives it, between picking tables and their driving motors, and upon conveyors, pumps, jigs and other devices.

The means commonly employed for securing changes in rotational velocity are belts, gears—spiral, bevel and



CROSS SECTION OF THE GEAR

This particular gear is triple, that is, three distinct gears are inclosed within one case, forming one unit. This gives a high reduction between the driving and driven shafts.

herringbone—sprocket chains and more recently the silent chain drive. Where the driving and driven shaft extend at right angles to each other, either the bevel gear or the worm gear is sometimes used to good effect.

Where, however, it is advantageous to keep the driving and driven shafts in the same line, the James reducing gear offers a ready solution to the problem. This gear, as may be seen in the accompanying illustration, is much more compact than those of the ordinary type and there is the further advantage that the gear wheels accomplishing the reduction operate in a continuous bath of oil.

The driving shaft, operating at high speed, carries on the inside of the casing a pinion, about which and carried upon steel pins fastened into a disk concentric with the pinion are three idlers. These are spaced equidistantly and mesh with an internal gear as large as the diameter of the casing will permit.

The disk, which revolves under the action of the idlers, also carries a pinion which meshes with a second set of idlers, which in turn mesh with a second internal gear. This construction is carried out until the desired speed reduction is attained. The last disk of the series actuates not a pinion but the driven shaft. The whole apparatus may be seen in sections in the accompanying illustration.

It will be at once perceived that this construction, while extremely simple, may be arranged to give almost any desired speed reduction. The ratio between the speeds of the driving and driven shaft in this device as now manufactured may be anything from 1 to 4 up to 1 to 1,600. It is, of course, seldom that this latter and extreme ratio is either necessary or desirable.

It can, nevertheless, be obtained in a device of this kind composed of only four of these concentric speed-reducing elements. It is sometimes advisable to combine this device with the ordinary worm-gear reduction. Thus a high-speed motor, say one operating at 1,800 r.p.m., could be arranged to drive a picking table where the speed of the apron is, say, 50 ft. per min. and the speed of the driving sprocket is roughly 4 r.p.m.

The compact size of this gear reduction renders it advantageous for application upon the same bedplate as the motor. It seldom exceeds in bulk the machine to which it is attached, and the use of an extended bedplate facilitates the operation of both machines while adding rigidity to the base.

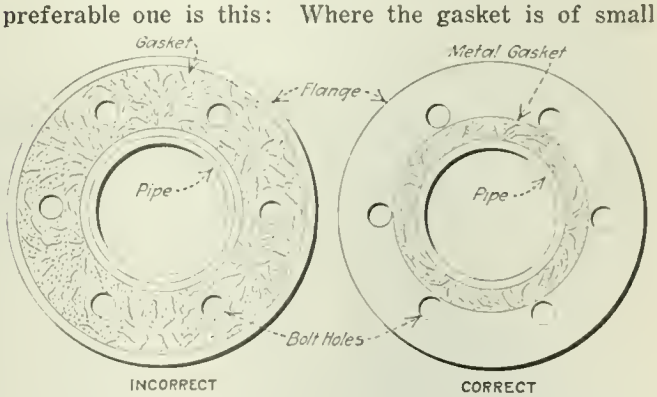
This gear reduction has thus far been but seldom applied to the machinery in use in the coal-mining industry. The device has, however, been given a thorough tryout in other industries where reliability is highly important, and it has proved entirely successful. There appears, therefore, to be no good reason why it should not attain equal results in the coal industry, where a compact, comparatively fool-proof, reliable gear reduction of large ratio is desirable. The speed-reduction gear here described is manufactured by the D. O. James Mfg. Co., of 1120 W. Monroe St., Chicago, Ill.

Metal Gaskets Should Not Be So Large As To Extend to the Flange Bolts*

By T. R. Morris
St. Louis, Mo.

WHERE a metal gasket is used in the flange joint between two pipe lengths it should be of relatively small diameter and placed within the bolts as shown in the accompanying illustration at the right. At the left is shown the incorrect method.

The reason that the practice suggested at right is the preferable one is this: Where the gasket is of small



THE TWO TYPES OF GASKETS

area the unit pressure—that is, the number of pounds per square inch—imposed on it when the bolts are tightened is much greater than if it has a large area. Thus a gasket of small diameter is "squeezed" tighter in the joint, with the same pressure on the bolts, than a gasket of large diameter.

Where rubber or some similar yielding material is used for the gasket it may be made as shown at left. The bolts hold the gasket in place and the unit pressure imposed on it, where it is of one of the softer materials, is sufficient to insure a tight joint.

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Why Boiler-Feed Pump Gives Better Service Than an Injector*

Injectors Are Perfect Devices as far as Using the Heat in Steam Is Concerned, But They Cannot Handle Hot Water

By T. H. Green
St. Louis, Mo.

WHEN an injector is used as a pump for raising and forcing water, and only as a pump, it is highly inefficient inasmuch as it requires about five times as much steam—or coal—as an ordinary single or duplex steam pump would employ to do the same work. Hence as a device for merely lifting or moving water the injector, from an economic standpoint, is entirely out of the running.

But it is a fact that the injector imparts to the water which it pumps all of the heat of the steam which it uses in pumping water. In the foregoing statement the minor, almost inappreciable, radiation losses that actually and unavoidably occur are disregarded. Hence from a thermal standpoint the injector is 100-per cent efficient. But the heat which it imparts to its feed water is heat from live steam, and only water that originally is relatively cold can be injected, whereas with the pumps of other types used for boiler feeding the feed water itself may be hot, having been heated previously by exhaust steam.

Injector Has Many Limitations

The injector cannot, in practice, handle effectively water at temperatures exceeding about 100 deg. F. This means that it cannot be used advantageously upon water that has been previously heated in a feed-water heater. Consequently this device cannot be employed at all with an open feed-water heater. It may be used, however, with a closed heater installed between the injector and the boiler.

An injector will not start when served by a steam pressure much lower than that for which it was designed. Assuming that the device is started on the pressure for which it was built, if the impressed pressure increases or decreases materially the injector will cease to work. Nor will it start again automatically upon resumption of the steam pressure at which it originally started and for which it has been temporarily adjusted. To cause it to start again to pump water, the operator must manipulate anew the starting and adjusting levers.

Abandon Injector and Save Exhaust Heat

Furthermore, material change in the level of the suction water being handled will cause the injector to cease operation. This necessitates a new adjustment and a new start. In many instances when an injector has been working and has become hot, if for any reason it stops or is stopped, it cannot be re-started until it has been duly cooled by sousing it with cold water. Obviously all of the above disadvantages restrict the desirable application of the injector for boiler-feed service. On the other hand, the simplicity, small space occupied, absence of moving parts and low first cost of the injector render its use desirable under certain conditions.

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The injector is uneconomical in an application where an exhaust-steam feed-water heater can be employed. This is a general statement. Hence injectors are ordinarily provided only on locomotives and traction engines and upon small portable boiler-engine units where the use of a feed pump and feed-water heater might not be desirable or feasible. It makes an excellent standby, however, even on large stationary boilers, to be used only in time of emergency such as the failure of the regular boiler-feeding equipment.

The injector is just about as economical from a coal-consumption standpoint as an ordinary steam pump that feeds cold water to the boiler. The following table discloses at a glance the economies of the situation.

RELATIVE ECONOMIES OF THE INJECTOR AND OF BOILER-FEED PUMPS OF DIFFERENT TYPES
(Re-arranged from data by D. C. Jacobus)

	Equipment Used for Forcing Feed Water Into Boiler	Relative Coal Consumption	Relative Saving in Coal (Per cent)
No Feed-Water Heater	Direct-acting steam pump receiving water at 60 deg. F. and forcing it into boiler at 60 deg.	1 000	0.0
	Injector, receiving water at 60 deg., heating it to 150 deg. and forcing it into boiler at that temperature	0 985	1 5
With Feed-Water Heater (which utilizes exhaust steam from engine)	Injector, receiving water at 60 deg.; water after passing through injector is heated from 150 deg. to 200 deg. in feed-water heater before being forced into boiler	0 938	6.2
	Direct-acting steam pump receiving water at 60 deg., which, after passing through pump, is heated to 200 deg. in feed-water heater before being forced into boiler	0 879	12 1
	Geared power pump mechanically driven by engine, receives water at 60 deg., which, after passing through pump, is heated to 200 deg. in feed-water heater before being forced into boiler	0 868	13 2

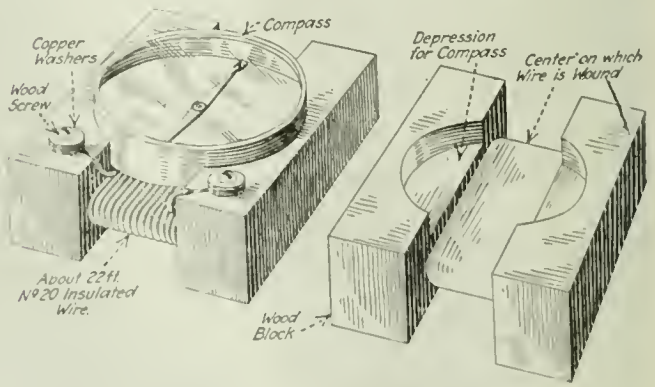
Note—Water fed into boiler operating at 80 lb. per square inch gage pressure. Pump has a duty of 10,000,000 ft.-lb. per pound of coal when no heater is used

Converting a Magnetic Compass Into an Efficient Galvanometer*

By R. W. Crawford
St. Louis, Mo.

A NEAT and effective galvanometer that may be used in many interesting electrical experiments can be assembled as suggested in Fig. 1. To make this galvanometer there are required: (1) A good pocket compass, (2) a block of white pine or other soft wood, (3) about 22 ft. of No. 20 copper wire, either cotton or silk insulated, (4) four copper washers, and (5) two round-head wood screws.

The wooden block is cut to the form shown in Fig. 2,



DETAILS OF GALVANOMETER

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making a bobbin on which the wire may be coiled and providing a depression such as will just contain the pocket compass. Next the insulated wire is wound on the center or bobbin as shown in Fig. 1. Each of the ends of the wire is brought out to a binding post made with a round-head wood screw and two copper washers. In using this galvanometer it must always be placed (Fig. 1) in such a position that when no current is flowing through the coil the compass needle will rest exactly parallel with the turns of wire on the core.

It should be noted that in a device of this kind satisfactory results are seldom obtainable with a cheap compass. To be reasonably accurate and sensitive the compass should be of relatively large diameter, the needle should be strongly magnetized and should be supported on a good jeweled pivot. It is probably impossible to buy a compass of much value for this work for less than a dollar.

As already mentioned in this article, bins, in order to dry the coal properly, should be equipped for unloading from the top down. Such an equipment costs more than do driers, and if ground space is at a premium the comparison in savings effected is even more in favor of the centrifugal machine. The use of driers also reduces the important item of settling tanks to a minimum, as all the fines and sludge are taken care of from the outset.

Experiments conducted on the first type of drier that I designed taught me that the use of scrapers would increase the settling area needed to such proportions that economical operation would be almost impossible. Furthermore, the reduced efficiency of the imperfectly dried coal and the loss of fine coal, with the lack of uniformity in the moisture of the dried product, so added to the expense of conducting draining bins that they made the need for a better type of drier a real necessity.

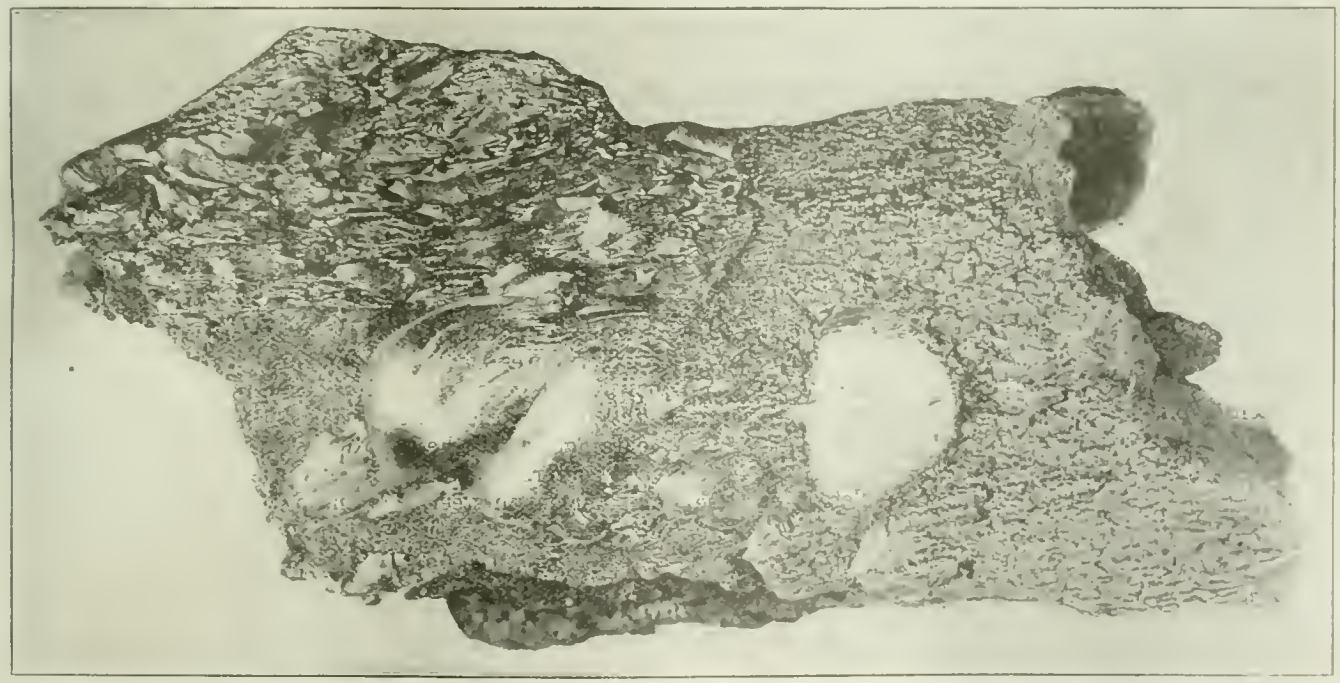
Carbon Blisters and Carbon Threads Are Said To Be Evidence of Good Coke

Undecomposed Hydrocarbons at the Bottom of the Oven Rise Into the Fierce Glow of the Upper Part of the Charge, Where They Split, Leaving Pure Carbon on the Coke Faces

COKE frequently has "metallic silvery" carbon deposits either in the form of solid blisters or hair-like threads. These deposits are found quite often in the beehive product and not infrequently in coke made in the byproduct oven, and they are usually taken as evidence that the coke is good and well-burned.

These deposits of excess carbon are in beehive ovens usually found near the top of the coke layer close to the oven walls or anywhere adjacent to the well-defined gas channels or fissures which develop in the charge during the carbonization period. Rarely, if ever, is this characteristic found in the lower portion of the coke mass, that is in the so-called "black-butts" section.

Since the carbonization process in the beehive oven proceeds from the top downward through the coal charge the temperature of the top layers is considerably higher than that of the lower layers. Accordingly, in the lower portion there is, especially in the early stages of coking, a copious evolution of undecomposed coal hydrocarbons which, ascending through the avail-



METALLIC BLISTERS OF CARBON AND THREADS, SOMETIMES DULL AND THIN, SOMETIMES LUSTROUS AND THICK, OFTEN OCCUR ON COKE

Coarse threads can be seen on the upper left-hand part of the coke mass and blisters in many places. Probably there is some fine hair but the illustration fails to reveal it

able openings and fissures, are deposited upon the upper layers and are there decomposed by coming in a reducing atmosphere into the reflected heat from the oven dome and into the radiated heat from the surrounding incandescent sections of coked coal.

Undoubtedly other factors affect the formation of bright carbon spots, such as the percentage of volatile matter in the coal, the richness of its tar and aromatic hydrocarbons, the uniformity of temperatures and the general coking conditions. The time of the coking period also has to be taken into account, as it is reasonable to assume that more solidified carbon hairs would be found in a 96-hour charge than in a charge of either 72 or 48 hours' duration.

Upon analysis these silvery carbon sections show a higher percentage of fixed carbon than the regular product. It might be surmised that as the carbon in this form is extremely hard, investigation would prove it to be of a polymerized nature.

Coke having carbon blisters and hairs of the kind so plainly shown in the illustration when in the upper regions of a blast furnace will resist dissolution in the ascending hot gases and retard wind penetration in the coke burden near the tuyeres.

If a Mine Dam Gather Refuse Behind It, How Can It Be Cleared?

Such a Dam Can Be Safely Built with a Manhole, Filled with a Pine Plug Removable by Use of a Jack

By D. C. Ashmead
Wilkes-Barre, Pa.

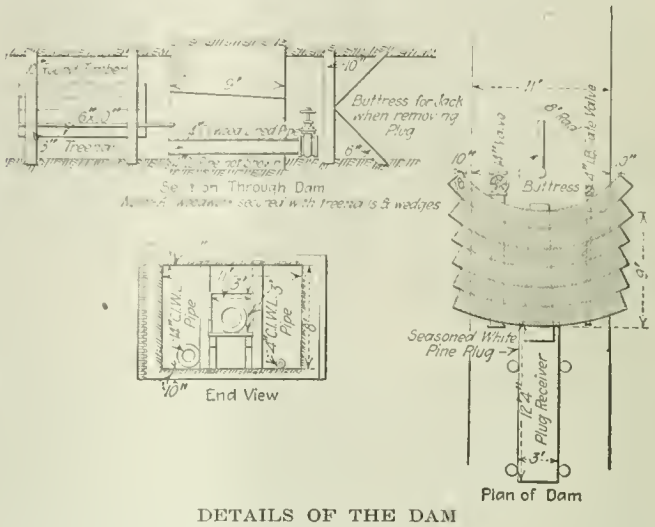
IN ONE of the mines in the anthracite region of Pennslyvania a unique and highly efficient mine dam has been installed. This is so arranged that access can be had to its inner or rear face, if for any reason such access is necessary. But, although an opening to the rear of the dam is provided, it is so arranged that this opening may be closed, and then the structure is to all intents and purposes as strong as if it were built of solid masonry.

The accompanying illustration shows the details of construction. The dam is built of brick in the form of an arc with a radius of 8 ft. It is 9 ft. in thickness, projects into the wall of the heading a distance of 2 ft. and into the roof and floor a distance of 10 in. Through the dam near the bottom extend two cast-iron wood-lined pipes, one having a diameter of 14 in. and the other a diameter of 4 in. and both are equipped with valves so that the water can be drawn off if necessary.

The main advantage of this dam, however, lies in the manhole that has been provided and the means that have been employed for its closure. Extending through the dam is a round tapering hole 16 in. in diameter at one end and 25 in. in diameter at the other. This is fitted with a white-pine plug that completely fills the hole. In the upper or rear side of the dam is built a receiver so that when this plug is pushed out of the hole it will be deposited upon this structure instead of falling to the ground. The construction of this device is well shown in the illustration and needs no further description.

In front of the dam a buttress is built to hold the jack which is used when it is necessary to remove the plug. The details of this buttress also are shown and it needs no further comment. When it becomes necessary to get behind the dam a jack is placed with one end against the plug and the other bearing upon the buttress. The plug may then be pushed back by the jack, and deposited upon the platform provided for its reception.

After access has been gained through the plug hole to the upper fall of the dam and the needed work or



DETAILS OF THE DAM

This shows clearly how the water wedges the plug into place and how this plug may be removed by means of a jack when the pressure of the water is removed.

inspection has been completed, all that is necessary to close the dam again is to pull the plug forward into place and the rising water will soon push it securely home, completely sealing the dam.

This whole device is simple and easily taken care of. In some places a mine dam is installed merely to hold water back, and it matters little if dirt accumulates behind it. In such a case a plug like this may be omitted. The main purpose in using the plug is to render it possible to get behind the dam to remove accumulations of dirt which otherwise might block the valves or pipes which extend through the structure.

Springfield District Has Lost Many Men

ACCORDING to John J. Watt, secretary-treasurer of subdistrict No. 4 of the United Mine Workers of America, few recruits are being obtained for the occupation of coal mining. His subdistrict comprises mines in Springfield and the immediate vicinity. Mr. Watt declares that there has been a decrease of more than 2,400 mine workers in the subdistrict in the last three years, although the area covered by the subdistrict has been slightly enlarged.

His figures show that at present there are 9,100 paid members of the United Mine Workers in this district though there were nearly 12,000 members three years ago, when the territory was smaller. The industrial centers where the mine workers can obtain steady employment in steel mills and automobile factories have attracted the men from the mining communities.

Coal Age Index

THE indexes to *Coal Age* are furnished free to all who ask for them. The index for the first half of 1920 will shortly be ready for distribution, and a copy can be had by addressing a postcard to the Subscription Department of *Coal Age*.

Review of Williamson and Pike County Strike To Secure an Agreement with the Union

A Few Evictions Have Occurred—Union Hopes to Extend Operations from this New Focus of Unionism Toward McDowell Field—Operators Assert 36 Per Cent of Mines Are in Full Operation

UPON the failure of the operators of the Williamson (W. Va.) region to recognize the union in that field, a strike order was issued by the officials of district 17 on Tuesday, June 29, calling all miners who had become affiliated with the United Mine Workers organization in Mingo County, West Virginia, and in Pike County, Kentucky, on a strike, to become effective Wednesday, June 30. As a result approximately 6,000 mine workers employed in the counties named laid down their tools.

The strike call applied to practically all the miners of Mingo County and to about 1,000 other miners employed largely by the West Virginia corporations on the Kentucky side of Tug River, in Pike County, Kentucky.

Although during the last two months most of the miners had been induced to become affiliated with the United Mine Workers organization, there had been no cessation of operations except at two or three places, but when C. H. Keeney, president of district 17, called a conference of the affiliated miners to be held at Williamson on Wednesday and Thursday, June 23 and 24, for the purpose of formulating demands to be made upon the operators and when the operators on their part declined to enter into the conference after being requested by officers of the union to do so, it became apparent that a strike would be called immediately.

Hope by Strike to Get Union Recognition

The union officials declared that they desired the conference for the purpose of negotiating a wage agreement. Of course as attendance upon the conference referred to would have involved in effect the recognition of the union, operators declined to attend it, and the strike was called. It is stated that an effort was made by the U. S. Department of Labor through one of its officials, Charles Kerwin, to avert the strike if possible, but Keeney, president of the district, refused to postpone it.

Federal mediators in endeavoring to settle the controversy between the miners and operators say that the object of the Government was to prevent any cessation of production. The operators stated they had a similar purpose in resisting the unionization of their mines. They contend that they would be in a better position to maintain and increase production if the miners were not organized, calling attention to the fact that during the November and December strike of union miners it was the Williamson and other non-union fields which prevented the country from being frozen into submission to the miners' demands by a complete stoppage of coal production.

Claims are made by officials of district 17 that many families have been evicted from their homes in Mingo and Pike counties since the work of organization began. However, evictions in Mingo County have occurred at only a few operations. In most cases when mine workers joined the union they were permitted to continue to work and to occupy company houses. There has been nothing to indicate, so far, that there will be wholesale evictions or any evictions at all even though miners, being in idleness, probably will not be able to pay the rental on the houses they occupy. There are three tent colonies occupied by the mine workers who were formerly in the employ of some of the companies in the Mingo and Pike county fields. It is alleged that efforts have been made by operators to secure miners from the outside with a view to continuing operations despite the strike, but little credence is given to the report.

Say 36 Per Cent of Mines Are Working Full

On July 5, five days after the beginning of the strike, operators of the Williamson field professed to be well satisfied with the strike situation in Mingo and Pike counties. At the end of the previous week it was stated by them that there were 29 mines out of the 80 mines in the field in full operation, and in addition to those mines there were a number of other mines still in operation, though with reduced forces. In substantiation of their claim that the calling of the strike had made no appreciable difference in production or in conditions existing before the strike, the loading of 227 cars of coal on Thursday, July 1, and of 219 on July 2 was cited.

In the week ending July 10 the Williamson field produced 867 cars, or 40,350 tons, of coal. On July 5 no coal was loaded but the output for the five days following was 177, 180, 180, 166 and 164 cars respectively.

Operators declared that only about 1,500 miners are employed in the strike area. About half that number, they said, had become members of the United Mine Workers organization. In the Pond Creek (Ky.) area, in which fully half the tonnage of the Williamson field is mined, the strike order exerted no perceptible effect, production there being normal. The union acknowledges that it has not made much progress in organizing mines on the Kentucky side of Tug River.

Officers of district 17 make the assertion that they will complete the organization of miners on Pond Creek and along Tug River in a short time and with that in view have leased 60 acres on Pond Creek, where a tent colony will be established. Mine workers' representatives also say they propose to prosecute vigorously the work of organizing the McDowell County miners.

The controversy is not as to wages, for the district president, C. F. Keeney, recently admitted that some operators in the Williamson field are paying a higher rate of wages than is provided in the Kanawha scale.

Nanty Glo Miners Stand by Weighmaster

THOMAS J. McDERMOTT, a check weighman, who is under bail for court on charges made by company officials, was the cause of a strike at the No. 3 mine of the Springfield Coal Co., Nanty Glo, Pa., June 17, when the management refused him permission to resume his work at the tipple. He had the highest number of votes but not a majority, as four men were candidates for the position. Nanty Glo is in the Johnstown district.

Discussion by Readers

Edited by
James T. Beard

Contract System of Mining Coal Gives Rapid Development

REFERRING to the inquiry of "Mine Superintendent" regarding the contracting system of mining coal, *Coal Age*, May 6, p. 959, permit me to describe briefly a system I have in mind and which has proved a great success in my own practice.

When coal is mined on contract by a reliable and competent man, experienced in mining and in the handling of men, not only is the mine superintendent relieved of much responsibility but the production is increased and the men work with far greater efficiency, which means the more rapid development of the property and a reduced cost of production.

The system to which I refer calls for a good practical mining man as contractor—one who has been in the game long enough to understand what the work requires and knows how to use his men to the best advantage. Such a one makes a contract with a company to mine a certain daily tonnage at a fixed price per ton and yardage. The contract may include hauling the coal to tipple or shaft bottom, or may cease with breaking down and loading the coal at the face.

Obligations Assumed Under the Contract

The contractor hires and discharges his own men, who may be paid by the company and the amount of the payroll charged to the contractor, or he may pay them himself. In any case, the contractor or his agent is timekeeper. All material is generally furnished by the company under the terms of the contract. The contractor may hire his men at an agreed wage per day, or pay them on a basis of piecework as he thinks best.

By the terms of his contract, the contractor is held responsible for the proper performance of the work and the safety of the men he employs, in the same manner as a company is made responsible for complying with all the requirements of the law when operating their own mine. He may even be required to put up a bond to secure the company in the fulfillment of his contract.

In one instance that I recall, the headings in the mine had been advancing at the rate of 30 ft. in a week, previous to the work being let out to a contractor. Employing the same number of men as before, the contractor increased the advancement to an average of 68 or 70 ft. in the same headings, which shows what can be done by a more efficient use of the men and giving close personal attention to the work being performed.

Let me say here that men work harder and to better advantage when they are given more freedom of choice and made independent workers. The best results are obtained when a contractor tells his men they can quit and go home after completing a certain amount of work, regardless of how long a time they take in the performance. The task set is a fair day's work in the estimation of the boss and the result is the men work with a will.

On the other hand, where men know that they must remain in the mine till the whistle blows at quitting time, there is no incentive for them to speed up and the chances are that the end of the shift finds their work not done. I have tried both of these schemes, but always found the first plan the one that gave the best results.

When driving a pair of headings where the average height of the coal was 3 ft. and there was 4 ft. of rock to be taken down, on the day plan, I could only make an advance of 50 ft. a week, until I made a change. I had employed eight men in driving the heading 12 ft. wide. Believing they could do better, I offered them a sort of subcontract with the result that the headings were pushed forward at the rate of 70 ft. a week. The men made more money and the cost of driving was less than on the day plan.

In closing, therefore, let me say, if you want results in putting coal on the tipple at a low cost of production, or wish to drive headings in record time put the proposition in the hands of an experienced and responsible mining man on a contract basis. Furnish him with all needed material and you need have no further worry about the high cost of production.

It is true that this type of contractor is not always easy to find; but when once found you are bound to see results; and all that remains for you to do is to measure up the yardage and weigh, load and market the coal. It is a surprise to me that more coal is not mined on contract than appears to be at the present time. To my mind, it is the surest way to get results.

Johnstown, Pa. S. W. F.

Guardboards in Trolley Haulage

RESPONDING to the request of "Triprider," which appeared in *Coal Age*, March 11, p. 506, asking for the opinions of readers in regard to requirements of compensation-insurance regulations specifying a width of five inches between the guardboards on trolley wires, I want to say that five inches is entirely too small a space between the boards.

There does not seem to be any standard length for axles of trolley wheels; some are 3 in. and others are 3½ in. long. Now, no one who has had experience in trolley haulage in mines will deny that when a wheel has become somewhat worn and the motorman is hauling a trip on a heavy grade and he cannot run slow but must make time, there is every liability that the wheel will jump the wire at some point.

Then, what happens? Before the trip can be stopped the wheel has been caught between the guardboards and a hanger; and either the guardboard is ripped off or the trolley harp and wheel are pulled off from the pole. To avoid this accident it is my opinion the guardboards should be at least 5½ in. and often 6 in. apart, so as to give sufficient clearance for the wheel to pass the hangers without catching.

In a case such as I have mentioned there is danger that the motorman riding on the rear end of the loco-

motive, or the triprider behind, may be severely injured by the broken boards torn from above. In addition to increasing the width between the boards, I would have them hang 2½ or 3 in. below the wire.

Someone has advocated using old water hose 3½ in. in diameter cut open and supported over the trolley wire. This idea seems to me wholly impracticable. Few of the mines require the use of hose of that size, and there would be difficulty in keeping the rubber stretched apart and in place. Moreover, insurance regulations do not mention the use of rubber hose. In my opinion the safest plan is to space the guardboards further apart. JOHN BUGGY.

Chambersville, Pa.

Flotation for Cleaning Coal Depends on Finding Suitable Frothing Reagents

AFTER reading the views of John V. Schaefer on flotation of coal, *Coal Age*, June 24, p. 1,316, I am induced to add further to the opinions I have already expressed in my previous letter, June 3, p. 1,155.

Although it seems that the application of the flotation process to the cleaning of coal is looking a long way into the future, it assuredly has some merits; and from laboratory results obtained to date, one can be safe in saying that coal can actually be cleaned by the flotation process notwithstanding the results of Mr. Schaefer's experiments conducted by and for himself.

There is little hope that the flotation process, by itself alone, would suffice for coal concentration on 100 per cent large scale operations; but it could be applied effectively as an adjunct to the regular water-jigging methods, and would also be useful in connection with the handling of secondary and refuse material and particularly sludge products produced from jig operations.

As a coal for this treatment would have to be crushed to pass at least a 10 or 30 mesh, it is a question whether coke ovens could handle as finely pulverized coal as this. There would also be the added danger of spontaneous combustion, in case these fines were put in storage piles. Transporting fine coal of this size to consuming plants would necessarily entail some losses, owing to leakage in transportation. The big question would also be the reduction of moisture in the fines to a degree suitable for consumption.

One of the first thoughts concerning the cleaning of coal by flotation was that certain coals might have some oil in themselves, that would render them amenable to this process without the addition of any frothing reagents, which would, of course, be highly desirable. Experimentation, however, failed to support this supposition.

The process appears to be by no means an economical one at the present stage of our knowledge, as the coal must be finely pulverized, then wet down with water so as to form a sludge, which is then treated with frothing reagents and finally agitated with air and water in the necessary substantial quantities. As the original opinion that coal carries its own frothing medium was not substantiated during experimentation, the difficult proposition now is to determine what chemical products are to be used that will be cheap and assist in a satisfactory separation as well.

If flotation coal was to be charged in byproduct coke ovens, the coal would carry into the ovens small quantities of either acid or alkaline frothing reagents, as the case might be; and the serious question would then have to be considered as to what deleterious influence these products would have on the oven walls and the coking action in general.

During an extensive investigation of this subject some three years ago, it was found that when using coal of 30-mesh pulverization in a small Callow pneumatic flotation machine, with frothing reagents that cannot be given here, an 85 per cent recovery of clean coal was obtained which analyzed 7.44 per cent ash and 0.74 per cent sulphur, against a head or feed sample of 12.65 per cent ash and 0.86 per cent sulphur. This particular sample was not a high-sulphur coal, the object being more to determine the possible ash reduction, which appears to be highly satisfactory, ranging from 12.65 per cent to 7.44 per cent.

Operating on a 10-mesh coal in a mineral-separation machine with sub-aeration, a raw coal analyzing 16.61 per cent ash yielded 60 per cent of good coal at 6.50 per cent ash. The crux of the whole flotation scheme, with coal, is to determine the proper kind of frothing reagents necessary; and, if this is found, there appears to be no question but that a clear, definite and efficient separation can be effected.

It is gratifying that Mr. Schaefer took the time to discuss this feature of coal cleaning, as it may induce others who have studied coal flotation to come forward with their opinions. Considerable pioneering work in this particular field has already been done and it is quite likely that it will become an interesting subject in the chapter of fuels. BYKEM.

Joliet, Ill.

Dry *vs.* Wet Hydrocarbon Gases

PECULIAR interest attaches to the question of what was the possible cause of the explosion that occurred some time since in the Buffalo mine working the upper Freeport seam, in the Cambridge district, in Ohio. In my opinion, most of the letters referring to the matter have ignored an important factor; namely, the presence of vaporized oil in this formation. I believe the only reference to that occurs in the letter of William Wesnedge, *Coal Age*, April 8, p. 719, who regards it as a possible cause of the explosion.

Judging from what has been written, the common tendency of writers, is to assume that methane is the only explosive gas found in a coal mine; and, since this gas is lighter than air, it is taken for granted that it should be found at the roof. However, it remains for us to understand that the conditions surrounding the mining of coal are multitudinous and we have much to learn in this regard.

Since that occurrence, I have had the opportunity to study an occurrence of a similar nature, but one of a much more definite character, and it is my hope that there will be a full report of the same in future annals of Ohio coal mining. In that instance, the origin of the gas that exploded was definitely stated to be the oil coming from Mahoning sandstone, as a result of a fall of roof that occurred in the waste of the mine.

Those familiar with the character of this formation know that the Mahoning sandstone contains petroleum, either in pockets or impregnating the rock. The conclusion that this oil is a possible source of natural gas appears to be justified in the opinion of many. That being the case, it would follow that the composition of the gas would be similar to that of the oil vaporized.

While I am not able to say that the oil, in this instance, has been submitted to a chemical analysis, it may be of interest to draw attention to the difference between certain hydrocarbon gases, which has given rise to their being designated as "dry gas" and "wet gas." It has been found that the dry gas (methane) is not condensible into oil (petrol or gasoline). On the other hand, the so-called wet gas is condensible into these oily products.

Allow me to suggest that here, then, is the solution of our mystery in a nutshell. The specific gravity of the condensible hydrocarbon gases being greater than that of air, they would naturally accumulate at the floor of the mine. Let us hope that this investigation will be followed up along these lines, and that the distinction I have pointed out will be fully and clearly explained. It is my belief that this will give us a more intelligent understanding of what is otherwise mysterious in the matter of mine explosions.

JAMES ASHWORTH,
Mining Engineer.

Livingstone, Alta., Can.

Safety in Trolley-Wire Protection

TROLLEY-WIRE protection in mines is an interesting question to all who are concerned in safeguarding the lives of workers underground. Men passing to and fro in the dimly lighted passages of the mine are often oblivious to the presence of danger from their proximity to a trolley or other live wire.

Reference has been made in previous letters to the requirements of compensation-insurance regulations that specify a width of five inches for the guardboards protecting trolley wires. Some have expressed the opinion that greater safety would be secured by reducing this width, while others have argued that the boards should be spaced further apart to avoid their being torn loose when the trolley jumps the wire, as frequently happens.

One thing is certain, however, if the mining laws or the insurance regulations specify a width of five inches between the boards there is no choice or alternative but to comply with that requirement, at least till it can be shown that a lesser or a greater width would afford greater safety or security in construction.

PROTECTION OF LIVES THE CHIEF OBJECT SOUGHT TO BE ACCOMPLISHED

As set forth in the excellent letter of G. E. Daugherty, *Coal Age*, June 17, p. 1,277, the purpose in view is protection of the lives of workers and permanence of construction. My belief is that the width of the guard boards apart is not of as much importance in respect to the protection they afford, as the fact that they are there and the wire is not left exposed.

For example, I believe that a workman absorbed in his own thoughts and coming in contact with the guardboard once will at once duck his head and lower any tools he may be carrying, and not permit himself to come so close to the wire again. In my opinion, not one workman in a thousand will allow himself to strike the boards a second time. It is true, of course, that when the boards are five inches apart a man's head can touch the wire, unless the latter is hung a few inches above the lower edge of the boards.

Now, in reference to permanence of construction, if the specified "five inches" is responsible for the difficulty experienced by motormen and caused by the trolley wheel becoming wedged tightly between the wire and the boards, there is some force in the argument for increasing this width. But, it occurs to me that low coal or some other condition may have been responsible for the trouble mentioned by "Triprider," in the inquiry, March 11, p. 506.

As Mr. Daugherty has said, "Good workmanship is required to construct trolley guards at a distance of even five inches apart, and to increase this width would make the construction still more difficult." Nevertheless, if it is true that motormen are experiencing these difficulties and the trolley tears down the boards, or the trolley wheel and harp are pulled off the pole, something must be done to eliminate such troubles.

DANGER MUCH INCREASED WHEN A GUARDBOARD IS TORN DOWN

A guardboard torn down would leave the wire exposed and greatly increase the danger of men coming in contact with the latter, causing a possibly fatal accident. This is a condition that should interest insurance agents and companies and lead them to start a thorough investigation and if necessary make such changes in the regulations as will afford the greatest protection.

Permit me to offer the suggestion of hanging the guardboards on hinges that would allow them to swing outward and thus avoid the wheel becoming tightly wedged should it happen to jump the wire. The hinges can be arranged to let the boards swing both ways or one way only, as desired. With proper care and attention on the part of the motorman, it seems to me there is little need of the trolley wheel jumping the wire and causing trouble. Increasing the distance will not avail.

Let me add, in closing, it would be well to have guardboards, at all crossings where men must pass under live wires, whitewashed, as a warning to them to use needed caution to avoid contact with the wire.

W. H. NOONE.

Thomas, W. Va.

Center Posts on Airways and Travelingways Better Than Double Timber

KINDLY allow me to say a word or two in explanation of my meaning in regard to the standing of center posts on entries where roof conditions are favorable, instead of using booms or crossbars supported on two posts, as described in my previous letter.

The criticism offered by Andrew O. Bain, *Coal Age*, June 17, p. 1,275, was all right as far as it applies to haulage roads. It was not my meaning to use center posts on such roads, except in some special cases, as we all know haulage roads should be kept as free from obstacles as possible. It was my intention to suggest such post timbering on return airways, travelways and other narrow work where the roof is of a suitable nature. Posts should be set on the side of an entry, only when it is necessary to strengthen the rib.

As the editor has remarked, some entries require no timbering. I have seen hundreds of yards of double-track entry without a stick of timber supporting the roof, at a depth of eighty fathoms below the surface. But that is not the condition to which I had reference.

Under conditions such as I have in mind, it is my belief that if booms and side props were not used, but center posts stood leaving a good walking space along the rib, in traveling roads and rooms, the timbering would be more satisfactory. It will be but a few years, now, when there will be 50,000 ft. of air-courses driven under such conditions as these to which I refer.

MAC.

Nova Scotia, Canada.

Inquiries of General Interest

Answered by

James T. Beard

Effect of Carbon Dioxide on the Explosion of Firedamp

PLEASE explain, in *Coal Age*, what would be the effect of adding carbon dioxide to firedamp. I have seen it stated that enough of carbon dioxide can be added to make a firedamp mixture non-explosive.

Topeka, Kan. STUDENT.

Carbon dioxide when added to firedamp has the effect of reducing its explosive qualities. The reason is twofold: 1. Carbon dioxide is an extinctive gas; that is to say, it will not support the flame of a combustion. 2. The addition of this gas to firedamp dilutes the mixture and reduces the percentage of explosive gas. When this percentage falls below the lower explosive limit of methane, the firedamp becomes non-explosive. When a firedamp mixture of methane and air is at its maximum explosive point the addition of one-seventh of its volume will render the firedamp non-explosive.

Coals of Great Britain and the United States

WE SHALL be pleased to receive through the columns of *Coal Age* any information you may be able to give on the origin of the coals used in Great Britain for the manufacture of metallurgical coke in byproduct coke ovens. In a general why, we would like to ascertain whether or not these coals are of a later or an earlier geologic age, as compared to the coals of the United States, particularly the coking coals of Pennsylvania, West Virginia and Kentucky.

M. D. CURRAN,

Toledo, Ohio. Supt. Byproduct Coke Plant.

This question was submitted to the chief geologist of the U. S. Geological Survey, David White, Washington, D. C., and brought the following response:

The coal used for the manufacture of coke in Great Britain is of Carboniferous age. The coal of the Appalachian region in the United States is practically all of Upper Carboniferous or Pennsylvanian age, only a little of it being Lower Carboniferous or Mississipian age. The coals of the upper Mississippi valley are also of Pennsylvanian age.

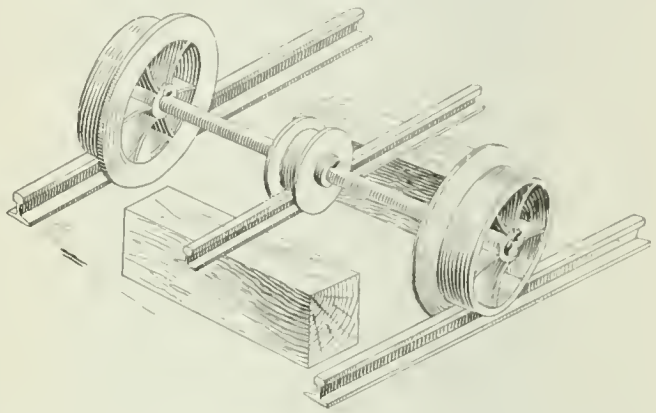
The lignite deposits of the Gulf Coast region are much younger, and are referred to the Eocene or early Tertiary period. The coals of the Far West are Cretaceous or Tertiary and very much younger than the coals of the Appalachian region.

An excellent general discussion of the coal fields of the United States is contained in the Geological Survey Professional Paper, 100A, by M. R. Campbell. Unfortunately, however, this publication is no longer available, being out of print; but can be found in most of the large public libraries.

Though not so stated in Mr. White's letter, from another source of information we find that about three-sevenths of the species of vegetable and animal fauna occurring in the coal beds of the United States are identical with those found in Great Britain, which fact is suggestive of the correlation of these deposits.

Prodigy in Mechanics

KINDLY permit me to submit, for my own information, the inclosed sketch showing three wheels keyed to a solid shaft and designed to travel on a track of three rails. Assuming that the two outer wheels are six inches in diameter and the center wheel only three inches in diameter, let me ask what would be the result if these wheels are mounted under a truck traveling on the track shown in the sketch. In



other words, what action would the center wheel make to cover the same length of rail as each of the outer wheels? STUDENT.

Walston, Pa.

Such a construction as described by this correspondent can only be regarded as a prodigy in mechanics. It would have no practical value for any purpose whatsoever. Assuming that the load rests principally on the two outer wheels, the center wheel would slip on the rail an amount equal to the difference between its circumference and that of either of the outer wheels, since all the wheels must make the same number of revolutions in the same time, being keyed to the same solid shaft.

On the other hand, if the construction is such that the load is equally distributed on all the wheels there may result some slipping of the outer wheels on the rails; but this will be less than the slipping of the center wheel on its rail. The amount of the slip in each case, under the assumed conditions of loading and equal adhesion of the wheels to the rails, may be taken as practically in the inverse ratio of the diameters of the wheels. In other words, under equal loading and equal adhesion to the rails, the three-inch wheel would slip four times the amount of either six-inch wheel, since there are two of the larger wheels and but one smaller wheel; thus, $2 \times 6 \div 3 = 4$. We can see no purpose in such a question, however.

Examination Questions

Answered by

James T. Beard

Firebosses' Examination Held at Pittsburg, Kan., March 20, 1920

(Selected Questions)

Ques.—Why does an explosion of firedamp in a coal mine render the air dangerous to life and health?

Ans.—The afterdamp from an explosion always contains irrespirable gases that are generally poisonous. The afterdamp is a variable mixture of carbon dioxide, carbon monoxide and nitrogen, besides often containing more or less unburned methane. To breathe such air is dangerous to life and health not only on account of the poisonous character of the gases, but likewise because of the deficiency of oxygen the amount being less than what is necessary to support life. There is danger also of a further explosion when the mixture contains unburned methane that escaped combustion and which renders a second explosion possible on the admission of fresh air.

Ques.—What are the explosive proportions of marsh gas and air forming the firedamp found in all coal mines?

Ans.—The lower explosive limit of pure methane and air is reached when the proportion of gas to air is 1:13, or the mixture contains 7.14 per cent of gas. The maximum explosive point is reached when the proportion of gas to air is 1:9.57, or the mixture contains 9.46 per cent of the gas. The higher explosive limit of pure methane and air is reached when the proportion of gas to air is 1: 5, or the mixture contains 16.67 per cent.

Ques.—What percentage of marsh gas mixed with air is necessary to show a flame cap?

Ans.—The percentage of methane (marsh gas) in air required to produce a flame cap in a safety lamp depends on the kind of lamp in use and the illuminant burned. Hydrogen gas burned in the Clowes hydrogen lamp, or acetylene gas burned in a carbide safety lamp, or naptha-benzine or other highly volatile oil burned in a lamp is more sensitive to gas than the common non-volatile oils such as cottonseed, sperm or lard oil. The light volatile oils, however, produce a fuel cap that is often mistaken for a gas cap when no gas is present in the air surrounding the lamp. The gas cap produced in the use of a volatile oil also shows a greater height of cap, for the same percentage of gas, than a non-volatile oil. Lastly, much depends on the ability of the observer to detect the non-luminous flame cap in a safety lamp.

For these reasons, it is only possible to give a modified answer to the question asked, and to say that the average fireboss will seldom detect a flame cap in his lamp, when less than two-and-one-half per cent of gas is present in the air. An experienced fireboss, using a Davy lamp burning a good quality of cottonseed oil, can usually detect the first appearance of a cap when two per cent of gas is present in the air, while some firebosses fail to see less than three per cent.

Ques.—What dangers may arise from the improper care or assembling of a safety lamp?

Ans.—When a lamp is improperly assembled or any part is broken the lamp is not safe for use in gas, because the flame is no longer isolated from the gas-charged air surrounding the lamp. A lamp not properly assembled is imperfect and it is possible for flame to pass through the cracks in the joints between the different parts of the lamp and ignite the gas outside.

Again, improper care of a lamp makes its use dangerous. To be safe in gas, a safety lamp must be thoroughly cleaned and examined before being filled and prepared for use. A dirty gauze heats quickly in gas and has a tendency to pass flame, due to the burning of the particles of dust or dirt in the mesh of the gauze. When a lamp is not held in an upright position, its flame impinges on and heats the gauze enough to pass flame. Also, if the lamp is exposed to a strong air current or blast of air, flame may be blown through the mesh of the gauze and ignite the gas outside.

Ques.—Explain what causes mine fires, and how you would extinguish them.

Ans.—Mine fires are caused by the careless use of open lights in proximity to combustible matter such as hay, wood, powder, etc.; by the heating and spontaneous combustion of fine coal and slack in the gob; by the sparking of live wires, burning out of fuses or other causes of the ignition of gas and dust in the mine; by windy or blown out shots igniting accumulations of dust or gas in a place, or by the ignition of a gas feeder, in blasting. Where oily waste is allowed to accumulate at the shaft bottom or pumping stations, fire may result from its spontaneous ignition.

The extinguishing of a fire, in a mine, will depend on what headway it has gained before being discovered; also, its location and the means at hand for fighting the fire. There must be no delay in notifying and withdrawing the men from the mine the moment a fire is discovered. It is important to reduce, as far as possible, the amount of air passing over the fire. All approach to the place must be made on the intake side to avoid the danger of the men being overcome with the fumes and gases of the fire.

When a fire is discovered smouldering in the waste it should be promptly loaded out in steel mine cars if that is practicable. Water should be used with caution, in such a case, owing to the fear of the dampness increasing the trouble. In any event, all of the smouldering material must be removed and the place cleaned thoroughly.

Where an active fire has gained considerable headway immediate steps must be taken to get water to the fire. If this means is not effective the place must be sealed off by building airtight stoppings, after which a careful watch must be kept to ascertain the progress of the fire. Where everything else has failed, it may be necessary to flood the mine or such section of the workings as can be isolated and flooded with safety.

Anthracite Commission Decides That It Is Not Empowered to Consider Prices and Profits

Can Determine Only "Questions in Dispute"—Operators Present Thirteen Exhibits—Show Wage of Contract Miner Runs $6.50 Per Start—Prove by Bank Deposits That Miner Has Money to Save or Spend

By D. C. Ashmead
Wilkes-Barre, Pa.

On Monday, July 12, the Anthracite Coal Commission resumed its sessions and listened to the arguments presented by Jett Lauck in favor of a submission of the seven exhibits on cost of production, profits and prices. These exhibits are entitled "Relation of Wages to Costs of Production, Profits and Prices," "Profits of Anthracite Coal-Mining Companies," "Wholesale and Retail Prices of Anthracite Coal, 1913-1920," "Freight Rates and Cost of Transportation of Anthracite Coal," "Operating and Financial Performances of Anthracite Railroads." "Combination in the Anthracite Industry," "Summary, Analysis and Statement of the Foregoing."

The exhibits, according to Mr. Lauck, constitute a unit and show that prior to 1873 there was free competition in the production and distribution of anthracite, with a resulting oversupply of labor, fluctuations in production and employment and market discrimination, but that from 1875 to 1900 the banking house of J. P. Morgan & Co. and its financial associates stabilized the industry by securing control of the coal-producing areas and the transportation facilities then existing and proceeded to render impossible the development of additional facilities for transportation to the Eastern and other markets.

Raised Freights to Coerce Independents

Having first obtained control of the seven great anthracite-carrying railroads, they, through the subsidiary coal companies or departments of these railroads, controlled the anthracite mining operations and reserves. The anthracite operators raised railroad rates so as to force the independent operators to sell to them. The anthracite carriers charged the same rates to their own subsidiaries, taking the profits of the industry through the railroads.

Mr. Lauck added: "The monopoly thus established was created by financial methods which constitute a permanent handicap both to the worker in the coal mines and to the consumer of anthracite coal. Extravagant prices were paid to eliminate competition and fictitious securities were issued in large amounts, which constitute a drain not only upon the productive capacity of the present generation but upon wage-earners and consumers as yet unborn.

"Under the combination thus established excessive transportation rates, with consequent coal-company losses, have furnished apparent justification for high prices and low wages. It has amounted to a process of writing the losses of coal companies into the cost of transportation, thus justifying high traffic rates, and then of writing these high transportation costs into the price of anthracite charged to the local dealer, thus justifying high prices to the consumer.

"It is shown that the enormous inflation of capital and bonds through the assumption of coal-company losses by the railroads and through payment of inflated prices for coal lands has resulted in enormous fixed charges which enter into the cost of anthracite transportation because interest on bonds is treated as cost

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JETT LAUCK, CONSULTING ECONOMIST OF UNION

Author of the two exhibits published in *Coal Age* last week and protagonist for the union. Under cross-examination he disappoints his hearers by evading a direct answer to questions and replying not with a resounding "Yes" or "No" but with a qualifying "Yes, technically" or "No, constructively." It is hard to pin him down to a frank avowal.

and not as profit. The resulting high rates have enabled the anthracite railroads to pay dividends far above those of the other railroads of the country.

Mine Profits Small; Industry Profits Large

"The process just described, from which these high profits have resulted, is such that it is well concealed from the public and difficult to reach, for these methods have enabled the anthracite corporations to show margins between the cost of producing anthracite and the price at which it is sold at the mine, between the cost of transporting anthracite and the rate charged by the railroad, and between the total cost of the anthracite before it is delivered to the dealer and the price at which it is delivered to him, which are to all outward appearances no more than average. Profits in the industry in the real sense, therefore, are not mine-company profits but industry profits—a group of family profits accumulated from all the factors in the combination.

"The conclusions drawn from the study are that as the result of the combination which has been achieved we must look for anthracite profits not in the coffers

of the coal companies but in the profits of anthracite railroads, the profits of sales companies, and the profits of those who control the banking combine which has engineered the anthracite combination.

Jurisdiction So Applied as To Be a Duty

"According to a strict or legalistic interpretation of the jurisdiction of the commission, its powers and authority extend only to such issues as have been formally submitted to it by the operators and the mine-workers. But we conceive that the actual jurisdiction of the commission goes beyond the powers and scope that a strict interpretation would imply. To our mind its jurisdiction extends beyond the eighteen enumerated points [the eighteen demands] which have been specifically submitted for arbitration and regarding which the commission is empowered to give a direct and effective decision.

"In our estimation the commission has an additional implied jurisdiction which is limited only by the public interest. Its jurisdiction, in other words, is not limited to its powers to act directly and effectively in the premises but it has also an implied jurisdiction under which it may not be able to act directly but under which nevertheless it can exert its power indirectly by advice or recommendation to specific agencies having direct powers and jurisdiction.

"This implied jurisdiction of the commission—its duty even—arises from the peculiar circumstances under which the commission has been constituted. The parties to the present controversy, after prolonged controversy and mediation, were unable to reach an agreement. The dislocation of an essential industry became imminent. Interposition was, therefore, made by the President. A tripartite commission with a representative of the public as its head was selected to determine the matters in dispute. The vital factor in the situation then became the public interest. The commission is not, therefore, an ordinary arbitration board. It is a public body, charged not only with the duty and power of deciding certain issues as to wages and conditions of employment but also with the development of all the facts bearing upon the public interest."

Bituminous Coal Commission's Action

Mr. Lauck went on to show that the coal commission appointed to adjudicate the bituminous controversy took a broad view of its powers and enumerated at length seventeen recommendations which that commission made, including suggestions for Federal, state and municipal purchasing of coal before July 1 of each year and a request to the Interstate Commerce Commission that it take under consideration the establishment of differential freight rates with low rates in the spring and high rates in the autumn months.

He quoted the Bituminous Coal Commission as follows: "In submitting this report particular attention is called to the fact that herein every effort has *been made for the protection of the public*, not only for the period under which this protection can be guaranteed by the Executive under the powers granted him by the Lever Act but it has been our effort to go into the underlying causes for high costs and to offer some remedy therefor—this in order that in the future when the Government relaxes its control over prices there may be a continuing force at work in furthering the public interest."

The Sankey Committee in Great Britain and the Board of Arbitration created by mutual agreement between railroad locomotive engineers and railroad managers in Eastern territory also were quoted as instances where the arbitrators went further than merely to consider the question of wages. Quoting advertisements of the operators in 1916, Mr. Lauck showed that they then regarded the question of profits as having a bearing on wages and urged the right of the public to receive fair treatment as regards both.

Declares Proclamation Favors Inclusion

Upon the completion of Mr. Lauck's brief Philip Murray read the President's proclamation to the commission and mentioned the points of joint agreement between the operators, saying that the miners ought to be permitted to present this data, as an agreement was made that either side could submit whatever testimony it desired. If the commission did not consider such testimony relevant they could ignore it when they decided as to what their award would be. The mine workers, said Mr. Murray, should surely be allowed to present it. He also believed that the public should be fully informed as to the cost of production and as to the events leading up to the present situation. Thomas Kennedy pointed out that the operators had declared that they had the public interest in mind when they refused the wage increase. The commission then adjourned until 2 p.m.

At the afternoon session S. D. Warriner presented the arguments of the operators. He first called attention to the President's proclamation giving an interpretation of it which was just the opposite to that which the miners had taken, saying that the President did not imply that the jurisdiction of the commission went beyond the strict letter of the document.

Explains Why Exhibits Should Be Excluded

In the opening words of his prepared plea Mr. Warriner denied that he had ever said that "the public is not interested in this case." His statement thus misquoted was "We are not trying this case before the public . . . we are trying it before this commission and the rules of procedure are for the commission itself; the public is not interested in that matter." In further explanation Mr. Warriner said that the commission was the best judge of what procedure was "best calculated to attain the objects of its inquiry."

The mine workers, said Mr. Warriner, were demanding "that the present wages of the anthracite mine workers be increased to correspond to the increase granted by the bituminous mine workers by the Presidential commission. The operators stand ready to give whatever the commission orders. "The real issue involved," adds Mr. Warriner, "is concerned with wages alone."

Consequently, as there is no disposition on the part of the operators to say either that they will not or cannot pay, why make inquiries on their profits or on the price at which they shall sell their product to the consumer? The mine workers declare that they want a living wage, and such a demand has nothing in it of the nature of profit sharing. They have not declared in their presentation that their wage is unfair but that it is unequal to their support. Hence the question is solely one as to the wages paid and the cost and standards of living.

Upon the conclusion of the reading of the brief Mr. Warriner said that the operators do not admit the truth

of the allegations in the exhibits contested and are confident that they could answer them to the satisfaction of the public and the commission, but they do not think that it is proper to do so at this time.

Mr. Warriner requested the commission to exclude from the records a number of editorials that had appeared in the public press concerning the contested exhibits which Mr. Murray had read during the morning session, and he pointed out the fact that if the mine workers' press bureau had not furnished this information to the press the articles could not have been written and that therefore the editorials did not really show the opinion of the public but only the opinion of the mine workers. The commission then adjourned until Tuesday.

Commission Rules Out Exhibits on Profits

On the following day the commission gave its decision as to the disposal of the exhibits, refusing the mine workers permission to present them. The ruling was based on the fact that not only the correspondence relating to the calling of the commission but the proclamation under which the commission was instituted and also the demands presented by the mine workers referred solely to wages and not to profits or prices.

The commission in making its ruling recited that on May 21, 1920, President Wilson in his letter to the operators and mine workers said "I shall insist that the matters in dispute be submitted to the determination of a commission to be appointed by me." Later in the above communication the President said "I shall hold myself in readiness to appoint a commission similarly constituted to the one which I recently appointed in connection with the bituminous-coal mining industry."

The commission quotes the report submitted to the officers and delegates of the tri-district convention of the United Mine Workers of America, in which nothing is said about prices or participation in profits but where reference is made solely to wages. It also quotes a letter of June 1 of the representatives of the operators to the Secretary of Labor in which they agree to abide by the award of a commission appointed by the President and incidentally describe the purpose of the commission in these words—"to decide the questions in dispute."

"To Hear and Decide Questions in Dispute"

In the proclamation of June 5 the President again describes the commission thereby created as a commission "to hear and decide the questions in dispute between the anthracite coal operators and miners." The ruling goes on to recite the fact that "the miners have presented eighteen demands and certain conditions of submission" which are matters of record. Without specifically stating it as the fact the commission seems to lead it to be inferred—and it is undoubtedly true—that the mine workers in their demands make no reference to profits and prices, and in consequence these matters have no relevancy to the demands they are making. They consequently are not "matters" or "questions" which are or have been made "matters" or "questions in dispute."

The commission concludes:

"It is the opinion of the commission, and it now so rules, that the authority and jurisdiction of the commission are specifically outlined in these documents and that the "matters in dispute" to be decided fall within the limit of the eighteen demands.

"The commission does not recognize the interpretation of implied jurisdiction as broadening the scope of the public interest but is of the opinion, and so holds, that the public interest represented in this controversy is confined to the question of wages, hours of work, recognition of the United Mine Workers of America, and other matters clearly stated in the eighteen demands.

"The reference in the President's communication to a commission 'similarly constituted to the one appointed in connection with the bituminous-coal mining industry' offers no suggestion as to powers, duties or jurisdiction. The commission therefore holds that this paragraph refers solely to the representative character of the commission in which the parties to the dispute and the public are represented."

Turning then to the public interest in the controversy the commission says:

"The commission is of the opinion and now rules that the seven exhibits purporting to set out the relation between wages and wholesale and retail prices, the situation as to freight rates, the operation and financing of anthracite railroads and other exhibits, are not germane to the matters in dispute and to the issues before this commission as outlined and defined by the eighteen demands.

"The commission fully recognizes the public interest in these questions and their vital importance to the public welfare. The commission, however, recognizes the limits of its own authority and therefore rules that those exhibits to which objection has been raised offer no contribution to the solution of the issues pending, and will not be admitted as part of the evidence in the case."

Operators at Last Open Their Case

Following this decision the operators presented three exhibits, the major one of which, known as No. 1, answers in order the eighteen demands of the mine workers. This is printed at length in another part of this issue. In this exhibit is explained how the erroneous estimate of the days worked by the anthracite and bituminous mines in 1919 was made and that it was a calculation based on certain assumptions now known to be untrue. They had been applied with success to the production of 1918 but it was not realized that conditions had so changed in 1919 (as a result of the lack of demand for culm coal in the anthracite region and for reasons not so obvious in the bituminous region) that the assumption could no longer be sustained.

To back up their contentions the operators accompanied this exhibit with another showing how many days actually were worked by the mines at a large percentage of the collieries in the anthracite region. This also is published in this issue, it being incorporated in the main exhibit, to which it properly belongs.

Hard-Coal Bank Deposits Show Big Growth

Another feature in the principal exhibit refers to the growth in bank deposits of the anthracite region. This was presented as evidence that the anthracite-mine workers were not receiving $24 less every month than they were expending, which alleged fact Mr. Lauck in his exhibits tried to impress on the commission

as being the unquestionable but deplorable truth regarding the present situation.

On July 14 the operators continued the presentation of their case before the commission and submitted to that end a series of exhibits in direct reply to those offered by the mine workers. The first of these is known as Operators' Exhibit No. 5 and is entitled "Statement Showing Total Net Earnings of Contract Miners Per Start During the Months of October, November and December, 1919, at Operations of Nine Companies Producing About 75 Per Cent of the Total Anthracite Output." Despite the length of the title the exhibit is so short that it may be reproduced here in full:

Total miners' starts	2,135,584
Total miners' net earnings	$13,883,058
Average net earnings per start	$6.50

Applying the figure $6.50 per start to the average of 281 starts made by the above companies the annual earnings of contract miners will be seen to have been $1,826.50. It may be added that this figure does not represent the full average earning nor the earning that the average man could have made had he utilized his opportunity to labor to the fullest advantage.

Wage Not Based on Working Time in State

The next document presented was recorded by the commission as Operators' Exhibit No. 6 and it bore as its title the notation "In Reply to Miners' Exhibit No. 5, Irregularity of Employment in the Anthracite Industry." It points out that any comparison between the time worked in the Pennsylvania bituminous mines with the time worked in the anthracite industry is unfair because all the wage settlements in the bituminous regions are based on the regularity of operation of the mines of the whole of the Central Competitive field, which includes western Pennsylvania, Ohio, Indiana and Illinois.

Wages are fixed in that field by a consideration of the average running time and earnings of the whole area and not of any part. The document then presents a table showing the average working time in the anthracite region and in the bituminous coal fields. It exhibits the fact that the days worked in the Pennsylvania bituminous coal field much exceed the number worked in the Central Competitive field and in the whole United States, but even though that is a fact the average number of working days in the last ten years has been higher in the anthracite mines than in the Pennsylvania bituminous coal mines.

Here again were submitted those charts which were published last week in *Coal Age*, showing that the anthracite industry is becoming a full-time operation, while the bituminous coal industry is as irregular as ever in its operation. Here again was presented the fact that the statements of the mine workers' advocates to the effect that last year the mines of the anthracite region worked only 252 days was incorrect and led to false conclusions. The correct figure, this exhibit reiterates, is 273 days.

The author of the exhibit points out from Mr. Lauck's own figures that the conditions in the anthracite region are not abnormal, as can be seen from the fact that the average production of domestic anthracite for the four-year period ending 1915 is only 1,600,000 tons more than for the four years ending in 1919 and that an increase so small as this can be accounted for by the increase in population in the area supplied. Mr. Warriner also points out that it is the domestic market that sustains the production of anthracite and that the production of coal for use under boilers is merely incidental. Consequently the domestic production is the criterion on which to base any predictions as to the probability of future steadiness of production.

Lauck Regards Hard-Coal Mining as Easy

The scarcity of mine workers during the last few years fully confirms the contention of the operators that it will require every possible day of activity of all the employees to meet the future demands on the industry. Mr. Lauck in his exhibit made the statement that anthracite mining was not as difficult as the mining of bituminous coal, but Mr. Warriner in this exhibit well shows that the mining of anthracite is the more complicated of the two. The distorted coal seams, the enormous quantities of water to be handled (an average of eleven tons being pumped or hoisted for every ton of coal produced), the careful preparation of coal in the breaker, the difficulty of disposing of the smaller sizes, all combine to make the production of a ton of anthracite more difficult than the production of an equal quantity of bituminous coal.

The exhibit states that Mr. Lauck's closing section of the exhibit, which is entitled "Probable Irregularity in the Future," is based on no authoritative data and is merely an expression of opinion made by one who in his testimony admitted that he had no technical knowledge of the anthracite industry.

Comparisons That Do Not Compare

In "Operators' Exhibit No. 7 In Reply to Miners' Exhibit No. 4" the operators point out that the latter exhibit contains in its basic figures three fundamental errors which vitiate all the deductions and conclusions drawn in the summary. These errors are:

(1) Use of figures that are not comparable:
  (a) For the two industries in the same year.
  (b) In the same industry for different years because drawn from three different sources and compiled by different methods.
  (c) For 1919 because compiled by different methods. Had either method been applied to both consistently, results radically different would have been obtained.

(2) Use of figures too limited to be representative.
  (a) Figures for 1916-1918 are based on data of weekly earnings of certain employees who, meeting with accidents, happened to come under the jurisdiction of the Workmen's Compensation Commission. Such figures are not adequate as a basis for arriving at the course of the earnings in the respective industries.
  (b) The figures for daily full-time earnings in the bituminous industry as secured in the June-to-August, 1918, survey of the U. S. Bureau of Labor Statistics are based on the earnings of only about one per cent of the total employees in the industry.

(3) Use in the computations of the exhibit of the estimate of 252 days as the number of days worked in the anthracite mines in 1919, whereas the actual number was 273 days.

A full account of the rest of this session will be published in next week's Coal Age.

The Labor Situation

Edited by
R. Dawson Hall

Bethlehem Steel's Coal Mine Still Works

WHILE a strike order which would have affected operation at the Penn Mary Coal Co. mines on the Morgantown & Kingwood R.R. in Preston and Monongalia counties was issued some time ago, it had been held up pending a conference, according to information given out by officials of district 17, United Mine Workers. The Penn Mary company is a subsidiary of the Bethlehem Steel Corporation.

Right of Motorman to Work When Requested Established by Failure of Mine Strike

A STRIKE at the No. 2 plant of the Morgantown & Cleveland Coal Co.'s plant near Morgantown was short-lived, lasting only over Tuesday and Wednesday, June 29 and 30. About a hundred miners struck because a motorman drew coal out of the mine when some of the miners did not want to work. It is alleged that the miners insisted upon the discharge of the motorman, the company refusing to take any such action, the miners thereupon going on strike.

Deputies at Roderfield, W. Va., Ambushed and Shot; Deputy Kills Stalking Miner

TROUBLE was precipitated by an attempt to organize the miners at Roderfield, in McDowell County, W. Va., on Sunday, July 4, one miner being fatally wounded and three other men wounded to a less degree in a clash between miners and and deputy sheriffs. Earlier reports indicated that the clash had assumed the proportions of a pitched battle and that there had been wholesale killing. This was not true. In the list of injured were J. W. Rose, a miner who will hardly recover; John Mitchell, a deputy sheriff, slightly wounded; Claude Akers, deputy sheriff, slightly wounded by shot from shot gun; John Saylor, miner, of Kentucky, slightly wounded.

According to the best information obtainable three deputy sheriffs, Mitchell, Akers, and Cates, were sent to Roderfield from Welch, the county seat, when it was learned that a man named Munsey was attempting to organize about twenty or thirty miners. Evidently the miners in meeting had sentries posted, for as the deputies were passing along the county road fire was opened on them from ambush. Two were wounded and one of the deputies hid behind a rock. When the miners in ambush came down to investigate what their shots had done Cates, the unwounded deputy, opened fire on them, wounding two. One of the two, J. W. Rose, was quite seriously wounded. The other miners broke for cover. Nine men implicated in the trouble were placed under arrest and lodged in the jail at Welch.

When a subordinate in the union sent in the first report of the shooting to the officials of district 17, United Mine Workers, it contained the information that miners were being slaughtered. On the strength of that report, District President Keeney wired President Wilson that miners were being murdered and that unless such outrages ceased the whole state would be plunged into civil war.

While, generally speaking, there does not appear to be much sentiment among the miners of McDowell County for the unionization of the field, yet Roderfield has always been more or less of a hotbed of unionism, although no locals have ever been organized there. The Flanagan Coal Co. among others, operates at Roderfield.

Following the clash on Sunday, July 4, Sheriff Daniels of McDowell County took a force of one hundred deputies to Roderfield and kept them there for several days.

R. B. Page, colored agitator, was arrested on Monday, July 5, on a charge of inciting to riot. He had gathered together seventy-five men and had started for Roderfield. Page was given a preliminary hearing on July 7 and his case was continued to July 9.

When Miners Try to Work They Are Fired On

FOLLOWING an exchange of shots between striking miners on the one side and loyal employees of the Borderland Coal Co. on the other side at Borderland, W. Va., in the Williamson field, on the morning of July 7, Judge James Damron of the Mingo Circuit Court swore in fifteen deputies as a safeguard against further trouble and sent them to the scene of the trouble soon after the shooting. At a late hour on the evening of that day the situation at Borderland was reported to be quiet.

It is estimated that more than one hundred shots were fired, the striking miners starting in to shoot at the mouth of the mine of the Borderland Coal Co., located on the Kentucky side of Tug River, and later directing their fire toward the tipple, which is on the West Virginia side of the river. Deputy Sheriffs on the Kentucky side together with a number of old employees of the coal company who refused to join the union returned the fire, raking the hillside where the miners were hiding in ambush. No casualities were reported by the company. It is understood that one of the strikers was slightly wounded and later removed to the house of a friend.

Union Mopping Up Non-Union Areas on Coal and Elk Rivers in West Virginia

ON THURSDAY, July 1, two hundred miners on Coal River, in West Virginia, were called out on strike by W. M. Blizzard, president of sub-district 1 of district 17, United Mine Workers. The companies affected by the strike order were the Madison Coal Co., the Fire Block Coal Co., and the Spear Eagle Coal Co. The workmen of the companies named were ordered to strike because it was alleged they had no contracts with their employees.

NEWS FROM THE CAPITOL

BY PAUL WOOTON

Coal and Coke Exported During May

EXPORTS of coal and coke during May, 1920, as compared with the corresponding month of 1919, taken from the returns of the Bureau of Foreign and Domestic Commerce, were as follows:

COAL AND COKE EXPORTS IN GROSS TONS

	May, 1919	May, 1920
Coal		
Anthracite	398,796	277,197
Bituminous	1,429,706	2,400,821
Exported to:		
Italy	35,908	380,015
Netherlands	4,272	215,823
Sweden	22,792	84,532
Switzerland	6,989	84,272
Canada	1,088,026	716,453
Mexico	6,904	7,121
Br. West Indies	10,144	6,232
Cuba	90,112	113,861
Other West Indies	1,770	11,438
Argentina	22,589	101,144
Brazil	109,868	73,190
Chile	4,931	40,488
Uruguay	8,362	31,128
All others	17,039	535,124
Coke	33,299	42,07

Stocks of Railroad Fuel Are Low

INCOMPLETE returns on stocks of fuel coal held by the railroads, according to a report issued by the Geological Survey, indicate that on June 1 stocks were unusually low, and further that between Feb. 29, the close of Federal control, and June 1 there was a sharp decline in stocks.

These statements are based on reports to the American Railroad Association made by 120 of the principal carriers. Stocks of bituminous coal held in cars by these roads declined 7 per cent from Feb. 29 to June 1; stocks in piles declined 34 per cent. For all stock the percentage of decrease was 21.

Stocks held by the New England roads decreased more sharply than for the country as a whole—32 per cent as compared with 21 per cent.

Market Reports on Soft Coal Under Investigation

AN INVESTIGATION of the activities of associations of producers of soft coal in the matter of exchanging reports of prices on sales is being undertaken by the Department of Justice. In connection with this investigation the following letter has been sent to all secretaries of local associations:

There is transmitted herewith for your information a copy of the statement given out by the Department of Justice on March 17, 1920, calling attention to the recent decision of the U. S. District Court at Memphis, Tenn., condemning the interchange of reports as to prices received on actual sales as practiced by the members of the so-called "Open Competition Plan" of the American Hardwood Manufacturers' Association.

Pursuant to that statement, this department recently began an investigation of associations of producers of soft coal alleged to be exchanging reports of prices received on actual sales.

This department was thereupon informed that the Franklin County, Williamson County and Saline County coal operators' associations, with headquarters at Chicago, Ill.,

Estimated Monthly Production of Coal by States, January-May, 1920*

(NET TONS)

State	January	February	March	April	May	Total Five Months
Alabama	1,740,000	1,409,000	1,565,000	1,419,000	1,502,000	7,635,000
Arkansas	221,000	179,000	204,000	151,000	179,000	934,000
Colorado	725,000	843,000	595,000	667,000	729,000	3,559,000
Illinois	8,760,000	7,575,000	8,721,000	6,580,000	6,700,000	38,335,000
Indiana	2,540,000	1,843,000	2,052,000	1,436,000	1,427,000	9,298,000
Iowa	877,000	787,000	850,000	731,000	709,000	3,954,000
Kansas	699,000	560,000	638,000	502,000	572,000	2,971,000
Kentucky	2,822,000	2,414,000	2,572,000	2,172,000	2,399,000	12,379,000
Maryland	301,000	217,000	366,000	310,000	306,000	1,501,000
Michigan	154,000	118,000	122,000	124,000	83,000	601,000
Missouri	584,000	484,000	547,000	423,000	480,000	2,498,000
Montana	506,000	405,000	367,000	358,000	288,000	1,924,000
New Mexico	317,000	275,000	314,000	258,000	257,000	1,421,000
North Dakota	84,000	63,000	58,000	54,000	41,000	300,000
Ohio	3,641,000	2,962,000	3,541,000	2,932,000	3,361,000	16,437,000
Oklahoma	405,000	338,000	327,000	314,000	323,000	1,707,000
Pennsylvania (bituminous)	13,761,000	11,323,000	13,435,000	11,019,000	11,126,000	60,664,000
Tennessee	639,000	488,000	551,000	487,000	507,000	2,672,000
Texas	149,000	110,000	104,000	121,000	129,000	613,000
Utah	271,000	473,000	482,000	319,000	382,000	1,927,000
Virginia	990,000	716,000	882,000	829,000	802,000	4,219,000
Washington	369,000	304,000	334,000	294,000	257,000	1,558,000
West Virginia	7,047,000	5,523,000	7,083,000	6,190,000	6,175,000	32,018,000
Wyoming	962,000	819,000	815,000	681,000	720,000	3,997,000
Other States (†)	11,000	10,000	12,000	10,000	11,000	54,000
Pennsylvania (anthracite)	7,366,000	6,335,000	7,240,000	6,593,000	7,745,000	35,279,000

* In this table, issued by the Geological Survey, attempt is made to estimate the production of coal, by States, for the first five months of the year 1920. The data available upon which to base these estimates are weekly figures of the number of cars of coal loaded by 137 bituminous coal-carrying roads and 9 anthracite carriers. Experience indicates that the estimates of current production for the country as a whole are probably within one or at the most two per cent of the actual production. In the case of individual states, however, the margin of error may be much greater. When a carrier originates coal in more than one state it is often necessary to apportion its tonnage arbitrarily, a task exceptionally difficult during recent months, when the switchmen's strike has made conditions generally abnormal. The estimates presented will be revised from time to time as additional data become available.

† California, Georgia, Idaho, North Carolina, Oregon, and South Dakota.

had discontinued the practice of exchanging such reports since the above mentioned decision of the District Court and since the issuance of the aforesaid statement of this department.

In order to facilitate the investigation, please inform the Department of Justice, Washington, D. C., whether the association which you represent is at present engaged in the practice of exchanging reports as to prices actually received.

If your association is now engaged in the interchange of such reports, please send to this department at your earliest convenience a complete set of such reports as distributed to the members of your association during the months of April, May and June, 1920.

Coal Operators Meet New England Representatives

THOSE who attended the New York conference of bituminous operators and the Fuel Administrators or their representatives from the New England States at the Belmont Hotel on Monday, July 19, agreed that the lack of cars was responsible for the coal situation in those states. The New England Fuel Administrators contended that unless their coal requirements are met many industries will be compelled to suspend operations next winter. It was agreed at the conference that until the railroads are able to furnish more cars to carry the coal from the mines to the markets, shipments from the Atlantic ports will have to be depended upon to meet the situation in New England.

Those who attended the conference included James J. Storrow, Fuel Administrator of Massachusetts; H. J. M. Jones, of Vermont; E. R. Joselyn, secretary to Maine's Fuel Administrator; A. T. Slayton, New Hampshire's Fuel Administrator; Thomas W. Russell, Fuel Administrator of Connecticut; James E. Bradley, Dundon, W. Va., vice-president of the National Coal Association; Thomas H. Watkins, president Pennsylvania Coal & Coke Co.; Thomas F. Farrell, Pocahontas Fuel Co.; J. W. Searles, Pennsylvania Coal & Coke Co. and former Deputy Commissioner of the Tidewater Coal Exchange, and F. W. Wilshire, Consolidation Coal Co.

Embargoes Urged by Operators and Railroads to Force Coal to Lakes

AN ORDER will be issued by the Interstate Commerce Commission toward the end of this week, it is believed, putting into effect a system of embargoes intended to force coal up to the Lakes. The order is expected to include provisions stimulating the flow of coal to New England and to Canada. Representatives of the operators and of the railroads presented the joint plan to Commissioners Clark, Aitchison and Potter at an executive session Monday, July 19. While all concerned declined to discuss the details of the proposal it is understood that the plan as regards Lake movement will be accepted by the commission with slight modification, but the commissioners were not so well impressed with the plan which had been worked out for New England. The representatives of the carriers declared the plans they submitted are entirely feasible from a railroad standpoint.

Since the process of increasing coal production can only be gradual it is recognized that the embargo in favor of Lake coal will acutely pinch other consumers who are drawing their supplies from the same producing area. An effort will be made to acquaint these consumers with the necessity of reduced supplies for a short period until the increased car supply brings production to a point where they can be supplied as well. It is pointed out that the public utilities are protected since they have assigned cars.

The operators were represented by D. B. Wentz, J. D. A. Morrow and C. P. White. They made it clear that they represented operators as a whole, and not the National Coal Association. Railroads were represented by Daniel Willard and A. G. Gutheim. Herman Griggs was present for the Lake Erie Ore and Coal Exchange, while W. H. Groverman and Judge McGee represented the Northwestern docks.

Prices for Settlement of Tidewater Accounts Are Announced

THE Executive Committee of the Tidewater Coal Exchange has fixed the prices at which Commissioner J. W. Howe shall make settlement for tonnage between debtor and creditor members as of July 1. At the New York piers the prices fixed for Pools 1, 9, 37, 39, 60 and 71 is $11; Pools 30, 38, 40 and 61, $10.75; Pools 4, 10, 31 and 62, $10.50; Pools 32, 33 and 43, $10.25; all other pools with the exception of Nos. 35 and 45, $10; Pools 35 and 45, $9.75.

At the Philadelphia and Baltimore piers the prices on the individual pools are 25c. less than at the New York piers, while at Hampton Roads the prices are as follows: Pools 44, 54, 64 and 84, $11.25; Pools 1, 2, 2P and 42, $11; Pool 3, $10.75; Pools 41, 43, 51, 53, 61 and 63, $10.25; Pools 5, 6, 7, 8, 40 and 56, $10; and Pools 32 and 35, $9.75.

As soon as the accounts of the debtor and creditor members can be verified the commissioner will send a statement to each of such members.

National Coal Association Defers Action On Committee Reports

THE board of directors of the National Coal Association met in Washington on July 14 and 15. Difficulty was encountered in assembling a quorum because so many of the directors were either called to New York to attend the regular monthly meeting of the Smokeless Association or had been detailed to work with the committee of railroad executives. It is understood that only routine business was transacted and that another meeting will be called for next month to finish consideration of committee reports.

Will Some Coal Age Reader Help Us With This Inquiry?

McGraw-Hill Company, Inc.,
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Attention "Coal Age."

Gentlemen:

Kindly furnish us rates and also advise the possibility of successfully advertising in your publication for a camel to drink the water accumulating in the mines on idle days, to avoid pumping expense, and a Joshua to command the roof to stand still, and thereby eliminate another item of idle-day expense.

Applications should be made to Every Operator, Anywhere.

Yours very truly,
O. U. CARSUPPLY.

Railway Executives Adopt Co-operative Plan To Improve Traffic Situation

FOLLOWING the meeting of coal operators and railroad officials at which the plan for controlling and making better the distribution of bituminous coal was discussed the Association of Railway Executives, of whom more than 100 were assembled, the same afternoon considered the situation of transportation generally. The outome of the meeting was a resolution urging all members to devote their utmost energy to the more intensive use of existing equipment and to adopt a program to be followed in this connection in co-operation with the public to secure for the country as a whole:

An average daily minimum movement of freight cars of not less than thirty miles per car per day.

An average loading of thirty tons per day.

Reduction of bad order cars to a maximum of 4 per cent of total owned.

An early and substantial reduction in the number of locomotives now unfit for service, and

More effective efforts to bring about the return of cars to the owner roads.

It also was resolved that all railroad companies shall forward to the advisory committee or such agency as the latter may designate reports that will enable a check to be kept currently of performance under this resolution, and the advisory committee shall arrange for comparative compilation of such reports and make distribution to the individual companies.

Indiana Considering Legislation to Control State Coal Industry

GOVERNOR James P. Goodrich of Indiana has called upon Ele Stansbury, Attorney General and an Indianapolis attorney, to pass upon the legality of a bill now prepared providing for the appointment of a state coal commission, which would have full authority to fix the price of coal in Indiana and to compel distribution within the state until all domestic needs are filled. The bill is the outgrowth of strong opposition to the Governor's idea for a state-owned and operated mine to provide coal for the state institutions.

The Governor declares that if it is found that Indiana has the power to enact such legislation to give relief from excessive coal prices to the people of the state he will submit the measure to the special session of the Legislature now in session and will urge its passage. The measure calls for the appointment of a commission of three members, to be known as the Indiana Coal Commission. These commissioners would have full authority to make exhaustive investigations of the mines of Indiana and to command any kind of reports that would enlighten them as to the cost of production and actual operating conditions of the industry.

The commission would have the power to fix the price of coal for sale within the state, and the bill also would vest the fuel commission with power to regulate the distribution of coal. The commission would have the right to limit the sale outside the state of coal mined in Indiana until all needs within the state are filled. In the event that any operator failed to comply with the provisions of the law or the orders of the commission, and willfully obstructed production, the bill provides that the mine or mines in question can be taken over and operated under the direction of the state commission. The owner of the mine in such case would be paid all operating expenses and a fair profit on his investment.

The bill is said to be an innovation in state legislation. While its legality is being determined little action is expected to develop on the state-owned mine bill, but opponents of the bill are still vigilant lest it be pushed through hurriedly while attention is being diverted to the last bill.

The important legal question being considered by the Attorney General is the authority of the state to empower a commission to limit the distribution of coal to Indiana consumers until they are adequately supplied.

How Public Utilities May Get Assigned Cars

THE New York Central Railroad Co. has announced that before arrangement for assignment of cars at coal mines on its lines, or before applying to other lines for assignment of cars for the benefit of public utilities located on its lines, as provided for in service order No. 9, it will require application to G. N. Snider, coal traffic manager, from the public utility using bituminous coal, showing full answers to the following inquiries. This applies to the lines of the New York Central east of Buffalo.

(1) Applicant's name and address.

(2) Describe fully nature of public service performed.

(3) Where and on what railroad delivery is taken.

(4) Tons of bituminous coal on hand.

(5) Average weekly consumption bituminous coal at present and similar average for the year.

(6) For each coal shipper under contract with applicant give name and address of shipper, names and railroad location of mines, contract tonnage, date contract shipments were to commence, rate of weekly shipment, shortage to date.

(7) For which of such shippers and to what extent are assigned cars desired under this order?

(8) Date of written communication from each such shipper agreeing to accept and load such assigned cars.

(9) In case of gas plants also give details as to your present water-gas situation.

(10) In case of electric plants state to what extent hydro-electric power is developed and whether coal requirements under inquiry 5 have made proper deduction for hydro-electric power.

(11) Certificate by responsible officer of the applicant company that the answers to the above inquiries are correct and that if, as a result of these assigned cars, more coal is received than necessary for average current consumption we will be immediately notified accordingly so assignment of cars may be stopped.

Forbids Confiscation of Government Coal

ANNOYING confiscations of coal consigned to the Government fuel yard at Washington have led the Interstate Commerce Commission to issue the following notice to all carriers:

"The commission's attention has been called to the fact that railroads frequently confiscate coal consigned to Government departments. It is obvious that railroads should refrain from confiscating coal consigned to the War Department or other Government departments."

Coal Operators and Railroad Officials Agree on Solution of Coal Situation

Railroad Executives Call on National Coal Association for Assistance —Operators Appoint Committee to Act for Coal Industry—Program Calls for Increased Production and Better Distribution — Action Considered a Step That Foreshadow's End of Nation's Coal Shortage

WHEN Daniel Willard, president of the Baltimore & Ohio and chairman of the board of the American Railway Association, on July 8 called on Colonel Wentz, president of the National Coal Association, for the assistance of the coal operators in solving the problem confronting the railroads today of giving the nation an adequate coal supply, the first step was taken that is expected to lead to an end of the serious shortage that now exists. Until now the Interstate Commerce Commission has been dealing with the situation without consulting or advising with the coal men, and progress has been too slow to satisfy the railroad executives.

Colonel Wentz had already called a meeting of all coal operators of the country, without respect to affiliation with the National Coal Association, for Monday, July 12, in Washington. At this meeting, attended by 130 representative coal operators from all over the country, the decision was reached to put in the hands of a committee the entire responsibility for presenting to the railroad officials and, through them, the Interstate Commerce Commission and the government, a feasible plan for meeting the situation. This committee was clothed with full power and directed to seek a common ground on which to meet the railroads.

The committee of operators met the railroad officials in New York on Wednesday, July 14, at 2:30 p.m., after having spent the morning in preparing the data that had been assembled in Washington the day before.

As was anticipated, the railroads knew of no other way to solve the problem of distribution than by assigned cars. The operators vetoed this method and made the counter proposal that as the present difficulty is the result of lack of transportation the first step should be to increase car supply at the coal mines generally and to give particular attention to those fields that furnish coal to the sections where the situation is critical, such as the Northwest and New England. Instead of assigning cars for individual consumers or even for the Lake trade it was proposed that distribution be guided by railroad embargoes placed with due respect to the needs of particular consuming markets. By this method the shipper of coal who is obliged by railroad embargo to send his coal in a particular direction and prevented from shipping to some other, will be protected in so far as his contract obligations are involved in the same way that he always has been protected by embargoes.

It was recognized that there is hardly a point in the Eastern territory at which there is not now congestion to such a degree as to warrant a railroad embargo. The proposal was accepted by the railroad officials as the best solution proposed, and steps were at once taken to work out the details in form for recommendation to the Interstate Commerce Commission as the basis for a formal order.

Many intricate problems remained to be solved after the general principle and the line of action had been determined. Car-service experts from the railroads and traffic men from the coal industry were called in to work out these complex questions. The subcommittee of experts, headed by D. E. Spangler, Car Service Commission, and A. G. Gutheim for the roads, and by Mr. Morrow and John Callahan for the National Coal Association, and assisted by Herman Griggs, the directing head and manager of the Lake Erie Ore and Coal Exchange, and W. H. Groverman, secretary of the Northwest Coal Dock Operators Association, spent Thursday in New York preparing a report for presentation to the main committee of railroad executives and coal operators on Friday, July 16.

Throughout the proceedings the representatives of the coal industry have taken the position that the present shortage is the direct result of lack of transportation, that the producers and shippers of bituminous coal have contracted to supply the requirements of consumers throughout the country and are ready and willing to meet these obligations if the railroads will but furnish the cars and transportation. Mr. Groverman testified, as he had the previous week in the hearings before the Interstate Commerce Commission that the dock operators have contracts with producers and shippers sufficient to cover their needs but that lack of cars has prevented the production and supply of this coal to the Lake front.

The first day's conference in New York City took place in the offices of Daniel Willard, president of the Baltimore & Ohio Railroad Co. The railroad representatives present in addition to Mr. Willard, who was chairman of the committee, were General W. W. Atterbury, Pennsylvania R.R.; C. H. Markham, Illinois Central; Hale Holten, of the Chicago, Burlington & Quincy; W. B. Storey, Atchison, Topeka & Santa Fé; B. F. Bush, Missouri Pacific; F. J. Pierson, New Haven system; Howard Elliott, Northern Pacific, and W. H. Truesdale, of the Delaware, Lackawanna & Western Railroad Co.

The operators' committee was headed by Colonel D. B. Wentz, of Philadelphia, president of the National Coal Association; and consisted of J. D. A. Morrow; Frank Wilshire; C. P. White, Cleveland; James F. Walsh, Pittsburgh; F. C. Honnold, Chicago, and J. G. Bradley, Dundon, W. Va.

The sub-committee consisted of D. E. Spangler, Car Service Commission; J. B. Fisher, C. W. Fiscus and J. E. Adrian, Pennsylvania Railroad Co.; John Callahan, Washington; C. P. White, Cleveland; E. D. Ballard, Chicago; W. H. Groverman, Minneapolis; J. R. Kearney, Car Service Commission; A. G. Gutheim, Car Service Commission; C. W. Hull, Chesapeake & Ohio R.R.; C. M. Sheafer, Pennsylvania R.R.; H. M. Griggs, Interstate Commerce Commission; J. D. A. Morrow; W. G. Curran, Baltimore & Ohio and F. W. Wilshire, Consolidation Coal Co.

Public Utilities Given Assigned Cars for Coal

Interstate Commerce Commission Issues Service Order No. 9, Extending For Thirty Days Priority on Open-Top Cars for Coal—Open-Top Cars Defined and 24-Hour Unloading Requirement Applied to All Freight

PROMPT action was taken by the Interstate Commerce Commission on the extension of Service Order No. 7 after the hearings as to the necessity for amendment were concluded on Saturday, July 10. These hearings, lasting three days, revealed the great importance of increasing car supply at the coal mines as well as the urgent need of public utilities for some measure of assistance in obtaining an adequate supply of coal. The new order, known as Service Order No. 9, was issued on Tuesday, July 13, while the coal operators were in Washington preparing to meet the executive committee of the American Railway Association with a program for taking care of the coal situation.

The first of four amendments to the original order defines open-top cars to which priority in use for coal loading shall apply. Flat-bottom gondola cars with sides less than thirty-six inches in height inside measurement, cars with racks, and cars which had on June 19, 1920, been definitely retired from service for the transportation of coal or allocated for other service are excluded from the provisions of the order. The second amendment extends the period during which the order shall be in effect to sixty days instead of thirty days from June 21, 1920.

The original order specified that coal must be unloaded from open-top cars within twenty-four hours, no mention being made regarding unloading of other freight from the same type of cars. The National Coal Association and the National Association of Retail Coal Merchants both pointed out the absurdity of this feature of Order No. 7 and requested the modification now granted in amendment number three that makes restrictions and penalties equal for all freight carried in open-top cars.

Assigned Cars Not for Storage Coal

The fourth amendment authorizes the assignment of cars for coal loading for current requirements of public utilities but not for storage. Ice plants, water and sewer works, hospitals, schools and other public institutions are included within the provisions of the order and may secure assigned cars, and thereby coal, by making written application to the originating carrier, concurred in by the delivering road. Cars so provided and loaded with coal are subject to but one reconsignment and that must be to another public utility or public institution, and then only in order that this plant may be kept in daily operation.

The order specifically states that assigned cars shall not be furnished for coal that is not needed for immediate and current consumption. No coal for storage can be acquired in this way. Just when coal in a pile is storage and when it is required for current use is not defined in the order and the question has arisen as to how much coal a plant may have before storage begins. At no plant is it considered feasible to operate with less than from two to seven days' coal on hand, and an amount approximating this quantity is really needed for current operation. It is quite possible that some railroads will interpret the order so rigorously as to make it of little benefit to public utilities. Experience in distributing coal obtained by the Fuel Administration and by the Railroad Administration last winter shows that consumers have a propensity for calling for help before the help is really needed, and some railroad officials who may be called upon to concur in requests for assigned cars may be excused if they are a bit callous.

Operators Pleased With Extension of Order

Coal operators generally were pleased that the commission had decided to extend for thirty days the open-top car order, although they are opposed to the assignment of cars for any purpose. Public road interests have announced that they will continue to fight for cars for necessary repair work that must be completed before winter. They point out the apparent inconsistency of the Government in ascribing the present coal shortage to lack of rail transportation and then preventing the repair and extension of good roads over which thousands of motor trucks of the country could assist by hauling freight. The Public Service Commission of Pennsylvania on July 12 issued an order, directing the carriers to allocate to the Commonwealth certain box cars for use in transportation, the cars to be delivered at the cement works indicated and their number to be taken for the total number of box cars available and not charged against any class of consignors or against the allotment of any particular industry.

The commission has made an investigation of the supply of box cars for the transportation within the Commonwealth of cement required for the construction of public highways. In the course of construction of about one thousand miles of highway, estimated to cost approximately $47,000,000, there have been many delays and in some places work entirely stopped by inability to secure box cars in which to transport cement from places of manufacture to points of construction. The result is that there are now two hundred places where roads are being constructed at which these main highways have been closed to traffic, and it will be necessary to keep them closed unless absolutely essential materials can be transported immediately and continuously until the work is finished.

Chairman Clark Opposes Reconsignment

E. E. Clark, chairman of the Interstate Commerce Commission, addressed a letter to Daniel Willard as chairman of the advisory committee of the Association of Railway Executives, transmitting a copy of the order and calling attention to the fact that no action was taken by the commission looking toward providing a car supply for Lake coal, suggesting that such action would be deferred by the Government until after the coal operators and the railroad officials had first tried to work it out by themselves.

Mr. Clark pointed out the abuses of the reconsignment privilege and urged the railroads to amend their tariffs to prevent this practice as much as possible. Such vigorous support by the commission of the position

taken by the operators pleased officials of the coal association.

Mr. Clark's letter to Daniel Willard which follows has to do mainly with the subject of reconsignment. In explanation of the reference to Lake coal it may be stated that the commission has been inclined to grant assigned cars for this purpose and may yet do so.

Following the hearing which concluded Saturday, July 10, with respect to the coal-car situation in territory east of the Mississippi River, Division 5 of the commission has given earnest consideration to the facts disclosed of record and known to it as bearing upon the present emergency. Certain features of the situation seem to us to need clarification or correction of our Service Order No. 7. Accordingly Service Order No. 9 has been entered amending and supplementing Service Order No. 7 and effective forthwith. A copy of Service Order No. 9 is sent to you for your information.

It will be noted that no especial recognition is given to the Lake cargo situation. It is understood that this is the subject of detailed discussions among the coal operators themselves, to be followed immediately by a conference with various railroad executives, and that we will be advised as to the determinations reached. We have not thought it proper to attempt to deal with this situation by order until we know the result of such deliberations.

There is one feature of the situation as to which we entertain no doubt and which we desire to call to your attention on behalf of the carriers, which seems to us to require immediate and careful consideration with a view to action which will remedy abuses abundantly shown to exist. We refer to the provisions contained in tariffs of the carriers permitting the general or promiscuous reconsignment of cars under load with coal. As an emergency proposition it seems to us that the carriers should at once take steps to bring this practice down to the unavoidable minimum. We are not prepared to say that all reconsignment of coal should be prohibited; but it seems to us that it would be a very unusual situation in which more than one reconsignment should be permitted during the existing transportation emergency.

The privilege of reconsignment of coal is one which is carried in the tariffs of the carriers. Without discussing or deciding whether the commission has power under the emergency provisions of the Transportation Act to require the restriction or suspension of this privilege, with the myriad situations which exist in the country, it is obvious that the carriers should themselves bring forward promptly proposals to the commission for a suitable amendment to their tariffs on short notice in harmony with the views here expressed.

We will thank you if you will see that this is called to the attention of the carriers represented in your association.

Service Order No. 9, amending and supplementing Service Order No. 7, giving preference in the use of open-top cars to coal, was issued by the Interstate Commerce Commission on July 13. Order No. 9 in full is as follows:

It appearing in the opinion of the commission that because of a shortage of equipment and congestion of traffic, aggravated by unfavorable labor conditions which continue to exist upon the lines of each and all the common carriers by railroad subject to the Interstate Commerce Act within the territory east of the Mississippi River, and because of the inability of said common carriers properly and completely to serve the public in the transportation of coal, an emergency exists which requires immediate action:

It further appearing that as the result of a hearing recently had by the commission concerning the question whether any change or addition shall be made in the existing rules, regulations and practices of common carriers by railroad east of the Mississippi River, as to open-top cars or in Service Order No. 7 of the commission relative thereto made and entered June 19, 1920, the said Service Order No. 7 should be modified as hereinafter ordered.

It is ordered that said Service Order No. 7 shall be amended and supplemented in the following respects, effective forthwith:

(1) By adding to the second paragraph thereof an additional proviso as follows:

"Provided, that the phrase 'coal cars' as used herein shall not include or embrace flat-bottom gondola cars with sides less than 36 inches in height, inside measurement, or cars equipped with racks, or cars which on June 19, 1920, had been definitely retired from service for the transportation of coal and stenciled or tagged for other service."

(2) That the words "for the period of thirty consecutive days beginning with June 21, 1920," in the fifth and sixth lines of the second paragraph of said Service Order No. 7 be amended so that the same shall read, "for the period of sixty consecutive days beginning with June 21, 1920;"

(3) That the fifth paragraph of said Service Order No. 7 be amended to read as follows:

"It is further ordered that all common carriers by railroad within the territory hereinbefore described be, and they are hereby, authorized and directed, until the further order of the commission, to place an embargo against the receipt of coal or other freight transported in open-top cars suitable for coal loading, as hereinbefore defined, by any consignee and against the placement of such open-top cars for consignment to any consignee who shall fail or refuse to unload such coal or other freight so transported in coal cars and placed for unloading within twenty-four hours after such placement, until all coal or other freight so transported in coal cars and so placed has been unloaded by such consignee, provided that this authorization and direction shall not interfere with the movement of coal under permit to any coal pool or pools when authorized by any order heretofore or hereafter entered by the commission or coal consigned to Tidewater or the Lakes for transshipment by water, nor shall it apply where the failure of the consignee to unload is due directly to errors or disabilities of the railroad in delivering cars."

(4) That following the fifth paragraph of said Service Order No. 7 shall be inserted an additional paragraph as follows:

"It is further ordered that until and including Aug. 19, 1920, all common carriers by railroad within said territory, to the extent that may be necessary in order that public utilities, including street and interurban railways, electric power and lighting plants, gas plants, ice plants, water and sewer works, also hospitals, schools and other public institutions, may be kept supplied with coal for current use but not for storage, be and they are hereby authorized to place, furnish and assign cars to coal mines for the transportation of such coal, in addition to and without regard to the existing ratings and distributive shares for mines upon said railroads; provided no cars shall be so placed, furnished or supplied by any such carrier without written application therefor from the public utility concurred in by the delivering railroad, showing that such coal is needed for current use, and not for storage, in order that the applicant may continue in daily operation, and provided further that such coal shall not be subject to reconsignment except to public utilities or public institutions, and that a written report of the cars placed hereunder shall be promptly made to the Interstate Commerce Commission by the railroad placing the cars."

And it is further ordered that copies of this order be served upon the carriers hereinbefore described, by the same carriers upon whom service has been made of Service Order No. 7, and that notice of this order be given to the general public by depositing a copy thereof in the office of the secretary of the commission at Washington, D. C.

In the issue of May 13, in an article describing the Mather Collieries, credit should have been given to the Sullivan Machinery Co. for the ten Sullivan Ironclad explosion-proof electric mining machines by which the coal is exclusively cut. A portable underground air compressor of the same make also is in use. Credit in the article in question was given to another manufacturer.

Coal Men Prepare for Publicity Campaign

TO SUPPLY the public with information about coal matters, as well as to combat much misinformation concerning the industry, the Wholesale Coal Trade Association of New York, Inc., is about to launch a publicity campaign. The plan is to include newspaper advertisements dealing briefly with the salient points on which the public should be informed, as the groundwork to a proper understanding of the difficult problems confronting the coal business.

Charges for Removing Overloads from Coal Cars

THERE has been considerable question as to the ability of the carriers to make a charge for removing overloads of coal from cars. Accordingly this matter was put up to the Interstate Commerce Commission some time ago by the National Coal Association, and the following self-explanatory letter has been received from Secretary McGinty of the commission:

Referring to your letter of April 14, with which you submitted copy of a circular issued by General Superintendent of Transportation Sheaffer of the Pennsylvania R.R., relative to a charge of 35c. per ton deducted by that company as a handling charge from the price paid for coal removed from overloaded cars:

This matter has received consideration, and it is the view of the commission that if the carrier is to make a charge for this handling service it should be provided for in the tariffs. It should be understood, however, that the fact that the charge is not now named in a tariff does not necessarily mean that a reasonable charge may not be made for service of this kind which has already been performed. In this connection attention is invited to the reports of the commission in Memphis Freight Bureau vs. Kansas City Southern Ry., 17 I. C. C., 190; Hampton Manufacturing Co. vs. O. D. S. S., 27 I. C. C., 666.

If you are of the opinion that the 35c. charge is unreasonable for the service performed you have the right to file formal complaint with the commission and secure a hearing on the question.

Petroleum Output During May Was Above Average

PRODUCTION of petroleum in the United States during May, according to a report issued by the U. S. Geological Survey, amounted to 36,859,000 barrels, a daily average of 1,189,000 barrels. This compares with the output during April of 36,201,000 barrels, but as there was one day less in that month, the daily average was slightly above that of May—1,206,700 barrels. March production totalled 36,461,000 barrels a daily average of 1,176,161 barrels.

For the five months January to May inclusive the total output was 176,713,000 barrels, a daily average of 1,162,586 barrels, compared with a total production during the corresponding months of 1919 of 146,711,000 barrels, a daily average of 971,596 barrels.

Stocks of petroleum held by pipe-line and other marketing companies on May 31, 1920, amounted to 124,633,000 barrels, compared with 124,991,000 barrels on April 30 and 125,597,000 barrels on March 31.

During May imports of petroleum totalled 6,695,571 barrels, compared with 6,186,384 barrels during April. Total imports for the five months January to May inclusive amounted to 30,889,012 barrels, compared with 19,796,398 barrels during the corresponding months of 1919.

Exports of crude petroleum during May amounted to 655,707 barrels, compared with 649,416 barrels during April. For the five months January to May, 1920, exports totalled 3,392,335 barrels, compared with 1,196,057 barrels during the corresponding months of the previous year.

Estimated total consumption of domestic and imported petroleum, including exports, during May amounted to 43,971,031 barrels, a daily average of 1,418,420 barrels. This compares with a total consumption during the corresponding month of 1919 of 35,141,000 barrels, a daily average of 1,133,581 barrels. During April, 1920, the total consumption amounted to 42,861,000 barrels, a daily average of 1,428,700 barrels, while for March, 1920, the total was 43,926,000 barrels, a daily average of 1,416,967 barrels.

British Comment on Our Export Trouble

UNDER the caption "Delivering the Goods" the *Journal of Commerce*, a Liverpool (England) publication, comments on the present predicament of the American exporters of coal, who have the business and the boats but not the coal. The editorial says:

"During the last week or two there has been a very severe slump in freights from the United States coal ports to European destinations, and possibly the worst in this respect has not yet been seen. The chief reason for the fall was the inability of shippers to find coal to fill the steamers chartered, and already there has sprung up a very big crop of claims for demurrage.

"There is plenty of coal in the States for export, but it is in the wrong place. In short Uncle Sam, having entered into the business of international coal merchant, now finds out that he has bitten off more than he can chew.

"It is certainly very unfortunate that the business has turned out so disastrous for all concerned, but results are about equal to the anticipations of the coal and shipping interests on this side."

The British writer thinks that England has plenty of coal but "unfortunately it cannot be mined quickly enough, thanks to the attitude of the Government-coddled miners, and thus the export trade is very seriously handicapped. The Board of Trade decision to limit coal exports is a confession of weakness, and certainly Great Britain cannot pay her way on the export of a paltry fifteen or twenty million tons of coal a year. Not only does a small coal export mean a big loss of trade, but the money usually earned in freights will soon begin to tell."

Hope is held out for the British exporter with predictions of industrial trouble if coal is not produced there in greater quantities. The writer encourages the trade with the statement that "even now it is not too late for the country to regain some part of its lost coal trade. Contracts placed with the States will be cancelled wholesale as soon as shippers start defaulting in real earnest, as they must do, and if the miners in this country put their backs into the task orders would soon flow back to this country again. Work must be found for the ships, and coal is the usual cargo for tramps outward bound for grain, wool or ore. Output is the essential factor in the situation, and this is greatly restricted. Already the country is face to face with the danger of a big shutdown in the engineering and allied trades, and if this eventuates while the country's export of coal is cut down to next to nothing there will be hard times for the working classes next winter."

Operators Make Full Reply to the Allegations of United Mine Workers Especially as to Wages and Working Time

Exhibit of Anthracite Operators to U. S. Anthracite Coal Commission Shows That in Period from 1917 to 1919 Anthracite Men Worked 22 Per Cent More Days Than Employees at Bituminous Mines

On March 9, 1920, at a joint conference of miners and operators held in New York, preparatory to the expiration of the four-year agreement which terminated March 31, 1920, the miners presented sixteen demands as the basis of a new contract. The parties in interest appointed four representatives on each side to constitute a negotiating committee to consider these demands and report back to the joint conference any agreement they might be able to reach. The members of this committee were the following: For the miners—John L. Lewis or Philip Murray, John T. Dempsey, Thomas Kennedy, Chris J. Golden and for the operators S. D. Warriner, W. J. Richards, W. L. Connell, C. F. Huber.

After eight weeks of negotiation in New York City, and after careful examination of the facts and figures presented, the operators felt that there was little justification for any increase. Nevertheless, in view of the existing unrest, as insurance against further increase in the cost of living within the period of the contract, and in compromise of existing differences, they offered an increase of 15 per cent to be applied as follows:

Operators' Offer to Miners

(a) The contract rates at each colliery shall be increased 60 per cent over and above the contract rates at each colliery, effective April, 1916, as established by the agreement of May 5, 1916.

(b) The day rates of outside company men receiving $1.545 or more per day under the agreement of May 5, 1916, shall be increased 60 per cent, plus $1.20 per day, or per shift, above the rates established in said agreement of May 5, 1916; it being understood that the increase thus made shall be not less than $2.30 or more than $2.80 per day or per shift.

(c) The day rates of inside company men receiving $1.545 or more per day under the agreement of May 5, 1916, shall be increased 60 per cent, plus $1.20 per day, or per shift, above the rates established in said agreement of May 5, 1916; it being understood that the increase thus made shall be not less than $2.50 or more than $2.80 per day or per shift.

(d) The rates paid consideration miners shall be increased 60 per cent, plus $1.20 per day, above the rates established under the agreement of May 5, 1916; it being understood that the increase thus made shall be not more than $2.80 per day.

(e) The rates paid contract miners' laborers and consideration miners' laborers shall be increased above the rates established under the agreement of May 5, 1916, to the same amount per day as the increase to company laborers, at the respective collieries, under the provisions of clause c hereof; it being understood that in the case of contract miners' laborers the miner is to assume and pay so much of said increase as shall be represented by the application of 60 per cent to the rate per basic shift as established under the agreement of May 5, 1916, and the difference between said amount and the total increase to the contract miners' laborers shall be assumed and paid by the operator.

(f) The day rates paid on machine mining shall be increased 60 per cent, plus $1.20 per day, above the rates established under the agreement of May 5, 1916; it being understood that the increase thus made shall be not less than $2.50 or more than $2.80 per day.

(g) All employees paid by the day and receiving less than $1.545 per day, or per shift, under the agreement of May 5, 1916, shall be paid an increase of $1.50 per day, or per shift, over the rates paid under said agreement of May 5, 1916.

(h) Monthly men coming under the agreement of May 5, 1916, shall be paid an increase of 60 per cent, plus $36 per month, over the monthly rates established in said agreement of May 5, 1916; it being understood that for outside employees the increase thus made shall be not less than $69 or more than $84 per month, and for inside employees not less than $75 or more than $84 per month.

(i) The employees of stripping contractors shall be paid an increase per day or per month corresponding in amount to the difference between the rates in effect March, 1920, and the rates established under this agreement for employees of the operators in similar occupations at the same colliery.

(j) The employees of tunnel contractors shall come within the terms of this agreement and the day rates of their employees shall be increased 60 per cent, plus $1.20 per day, above the rates established under the agreement of May 5, 1916; it being understood that the increase thus made shall be not less than $2.50 or more than $2.80 per day.

(k) The increases herein provided shall become effective April 1, 1920, and where they apply to day rates are to be applied to a day of eight hours or more, as established under the agreement of May 5, 1916.

The miners rejected this proposition and the operators then offered, as an alternative, arbitration by three men, representative of the public, who were to be appointed by the President of the United States and to sit with the negotiating committee to decide matters in dispute. This offer also was rejected. As there was every evidence of a disagreement the Secretary of Labor invited the committee to appear before him in Washington in the hope that some ground might be found for an amicable adjustment of the matters in dispute. Both sides argued the case before the Secretary and were finally asked to accept the following as a basis of compromise:

Plan of Secretary Wilson

The terms and provisions of the award of the Anthracite Coal Strike Commission and subsequent agreements made in modification thereof or supplemental thereto, as well as the rulings and decisions of the Board of Conciliation, are hereby ratified, confirmed and continued for a further period of two years, ending March 31, 1922, except in the following particulars, to wit:

(a) The contract rates at each colliery shall be increased 65 per cent over and above the contract rates at each colliery, effective April, 1916, as established by the agreement of May 5, 1916.

(b) The day rates of outside and inside men receiving $1.545 or more per day under the agreement of May 5, 1916, shall be increased 65 per cent, plus $1.20 per day, or per shift, above the rates established in said agreement of May 5, 1916; it being understood that the new rate so established shall be not less than $4 or more than $6 per day or per shift.

(c) The day rates of employees receiving less than $1.545 per day under the agreement of May 5, 1916, shall be increased $1.50 per day, or per shift, above the rates established in said agreement of May 5, 1916.

(d) The rates paid contract miners' laborers and consideration miners' laborers shall be increased above the rates established under the agreement of May 5, 1916, to the same amount per day as the increase to company laborers, at the respective collieries, under the provisions of clause b hereof; it being understood that, in the case of contract miners' laborers, the miner is to assume and pay so much of said increase as shall be represented by the application of 65 per cent to the rate per basic shift as established under the agreement of May 5, 1916, and the difference between said amount and the total increase to the contract miners' laborers shall be assumed and paid by the operator.

(e) Monthly men coming under the agreement of May 5, 1916, shall be paid an increase of 65 per cent, plus $36 per month, over the monthly rates established in said agreement of May 5, 1916; it being understood that the increase thus made shall be not less than $20 or more than $30 per calendar month over the rates now in effect.

(f) The employees of stripping contractors shall be paid an increase per day or per month corresponding in amount to the difference between the rates in effect March, 1920, and the rates established under this agreement for employees of the operators in similar occupations at the same colliery.

(g) The employees of tunnel contractors shall come within the terms of this agreement and the day rates of their employees shall be increased 65 per cent plus $1.20 per day above the rates established under the agreement of May 5, 1916.

(h) The increases herein provided shall become effective April 1, 1920, and where they apply to day rates are to be applied to a day of eight hours or more, as established under the agreement of May 5, 1916.

It is understood and agreed that the case of inside pumpmen and inside and outside hoisting engineers, working a twelve-hour cross shift, shall be referred to the Board of Conciliation. The board shall work out a basis of eight-hour shifts and the rates to be paid for an eight-hour day. Pending the decision of the board inside pumpmen and inside and outside hoisting engineers working a twelve-hour cross shift shall continue on that basis and shall be paid the same increase as provided for day men under clause b hereof. When the rates to be paid for an eight-hour day have been established by the Board of Conciliation time in excess of eight hours per day shall be paid for at the rate per hour established for the eight-hour day.

It is further understood and agreed that the Board of Conciliation shall act as a commission to make a study of, and report to the joint conference at the expiration of this contract, the matter of uniformity in day rates for the several occupations of day men at the respective collieries in the anthracite field.

Contract miners whose tools are lost through no fault of their own as the result of squeezes, cave-ins, and similar accidents shall be furnished with new tools by the company, corresponding to the tools lost, without expense to the miner.

Whenever contract miners reporting for duty are shut out of work through no fault of their own they shall be given the opportunity of working in other places or at other work at the rate of wages established for such other places or such other work, if such other places or other work are available.

Whenever deficient or abnormal conditions are encountered in a working place by contract miners the miner or miners affected shall make such fact known to the foreman, and if the foreman and the men affected are unable to agree it shall be referred to the grievance committee and dealt with in the manner provided for other grievances. Work shall be continued pending the adjustment unless otherwise directed by the foreman, and whatever decision is made shall be retroactive to the date upon which the grievance was raised.

[This contract was to be signed by four representatives of the anthracite operators and by the presidents of districts Nos. 1, 7 and 9 and the president of the United Mine Workers of America on behalf of the "United Mine Workers of America," which is so designated in the instrument, also by the chairman and secretary of the conference as attestants.—Editor.]

Operators Accepted Offer

The operators concurred, but the miners, through their scale committee, rejected the Secretary's recommendation. Thereupon the Secretary addressed a letter to the President, briefly outlining the situation, and stating that

the basis of compromise he had proposed, namely, $4 per day to men who had received $1.50 per day in 1914 and $6 per day to men who had received $3 per day in 1914, was as far as he could go and justify his position. In this letter he asked Presidential authority to say that there must be no cessation of work and that in case of final disagreement the matters at issue must be submitted to arbitration.

Upon receipt of an affirmative reply the Secretary referred the matter once more to the negotiating committee and the mine workers decided to refer the entire matter to a tri-district convention to be held in Wilkes-Barre. The convention endorsed the action of the scale committee in rejecting the Secretary's offer, and decided to refer the matters at issue to arbitration. Thereupon the President issued the following proclamation:

President's Proclamation

Whereas the wage scale of the anthracite coal operators and miners expired on March 31, 1920; and the operators' and miners' wage scale committee has been in conference since early in March in an effort to negotiate a new wage scale; and the committee agreed at the beginning of its sessions that any agreement finally arrived at would become retroactive to the first of April, 1920; and I addressed a communication to the scale committee on May 21, 1920, when a disagreement was imminent, in which I said that if the scale committee was unable to reach an agreement I would "insist that the matters in dispute be submitted to the determination of a commission to be appointed by me, the award of the commission to be retroactive to April 1, in accordance with the arrangement you have already entered into, and that work be continued at the mines pending the decision of the commission. I shall hold myself in readiness to appoint a commission similarly constituted to the one I recently appointed in connection with the bituminous coal mining industry as soon as I learn that both sides have signified their willingness to continue at work and abide by its decisions," and whereas the scale committee has further agreed as follows:

"(1) The terms and provisions of the award of the Anthracite Coal Strike Commission and subsequent agreements made in modification thereof or supplemental thereto, as well as the rulings and decisions of the Board of Conciliation, will be ratified and continued, excepting in so far as they may be changed by the award of the commission.

"(2) When the award of the commission is made it will be written into an agreement between the anthracite operators and miners in such manner as the commission may determine.

"(3) It is understood that neither operators nor miners are in any manner bound by any tentative suggestions that have been made during the period of their negotiations and that either side shall use its own discretion in the presentation of its case in connection with matters at issue";

Now therefore, I, Woodrow Wilson, President of the United States, hereby appoint William O. Thompson, of Columbus, Ohio; Neal J. Ferry, of McAdoo, Pa., and William L. Connell, of Scranton, Pa., a commission to hear and decide the questions in dispute between the anthracite coal operators and miners. Its report will be made within sixty days if possible, will be retroactive to April 1, 1920, and will be made the basis of a new wage agreement between the anthracite operators and miners in such manner as the commission may determine.

In witness whereof I have hereunto set my hand and caused the seal of the United States to be affixed. Done in the District of Columbia, June 3, 1920, etc.

Murray Lists Major Demands

In his opening address Mr. Murray stated that of the eighteen demands made by the mine workers there were four of major importance, to wit:

(1) Eight hour day for those occupations which are based on a longer workday, such as engineers, pumpmen, stablemen, etc.

(2) Standardization of rates of pay for the same work throughout the field.

(3) The same increases in rates of pay as were granted to soft-coal mine workers by the President's Bituminous Coal Commission by its award of March 19, 1920. This demand involves the following increases:

(a) The establishment for all adult male workers who are now receiving less than $5 a day a rate of $6 per day.

(b) An increase of $1 per day to all adult male workers who are now being paid $5 or more than $5 a day.

(c) Workers paid on a monthly basis to receive an increase proportionate to their rate per day computed on the basis of the number of days worked per month.

(d) Boys who are now receiving less than men's wages to be advanced 53c. per day.

(4) Formal recognition of the United Mine Workers of America, the award of this commission to be written into an agreement to be signed by representatives of the operators and of the United Mine Workers of America.

Constitutes New Demand

The foregoing explanation constitutes an entirely new interpretation of the wage demand and involves an increase greatly in excess of any claim heretofore made. It is intimated that if this demand is granted the same increases will be awarded to the anthracite workers as were awarded to the bituminous workers by the President's Bituminous Commission. Its award reads as follows:

(f) That all day labor and monthly men (the advance to monthly men to be based on an average of the usual number of days he is required to work in a month), except trappers and other boys, be advanced $1 per day. Trappers and boys receiving less than men's wages to be advanced 53c. per day.

This award did not establish a $6 per day minimum in the bituminous field, as claimed. Mr. Murray later tried to explain this inaccuracy, but it was done in a way that left the meaning quite obscure. Furthermore, in this explanation he makes the unqualified statement that $6 per day is "the minimum day rate in the bituminous coal-mining areas." The operators challenge this statement as inaccurate and not in accord with the facts.

Demands Are Now Growing

The demands presented by the miners to this commission embody in substance what was presented to the joint conference, except that the original demand for a 60 per cent increase in the contract wage-scales and a $2 per day increase to day men has been modified to read, "an increase to correspond to the increases granted the bituminous mine workers by the Presidential Coal Commission." Also, the demand for a 6-hour day and a 5-day week has been modified to read, "that the 8-hour day be extended to all classes of inside and outside day labor and monthly men."

When in the conferences of the negotiating committee the wage demand was modified to an increase to correspond to that granted the bituminous workers by the Presidential Coal Commission the mine workers then stated that it contemplated an increase of 27 per cent to contract miners and $1 per day to day workers. This commission has now before it identically the same demand, written in exactly the same words, but with a new interpretation—namely, that it means an increase of 31 per cent to contract miners and a minimum rate of $6 per day to day workers. The operators again challenge the accuracy of this interpretation of the bituminous award.

Four Times Pre-War Rates

It is quite pertinent to ask that the commission inquire most carefully into the supporting data for a demand that has been subject to so many changes and to such varied interpretations. The establishment of a minimum rate of $6 per day to day workers would give common labor an increase of approximately 75 per cent over the rates now in effect and nearly 300 per cent over the pre-war rates. It would give to labor of this class 75c. per hour, as compared to an average rate of 45c. per hour now being paid to the same labor in other industries. It would give to labor of this class practically the same rate as is now being paid to the highest skilled labor in industrial establishments in the eastern portion of the United States.

The lowest day rate for adult labor is now $3.35 per day. The mine workers propose that this labor shall be increased to $6 per day, an increase of 80 per cent over its present rate and 300 per cent over its pre-war rate of $1.50 per day. They likewise propose that day labor now receiving $5 per day shall be increased $1 per day, making the new rate $6 per day, an increase of 20 per cent over present rates and 106 per cent over the pre-war rate.

As $3.35 and $5 represent generally the minimum and maximum rates paid to day labor it follows that under the scale they propose practically all day workers would receive $6 per day. In a word, the existing differentials that have been established as a reward for greater skill and efficiency are to be entirely wiped out and everyone is to receive the same, irrespective of the character of the employment.

We cannot conceive that any plan embodying the principle of equal pay to all classes of day labor, regardless of skill and training, will give satisfaction to our employees or will receive serious consideration on the part of this commission.

In this reply the operators will confine their discussion to the eighteen demands as drafted by the tri-district convention, as presented by Mr. Murray, and as explained by Messrs. Dempsey, Kennedy and Golden. The effort will be to give this commission only essential facts bearing on these particular demands, which are the only matters before the commission for its consideration and decision.

Demand No. 1

We demand that the next contract be for a period not exceeding two years and that the making of individual agreements and contracts in the mining of coal shall be prohibited.

So far as the term of the contract is concerned the operators agree to a two-year period. As to the abrogation of individual contracts in the mining

of coal, the same demand was made by the mine workers in 1912 and adjusted by the following clause in the agreement of May 20, 1912:

(c) There shall be an equitable division of mine cars, as set forth in the award of the Anthracite Coal Strike Commission and the decisions of the Conciliation Board; and further, the rates paid by any contract miner to his employees shall not be less than the standard rate for that particular class of work.

Under this agreement the miners are amply protected against discrimination both in the distribution of cars and in the rates of pay. At the same time the operator may exercise full authority as to mining methods which in his judgment are necessary to provide for the safety of the employees and to secure efficiency in production. The argument of the mine workers can be interpreted only as indicating a determination to limit the opportunity and earning capacity of the individual.

Contract Is No Exploitation

The practice of contracting a section of a vein, or a particular opening, to one man, who in turn employs his help, is a practice that has been in effect for a great many years. It has particular merit where the conditions involve removal of pillar coal or other conditions of mining not common to the average seam and where exceptional skill and supervision are required. The contention of the miners is that one man benefits by the labor of others and that the men employed earn less than if employed on separate contracts.

To this the operators reply that the condition that obtains is no different from that of a contractor in any other industry employing a number of men and that the men employed by the contractor can secure individual contracts in other sections if they so desire. The fact is that many men prefer to work at a fixed rate per day instead of a contract, or piece-work basis, and that it has always been possible to find men anxious and willing to work for contractors at the rates established and paid.

The argument that "the worker is being exploited," that the mine workers demand "equal rights to all and special privileges to none," is simply rhetoric. The workers are not exploited any more than any man working for another is exploited. Under the agreement of 1912 they are paid rates not below the established colliery scale, and in many instances the rates paid are higher than the colliery scale. They are not compelled to work for a contractor but do so of their own free choice and for reasons already indicated. Under the circumstances there is no sound argument for abrogation of a system of mining that has been in effect a great many years and which has resulted in promoting safety, efficiency and maximum production under the conditions to which the system is applied.

Demand No. 2

We demand that the present wages of the anthracite mine workers be increased to correspond to the increases granted the bituminous mine workers by the Presidential Coal Commission.

The demand to make an increase in wages to correspond to the increase granted bituminous workers must be considered in the light of conditions in the two industries. For if conditions differ then this demand is based on a false premise and a scale of wages thus established would be manifestly unfair.

The conditions of, and the opportunity for, employment differ so widely in the two industries that one is not comparable with the other. Anthracite is not only mined, but after it is mined passes through a breaker where it is screened into nine sizes, passed to jigs or mechanical separators for removal of refuse, and is then loaded for market. The underground operation of an anthracite mine requires vastly more maintenance, pumping, etc., than a bituminous mine. As a result of this situation only about one-third of the men employed in the anthracite industry are engaged in cutting and loading coal, while in the bituminous industry two-thirds of the total are thus employed.

In the matter of working time or opportunity for employment the two industries have been gradually drifting apart until today the anthracite is on practically a full-time basis, as compared to 200 days per year in the bituminous.

Anthracite Pays Bigger Wages

It follows that neither in conditions of employment nor in opportunity for work are the two industries analogous, and there is therefore no sound reason why an advance awarded the bituminous worker should constitute a basis for adjustment of wages in the anthracite field. The anthracite industry is quite willing to compare the annual earning capacity of its employees with the earnings of those employed in the bituminous industry, for it will be shown that the anthracite worker, under present wage scales, is earning more per annum than the bituminous worker with the increase granted by the President's commission.

The question as to whether rates in the anthracite industry are fair and equitable must be determined with full appreciation of the following elements: (1) Opportunity for continuous employment; (2) Annual earning capacity; (3) Increase in annual earning capacity, 1914 to 1919, as compared to the increase in cost of living; (4) Daily wage; (5) Comparison of rates in effect with rates paid in occupations requiring like skill in other industries.

Must Have Chance to Earn

To the worker a daily rate has little significance unless he be given the opportunity to earn it. The present condition in the bituminous industry furnishes a striking illustration. It has been well depicted by Commissioner Colver of the Federal Trade Commission in a statement made on June 29, in which he said:

The coal mines are being allotted only 15 per cent of the cars which are needed. Coal miners who nominally receive a wage so high as to seem unheard of, are able to work only one day a week and see their families go hungry.

With reference to the opportunity for continuous employment Table I is submitted, showing days worked in the anthracite field and the bituminous field in the past ten years:

TABLE I. DAYS WORKED IN ANTHRACITE AND BITUMINOUS FIELD

Year	Anthracite 9-Hr. Days	Anthracite Equivalent 8-Hr.	Bituminous Central Competitive Field	Bituminous All Fields of United States
1910	299	258	219	217
1911	248	277	210	211
1912	231	260	224	223
1913	257	289	233	232
1914	245	276	184	195
1915	230	259	198	203
1916		*263	228	230
		Av. 269	Av. 214	Av. 216
1917		285	244	243
1918		293	250	249
1919		273	201	†201
		Av. 284	Av. 232	Av. 231

* 9-hour day January to April; 8-hour day May to December.

† Estimated—report of President's Bituminous Commission gives 193 days.

From the foregoing it will be noted that on a basis of equivalent hours per day the working time in the anthracite field in the period 1910 to 1916 was 55 days, or 25 per cent, more than the Central Competitive field and the same percentage more than the bituminous fields of the country as a whole; and that in the period 1917 to 1919 it was 52 days, or 22 per cent, more than the Central Competitive Field and the same percentage more than the bituminous fields as a whole. It will therefore be noted that war conditions made little change in the relative situation. But during the post-war condition, namely, 1919, the figures show that the anthracite mines have worked 72 days, or 36 per cent, more than the bituminous.

Now on Full-Time Production

It is therefore clearly apparent that the anthracite industry is on a basis of full-time production. There has been much argument on the part of the anthracite workers that this was not the case, that the conditions that obtained in the past few years were abnormal and that there would be a return to pre-war conditions, with a material reduction in working time.

It is to be assumed that the demand will be as great in the years to come as in years gone by, plus an increase which is bound to ensue with the normal growth in population. Therefore if it is a fact that the production of domestic sizes per annum has shown little increase in the period 1916 to 1919 as compared to the period 1912 to 1915 it must follow that supply has only met demand and that the working time necessary to produce the tonnage in the past few years reflected a normal, and not an abnormal, condition. The situation is reflected in Table II, showing domestic and steam sizes in the period named.

From the following it will be noted that the production of prepared and pea sizes has increased only 3.8 per cent in the four years 1916 to 1919, as compared to the period 1912 to 1915, or an increase of less than 1 per cent per annum.

TABLE II. SIZES OF ANTHRACITE SHIPPED

Year		Prepared and Pea, Tons	Steam Sizes, Tons
1912		45,678,201	17,932,377
1913		50,594,305	18,475,323
1914		49,998,507	18,344,094
1915		48,944,747	18,939,029
	Avg.	48,803,940	.....
1916		48,245,724	19,130,640
1917		53,487,277	23,646,028
1918		51,974,714	24,675,204
1919		48,991,572	17,863,739
	Avg.	50,674,822	.....

In the coal year from April 1, 1919, to March 31, 1920, the anthracite industry offered steady employment and no time was lost except that lost voluntarily by the employee or because of some interference with operation beyond the producers' control. Car shortage and no market were not factors in the situation, for there was practically a 100-per cent car supply and there was a market for every ton of coal that could be produced.

Prepared Sizes the Test

The anthracite industry has always predicted its working time on the market for prepared sizes. The steam sizes have never been a factor in determining days worked, for if the market would not absorb the total production of these sizes the excess was stocked either at the collieries or in the storage yards. This is an important factor in consideration of the issues before us, for in the production of prepared sizes, with mines working every day, will give the necessary tonnage to meet country's needs, then the anthracite industry is on a full-time basis.

The average annual production of prepared sizes in the four years 1912 to 1915 was 48,803,940 tons. In the year 1919, with 273 working days, the production was 48,991,572 tons. It will therefore be noted that production has not increased and that with a proper allowance for increased population and increased demand, it will be necessary to work more than 273 days in 1920; in fact, in the light of the experience of the past coal year, it will be necessary to have full-time operation to supply the demand, for there was a market for all coal that could be produced in the coal year ending March 31, 1920.

How Work-Day Error Arose

The mine workers have offered certain exhibits purporting to show days worked, opportunity for employment, earnings of anthracite employees, etc., in which appear certain tabulations and conclusions. The attention of the commission is directed to the fact that in all of these exhibits the working time for the year 1919 is given as 252 days. This was one of the first points in controversy during the negotiations, and the mine workers then stated that this figure had been obtained from a statement of G. O. Smith, director of the United States Geological Survey.

As the figures of the large operating companies, producing about 80 per cent of the total anthracite tonnage, showed 281 starts and 273 eight-hour days of breaker operation the operators inquired of the Survey in what manner it had arrived at 252 days as the working time in the anthracite field in 1919. In reply E. W. Parker, director of Bureau of Information, received the following from F. G. Tryon, acting in charge of coal and coke statistics, Division of Mineral Resources, U. S. Geological Survey, March 18, 1920:

For the purpose of incidental comparison with the figures presented for the bituminous mines in the paper delivered by the director at the February meeting of the American Institute of Mining Engineers, an estimate of 252 days worked in 1919 was used for anthracite mining. The method by which this estimate was obtained is as follows:

In the absence of changes in the number of men or of the productivity per man per day, the number of days worked in 1919 should bear the same relation to the number of days worked in 1918 as the figures of total production for the two years. The proportion might be stated 98,826,000 tons in 1918 is to 86,200,000 tons in 1919 as 293 days is to 256 days. Comparing the years 1917 and 1919, the figures of days worked for the latter year would be 247. The two estimates thus obtained—256 days and 247 days—were averaged and the result, 252 days, was accepted as a rough measure of the days worked in 1919.

As pointed out by you, any significant change in either the number of men employed or the average productivity per man per day would invalidate this estimate. If you are in possession of actual returns you will be much better able to arrive at a temporary conclusion than is the Geological Survey at the present time.

TABLE III. AVERAGE ANNUAL EARNINGS OF ANTHRACITE EMPLOYEES WORKING THROUGHOUT THE YEAR 1919 COMPARED WITH EARNINGS IN THE SAME OCCUPATIONS IN THE YEAR 1914

	Earnings, Year 1914	Earnings Year 1919	P. C. Inc. Over 1914	No. of Men
Contract miners	$820	$1,719	109.6	13,467
Inside day men:				
Blacksmiths	737	1,565	112 3	55
Bratticemen	667	1,342	101.2	477
Carpenters	754	1,577	109 2	38
Culm-men	807	1,520	88 4	55
Drivers	493	1,157	134 7	897
Engineers—Locomotive	724	1,471	103.2	666
Engineers—Slope	671	1,384	106.3	338
Headmen and footmen	601	1,380	129 6	754
Machinists	880	1,699	93 1	49
Masons	645	1,281	98.6	136
Company miners	698	1,365	95.6	1,061
Company laborers	549	1,259	129.3	3,673
Pipemen	795	1,539	93.6	26
Pulleymen	646	1,339	107.3	36
Pumpmen	829	1,727	108.3	467
Car runners	543	1,219	124 5	647
Shaftmen	971	1,683	73.3	42
Stablemen	779	1,557	99.9	117
Timbermen	601	1,379	129 5	295
Tracklayers	671	1,398	108.3	612
Average	$615	$1,334	116 9	10,441
Outside day men:				
Blacksmiths	818	$1,667	103 8	269
Carpenters	761	1,595	109 6	943
Engineers—shaft	964	1,760	82 6	491
Engineers—tower	871	1,673	92 1	12
Engineers—slope	797	1,575	97 6	414
Engineers — power house	907	1,645	81 4	96
Engineers—breaker	830	1,654	99.3	96
Engineers—fan	724	1,557	115 1	120
Engineers — locomotive	821	1,636	99 3	243
Firemen	719	1,511	110.2	1,049
Headmen and footmen	546	1,267	132 1	375
Laborers	524	1,264	141 2	4,467
Loaders	543	1,226	125 8	478
Machinists	851	1,679	97 3	387
Pumpmen	729	1,579	116 6	45
Stablemen	757	1,494	97 4	91
Teamsters	588	1,398	137 8	148
Timber cutters	527	1,264	139 8	236
Track layers	666	1,354	103 3	114
Average	$643	$1,409	119 1	10,074
Average all occupations	$705	$1,509	114 0	33,982

TABLE IV. BREAKER STARTS AND DAYS WORKED DURING YEAR 1919 AT OPERATIONS PRODUCING EIGHTY-EIGHT PER CENT OF THE TOTAL ANTHRACITE TONNAGE

(This table does not rightly belong to this exhibit being Operators' Exhibit 2)

	Number of Collieries	Avge. Breaker Starts	Average 8-hour Days Breaker Operation
Hudson Coal Co.	14	286	290.2
Hillside Coal & Iron Co.	4	292	286.5
Pennsylvania Coal Co.	10	287	289.4
Scranton Coal Co.	8	290	247.7
Delaware, Lackawanna & Western R.R. Co.	18	278	274.7
Lehigh Valley Coal Co.	19	280	264.0
Lehigh & Wilkes-Barre Coal Co.	11	277	271.0
Lehigh Coal & Navigaton Co	6	271	271.0
Philadelphia & Reading Coal & Iron Co.	31	279	278.5
Susquehanna Collieries Co.	13	279	276.3
Temple Coal Co.	6	266	212.1
Racket Brook Coal Co.	1	274	271.3
Cranberry Creek Coal Co.	1	273	271.3
Midvalley Coal Co	1	273	272.0
Darkwater Coal Co.	1	277	275.3
Buck Run Coal Co.	1	278	271.8
Madeira, Hill & Co	6	270	263.0
Trevorton Colliery Co.	1	279	276.0
Locust Mountain Coal Co.	1	275	279.9
Buck Ridge Coal Mining Co.	1	279	276.3
Estate A. S. Van Wickle	1	303	283.9
G.B. Markle Co., Inc.	4	299	297.4
Peoples Coal Co.	1	282	282.0
George F. Lee Coal Co	1	277	277 4
Kingston Coal Co.	3	283	282.1
C. M. Dodson & Co	1	276	266.3
Pardee Bros. & Co.	1	272	269.9
Totals	166	279	273.1

It will be noted that 252 days was simply an estimate, theoretically deduced from certain factors; and it will further be noted that the method employed failed to take into account the fact that the years 1917 and 1918 included a large tonnage from culm banks, whereas there was comparatively little culm-bank tonnage in 1919. The result was that the computation produced a result entirely at variance with the facts.

Knew Figure Was Contested

All of the foregoing was made a matter of record during the negotiations. Yet Mr. Lauck presents to the consideration of this commission exhibits showing days worked, earnings of anthracite workers, etc., in which the erroneous figure of 252 days is one of the controlling factors and exerts a most vital influence in the results shown and the conclusions drawn therefrom.

In the matter of annual earning capacity the operators have summarized in Table III from the payrolls of nine companies, producing about 75 per cent of the total anthracite output, the earnings of all employees whose names appeared in each semi-monthly pay period in the years 1914 and 1919, classified as to occupations. The figures shown represent the actual amount received, on the average, by the employee in each occupation in each year, and in the case of contract miners the amount received after deduction for powder and other supplies purchased from the operator and used in the conduct of the work.

TABLE V GROWTH OF BANK DEPOSITS IN ANTHRACITE COAL FIELDS OF PENNSYLVANIA YEARS 1916-1920

	No. of Banks	Savings Deposits, Jan. 1, 1916	Savings Deposits, Jan. 1, 1920	Increase Over 1916	Per Cent
Hazleton Region	9	$9,754,678 84	$15,173,598 79	$5,418,919 95	56
Lykens Region	7	946,825.95	1,638,622 87	691,796 92	73
Wilkes-Barre City	12	20,176,449 19	27,341,979.11	7,165,529 92	36
Wyo. Val. Local Towns	16	14,590,880.21	23,453,450.51	8,862,570 30	61
Scranton City	18	32,632,874 71	42,127,999.63	9,495,124 92	29
Lacka. Val. Local Towns	18	11,181,143 20	16,938,734 77	5,757,591 57	51
Southern Field	28	10,324,955 98	17,653,327 19	7,328,371 21	71
Western Field	22	9,240,445.29	17,157,102 22	7,916,656.93	86
Grand totals	130	$108,848,253.37	$161,484,815.09	$52,636,561 72	48

From Table III it will be noted that the average annual earning capacity of adult employees in the industry was $1,509 per annum, or an increase of 114 per cent over the year 1914, and that in very few occupations has the increase been less than 95 per cent which the miners have so forcibly contended throughout our negotiations represents the increase in the cost of living within the five year period.

In fact, the figures show that not only have increased earnings compensated for the increase in the cost of living but there has been an increased opportunity to save, as evidenced by the savings deposits of the several banks in the anthracite field. From data collected by the Luzerne County National Bank, of Wilkes-Barre, Table V is submitted.

The operators contend that average earnings of $1,509 per annum compare favorably with the average annual earnings of employees in other basic industries. The contention of the mine workers is that, in order to secure these annual earnings it has been necessary that men work every day and overtime on some days, and that the figures submitted indicate that this has been the condition.

While it may be true that in some occupations the earnings indicate full time and overtime on the basic 8-hour day, the fact remains that in practically no case do the earnings show overtime of more than one hour per day, on the average, for full-time work. The fact that the men have been able to secure this steady employment is the best evidence of the opportunity that the industry affords.

In the matter of increase in the cost of living the mine workers have presented an exhibit which shows that according to the U. S. Bureau of Statistics the cost of living in December, 1919, exceeded that in December, 1914, by 95 per cent and the cost of living in May, 1920, exceeded that in December, 1914, by 104 per cent. It also declares that according to the National Industrial Conference Board the cost of living in March, 1920, exceeded that in June, 1915, by 94.8 per cent and the cost of living in April, 1920, exceeded that in June, 1915, by 96.6 per cent. Another statement presented is that, according to the Massachusetts Commission on the Necessaries of Life, the cost of living from December, 1914, to April, 1920, rose 92.3 per cent.

In the negotiations the mine workers contended that the increase in the cost of living was 95 per cent as compared to 1914 and that the wage demand was largely predicated on this increase. They now argue that the increase is 104 per cent, and it is interesting to note the basis of this claim. On page 5, Exhibit 8, referring to the 95 per cent and 104 per cent increase shown in the table and purporting to be statistics compiled by the U. S. Bureau of Labor appears the following footnote:

(1) Estimates: increase between December, 1919, and May, 1920, being estimated as 5 per cent from price increases shown in later sections.

It will thus be seen that the 104 per cent is based on no actual study but is an estimate which the footnote says is based on price increases shown later in Exhibit 8. No method by which this estimate is obtained is furnished and even if it were the operators cannot see any justification for drawing general conclusions from such insufficient and hypothetical data.

The latest authoritative data we have been able to find on the subject of the cost of living is that prepared by the National Industrial Conference Board in its Research Report 28, May 1920, in which appears Table VI.

These figures are averages for the country as a whole and in applying them to any specific community, local conditions should always be taken into account. Unless, however, local conditions are very unusual, as, for example, where there have been very large or very small rent increases or where prices of the other items have increased much more or much less than the average allowed, it will be found that the cost of living advanced approximately 95 per cent between July, 1914, and March, 1920.

It is interesting to note that at the time of the last wage adjustment in the anthracite field in November, 1918, the increase in the cost of living was 65 per cent and in March, 1920, it was 94.8 per cent over 1914. By dividing the index number 165 into the difference between the increase of 65 per cent in November, 1918, and the increase of 94.8 per cent in March, 1920, it is found that the increase in March, 1920, was 18 per cent over November, 1918. However, in November, 1918, wages were adjusted to a basis far in excess of the increase in the cost of living at that time, and therefore the increase between November, 1918, and March, 1920, furnishes no sound argument for a further increase in wages in the anthracite industry.

Without prejudice to the contention that annual and not daily earnings should be the real criterion of whether wages are adequate or inadequate, there is set forth in Table VII a comparison of the daily rates of compensation in 1914 and 1919 and the relation of the increase in daily rate to a 95 per cent increase in the cost of living.

Are Compensated Already

From Table VII, eliminating for the moment annual earnings and considering only daily rates, it will be noted that a 1.3 per cent increase on present rates would result in an increase of 95 per cent in the daily earnings of the contract miner as compared to 1914, and that an increase of 14.9 per cent to the highest-rate dayman would increase his daily earnings 95 per cent as compared to 1914, while in the case of the lowest-rate daymen the compensation is now 17.6 per cent inside and 12.7 per cent outside in excess of a 95 per cent increase in the cost of living. However, the average working time in 1914 was 245 9-hour days and in 1919 was 273 8-hour days. In the year 1916 the working day was changed from nine hours to eight hours and a slightly higher rate established for the 8-hour day. It follows, therefore, that the opportunity for work increased 11½ per cent, which practically compensated for any deficiency in rate to any class of employees when considered in terms of annual earning capacity.

Mr. Golden contended that the most that the highest-paid daywage man in his district could have earned, working every day that the mines were in operation in 1919, was $1,256.64, and the lowest rate man $908.48. Apparently these results were obtained by multiplying 272 days by $4.62 for the high-rate man and $3.24 for the low-rate man. The statement is quite inaccurate and misleading, for there are many men in Mr. Golden's district receiving more than $4.62 per day and there are

TABLE VI. PERCENTAGES OF INCREASE IN COST OF LIVING IN AVERAGE AMERICAN COMMUNITIES, BETWEEN JULY, 1914, AND MARCH, 1920, BY SEPARATE BUDGET ITEMS

(Table 7 of Research Report 28 of the National Industrial Conference Board)

Budget Item	July, 1914, and July, 1915	July, 1914, and July, 1916	July, 1914, and July, 1917	July, 1914, and June, 1918	July, 1914, and Nov., 1918	July, 1914, and March, 1919	July, 1914, and July, 1919	July, 1914, and Nov., 1919	July, 1914, and March, 1920
	Percentages of Increase Between								
Food	(b)	11	46	62	83	75	90	92	100
Shelter	(b)	1.5	5	15	20	22	28	38	49
Clothing	3	20	43	77	93	81	100	135	177
Fuel, heat and light	2	4	26	35	40	42	42	48	49
Sundries	(b)	4	17	50	55	55	63	75	83
All items (a)	0 5	8.7	31 3	52 2	65 0	60 5	72 2	82 2	94 8

(a) Weighted. (b) No change.

TABLE VII. TABULATION SHOWING INCREASE IN DAY WAGE RATE 1914-1919 AND COMPARISON OF INCREASE WITH A 95 PER CENT INCREASE IN THE COST OF LIVING

1914 Rate	1916 Rate	War Allowance	Present Rate	Per Cent Increase Present Rate Over 1914	Excess or Deficiency as Compared to 95% Increase in the Cost of Living	Excess or Deficiency in Percentage of Present Rate as Compared to 95% Increase in the Cost of Living
			Contract Miner			
$3 40	....	.....	$6.54	92.4	— 2.6	— 1.3
			Outside Day Men			
$1.50	$1.55	$1.80	$3.35	123.3	28.3	12.7
1.60	1.65	1.80	3.45	115.6	20.6	9.6
1.70	1.75	1.80	3.55	108.8	13.8	6 6
1.80	1.85	1.80	3.65	102.8	7.8	3 8
1.90	1.96	1.80	3.76	97.9	2.9	1.5
2 00	2.06	1.80	3.86	93.0	— 2.0	— 1.0
2.10	2.16	1.80	3.96	88.6	— 6.4	— 3 4
2.20	2.27	1.80	4 07	85.0	—10.0	— 5.4
2.30	2.37	1.80	4 17	81.3	—13.7	— 7.6
2.40	2 47	2.00	4.47	86.2	— 8 8	— 4.7
2 50	2.58	2.00	4.58	83.2	—11.8	— 6.4
2 60	2.68	2.00	4.68	80 0	—15.0	— 8 3
2.70	2 78	2.00	4.78	77.0	—18.0	—10.2
2.80	2.88	2.00	4.88	74 3	—20.7	—11.9
2 90	2.99	2 00	4.99	72.1	—22.9	—13.3
3 00	3.09	2.00	5.09	69.7	—25.3	—14.9
			Inside Day Men			
$1 50	$1.55	$2.00	$3.55	136.6	41.6	17.6
1.60	1.65	2.00	3.65	128.1	33.1	14.5
1.70	1.75	2.00	3.75	120.6	25.6	11.6
1 80	1.85	2.00	3.85	113.9	18.9	8.4
1.90	1.96	2.00	3.96	108 4	13.4	6.4
2.00	2.06	2.00	4.06	103.0	8.0	3.9
2.10	2.16	2.00	4.16	98.1	3.1	1.6
2 20	2.27	2.00	4 27	94.1	— 0.9	— 0 5
2 30	2 37	2.00	4.37	90.0	— 5.0	— 2.6
2 40	2.47	2.00	4.47	86.2	— 8.8	— 4 7
2 50	2.58	2.00	4.58	83.2	—11.8	— 6
2.60	2.68	2.00	4.68	80.0	—15.0	— 8
2 70	2.78	2.00	4.78	77.0	—18.0	— 1
2.80	2.88	2.00	4.88	74 3	—20.7	—11.
2.90	2.99	2.00	4.99	72.1	—22.9	—12
3.00	3.09	2.00	5.09	69.7	—25.3	—14 9
			Boys			
$0 90	$0.93	$1.20	$2.13	136.7	41.7	17 6
1.00	1.03	1.20	2.23	123.0	28.0	12.5
1 10	1.13	1.20	2.33	111.8	16.8	7.9
1.20	1.24	1.20	2.44	103.3	8.3	4.1
1 30	1.34	1.20	2.54	95.4	0 4	0 2
1 40	1 44	1.20	2.64	88.6	— 6.4	— 3.4

comparatively few men receiving as little as $3.34 per day. Furthermore, it is a fact that most of the day workers have the opportunity for some overtime on days the colliery is in operation or have the opportunity to work on days the colliery is idle. A mere computation of daily rate times an arbitrary number of days does not represent actual earning capacity. What the man really got in his pay envelope is clearly shown in the tabulation of annual earnings submitted herewith.

Powder and Supplies

The mine workers have contended that the contract miner received an increase of 7 per cent on his contract rates in 1916 and a further increase of 40 per cent in 1918, or a total of 49.8 per cent over his 1914 rate, and that it was therefore illogical to credit him with an increase of 92.4 per cent (which the actual earnings show) unless the difference could be attributed to increased efficiency, and that unless a further increase was granted he would be penalized for his effort.

In answer the operators submit that the advance of 49.8 per cent was on the gross earnings, before deduction of powder and supplies; and that as the cost of powder and supplies was fixed by agreement at the pre-war price to the miner the increase of 49.8 per cent was really an increase of 55 per cent on his net earnings or his rate per day. In addition the operators have found that there was an increase in opportunity within the day itself. This increase in opportunity can be attributed to the following general causes:

Where Miner Has Gained

(1) The more extensive use of power in mining, thus increasing output per miner.
(2) The more extensive use of power in transportation, thus improving car supply to miner.
(3) The improvement in mechanical and electrical appliances, thus facilitating mining and increasing output per miner.
(4) The improvement in mechanical appliances used in handling and preparation, thus reducing delays in operation.
(5) The provision in the agreement of May 5, 1916, stipulating eight hours' work at the face.
(6) Modification in contract rates and allowances paid over contract rates where conditions did not permit of satisfactory earning capacity.

The combined result of all the factors that have entered into the situation has been to increase the average daily earning capacity of the contract miner from $3.40 per day in 1914 to $6.54 per day in 1919—an increase of 92.4 per cent. Add to this the increase in working time and the actual increase in annual earnings was 109.6 per cent. These are the facts, arguments to the contrary notwithstanding, to be given full weight in reaching conclusions.

It is particularly indefensible to term the opportunity that has come to the contract miner to increase his daily earning capacity a penalization. The theory advanced is that the contract miner has worked harder and more efficiently, thus increasing his daily earnings and that by withholding a larger increase in rate, which would permit of still greater earnings, effort and efficiency are not given proper reward. The operators might well argue that the opportunity existed for the safe effort and efficiency in 1916 and if the miner did not take advantage of that opportunity, he was withholding that which was due both himself and his employer. The operators claim that the contract miner today is not earning what he could earn by working a full eight hours and refer the commission to the survey of the Department of Labor made in January, 1919 (Monthly Labor Review, Vol. IX, No. 6, Dec. 1919, p. 211), which shows the average working time of the contract miners covered by the survey as 6.8 hours per day, figured from the time they entered to the time they left the mine. The contract of May 5, 1916, at the time of the establishment of the eight-hour day, contained the following:

> THIRD: An 8 [illegible] day means eight hours of actual work for all classes of labor, at the usual working place, exclusive of noon-time, for six days per week, if the operator desires to work his mines to that [illegible] excepting only legal holidays. The time required in going to and coming from the place of employment in or about the mine shall not include any part of the day's labor.

One of the contentions of the mine workers has been that the wage of 1914 was inadequate and that an increase in excess of the increase in the cost of living should be granted to compensate for a deficiency in the base wage.

To this the operators reply that the wage in 1914, both as to the rates paid common labor and the differentials between common labor, semi-skilled, and skilled labor, were entirely commensurate with the rates paid in other basic industries and the cost of living at that time; and that therefore any increase in excess of the cost of living would be special preferment to bring one class above another, with its resultant effect on the entire labor situation.

In a word, it would place the anthracite industry at the peak of the spiral and other industries would be confronted with the request to advance wages once more and climb to meet the advance granted the anthracite workers. The inevitable result of such a situation would be that the worker would not benefit by the increase and that there would be a further increase in the cost of living.

Taking one more phase of the controversy and measuring wages in the anthracite industry with wages paid in other basic industries in the same territory and in adjoining territory where similar conditions of living and living costs obtain, the facts are as follows:

City of Scranton and Vicinity—A canvass of the situation in this terri-

tory, located in the northern end of the anthracite field, with industries such as the Scranton Bolt & Nut Co., Scranton Forging Co., Scranton Pump Works, Scranton Stove Works, Finch Manufacturing Co., Maccar Truck Co., Spencer Heater Co., National Metal Trades Association, Hendrick Manufacturing Co., Cross Engineering Co. and Carbondale Machine Co., shows the following rates generally paid to the different classes of labor indicated:

	Minimum per Hour, Cents	Maximum per Hour, Cents
Common labor	38	48
Semi-skilled labor	44	56
Skilled labor	54	80

The foregoing are rates paid following adjustments made in April, 1920, and they carry to April, 1921.

City of Wilkes-Barre and Vicinity—The rates paid by other industries, such as the Vulcan Iron Works, Sheldon Axle Works, Hazard Manufacturing Co., and by the Wilkes-Barre Railway Co., employing a total of more than 5,000 men, are as follows:

	Minimum per Hour, Cents	Maximum per Hour, Cents
Common labor	42	47
Semi-skilled labor	46	56
Skilled labor	52	80

The foregoing are rates paid following adjustments made in April, 1920, and they carry to April, 1921.

City of Hazleton and Vicinity—The rates paid by other industries, such as the Wilmot Engineering Co., Hazleton Drop Forging Co., Gross Manufacturing Co., Benjamin Iron & Steel Co., Duplan Silk Co., and by the Harwood Electric Co. and the Wilkes-Barre & Hazleton Railway Co., are as follows:

	Minimum per Hour, Cents	Maximum per Hour, Cents
Common labor	37	48
Semi-skilled labor	41	56
Skilled labor	53	78

Pottsville, Reading and Vicinity—The rates paid by other industries in this territory, particularly in the iron and cement industries, and employing large numbers of men are as follows:

	Minimum per Hour, Cents	Maximum per Hour, Cents
Common labor	37	47
Semi-skilled labor	44	57
Skilled labor	54	80

Allentown, Bethlehem and Vicinity—The rates paid by other industries in this territory, particularly the steel and cement industries, and employing large numbers of men are as follows:

	Minimum per Hour, Cents	Maximum per Hour, Cents
Common labor	35	45
Semi-skilled labor	50	60
Skilled labor	52	78

The industries above named employ thousands of men and are in direct competition with the anthracite mines for labor. In comparison with the rates paid by them, the anthracite industry is now paying:

	Outside Cents per Hour	Inside Cents per Hour
Common labor	42 to 46	48 to 54
Other day labor	48 to 64	56 to 68
Contract miners (average)		82

Other Industries Pay Less

It will be noted that the rates paid common labor compare very favorably with the rates now paid in other industries. It will also be noted that if the lower rates paid other day labor are compared to rates paid semi-skilled labor in other industries and the higher rates paid other day labor are compared to a mean of the skilled rates in other industries (which is a proper basis of comparison) the relationship is at once apparent. Furthermore, if the rate paid contract miners is compared to the rate paid the highest skilled labor in other industries it will be found that the contract miner is receiving fully as much as machinists, blacksmiths, boiler-makers, etc., in first-class shop work.

In the light of the facts here presented the conclusion must be that rates now prevailing in the anthracite industry compare favorably with rates paid in other basic industries in the same section and with which the anthracite industry is in competition for labor, and that unless this fact be given proper weight in considering any change there is the probability of a most serious disturbance in the wage structure throughout the entire region in which the industry is located.

Unequal Time, Unequal Pay

At various times during the conferences the mine workers have referred to the differences in day rates in the anthracite and bituminous fields for the same class of labor. The contention through the negotiations was that the lower rates obtaining in the anthracite field were in themselves a sufficient argument for an increase and that the least that should be considered was $1 per day.

In answer the operators have referred to the entirely different conditions obtaining in the two industries, and have shown that an increase of the same magnitude as that given the bituminous worker was both unnecessary and unwarranted. They have pointed out the difference that has always existed in the rates of day labor in the two fields and that was always recognized in past wage agreements.

They have referred to the award of the Bituminous Commission and the arguments presented by the mine workers before that commission as the best evidence of a difference in conditions which demanded different treatment. They have contended that the award of the Bituminous Commission was predicated on lack of opportunity and that only on this theory could the advance granted, or the rates established thereunder, have been justified.

In support of this contention the following is quoted from the majority report of the Bituminous Commission, page 26:

> At the present time America requires less than 500,000,000 tons of bituminous coal a year, while the capacity of the mines in operation is over 700,000,000 tons.
>
> Under the stimulus of war demand many new mines were opened and many old ones expanded in order to secure sufficient coal to meet the exceptional and urgent national requirements. As a result the coal industry, which was speculatively overdeveloped before the war, is still more overdeveloped now and employs more capital and more labor than is necessary to supply the present needs of the country.
>
> It is not to be expected that exports of coal will increase sufficiently to absorb a perceptible proportion of the gap between the demand for coal and the capacity of mines, as our shipping terminal facilities are such that not more than 25,000,000 tons of coal a year can at present be exported.
>
> Full-time employment in the coal mines cannot, therefore, be expected until the industry is put on such a basis that only those mines remain in operation whose output is required to supply the annual needs of the country.

It must be apparent from the foregoing that the commission was influenced in its findings by the conditions that obtained, and that it found it necessary to establish daily rates which applied to five-sevenths working time, or a little over 200 days per year, would enable the employee to live with some degree of comfort during the full year of 365 days.

Soft-Coal Wage Lower

Reference has been made in this exhibit to the comparative earnings of anthracite and bituminous workers. A tabulation has been given showing average earnings per annum of $1,719 for contract miners, $1,334 for inside daymen and $1,409 for outside daymen—an average of $1,509 for adult employees. Contrast these figures with those given by Mr. White in his minority report as a member of the President's Bituminous Commission and note the difference in favor of the anthracite workers.

> Page 70. The proposed increase will bring the yearly earnings that may be expected up to an average of only $1,200 to $1,300 and a maximum of only $1,600 to $1,700.
>
> Page 80. At rates prevailing in 1919 the actual annual earnings of pick miners in all bituminous mines were approximately $1,130, according to the comprehensive study made by the U. S. Bureau of Labor Statistics and published in the December, 1919, Labor Review. According to exhibits submitted by the operators themselves the average annual earnings of pick miners and loaders in the northern Illinois district were, at 1918-19 rates, under $1,000 a year. Furthermore, these same exhibits show that if conditions had been such as to permit these men to work every day when the mines were in operation in 1918 they would have been able to earn not over $1,200 per year; that if conditions had been such as to permit these men to work every day when the mines were open in 1919, when conditions were worse, their annual earnings would have been less than $1,000; and that in less than one-third of the companies shown in the exhibit were the average monthly earnings of all occupations listed as high as $100, while in almost half the cases the average monthly earnings were below $80.

Murray Wants 31 Per Cent

Mr. White was formerly president of the United Mine Workers of America and was the representative of the mine workers on the Bituminous Commission. He was undoubtedly familiar with conditions and spoke with knowledge and authority. Yet, in the face of his statement, Mr. Murray informs your commission that it is necessary to increase contract rates 31 per cent and day workers $1 to $2.65 per day

in order to bring the earnings of anthracite workers to a parity with those in the bituminous industry.

Several exhibits have been presented at the hearings before this commission on "The Cost of Living," "A Living Wage," "A Sanction for a Living Wage," etc. The formal replies to these exhibits will be made in a separate paper or papers.

On the general proposition that every industry should pay its employees a living wage there is no difference of opinion. The practicability of establishing in any sort of concrete manner a standard of a living wage and its application to individuals in various classes of employment, and with different standards of living, is a controversial matter in which we take a position directly opposed to the other parties to this submission.

The anthracite operators contend that they have been and are paying living wages to their employees and that in all of the agreements made with the mine workers subsequent to the award of the Anthracite Coal Strike Commission due consideration has been given to conditions of living, the maintenance of health and comfort, and the general trend of wages in other industries, particularly those in the vicinity of the anthracite region.

Exceed Subsistence Wage

That the general policy of a living wage has been upheld in the region is attested by (1) the general business prosperity, which reflects the prosperity of the employees of the dominant industry; by (2) the financial status of the banks, particularly savings banks and banks having savings departments; by (3) the patronage given to amusements and the time taken for recreation; and by (4) the comfort in which all of the anthracite workers are able to live. There is no evidence of poverty or even of a "bare subsistence level" in the families of the employees of the anthracite industry.

The impracticability of establishing a standard minimum or living wage on the basis of the family budget, and its relation to increase or decrease in the cost of living, will be considered in the formal replies to these exhibits. However desirable it may be that every worker shall be paid a wage commensurate with his reasonable needs for the support of himself and family, the value of the service performed must ever be an essential factor in the preparation of a wage scale. The difference in the capacity and in the requirements of the individual, and the necessity for equal compensation for equal service make impracticable the establishment of a wage scale based on the "budget plan."

Conclusions as to Wage

Summarizing the foregoing data and argument in reply to Demand No. 2, the operators submit the following:

(1) That conditions in the anthracite and bituminous industries are not the same, either as to the character of the work or opportunity for employment, and that the increase granted the bituminous worker should not control as a basis of adjustment in the anthracite field.

(2) That the anthracite mines are on a basis of full-time operation. The average days worked were 285 in 1917, 293 in 1918 and 273 in 1919. The lesser working time in 1919 can be attributed entirely to the readjustment of markets following abrogation of Government control on Feb. 1. As soon as this was accomplished and in the coal year April, 1919, to March, 1920, the mines operated full time.

(3) That, based on a comparison of rates paid in other industries in the same territory, for occupations requiring like skill and effort, no wage increase is warranted.

(4) That, based on annual earnings, the increase in the cost of living has been fully met, and no further wage increase is warranted.

(5) That, taking daily earnings instead of annual earnings as the basis of comparison, it would be necessary to increase contract miners only 1.3 per cent over present rates, or 2.5 per cent over the 1916 scale, to parallel a 95 per cent increase in the cost of living.

(6) That, taking the daily rates of day men instead of annual earnings as the basis of comparison, it would be necessary to increase the highest paid day labor 14.9 per cent over present rates, or 24.6 per cent over the 1916 scale, to parallel a 95 per cent increase in the cost of living. The lowest paid day labor is now receiving a wage much in excess of the increase in the cost of living. The relationship of daily wage to increase in the cost of living for any rate is clearly set forth in Table VI.

(7) That, in case any increase or adjustment is determined upon, it should be based on the 1916 scale, so that occupations paid similar rates at that time may receive similar rates under any new scale that may be established.

(8) That, in case any increase or adjustment is determined upon, it should be on a percentage basis, and not a flat increase of the same amount per day to all classes of day labor. A flat increase, under present conditions, narrows the differential between the different classes of labor, giving due consideration to the purchasing power of the dollar, and lessens the incentive to advance from the lower-paid occupations to those requiring greater skill and training.

Demand No. 3

We demand that a uniform wage scale be established so that the various occupations of like character at the several collieries shall command the same wage.

In answer to this demand the operators submit that there are nearly 300 collieries in the anthracite field and that there are over 100 classifications of labor at a single colliery. It is conceded that there are minor variations in rates paid day labor for the same class of employment in different parts of the field.

However, it is not a fact that because a different rate may be paid at adjoining operations to the same occupation there is necessarily some irregularity in compensation. It may well be that the duties and responsibilities of the positions are entirely different and that a differential in rates may be fully justified.

Mr. Kennedy states that the rates paid carpenters, blacksmiths, and others are less than those paid in other industries. It is true that carpenters receive a lesser rate than the skilled men in the building trades and that blacksmiths may receive less than the more skilled man in industries. However, the character of the work performed is far different and the carpenter has continuous employment as compared to the seasonal employment in the building trades.

This Also Is a New Demand

The demand presented by the mine workers makes no reference to contract rates and it is difficult to understand why it has been brought into the discussion. It is well known that, while the rate per car or per yard may not be the same at different operations or in different veins at the same operation, yet the rates in effect have been established with due reference to all the conditions, and in one way or another the miner is compensated for his work on a basis that nets a fair comparative earning capacity.

What would be accomplished by a readjustment of contract rates to some different basis if the result in net earnings to the miner remains the same? While it may be desirable ultimately to secure greater uniformity in day rates, it would be impossible for this commission, in the limited time at its disposal, to tabulate and give proper consideration to a subject so complex and involving, as it does, a readjustment of rates throughout the entire field. In the negotiations the following was suggested by the Secretary of Labor and accepted by the operators as the only practicable answer to this demand:

It is understood and agreed that the Board of Conciliation shall act as a commission to make a study of, and report to the joint conference at the expiration of this contract, the matter of uniformity in day rates for the several occupations of day men at the respective collieries in the anthracite field.

Demand No. 4

We demand that shovel crews operating for coal companies shall be paid not less than the rates paid by contractors to shovel men.

This is a demand for a new basis of compensation, predicated on what others are paying, and without regard to the wage scales in effect, many of which date back to the award of the Anthracite Coal Strike Commission and have been adjusted as other wages have been adjusted since that time. If there is to be an equalization of wage, it would be just as logical for the operators to demand that the shovel crews of contractors, engaged in stripping operations, be paid the

same rates as the coal companies are paying.

Mr. Kennedy gave the rates paid in Kansas and New York as an example of rates in effect for shovel crews, without any reference to the character of the employment or living conditions that may obtain in these particular localities. He furthermore presented rates paid by different companies in his district, without any reference to the fact that the character of the equipment and intensity of work were far different. Again, in the case of the Dodson Coal Co. and the Lehigh Valley Coal Co. he submitted rates that are lower than the rates actually paid.

Shovels, Big and Little

The operators contend that in many instances the work and responsibility of the positions are not the same. The coal companies operate many small shovels for loading of coal and culm banks, while the contractors operate only 70, 80, or 90-ton shovels, with the shovel engineer acting as supervisor of the work in the pit.

However, eliminating all other contentions, the operators submit that rates paid shovel crews have been established with due regard to the responsibilities of the positions, that the differentials between this class of labor and other classes are fair and equitable, and that no good reason can be shown for giving special consideration to men in this particular employment.

Demand No. 5

We demand that the 8-hour day be extended to all classes of inside and outside day labor and monthly men with time and half-time for overtime and double time for Sundays and holidays.

Under the award of the Anthracite Coal Strike Commission appointed by President Roosevelt in 1902 a work-day of nine hours was established in the anthracite field. The following specific exceptions were made:

Hoisting engineers on water shafts	8-hour day
Firemen	8-hour day
Other positions continuously manned	12-hour day

Those employed on the twelve-hour basis were to be "relieved from duty on Sundays, without loss of pay, by a man provided by the employer to relieve them during the hours of the day shift." This basis of operation continued until March, 1912, when, in compliance with a law enacted by the Pennsylvania Legislature, hoisting engineers on shafts and slopes, handling both men and coal, were put on an eight-hour day.

3,000 Long-Hour Employees

There was no further change until May, 1916, when, by agreement, the eight-hour day was substituted for the nine-hour day. However, in positions continuously manned the twelve-hour day was continued, except in the case of hoisting engineers, coming within the provisions of the eight-hour law. There are approximately 3,000 men in the anthracite field employed on a basis of more than eight hours per day. Almost three-fourths of this number are working twelve hours and the balance nine to eleven hours per day. The occupations, generally, are the following: Outside: Hoisting engineers, fan engineers, power-house engineers, pumpmen, stablemen and watchmen; inside: Hoisting engineers, pumpmen and stablemen.

Where Are the 1,500 Men?

The operators contend that the men employed in these occupations are engaged in work requiring little physical or mental effort and that they undergo no hardship in working a 12-hour day. The best corroboration of this statement is the fact that very few men take advantage of the Sunday-off provision of the Anthracite Strike Commission and prefer to work every day, receiving an extra day's pay for Sunday work.

The operators further contend that under present conditions, with a shortage of labor everywhere and the necessity for maximum production on the part of the individual, it is unwise and unnecessary that there be a readjustment involving the employment of 1,500 additional men in work requiring so little physical or mental effort.

In the discussion of this demand it was shown that the compensation of men working on a twelve-hour basis had been fixed with regard to the longer shift and that it would be impracticable to place these men on an eight-hour basis at the same rate now being paid for twelve hours, without placing their wage completely out of line in comparison with other occupations requiring greater skill and effort. This fact alone requires that this demand shall have most careful consideration; for any decrease in annual earning power, under present conditions, might prove quite unsatisfactory to most of the men involved.

Long Hours, Easy Snaps

In the matter of intensity of work the following brief summary of conditions may be of value:

Hoisting Engineers—There are comparatively few men in this occupation working a twelve-hour day. Where the condition obtains it will be found that the real work is confined almost entirely to the day shift. The night shift has little to do and is employed largely to provide continuous service in case of any emergency. Mr. Kennedy and Mr. Golden have referred to engineers hoisting men and rock or men and timber and working a twelve-hour shift as an attempt to evade the law. It is well known that where this condition obtains the men are working on tender shafts or slopes where the work is not constant or arduous and where it is no hardship to work a twelve-hour day.

Fan Engineers—These men are in reality oilers and are employed to watch and oil the fans while in operation. The position of fan engineer is one sought by hoisting engineers and others when they reach a point in life where they desire employment that requires little work. In this occupation the fact is that the man seeks the job and the operator does not have to seek the man.

Power-House Engineers—These men are employed to watch and oil air-compressors, generators, motor generating sets and machinery of that general type. Their duties are confined to oiling and packing. They assist in repairs under the supervision of the colliery machinist or colliery electrician.

Pumpmen—These men are in charge of pumps while in operation and attend to the oiling and packing and replace worn parts when necessary. Mr. Golden has presented in detail a list of the duties of pumpmen in his district. One would infer that the work was most arduous. The fact is that while these duties may all be part of a competent pumpman's work, most of them represent work performed only at long intervals of time.

Stablemen—The duties of these men involve feeding of stock, care of the barns and assistance in harnessing and unharnessing. After the mules are out of the barn there is in reality insufficient work to keep them busy. It is a common practice to permit stablemen to go to their homes in the middle of the day and return in time to take care of the stock.

Watchmen—The character of this employment is so well understood that little explanation is necessary. Suffice it to say that Mr. Kennedy's expression that the men in this occupation are "constantly on the jump" hardly fits the case.

Demand for More Hours

Embodied in Mr. Kennedy's discussion of this demand is a plea that two breakers in his district that are now operating a seven-hour day should be compelled to work an eight-hour day. This is a local condition, brought about by insufficient coal for full-time operation, and is entirely irrelevant to the intent of this demand.

The mine workers contend that it is a hardship for men in the occupations named to work a 12-hour day. The operators reply that the work is not arduous and that the positions are eagerly sought by men to whom the character of the employment appeals and who are quite willing to work the longer work-day.

The operators admit there is a wide difference of opinion as to what shall constitute a work-day under any and all conditions of employment. They contend, however, that if a day of more than eight hours is applicable to any employment it is certainly applicable to those now working the longer work-day in the anthracite field.

Merely a Last-Hour Effort

It is true that they accepted the suggestion of the Secretary of Labor to place hoisting engineers and pumpmen on an eight-hour day. However, this was only done in a spirit of compromise and in a last-hour effort to reach an agreement. The operators still contend that the character of the

employment makes the longer workday no hardship and that the demand is not entitled to favorable consideration. The suggestion of the Secretary of Labor follows:

It is understood and agreed that the case of inside pumpmen and inside and outside hoisting engineers, working a twelve-hour cross shift, shall be referred to the Board of Conciliation. The board shall work out a basis of eight-hour shifts and the rates to be paid for an eight-hour day. Pending the decision of the board, inside pumpmen and inside and outside hoisting engineers working a twelve-hour cross shift shall continue on that basis and shall be paid the same increase as provided for day men under clause b hereof. When the rates to be paid for an eight-hour day have been established by the Board of Conciliation, time in excess of eight hours per day shall be paid for at the rate per hour established for the eight-hour day.

Punitive Overtime Rates

We now come to the second portion of this demand, providing for time and half time for overtime and double time for Sundays and holidays. A request for punitive overtime was one of the demands submitted to the Bituminous Commission and refused in its finding.

The anthracite industry cannot operate a full 8-hour day if every employee is limited to eight hours' work in any one day. The plant must be maintained at a proper standard for satisfactory service, and repairs cannot be made while breakers and other equipment are in operation. If the maximum workday of the employee is limited to eight hours, it must follow that the actual time of breaker operation will be less than eight hours per day, with a resultant decrease in production and decrease in hours worked by all employees.

Mr. Kennedy makes the statement that the operators want overtime to show a high annual earning capacity for the employees. In support of this statement he has submitted pay checks of a carpenter who worked 700 hours overtime in thirty-one semi-monthly pay periods. As a matter of fact, this represents on the average about nine and three-fourths hours per working day for a man in an occupation that carries as much overtime as any occupation at a colliery.

More Pay, Not Less Overtime

Mr. Golden shows that 4,467 outside laborers averaged 340 days of eight hours. As a matter of fact this represents but nine hours per day for full-time work. He further shows that 3,673 inside laborers averaged 299 days of eight hours. Why shouldn't a man work 299 days if he has the opportunity? Mr. Golden contends that because the breakers worked 273 days, the practice of working overtime was abused by working a man 299 days. The operators fail to see the logic of such a contention.

Mr. Dempsey says that men do not want to work overtime and that extra pay is demanded as a deterrent to overtime. The operators challenge the first statement and question the accuracy of the second. Thousands of men are not in favor of the 8-hour day and are only too glad of the opportunity to work more. Whenever punitive overtime has resulted in no overtime there has been universal dissatisfaction. The real issue is more pay and not the elimination of overtime.

Demand No. 6

We demand a closed-shop contract, which means full recognition of the United Mine Workers of America as a party to the agreement.

The operators understand from this demand that the mine workers ask for a contract embodying the principle of the "closed shop" and compulsory "check-off," involving, as it does, enforced deductions from the worker's wages of dues and assessments levied by the United Mine Workers of America.

The relations between employer and employee in the anthracite field have for almost twenty years been governed by the principles and practices established by the award of the Anthracite Coal Strike Commission appointed by President Roosevelt and the decisions of the Board of Conciliation created thereunder. In the successive contracts of 1906, 1909, 1912 and 1916 these principles and practices have been jointly affirmed and continued.

One of the principles established by the commission and so long satisfactorily continued has been the "open shop," embodying full protection to employees to organize as they may desire and to safeguard the rights of their members before the Board of Conciliation against any employer who might seek to discriminate because of membership in a labor organization. Membership in such labor organization must, however, be based upon the freedom of choice of the individual.

Want Open Shop to Continue

For almost twenty years the Board of Conciliation has successfully adjusted all differences between employer and employee, and its work has received universal respect and approval. Its organization has been taken as a model in other industries. During this same time the anthracite mine workers' organization has been fully protected in its rights under the award of the Anthracite Coal Strike Commission.

The operators have no antagonism toward the organization of the mine workers, but are unwilling to substitute for a tried and successful institution a plan embodying principles repugnant to the American principle of freedom of choice, whether on the part of employee or employer, and involving, as it does, full compliance with whatever rules the organization may see fit to establish.

Courts Sustain Open Shop

The operators take the position that the relations between employer and employee in the anthracite region should be continued on the principle of the "open shop" as set forth in the award of the Anthracite Coal Strike Commission, to which the organized employees of the anthracite region have subscribed in the past and under which their rights have been fully protected.

Furthermore, the principle of the "open shop" has received the unqualified endorsement of the courts, both state and federal. The demand for an extension of the "check off" in the bituminous field was not granted by the President's commission and the question of its continuance where now imposed is to be investigated by order of the commission.

In reply to a demand of a similar nature made before the Anthracite Strike Commission in 1902 by John Mitchell, representing the anthracite mine workers, that commission said:

The commission agrees that a plan under which all questions of difference between the employer and his employees shall first be considered in conference between the employer or his official representative and a committee chosen by his employees from their own ranks is most likely to produce satisfactory results and harmonious relations, and at such conference the employees should have the right to call to their assistance such representatives or agents as they may choose and to have them recognized as such.

In order to be entitled to such recognition, the labor organization or union must give the same recognition to the rights of the employer and of others which it demands for itself and for its members. The worker has the right to quit or to strike in conjunction with his fellows when by so doing he does not violate a contract made by or for him. He has neither right nor license to destroy or to damage the property of the employer; neither has he any right or license to intimidate or to use violence against the man who chooses to exercise his right to work, nor to interfere with those who do not feel that the union offers the best method for adjusting grievances.

The union must not undertake to assume or to interfere with the management of the business of the employer. It should strive to make membership in it so valuable as to attract all who are eligible, but in its efforts to build itself up it must not lose sight of the fact that those who may think differently have certain rights guaranteed them by our free government. However, irritating it may be to see a man enjoy benefits to the securing of which he refuses to contribute, either morally or physically or financially, the fact that he has a right to dispose of his personal services as he chooses cannot be ignored. The non-union man assumes the whole responsibility which results from his being such, but his right and privilege of being a non-union man are sanctioned in law and morals. The rights and privileges of non-union men are as sacred to them as the rights and privileges of unionists. The contention that a majority of the employees in an industry by voluntarily associating themselves in a union acquire authority over those who do not so associate themselves is untenable.

Those who voluntarily associate themselves believe that in their efforts to improve conditions they are working as much in the interest of the unorganized as in their own, and out of this grows the contention that when a non-union man works during a strike he violates the rights and privileges of those associated in efforts to better the general condition and in aspirations to a higher standard of living. The non-union man, who does not believe that the union can accomplish these things, insists with equal sincerity that the union destroys his efforts to secure a better standard of living and interferes with his aspirations for improvement. The fallacy of such argument lies in the use of the analogy of State government, under which the minority acquiesces to the rule of the majority, but government is the result of organic law, within the scope of which no other government can assume authority to control the minority. In all acts of government the minority takes part, and when it is defeated the government becomes the agency of all, not simply of the majority.

It should be remembered that the trade union is a voluntary social organization, and, like any other organization, is subordinate to the laws of the land and cannot make rules or regulations in contravention thereof. Yet it at times seeks to set itself up as a separate and distinct governing agency and to control those who have refused to join its ranks and to consent to its government, and to deny to them the personal liberties which are guaranteed to every citizen by the constitution and laws of the land. The analogy, therefore, is

unsound and does not apply. Abraham Lincoln said, "No man is good enough to govern another man without that other's consent." This is as true in trade unions as elsewhere, and not until those who fail to recognize this truth abandon their attitude toward non-union men, and follow the suggestion made above—that is, to make their work and their membership so valuable and attractive that all who are eligible to membership will come under their rule—will they secure that firm and constant sympathy of the public which their general purposes seem to demand.

Rights of Non-Union Men

It is quite difficult to reconcile the contentions of the mine workers for the "closed shop" and "check-off" with the views so forcibly expressed above. We are told that the "closed shop" is necessary to make every employee a party to the agreement, whereas the commission denied the "closed shop" in no uncertain terms. In fact one of its findings was the following:

It is adjudged and awarded: That no person shall be refused employment or in any way discriminated against on account of membership or non-membership in any labor organization; and that there shall be no discrimination against or interference with any employee who is not a member of any labor organization by members of such organization.

We are told that the "check-off" is necessary to raise funds to carry out contractual relations, yet the commission held that it was incumbent on any labor organization "to make its work and its membership so attractive that all who are eligible to membership will come under its rule"—not by force but of their own free choice.

The mine workers submitted a brief, prepared by their attorney, purporting to show that it was possible for the operators to collect union dues without infringement of any statute. The operators have no interest in the legal phase of the situation. They are unalterably opposed to the "closed shop" and "check-off" for reasons clearly outlined. They are confident that this commission will see fit to reaffirm the fundamental principles laid down by the Anthracite Coal Strike Commission and which have been so forcibly reiterated from time to time in the opinions of our courts.

The operators are not opposed to the principle of "collective bargaining" or to periodical "trade agreements," provided such agreements are conscientiously observed by both parties subscribing thereto. However, they believe that such contracts can be successfully enforced only by willing co-operation of both employer and employee. The "closed shop" cannot insure control of the members of a labor union against their personal desires. In any wage agreement the influence of the union in upholding the "sanctity of contract" is purely moral—not legal—and depends for its success on the voluntary co-operation of its individual membership.

Demand No. 7

We demand that all dead work shall be paid for on the consideration basis existing at the colliery, and that where more than one miner is employed they shall receive the same rate.

This is a demand where a miner is taken from contract work to perform other work that, irrespective of whether or not the work to be done is necessary to the continuance of his contract, he shall be paid the consideration rate and not the company rate applying to the work on which he is temporarily employed.

The operators contend that this demand is unfair and without justification. Great stress is laid on the fact that the miner has a certificate of competency as a contract miner. It is difficult to see wherein this affects the situation, for he is not performing the work contemplated in his certificate.

There is no reason why a contract miner, prevented from working on contract work, and asked to do repair work, should be paid any higher rate than that paid day men for doing exactly the same work. It may be that, temporarily, he will earn less per day than he would earn under his contract, but he will certainly earn more than if he went home and waited for the company men to make the necessary repairs.

Demand No. 8

We demand payment for all sheet iron, props, timber, forepoling and cribbing.

This demand, as interpreted by Messrs. Dempsey and Golden, contemplates payment for certain specific items of work where the same are not now separately paid for. As interpreted by Mr. Kennedy, not only the question of payment but the rates paid are involved. Mr. Kennedy contends that the rates are a "heritage of 1902" and were established on an unfair basis; that the umpire, in cases before the Conciliation Board, has sustained the rates as proper rates and "the men have been denied proper compensation."

Answering Mr. Kennedy, the operators submit that the rates of 1902, following the award of the Anthracite Strike Commission, have been accepted as the base upon which all adjustments have been made since that time. In support of this contention the following is quoted from the agreement of May 20, 1912:

For the purpose of facilitating the adjustment of grievances, company officials at each mine shall meet with the grievance committee of employees and prepare a statement setting forth the rates of compensation paid for each item of work April 1, 1902, together with the rates paid under the provisions of this agreement and certify the same to the Board of Conciliation within sixty days after the date of this agreement.

Work Paid For as Coal

Under the circumstances and accepting the decision of the umpire, in what way have the men been denied proper compensation? If these rates are now to be subject to readjustment, what foundation is left for the establishment of a new wage scale? Mr. Kennedy's argument is entirely foreign to the purpose and intent of the demand, as expressed and as explained by Messrs. Dempsey and Golden.

The operators contend that in demanding separate payment for each specific item of work the mine workers ignore the fact that all work of every kind is now paid for in one form or another. It may be true that at certain operations payment for props, sheet iron, etc., is included in the price per car, per ton, or per yard, while at other operations these items are paid for separately.

However, this does not alter the fact that the work is paid for and any change in the system of payment would involve a readjustment of the entire contract scale. The real purpose and intent of this demand is to secure additional compensation for the miner, supplemental to any adjustment which the commission might see fit to make.

Demand No. 9

We demand where miners are prevented from working on account of lack of supplies that they shall be accorded the opportunity of making a shift at some other work.

This is a demand that if contract miners are unable to work because of lack of materials ordinarily furnished by the operator and required in the conduct of the work, they shall be temporarily given other employment. This has always been the practice within reasonable limitations.

The operators cannot accept the principle the mine workers seek to establish that because a man is employed as a contract miner and reports for duty he must, necessarily, be given work. However, they are willing that he should be given preference if other work is available and therefore concurred in the following suggestion of the Secretary of Labor in reply to this demand:

Whenever contract miners reporting for duty are shut out of work through no fault of their own, they shall be given the opportunity of working in other places or at other work, at the rate of wages established for such other places or such other work, if such other places or other work are available.

Demand No. 10

We demand in the settlement of grievances that the aggrieved party shall have the right to demand settlement upon a basis of equity, and if such equity settlement is requested the conditions of 1902 shall not enter into or prejudice the case.

This demand contemplates that the mine workers shall have the right to present to the Conciliation Board during the term of a contract the question as to whether any rate provided in such contract is or is not "equitable," and that in the determination of their grievance the fact that the rate in question is an agreed rate, whether based on the award of 1902 or not, shall not prejudice their case.

The proposed practice would undermine the very foundation of successful collective bargaining. The President's Industrial Conference has well expressed the governing principles as follows:

Essential to the success of collective bargaining is a clear realization by both sides of the obligations it imposes, and of the limitations of these obligations. The collective bargain usually relates to standards only, such as the rate of wages to be paid, the hours to constitute a day's work, and the conditions under which this work is to be performed. There is also usually a specified time during which the agreed standards are to be maintained. The agreement imposes on the employer the obligation to observe these standards if he provides work. It does not bind him to provide work. Similarly it imposes on employees the obligation to accept the agreed stand-

ards so long as they remain at work. It does not bind them to continue in employment.

Every agreement since 1902 has been based upon the rates and practices established by the Anthracite Coal Strike Commission. Each agreement has modified or supplemented this award either in general rates or in particular cases or practices. These agreements have been for definite terms and certainly, during such terms, the agreed rates should be the established standards which both parties are obligated to maintain and by which the Board of Conciliation should judge and determine disputes.

It may be true, as Mr. Kennedy says, that "equity is one of the cardinal principles of the American Government," but the determination of equity is in accordance with the Constitution and law of the land. Likewise, any determination in equity by the Board of Conciliation must be based on the terms and principles of the agreement to which both parties have subscribed.

It may well be asked wherein would be the benefit to be derived from a contract which, if it embodied the provisions of this demand, would become no contract at all—if, instead of a fixed wage scale, insuring peace during the life of the contract, there should be inserted a provision that would permit any rate to be attacked at any time by either party on the ground of inequity. The operators contend that the effect of granting this demand would be chaos rather than the peace that should result from an agreement in which the obligation of both parties is clearly defined.

Demand No. 11

We demand that a uniform rate of 17c. per inch be paid for all refuse in all kinds of mining up to 10 ft. wide, and proportional rate be applied for all over 10 ft.

This demand is based on the theory that the miner is asked, within certain limitations, to separate the refuse in the vein from the coal before loading, and that he should therefore be compensated for his labor. It ignores the fact that he is now being paid for this very work—either by payment of a fixed price per yard, according to thickness of refuse, or by a yardage price on the rib, or by a car or ton price that includes payment for the refuse in the vein which the miner is required to handle. The bases of payment now in effect have long been established with reference to each vein and the particular condition in that vein and have been fixed to produce a fair and reasonable compensation.

It is asserted that the proposed rate of 17c. per inch for 10 ft. in width is fair and reasonable. As a matter of fact this rate is fully four times what is now generally paid in chamber work for refuse in the vein, where refuse is separately paid for. This commission could not consider any change in the basis of payment without securing in detail the conditions that obtain at each operation and the rates paid.

The operators contend that such survey would show that the miner is now being compensated for refuse handled as previously explained and that there is no justification for this demand. The real intent is to secure additional compensation for the miner supplemental to any other adjustment the commission might see fit to make.

Demand No. 12

We demand that wherever miners are now paid on the car basis hereafter they shall be paid on the legal ton basis and that dockage shall be eliminated.

This demand as to payment by the ton, instead of the car, was presented to the Anthracite Coal Strike Commission in 1902 and has been one of the demands before every joint conference since that time. The following is quoted from the award of the commission:

Any measure of work performed as a basis for payment must in a certain sense be arbitrary. Payment by the car, by the ton, or by the yard is the result of an agreement between presumably intelligent parties, and all the circumstances attending either method are matters for their consideration. If a miners' ton of 28 hundredweight is taken as the basis of payment, the price for such ton is fixed with reference to its size. So of payment by the car or by the yard.

The commission is not now prepared to say that the change to payment by weight based on a 2,240 pound ton, when the price would necessarily be adjusted to the number of pounds—practically the case now—would prove of sufficient benefit to the miners to compensate for the expense and trouble thereby imposed upon operators now paying by the car. Many of the operators, in order to accommodate themselves to the change, would have to reconstruct the breakers or place the scales at the foot of the shaft, and, when there is more than one level in the mine, at the foot of each level.

The same argument holds good today, except that the more extensive development of the collieries makes the problem more complex. It is difficult to see wherein the miner expects to benefit by such a change, unless it is hoped that the ton price would be fixed on a basis that would give a greater return than the present car price. If this was done the whole question of miners' wages would be thrown into confusion. The operators contend that there is no reason why a car of fixed capacity does not constitute a basis of payment just as equitable as payment by weight. The bulk of the coal mined since the inception of the industry has been paid for by the car or the yard.

Dockage a Needed Penalty

Dockage is a penalty imposed for insufficient loading or excessive refuse in the mine car. The contention is made that cars have to travel long distances and that the coal is shaken down to such extent that the miner is docked for light loading. No reference is made to dockage for excessive refuse.

The fact is that after a car has traveled a short distance the coal reaches a permanent bed, and further settlement is not appreciable, irrespective of the length of haul. In the matter of dockage for refuse a car of absolutely clean coal is not expected or demanded, but it is understood that there shall be no more refuse than the prescribed rules at the colliery allow, based on the conditions that obtain in the mining of the coal.

Dockage for cars improperly loaded is therefore a reasonable penalty imposed on the miner and has been in effect since the beginning of the industry. The subject was given careful consideration by the Anthracite Strike Commission, and to protect the miner against any unfair practice the commission made the following award:

That whenever requested by a majority of the contract miners of any colliery, check weighmen or check docking bosses, or both, shall be employed. The wages of said check weighmen and check docking bosses shall be fixed, collected and paid by the miners in such manner as the said miners shall by a majority vote elect, and when requested by a majority of said miners the operators shall pay the wages fixed for check weighmen and check docking bosses out of deductions made proportionately from the earnings of the said miners, on such basis as the majority of said miners shall determine.

With this protection to the miner, it is difficult to understand why a demand of this kind is made.

Demand No. 13

We demand that on all reel motors one motorman and two brakemen be employed and that on all other motors and engines assistants or patchers be employed and that when motormen or engineers are repairing their motors or engines their assistants shall be employed to help in the work.

This demand is an effort to take out of the hands of the management the authority to determine the number of men required and arbitrarily to fix the number to be employed on reel motors, irrespective of conditions or the amount of work involved in the particular location in which the men are working. It furthermore provides that assistants are to be employed on repairs, irrespective of whether they may be competent or whether their services may be actually required. The nature of the demand and its effect on efficient management requires no comment.

Demand No. 14

We demand that for all tools lost through no fault of employees as a result of squeezes, water or fire, the men to be compensated for such losses.

This is a minor demand, and at the suggestion of the Secretary of Labor the following was accepted by the operators in answer thereto:

Contract miners whose tools are lost through no fault of their own as the results of squeezes, cave-ins and similar accidents shall be furnished with new tools by the company, corresponding to the tools lost, without expense to the miner.

Demands Nos. 15 and 16

Where contract miners are employed doing company work the company shall supply them with the necessary tools, and failing to do so shall compensate the miners by paying each miner not less than one extra hour per day for the use of such tools.

We demand that the company shall supply to all company men the necessary tools free of charge.

Demand No. 15 is a demand to change an established practice. It would be quite impracticable to supply tools to contract miners whenever engaged in company work; nor should extra compensation be paid for use of the miner's tools, as we will later show. Demand No. 15 should be considered in conjunction with Demand No. 16, for the two are interwoven, and any conclusion reached as to one necessarily affects the other.

Demand No. 16 provides "that the company shall supply to all company men the necessary tools free of charge." The practice in this respect is not uniform throughout the field. With many companies the company men have always been required to furnish all tools except special tools.

This was considered in establishing the rates paid and was prompted by the fact that under the conditions of employment it was practically impossible for the management to look after tools. It was the intent that by having the employee furnish his own tools the responsibility for loss and for proper care would attach where it rightly belongs.

Reverting to Demand No. 15, it will be seen that if the company men furnish their own tools, there is no reason why the contract miner, engaged in company work, should be furnished tools or receive extra compensation for the use of his own tools.

The purpose of this demand is further to increase wages to the extent that the miner and company men may be relieved from purchasing tools. The operators submit that if wages are found to be inadequate, the same should be adjusted in the light of established conditions and practices and that a wage increase should not be supplemented by favorable consideration of demands of this character.

Demand No. 17

We demand that check weighmen and check docking bosses be permitted to serve as members of mine committees.

The demand that check weighmen and check docking bosses shall be eligible to membership on mine committees is in contravention of clause (d) of the agreement of May 20, 1912, wherein it was provided that the grievance committee at each colliery should be composed of three employees. In June, 1917, the check docking boss at Pyne Colliery filed a case before the Conciliation Board asking that the Delaware, Lackawanna & Western Railroad Co. be compelled to recognize him as a member of the grievance committee of that colliery. This case was referred to Charles P. Neill, umpire.

The decision of the umpire fully sustained the position of the company and held that check docking bosses were not employees and therefore not eligible to membership on grievance committees. The demand, as here presented, is, therefore, an effort to write into a contract that which has already been a matter of adjudication and in which the mine workers lost their case.

The operators submit that a grievance committee at each colliery was made part of the 1912 agreement, only with the distinct understanding that its members were to be employees at that colliery. The check docking boss is not, in any sense, an employee of the operator. Under the circumstances it would be a direct violation of the spirit and intent of the agreement of 1912 to admit him to membership on the colliery committee.

Demand No. 18

We demand that where contract miners encounter abnormal conditions in their working places they shall have the privilege of going on consideration work. A definition of consideration work shall be written into the agreement.

This demand was the subject of much discussion during the negotiations, and at the suggestion of the Secretary of Labor, the following was accepted by the operators as representing a proper answer to this demand:

Whenever deficient or abnormal conditions are encountered in a working place by contract miners, the miner or miners affected shall make such fact known to the foreman, and if the foreman and the man affected are unable to agree, it shall be referred to the grievance committee and dealt with in the manner provided for other grievances. Work shall be continued pending the adjustment unless otherwise directed by the foreman, and whatever decision is made shall be retroactive to the date upon which the grievance was raised.

In submitting the foregoing data and argument the operators do so with full confidence that the commission will find in its pages a satisfactory basis for adjudication of the matters in dispute. Every effort has been made to outline the situation clearly, so that in arriving at conclusions there can be no opportunity for a misunderstanding of the points in controversy.

The operators are confident the record will show that they were at all times willing and anxious to reach an amicable settlement with the miners' representatives; that the concessions offered were extremely liberal in the face of the facts, and that they could have gone no further, in justice to the miners themselves, the public, and the industry.

American Coal Imported by Italy During 1919 and 1920

It was only in the month of February, 1919, that Italy began to import American coal. The amount of coal imported increased continually as a consequence of the growing demands of national industry and the decrease in the supply of English coal, which formerly had sufficed to cover requirements entirely.

The following figures show Italy's imports of American coal by months from February, 1919, to April, 1920. The receipts of American coal for the month of May are estimated officially at 300,000 tons.

Months	For Government Account Metric Tons	For Private Firms Metric Tons	Totals Metric Tons
1919			
February	2,127	.....	2,127
March	9,345	.....	9,345
April	26,477	.....	26,477
May	34,258	.....	34,258
June	21,533	45,396	66,929
July	57,970	31,509	89,479
August	135,869	84,301	220,170
September	155,310	218,105	373,415
October	222,738	273,023	405,781
November	175,238	161,347	336,585
December	2,314	13,587	15,901
1920			
January	17,040	2,851	19,891
February	68,597	35,152	103,749
March	79,726	14,472	94,198
April	53,147	65,189	118,336
Totals	1,061,689	944,932	2,006,641

Up to December, 1919, c.i.f. prices for purchases made by the Government with long-time contracts and consignments by installments ranged from $33 to $34, from which time a certain decrease in price was noted.

From January to April, 1920, the Government effected new purchases c.i.f. for isolated cargoes only, varying in price on an average from $31.50 to $32.75 per ton. Generally private firms bought at the same or at slightly higher prices.

The above figures have reference, of course, to c.i.f. cargoes for ports on the western coast of Italy, since for cargoes to the Adriatic cost the price is $2 or even $3 higher.

Operating Conditions at Coal Mines in Indiana, June, 1920

PREPARED BY JONAS WAFFLE, SECRETARY, INDIANA COAL TRADE BUREAU

Railroads on Which Mines Are Located	District	No. of Mines	Tons Produced	Full Time Capacity (Tons)	Tons Lost and Causes Therefor — Total All Causes	Car Shortage	Railroad Trouble	Other Labor Mine Disability
Big Four	Terre Haute	6	72,947	104,764	31,817	28,498	325	2,994
B. & O. S. W.	Vincennes	2	31,343	49,013	17,470	12,013	3,071	2,386
	Clinton	27	286,671	422,333	135,662	119,914	7,628	6,120
C. & E. I. [1]	[2] Sullivan	16	166,057	287,286	121,229	113,491	1,694	6,044
	Total	43	452,728	709,619	256,891	233,405	11,322	12,164
C. I. & W.	Dana	1	10,927	12,352	1,425	.....	1,425	
Cent. Ind.	Brazil	1	4,852	4,852	.....	.....	..	
	Clinton	14	276,474	326,591	50,117	44,833	1,948	3,336
C. T. H. & S. E. [3]	Linton	27	26,695	397,724	130,774	80,638	24,282	25,854
	Total	41	543,424	724,315	180,891	125,471	26,230	29,190
E. & I.	Clay City, Petersburg	11	102,365	184,792	82,427	71,056	4,163	7,208
E. & E.	Evansville	2	10,038	11,052	1,014	978	.....	36
E. S. & N.	Evansville	3	10,037	18,141	8,104	2,749	2,084	3,271
Ills. Cent.	Linton	6	53,323	110,027	56,704	50,900	1,417	4,387
Monon [4]	Linton	21	204,855	357,634	152,779	55,531	51,950	45,298
	[5] Main Line	20	205,179	349,648	144,469	105,837	4,781	33,851
P. C. C. & St. L.	[6] Vincennes	21	364,783	746,108	381,325	190,366	107,417	83,542
	Total	41	569,962	1,095,766	525,794	296,203	112,198	117,393
	Ayrshire	7	61,776	121,377	59,601	53,484	458	5,659
Southern	Boonville	6	44,259	97,936	53,677	48,995	341	4,341
	Total	13	106,035	219,313	102,479	799	10,000	
Totals		191	2,173,036	3,601,630	1,428,594	979,283	214,984	234,327
Total for month ending May 31, 1920.		194	1,404,687	3,601,144	2,196,457	1,715,131	399,613	81,713

(1) Two mines served by two railroads. (2) Includes all mines South of Terre Haute. (3) One mine served by two railroads. (4) Four mines served by two railroads. (5) Includes all mines on St. Louis and Michigan divisions. (6) Includes all mines on Vincennes Division and Dugger Branch.

No Trouble at Matewan Murder Trial

WHILE there was a feeling of tenseness at the opening of the July term of the Circuit Court in Mingo County, West Virginia, at Williamson on July 12 when twenty-four men indicted for murder in connection with the death of ten people at Matewan on May 19 appeared before the bar of the court to answer to the charge against them, nevertheless no untoward incident marred the opening of the court. No effort will be made to try those charged with complicity in the Matewan trouble at this term of court, the cases against the twenty-four going over to the September term of court. Each of the defendants was required to give bond in the sum of $10,000 for his appearance at that term.

Fearing a possible clash, no effort was made to have the six Baldwin-Felts men under indictment for the murder of Mayor Testerman and Otto Kingsley appear in court with other defendants charged with the death of the comrades of the six under indictment. They will be asked to give bond later.

Is an Extra Deadwork Rate a Bonus?

NO DECISION was reached at the conference of representatives of the mine workers and operators who are investigating the bonuses for deadwork at the mines of the Maryland Coal Co. At the meeting held in Fairmont during the week ending July 10 it was impossible for the two sides to agree. The conferees after failing to reach an agreement submitted the question to two arbitrators—George Osler, of Pittsburgh, and Percy Tetlow, statistician of the United Mine Workers. These will select a third arbitrator, to whom evidence collected will be submitted.

Bonuses were paid in northern West Virginia until a few months ago, when the Baltimore agreement was made. Under that agreement they were to be eliminated. The Maryland Coal Co. when extending the duration of the wage contract last December, in order to hold their miners, agreed to pay a certain bonus for deadwork. The position taken by statistician Tetlow is that opertors to meet local conditions are permitted to pay for deadwork an amount in excess of the scale. On the other hand, operators contend that under the Baltimore agreement no bonuses could continue to be paid after April 1 of this year.

Back Pay of $20,000 Is Distributed

AFTER a meeting between President Lonnie Jackson, of district No. 23, United Mine Workers of America, and the Memphis Coal Mining Co., which operates near Mannington, in the western Kentucky field, a mine having about a hundred mine workers, the company agreed to pay $20,000 of back pay to its employees, being an increase in pay for work performed between Nov. 24, 1919, and April 1, 1920.

The sum was to be paid in two installments—on July 3 and on the first Saturday in August. But it is arranged that if the company finds it difficult to make payment an extension may be granted. Several western Kentucky mines did not give the increase in pay Nov. 24, 1919, as they questioned whether they were in honor bound to do so. To convince them of their obligation the mine workers at this Mannington mine went on strike for two weeks.

Several suits have been started in the Christian County Court in an endeavor to collect back pay of this character, $8,000 being involved in these cases. The Williams Coal Co., also operating at Mannington and employing sixty miners, has agreed to pay over all the back pay as soon as the first suit in any of the cases is won by a mine worker. The Williams strike, which also lasted two weeks, came to an end as soon as this promise was made. The two companies had individual contracts with the union which they apparently claimed were of effect till April 1.

Check Weighman Refused Access to Tipple and Strike Results at Erie Mine

AS THE result of a refusal on the part of the officials of the Pennsylvania Coal Co. to let Alexander Campbell act as check weighman and Charles Alba act as check-docking boss a strike of 1,200 employees occurred at No. 6 colliery, Pittston, Pa., on July 1. The company declares that it does not consider that the men were duly elected.

When the mine workers began picketing, one of the picketers was put under arrest by company police. It appears that the company was willing to recognize the former check weighman and check-docking boss but was unwilling to co-operate with the new appointees till the charges made against them were disproved. However, in the afternoon the company declared itself of another mind and willing to allow Ford and Bell, the former check officials, to be replaced by Campbell and Alba. The strike was clear evidence that the employees did not believe that the newly-chosen officials were unworthy of their confidence so the company quite properly recognized their choice.

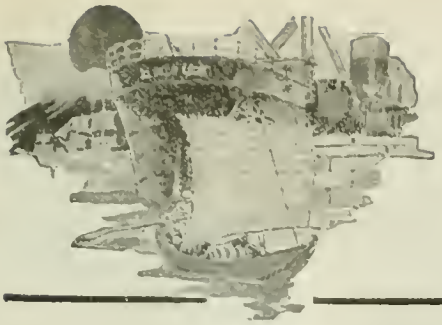
Six Who Refused to Testify in Industrial Relations Court Are Sentenced to Jail

BECAUSE they have refused to testify as to the strike in the Kansas coal fields six officials of the Kansas district of the United Mine Workers of America were on June 16 sentenced to the county jail until such time as they are ready to testify in the Industrial Relations Court of that state. This was the outcome of a trial for contempt held in the Crawford County Court. A stay of execution was, however, given by Judge A. J. Curran on an appeal, the men giving bonds of $2,000 each.

The men in question were James McIlwrath and H. H. Maxwell, board members; Thomas Cunningham, traveling auditor, and John Steele, Willard Titus and John Fleming, joint members.

District Union Leaders To Be Tried for Complicity in Glen White Shooting

OFFICIALS and board members of the New River district, No. 29, of the United Mine Workers of America, against whom perjury charges are now pending as the result of testimony alleged to have been given in the trial of Tony Stafford at Beckley last January, will be tried at the October term of the Criminal Court of Raleigh County. Their cases were set for trial at the time mentioned at a term of the Raleigh Criminal Court during the week ending June 26, when the grand jury brought in new perjury indictments against "Peggy" Dwyer, a board member, and against Obe Clendenin.



Foreign Markets and Export News

English Bunker Coal Shipments Are Increasing

During April, according to the *Colliery Guardian*, 1,175,564 tons of coal were shipped from England for the use of steamers engaged in the foreign trade, as compared with 886,877 tons in April, 1919, and 1,795,619 tons in April, 1913. During the first four months of the present year 4,520,957 tons have been so shipped, as compared with 3,583,485 tons, and 6,744,106 tons in the corresponding periods of 1919 and 1913, respectively.

Coal Output of Scotland in 1919 Was Slightly Increased

Consul George E. Chamberlin, Glasgow, reports that the estimated output of the Scottish coal mines for the year 1919 was 32,000,000 tons, an increase of 110,000 tons over that of the preceding year. Statistics as to the quantity exported are not yet available. There were threatened labor troubles throughout the year that interfered with production to some extent. Following the deliberations of the Sankey commission, appointed by the Government, an advance of 48 cents per ton was allowed the miners and one hour per day deducted from their working time. The advance in wages and the decrease in hours of labor went into effect on July 16, 1919.

On June 28, 1917, the first systematic attempt by the Coal Controller was made to regulate prices for export, the prices for Scotch districts being from $5.84 for third grade to $7.54 for Fifeshire first quality navigation, f.o.b. nearest port. These prices were regarded as fixed in the cases of shipments to France and Italy, and a minimum for shipments to neutral ports. Since then various changes have been made. The latest revision of the schedule was issued by the Controller of Coal Mines on May 28, 1919, when prices were fixed as follows:

Quality	Schedule "A" minimum, France and Italy.	Schedule "B" minimum, neutral countries.
Lanarkshire:		
Best splint	$9 00	$17 04
Best all coal	8 51	15 33
First navigation	9 00	17.04
Fifeshire:		
First steam	8 51	17 04
Third steam	7 84	14 60
First navigation	9 24	17 04

All per ton, f.o.b. nearest port.

On August 22, 1919, an order was issued, with the concurrence of the Coal Controller, raising the price by $8.51 per ton over schedule A in the case of France and Italy, and $4.86 per ton over schedule B in the case of neutral countries. These prices are being exceeded in some instances by $2.43 per ton, especially in shipments to neutral countries.

The above prices are much above those for local consumption. Coal for domestic purposes is now selling in Glasgow at approximately $9.75 per ton, and for industrial purposes about $2.43 per ton higher. This necessitates the retention by the Fuel Controller of a certain portion of the output of mines for home consumption. The percentages fixed for the years 1918 and 1919 are as follows:

District	1918 Home Trade Percentage	1918 Export Percentage	1919 Home Trade Percentage	1919 Export Percentage
Lanarkshire	85	15	86	14
Fifeshire	72	28	71	29
Lothians	86	14	84	16
Ayrshire	95	5	96	4

The above allowance for home consumption is not sufficient to meet requirements and the rationing system introduced during the war is still in force. While this system may, in some instances, be a hardship on consumers, on the whole it has been highly beneficial, as with it the fuel control has given the public a much lower price than would otherwise have been obtainable. The export price would have governed that for home use.

Bituminous Beds in Colombia To Be Worked

In 1919, Trade Commissioner P. J. Bell, Barranquilla, reports, preliminary plans were made to work the beds of bituminous coal in Colombia which lie along the bank of the San Jorge a short distance above the head of navigation. The seams in these deposits vary in width from a few inches to 12 feet; the vein which it is planned to work has a width of 10 feet and a dip of 14 deg. from the horizontal. Surface soil only has to be removed to uncover the coal which lies at a depth of 1 to 2 yards under the topsoil. A preliminary analysis of the coal was made and some work done to clear the river for navigation. An initial shipment of 3,000 tons to Barranquilla has been contracted, and it is planned to float the coal down to Barranquilla in 100-ton barges.

The local consumption of coal at Barranquilla, including the needs of the Barranquilla - Puerto Colombia and Santa Marta railways, is estimated at approximately 1,000 tons per month. Mining cost should not exceed $0.50 per ton and the cost of barging to Barranquilla not more than $6 per ton.

Japanese Coal Market Promises Early Improvement

Wheelock & Co.'s coal market report, issued at Shanghai, recently, states that the Japanese coal market has been very quiet during the past fortnight, which is not to be wondered at in view of the recent decline in exchange. The local silk filatures are expected to reopen next month with the advent of the new cocoon season's crops, however, and this should have a beneficial effect on the market. The market in Japan has weakened somewhat for second and third grade dust coals, but the prices for first quality dust and lump coals continue firm.

Fushun mines seem to have recovered from the disastrous explosions which occurred some three years ago and as the output has now been considerably increased there is a certain amount available for export, but owing to exchange and the high cost of producing it is difficult to do business locally.

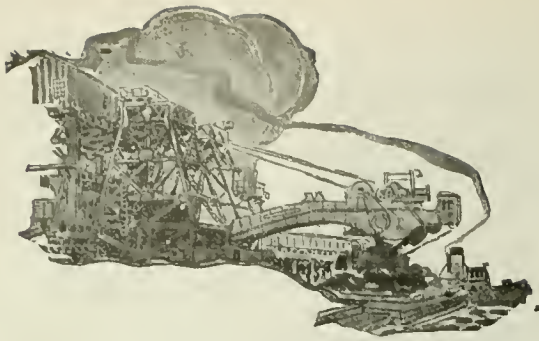
When supplies of the better grades of Kaiping lump coal have been made to yearly contractors a very limited quantity of No. 2 lump remains for the open market, the supplies of which fall short of the demand. There also is a temporary shortage in other grades.

Coal prices are quoted as follows:

JAPAN COAL	
Miike lump, Miike small, Miike dust	Contracted for ex-wharf
	Taels ex-Wharf
Kishima lump	14 00
Kishima dust—no stock	10 00
Shakano lump	13 00
Arate lump	12 00
Shimoyamada kirigomi	11 00
Shin Shakano Kirigomi	11 00
Yoshinotani No. 1 lump	12 00
Yoshinotani No. 2	10.00
KAIPING COAL	Taels per Ton ex-Wharf
No. 1 lump	14 00
Loco lump	13 50
No. 2 lump	10 00
Washed nuts	13 50
Washed slack	10 50
No. 1 slack	9 00
No. 2 slack	8 50

Departure of Refugees Affects Coal Output

The coal mines at St. Laurent-sur-Gorre, in the Department of Deux-Sevres, veins of which extend just over the border into the Department of Vendée, according to a report by Consul W. W. Brunswick, La Rochelle, produced 59,000 tons of coal in 1918, against 27,000 tons in 1919. The loss in production for 1919 as compared with the preceding year is explained by the return to their homes of refugees from the north.



Production and the Market

Weekly Review

Production Gaining—Prices Still Mount, with Prospects for Still Higher Figures Before the End of the Month—Emergency Measures To Be Taken by Operators and Railroads Expected to Relieve Conditions of Supply in Northwest and Possibly in New England

FOR the last two weeks interest has centered in the efforts of the coal operators and the railroad officials to find a solution of the coal shortage situation. It is now too early to know the sentiment of the trade regarding the plan to control distribution by a series of limited embargoes, which is understood to be the method proposed.

Production of soft coal in the week of Independence Day was 9,803,000 tons, a record for this week second only to that attained in 1918. All indications are that production in the week of July 17 will be the record so far since the strike began in April. Because of the five-day week the Geological Survey has not estimated the average daily output and the curve below does not show a figure for the week of July 3. It will be brought up to date next week.

Alabama is suffering from scattering strikes that have seriously reduced the much-needed output of a number of important mines. A strike has developed in the anthracite region and is causing New York to worry about the supply of domestic fuel that comes from the area affected. The strike in the Thacker field of West Virginia still is in effect. As a result of the mines there being shut down, the Norfolk & Western has a full car supply for all other mines on its lines.

Prices show no disposition to fall, in fact they are slowly mounting as far west as Chicago, and in some fields of the East where public utilities have begun to call for assigned cars prices have taken a sharp upward trend because of the fewer cars of free coal that are available.

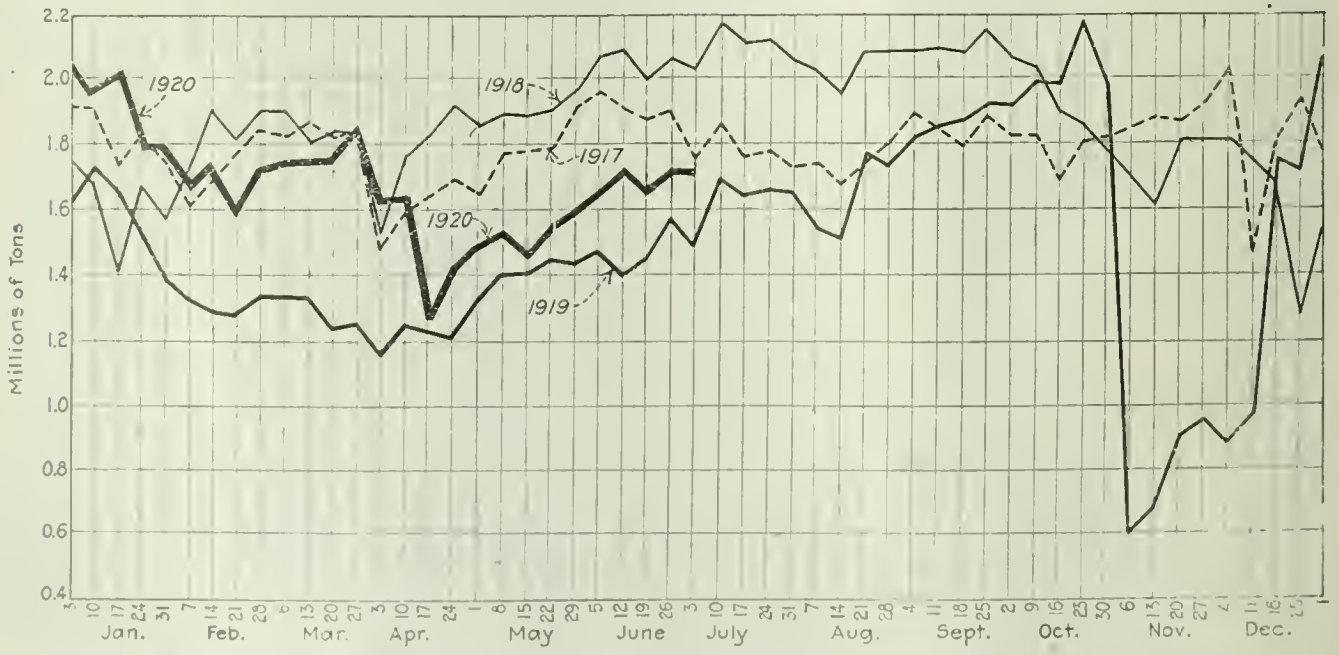
New England is becoming aroused and says that it has not yet really begun to buy for tide delivery. In Indiana the state is seriously considering a law to control the export of coal out of the state as a means of protection of home industries. Michigan consumers are meeting this week at Lansing to adopt a plan of action to protect their coal supply.

At Atlantic tidewater ports movement is good but there are boats waiting for coal. Baltimore reports a record congestion in the harbor.

Lake Coal Dumped Season to July 17

(NET TONS)

	Cargo	Fuel	Total
1919.....	11,360,221	510,063	11,870,284
1920.....	5,010,389	390,758	5,401,147



*From weekly report of Geological Survey.

Reports From the Market Centers

New England

BOSTON

Spot-Coal Demand Continues and Prices Are Firm—All-Rail Movement Improves—Hampton Roads Despatch Is Somewhat More Favorable—Anthracite Situation Is One of Anxiety—Shipments Are Light.

Bituminous—The market this week has shown the same buoyancy that has been characteristic since May 1. Spot coal is still much in demand in this territory. The high figures that have prevailed for the past fortnight have attracted shipments from Hampton Roads. Now that buyers will pay a price that is more nearly competitive with export business the coal comes forward—$17@$20 has been paid recently for the Southern coals f.o.b. cars at Boston, plus whatever demurrage charges accrue.

Prices continue their upward swing, and there is yet to be seen any indication of reduced figures. Except among certain buyers even the high volatiles are being readily absorbed. With the railroads still making strenuous exertions to get supply fuel there is no likelihood of any drop in prices, at least not on the merits of the market as it now stands.

A reasonably large proportion of New England's coal is coming forward on contract. There are few industrial plants that are in great distress. The railroads have been able lately to improve measurably their service. Serious cases of congestion at the gateways have been worked out, and while embargoes are still intermittent there is quite a marked shortening of the time from mines to consumer.

There is coal to be had for spot shipment in almost any reasonable quantity, provided only the buyer will pay the going price.

The Virginia terminals are dumping coal in almost normal volume. Despatch is better than for some weeks, although foreign bottoms still find the going hard. Spot sales at Hampton Roads are now seldom reported, but it is noticed that clearances for New England are somewhat more frequent.

Current quotations for bituminous at wholesale range about as follows:

	Clearfields	Cambrias and Somersets
F.o.b. mines, net tons	$10.50@$11.75	$11.50@$13.00
F.o.b. Philadelphia, gross tons	13.60@ 15.00	14.75@ 16.50
F.o.b. New York, gross tons	14.00@ 15.40	15.10@ 16.85

Anthracite—The trade continues to feel the keenest anxiety over domestic sizes. A great many householders have their coal in, it is true, but there is yet quite a heavy tonnage to come forward. Up to the time of the freight trainmen's strike on the Philadelphia & Reading and on the Pennsylvania good progress was being made by water, but all-rail the situation is not so favorable. On the New Haven road in particular there are many retail dealers who as yet have had less than a single month's full quota since Apr. 1.

Tidewater

NEW YORK

Anthracite Is Needed to Relieve the Situation—Market Is Likely To Feel Strike in Upper Fields—Steam Sizes Are Stronger—Peak May Be Reached in Bituminous Prices—Conditions Are Somewhat Better.

Anthracite—The cry for coal is becoming more urgent. Movement here has not increased to any appreciable degree and this does not speak well for next winter's supply in the dealers' bins.

Complaints from retail dealers that the large companies are not shipping sufficient coal to meet their standing orders are numerous.

The prospect that upward of 6,000 mine workers in the upper coal fields would quit work because of disputes with their employers will have an important effect upon the local situation, as considerable of the coal produced at the mines affected comes to this market.

Shipments from all of the docks with the exception of Port Reading have been in better shape. Port Reading continues under embargo because of the difficulty in getting barges towed from the docks.

Domestic sizes of independent producers are holding firm around $11, with the demand strong. The steam coals are firm with stocks not oversupplied. Independent buckwheat is being quoted from $4.40 to $4.85, quality entering into the situation. Rice and barley show little change from last week.

Current quotations for company coals, per gross ton, at the mine and f.o.b., New York Tidewater, lower ports, are as follows:

	Mine	Tidewater
Broken	$7 40@$7 55	$9 25@$9.40
Egg	7.40@ 7 55	9 25@ 9 40
Stove	7 65@ 7.90	9 50@ 9.75
Chestnut	7 70@ 7.90	9.55@ 9 75
Pea	5 95@ 6 35	7.70@ 8.10
Buckwheat	4 00@ 4 10	5 75@ 5 85
Rice	3.00@ 3 50	4 75@ 5.25
Barley	2 25@ 2 50	4 00@ 4 25
Boiler	2 50	4 25

Quotations for the domestic coals at the upper ports are generally 5c. higher on account of the difference in freight.

Bituminous—Many tradesmen believe the peak in prices has been reached and that the market is about ready to go in the other direction. To back their opinion they point to an improvement in car supply in parts of the Clearfield region and to the conferences held in this city by committees of railroad executives and bituminous operators, at which the chief topic of discussion was car supply and distribution.

The price list shows no recessions but on the contrary some grades have been held at slight advances over the previous week's quotations.

It was estimated there were about 4,000 cars of coal at the various loading docks on July 16, of which 2,500 had been reported to the New York Tidewater Coal Exchange. This was a slight improvement over the tonnage on hand a week previous, especially at Arlington and Port Reading. Pier 18 was under embargo, except for certain specific coals, and shipments from Port Reading were subject to permits. Movement from South Amboy was reported as about 70 per cent.

Quotations, at the mines, on Pools 1, 9 and 71, ranged from $13 to $14, with little being offered; Pool 10, around $12.50; Pools 11 and 18, $11.75@$12.50; and Pool 34, $11.75. Quotations f.o.b. piers ranged from $16 to $16.25 and from $17 to $17.25 alongside.

PHILADELPHIA

Anthracite Stocks Are at Low Ebb—Moderate Shipments Come in Over P. R.R., but P. & R. Has Embargo on Hard Coal—Steam Coals Are in Strong Demand—Buckwheat Is Scarce, but Rice Is Fairly Plentiful—Barley Is Getting Stronger—Bituminous Is Still Scarce and High—Car Supply Is Somewhat Improved—Business at Tide Continues Good.

Anthracite—The stocks of coal in the yards of the dealers at this time are so low that it comes close to being a record condition for shortage of tonnage. Were it not for the fact that the dealers located on the lines of the Pennsylvania R.R. have been getting moderate shipments, it would be necessary to revert to the big coal strike of 1902 for a parallel.

The Philadelphia & Reading Ry., which supplies the bulk of anthracite tonnage to this district, has been embargoed against anthracite coal since June 19. With the continued absence of coal the early margin of tonnage is fast fading and it will not be long before an actual deficiency is shown at the present rate.

With fall fast coming on the dealers realize they are in for trying times in the course of seven or eight weeks. Most yards still have a fair quantity of pea coal on hand, but this is fast dwindling. The stocks of the larger sizes are merely negligible.

All of the producing interests are daily in receipt of inquiries from outside markets offering advances over the current circular, and in the case of in-

dependent operators this price is close around the $12 mark. With the production limited by a short car supply it is not believed that anything but an extremely small tonnage is being sold at the high figures offered.

There is strong demand for the steam coals, with the possible exception of barley, and some of the larger companies are even reporting increasing activity in this size. Numerous large plants throughout this territory, and even at more distant points, are making inquiries as to anthracite steam sizes, and particularly in the case of rice coal have closed contracts.

With the collieries on short production the companies are just about able to keep up with their orders, and while the companies maintain a price around $4.10 for buckwheat, independents have little difficulty getting from 25 to 35c. more for this size.

Bituminous—The price for soft coal remains high, and this despite frequent reports of a better car supply. Prices at this time for the better grades of Pennsylvania steam coal run from $12.50 to $14 at mines. There is some little tonnage of ordinary steam coal, mostly pool 18, offered around $12, but even this classification at times comes close to top figures. The Westmoreland and Youghiogheny gas coals are reported to be selling anywhere from $13 to $15 a ton at the mines. Fairmont coals are somewhat lower and a price of $12.50 at mines will cover all of the grades on an average, based on recent sales.

There continues to be a good business at tide, especially since the piers have reached good working order again following the strike. All of the export business is going forward under permits on account of obligations entered into prior to restrictions being placed on this class of business. It is not believed any really bona fide business of this kind would be prohibited.

Coke, both foundry and furnace, is high in price and extremely scarce. A price recently heard was $18 a ton at ovens, as compared with contract prices entered into last spring around $8 to $10.

BALTIMORE

The Port's Greatest Congestion of Ships Awaits Loading—Car Supply Is Discouraging — Prices Are Over Wide Range—Anthracite Receipts Are Quite Light.

Bituminous — At this writing the greatest congestion of coal-carrying vessels ever noted in the history of this port is recorded. At or off the Curtis Bay piers are 53 ships to take on a total of about 300,000 tons of coal, while at the Canton pier are seven or eight other vessels for about 50,000 tons additional. Loadings coastwise and for export by permit are now being pushed, however, and the first part of July has seen recorded a total export loading of around 150,000 tons, of which about 135,000 was cargo coal.

At tide, however, is only a total of around 2,000 cars of coal, with about the same amount reported running from mines to tide at this writing, so that all the coal in sight at this time can not take care of waiting ships promptly.

Car supply, which had improved at last writing, is again discouraging, despite the strenuous efforts of the General Railroad Committee to find a way to get coal moving more promptly and thus head off the possibility of a renewal of Fuel Administration days. The supply of cars on the Baltimore & Ohio eastern lines at this time is only around 35 per cent, and that on the Pennsylvania and Western Maryland but little better in most of the mining regions they touch.

While Federal investigations continue in this city, there are many sales continued at exceptionally high prices; but prices are over a much wider range. For instance there was a case of purchase to complete a cargo of coal. A price of $17 was quoted a gross ton f.o.b. piers here, and the purchaser showed that he had just bought some of the same coal from another source (Pool 9) for $13.75 a gross ton f.o.b. piers. However, he needed the coal and paid the high price because he could get no other fuel quickly. The need of the moment is apparently setting each individual sale.

At the mines the purchaser most of the time offers a price, many producers refusing to quote a price and merely taking the high offer. Coal is actually being sold now, on which the consumer has not been billed and is trusting that he will be charged a fair price. Sales at the mines of best coals have been generally from $11 to $13 f.o.b. mines the net ton.

Anthracite—Hard-coal dealers here report that receipts continue quite light. Many consumers are now growing uneasy in the face of the mounting cost of coal on the price at time of delivery plan. Also some are afraid that they may not get coal as desired. For instance the deliveries to city schools have been only about one-third normal, and it is stated that all the schools may not be able to get coal as desired. The coal men here admit that heavy shipments are needed from now until September to fill the deficiency.

Lake

BUFFALO

Conditions Are but Little Changed, Bituminous Being Active and Strong—Anthracite Is Moving at a Good Rate and Lake Shipments Hold—Coke Prices Are Still Mounting.

Bituminous—The complaint of shortage continues, in spite of official reports of heavier mining than last year. Consumers are bidding for coal in a way that makes any weakening of the price out of the question. They are paying practically top prices for country-bank coal, which is often of poor quality.

Bituminous prices are now based on about $10@$10.50 for all grades of coal at the mines. At the same time most of the coal is selling for much less, by contract. One anthracite shipper is selling steamboat fuel for $6.30 delivered on board and has done so all the season, by virtue of a contract for Youghiogheny coal. But for that the Lake shipments of anthracite would be much less than they are, for the great problem on the Lakes now is where to get fuel at any price.

Anthracite — The conditions remain as before. Consumers are not satisfied, for as a rule they want their winter's coal now and of course that is not possible. However, a large amount of it has been delivered. Canadian dealers are still numerous here, all asking for coal.

Lake shipments are good and soon the Philadelphia & Reading docks, which have been rebuilding all the season, will be added to the list. For the week the loadings amount to 93,200 net tons, of which 51,100 tons cleared for Duluth and Superior, 32,000 tons for Chicago, 7,200 tons for Fort William and 2,900 tons for Manitowoc. Rates of freight remain at 50c. to Duluth and Fort William; 60c. to Chicago and Manitowoc.

Coke—Jobbers report that they are not able to get 72-hr. foundry for less than $18.50 at the ovens and some are asking $19, to which must be added $2.60 freight to Buffalo. This brings 48-hr. furnace at $17. Low grades are not moving much. The local iron furnaces are all running strong.

Inland West

UNIONTOWN

Soft Coal and Furnace Coke Prices Move Upward—Car Shortage Continues Acute—Coke Supplies Are Scarce, with Fancy Figures for Free Tonnage.

Prices both for bituminous coal and furnace coke resumed their upward trend this week, a level of $11.25 and $11.75 being reached for classified coal; furnace coke moving at $17.50 and $18 with at least one offer of $18.50 ovens, late in the week, not being covered. There are a number of permits out for export coal and the price on such coal advanced during the week from $10.75 and $11.25 to the above mentioned maximums.

The car shortage continues acute; more than three score coal mines (large and small) being forced to suspend the last three days of the week because of no cars. Similar measures were adopted by a dozen or more coke plants.

The best placement was made by the Monongahela R.R. which provided both coke and coal operations with a 35 per cent placement; 2,034 coal cars and 1,031 coke cars being received from the Pennsylvania and Pittsburgh & Lake Erie railroads, which supply the Monongahela with cars.

Coke supplies are scarce and the competition is keen to secure what tonnage is made available to the open market. The bulk of the region's mer-

chant-coke output is moving upon contracts which have a basis of $12 ovens, but fancy figures can be secured for any free tonnage.

While conditions appear quite as gloomy as they are pictured, there is a bit of optimism in the air as operators await the decision of the railroad labor board. Should a satisfactory wage adjustment be made they believe the rank and file of the railroad men will greatly increase their individual efficiency, and do more than anything else to bring the railroads "out of the woods."

MILWAUKEE

Situation Continues Critical — Industries and Utilities Are on Hand-to-Mouth Basis—Rail Movement Gives No Relief and Lake Receipts Are Quite Unsatisfactory.

The coal situation continues unimproved. Orders from individual consumers are piling up, and industrial concerns and public utility plants are working on a hand-to-mouth basis. Cargoes reach the docks daily, but not in sufficient volume to cause an accumulation of stocks at the yards. The rail movement is almost nil. Hundreds of small dealers who rely upon the dock yards for coal find their business at a complete standstill. They get little coal. The bulk of present deliveries is made direct from the docks.

Local coal men are close on the heels of the Interstate Commerce Commission, and if the worst comes and industries are forced to suspend, it will not be because sufficient effort was not made by those interested in supplying the community with fuel. With maximum coal receipts from now on to the close of navigation, Milwaukee will not have coal enough to meet the demands of winter. Receipts by Lake thus far this season aggregate 317,451 tons of anthracite and 466,799 tons of soft coal, a gain of 29,759 tons of the former and a loss of 1,116,906 tons of the latter in comparison with last year's record during the same period. Prices continue unchanged.

COLUMBUS

A Better Car Supply Permits a Greater Production — Demand for All Grades Continues Strong and Prices Continue High — Lake Trade Shows Some Improvement, but Is Far Below Normal.

The priority car order, giving preference to mines as far as open-top equipment is concerned, is causing a better supply of cars to be delivered at all Ohio mines. Operations have been more active and indications point to a better run of cars for the coming two weeks. Operators are taking advantage of this condition, by pushing the output as much as possible and it is hoped that the general condition will be remedied as a result. Demand for all grades is still good and prices continue at high levels.

The buying for steam purposes is one of the features of the trade. Manufacturers, few of whom have any surplus stocks, are using every means to keep their plants in operation. Buyers have been dispatched to the mines to purchase available tonnage and the price to be paid is a matter of little consequence.

Railroads are taking a larger tonnage, which still further reduces the supply for commercial purposes. Public service concerns are also buying actively and many are trying to accumulate reserves for the fall and winter.

The domestic trade is active as dealers are now in the market for supplies to take care of long standing orders. Dealers are getting anxious and are offering high prices to compete with steam users. Practically no Pocahontas is coming into central Ohio territory as the main supply is going to the seaboard. A considerable tonnage of splint is coming in and sells at high figures.

Dealers are depending largely on Hocking, Cambridge and Pomeroy coals for their supplies. Retail prices continue high and range from $8 to $10.50 for Ohio coals and even higher for West Virginia splint.

The Lake trade shows some improvement over a week ago as a larger tonnage is being loaded at the docks of the lower Lake ports. But the season is far behind that of last year with hardly one-fourth of the tonnage moved to date. Reports show that Lake shippers are getting anxious and that there must be especial attention given to the trade from this time on to avoid an acute coal shortage in the Northwest.

Production is slightly better in all of the Ohio districts. The Hocking Valley produced about 65 to 70 per cent during the week and the figures from Pomeroy Bend are about the same. The eastern Ohio field produced about 55 to 60 per cent while Cambridge, Crooksville and Jackson districts had about a 60 per cent run.

Prices of coal used in central Ohio at the mines are:

Hocking lump	$6.00@$8.50
Hocking mine-run	5.50@ 8.50
Hocking screenings	5.00@ 8.00
Pomeroy lump	6.50@ 9.00
Pomeroy mine-run	6.00@ 8.50
Pomeroy screenings	5.50@ 8.00
West Virginia splint, lump	6.75@ 9.00
West Virginia mine-run	6.50@ 8.75
West Virginia screenings	6.00@ 8.50
Pocahontas lump	7.00@ 9.00
Pocahontas mine-run	7.00@ 8.75

MIDWEST REVIEW

Car Supply Improves in Illinois and Indiana but Prices Show an Upward Tendency—I. C. C. Continues Open-Top Car Order and Defines What a Coal Car Is—Situation in the Northwest Is Serious and Relief Is Sought at Washington.

There has been no weakening in the coal market during the past few days; in fact, on the contrary, prices on practically all grades are showing an upward tendency. The car supply at the mines in Illinois and Indiana is improving to some small extent, but not enough to relieve the present acute shortage or have any influence on the market.

Usually the mines receive a good car supply on Monday and Tuesday, which tends to ease up the market to some extent. While the supply on Monday and Tuesday was pretty good, in fact better than the average, there was no sign of a weakening tendency in prices.

Agitation for a better car supply at the mines is the order of the day, and nothing is being overlooked by the coal operators themselves, or by the public, to bring such a situation about. Primarily there is no coal shortage, but a most serious transportation shortage.

DETROIT

Order 7 of I. C. C. Is Welcome, but Might Be More Effective If All of Cars Built for Coal Loading Were Diverted to the Trade—Conference Is Arranged for at Lansing to Plan to Avert the Threatened Shortage.

Bituminous—Representatives of the coal trade in Detroit are quite generally gratified by the action of the Interstate Commerce Commission in extending the operation of Order 7 for an additional 30 days beyond July 21.

The opinion is expressed by some of the wholesalers and jobbers, however, that more effective results would be obtained from the operation of the order if the railroads would divert to the coal trade all cars originally built for that traffic, some of which are now employed in the transportation of other commodities. Unless this is done the dealers fear the supply of cars available at the mines will prove inadequate to move coal in sufficient amount to assure that the needs of Detroit and Michigan generally will be met.

With the purpose of definitely determining the requirements of coal consumers in Michigan during the coming winter and arranging some plan to expedite deliveries, arrangements are being made for a conference in Lansing to be attended by representatives of public utilities, industrial centers and the coal dealers, in the hope that some constructive program can be outlined for bringing relief to the coal consumers of the state.

The public utilities and many of the industrial companies have been unable to get coal in sufficient amount to build up reserves. Many of the utility companies in the state have but little stock on hand or coming to them, despite embargoes which were designed to assist them.

CHICAGO

Demand Is Unprecedented with Wide Range in Selling Prices—Local Public Utility Commission Takes Steps to Insure Better Delivery of Cars to Mines —Coal Will Not Be Reconsigned After Reaching Chicago.

The demand for coal in the Chicago market is unprecedented, with retailers and manufacturers bidding against each other for what little coal is available. From a superficial investigation, however, it appears that both retailers and manufacturers are far better off today than they were some time back, in that they now have some coal on hand.

The Chicago Real Estate Board, acting for owners of apartment houses in this city, had a hearing a few days ago before the local Public Utilities Commission. The apartment house owners claim that hardly 5 per cent of the apartment houses have their winter supply of coal on hand, and they request that the public utility commission takes steps so that coal cars will be delivered in greater numbers to the coal mines.

At this same hearing were some officials of the Illinois Central R.R. who had been summoned to explain why so many empty cars were to be seen lying idle on the various switching tracks and in holding yards. Those who appeared for the railroad replied that coal was coming into Chicago in greater quantities than for the same period last year, but instead of doing Chicago any good the coal was being reconsigned to points beyond.

The railroad authorities blamed the wholesalers for the fact that the yards were congested with loaded coal cars awaiting reconsignment. As the market for coal is so obviously strong it is well understood that there is but little free coal in or about Chicago waiting to be reconsigned.

On the whole, the railroads serving Chicago are in better shape than they have been during the past few months, although conditions are far from normal at present. Practically all of the railroad officials emphasized the point that one of the greatest difficulties in their efforts to expedite coal shipments is the accumulation of freight—coal and otherwise—in the Chicago terminal yards. The Chicago Terminal Committee has just issued an order which prohibits the reconsignment of coal cars after they reach Chicago.

It is said that the Chicago, Burlington & Quincy has taken a step further and will not reconsign coal after it arrives at Galesburg. This step has been taken in order to give the railroads a chance to clean up their yards, as well as to put a stop to promiscuous speculation in coal.

The action of railroad labor has some bearing on the present situation, as it is thought that when the Federal Wage Board makes its award it will have a good effect on labor and stabilize that element which, at the present time is in a very unsettled state.

A wide range exists between the selling prices of local coals. On the spot market screenings are selling anywhere from $4.75@$6.25 per ton f.o.b. mines: mine-run from $5.50@$6.50 and prepared sizes from $5.50@$7.

ST. LOUIS

Fuel Conditions Generally Are Growing Serious—Transportation Shows but Little Improvement — Prices Continue To Advance.

St. Louis proper is not suffering to any great extent for the need of coal, but all manufacturing plants are short, running on a day-to-day supply ahead. Many plants have curtailed the use of fuel as much as possible and some plants are running short time.

The dealers in and around St. Louis are unable to purchase Standard coal at the prevailing market because the large dealers with contracts can sell coal at a retail price cheaper than the open market Standard mine price. As a result, but little Standard coal is moving for domestic purposes. In the Standard field commercial coal mines work about 1½ to two days commercial and railroad mines get four and 4½ days a week.

Mt. Olive coal is in good demand for the domestic trade, but the supply is one-fourth of what it should be. The Carterville supply for St. Louis is one-tenth of what it should be.

These conditions, due to the fact that no anthracite, West Virginia smokeless or Arkansas is available, present a situation more serious than St. Louis has had to face in the memory of any local coal man. About 20 per cent of the coal that is usually stored at this time of the year has been put away.

Prices here range from $3 on contracts to $4 for local shipments. Out of town shipments, such as Chicago, are bringing $5 for lump, egg, nut, mine-run and screenings. Shipments to Detroit and Canada bring as high as $6 and better for all grades.

The Mt. Olive field continues to take care of its regular trade at from $3@$3.75 on all sizes and getting about three days a week on commercial.

Market conditions are satisfactory on most roads; the exception being the Missouri Pacific. Coal from this district has been selling at circular prices; Zeigler coal goes at $5.50, whereas other coal is selling at from $3.80@$4, with the exception of a few operators who are getting between $5 and $7 for northern shipment.

Somewhat similar conditions prevail in the Duquoin field. The running time last week was from three to four days; mines are neglecting old contracts and orders and are taking care of Canadian shipments at prices of $6 to $7.

There are no changes in retail prices, although many dealers in St. Louis are refusing to take orders for anything but Standard and Mt. Olive, and at a price prevailing at the time of delivery.

South

BIRMINGHAM

Demand Is Heavy but Sales Are Restricted to Small Spot Supply—Strikes Offset Benefits of Improved Car Supply and Production Shows Decrease—Merchant and Domestic Mines Suffer Mostly from Labor Troubles.

Operations at domestic and merchant mines in this district continue to be badly crippled by local strikes, numbers of mines in Walker, Bibb, Tuscaloosa and in the western section of Jefferson County being totally or partly closed. Indications of the past few days, however, point to an improvement in this respect, as the output at several of these mines is being gradually increased. Labor generally is offering no assistance or co-operation in increasing coal production.

Transportation conditions are good on the Southern and Frisco lines and mines are getting all the cars needed. The supply on the Louisville & Nashville is around 45 per cent of requirements and mines dependent on this road for equipment are losing some time due to lack of cars for loading.

The market is strong and the demand heavy but the tonnage being sold is confined almost entirely to the spot trade and comes from the small mines not holding contracts. Sales agencies and jobbers have little coal to offer, the entire output from all the larger mines being applied against contracts where deliveries are badly in arrears, and quotations are suspended.

Spot coal is bid up to high figures, prices reported ranging from $6.75 to $8.50 at mines. There is not much to be had at any figure. Quite a number of domestic mines are involved in the strike trouble and the receipts of this grade of coal are entirely inadequate to meet daily sales and enable an accumulation of stocks.

LOUISVILLE

Car Supply and Prospects Generally Are Better in Kentucky Fields— I. C. C. Orders Are Expected to Bring About Further Good Results—Prices Are Fairly Firm, Although Increased Production Should Result in Lower Market.

Better car supply, and better prospects generally in the Kentucky Fields. Prices fairly firm on all grades, although increased production is expected to result in falling prices.

It is claimed that there has been an increase of about 10 per cent in car supply during the month, and that mines of Kentucky are now getting a 50 per cent car supply, with prospects of improved supplies as a result of extension for 30 days longer of the I. C. C., ruling, placing a ban on open-top cars except for transportation of coal.

Leading operators and traffic men claim that if this rule is continued and enforced it will result in empties finding their way back to mines which have not been handling coal for a long time. General prospects are for better car supply, and with this car supply it is claimed production will begin to catch up with demand, which will stop price bidding, and enable competition to level prices to something like normal.

It is reported that demand is already showing the effect of larger shipments, and that, with the exception of gas coals and the best grades of steam coals, there is not quite so keen a demand. Furthermore, operators are beginning to offer coal, instead of the buyer going to the operator.

It is claimed that a buyer's market has a good chance of being re-established shortly if car supply reaches a 60 to 70 per cent level in the next two

or three weeks. However, it is also claimed that, in view of the light domestic stocking, lower prices will bring a big immediate shipment demand from retailers, which will have a tendency to hold the market.

In event of domestic demand becoming as strong as is predicted for the fall, then as soon as block coal gets down to $4 or $5 at the mine many mines will have a little delay in getting their screens back in shape, as many of them have not been screening for weeks.

Retailers' stocks are quite low as a whole, and no buying is being indulged in on the present market, nor is there any prospect until conditions change.

The strikes in West Virginia have not had much effect in eastern Kentucky, and have made such little headway in West Virginia that they are not being considered seriously by operators along the Kentucky border.

Quotations show: Eastern Kentucky mine-run, gas coal, $8.75@$9.50; nongas, $8.50@$9. Western Kentucky lump, $5.75@$6; mine-run, $5@$5.25; nut and slack, or pea and slack, $4.50@$5.

Canada

TORONTO

Anthracite Situation Is Fairly Satisfactory—Bituminous Continues Scarce and Prices Are Fluctuating.

The situation as regards anthracite shows some improvement and present conditions are fairly satisfactory, shipments coming forward freely. Owing to the fact that consumers placed heavy orders early in the season dealers are generally considerably behind in deliveries, but are gradually overtaking orders in arrears. Announcements by the Railway Board as to arrangements for insuring a supply have had a reassuring effect and no serious shortage is anticipated. Bituminous continues scarce and industrial plants have in many cases had to curtail their output and are only kept in operation by a hand-to-mouth supply. Consumers have so far been unable to lay in stocks ahead. Dealers are disposed to be skeptical as to the feasibility of the proposal to procure supplies from the Albert mines, regarding the cost of the long haul as prohibitive.

Quotations per short ton are as follows:

Retail:	
Anthracite egg, stove, nut and grate	$15.50
Pea	14 00
Bituminous steam	15.00@16.00
Domestic lump (nominal)	18 00
Cannel	16.00
Wholesale f.o.b. cars at destination	
Three-quarter lump	$14 00@16.00

These prices vary from day to day.

Exports of Coal and Coke By Customs Districts

Domestic exports of coal and coke from the United States by customs districts during May, 1920, according to statistics supplied by the Bureau of Foreign and Domestic Commerce were as follows:

	Anthracite (Tons)	Bituminous (Tons)	Coke (Tons)
Maine and New Hampshire			58
Vermont	1,703	3,555	58
Massachusetts	104		
St. Lawrence	109,961	79,931	808
Rochester	63,664	133,879	437
Buffalo	94,459	95,473	2,989
New York	1,979	15,184	1,393
Philadelphia	1,664	199,909	2,649
Maryland		424,614	5,834
Virginia		940,408	
South Carolina		66,475	
Georgia		10,820	
Florida	178	18,424	
Mobile		736	
New Orleans	2,946	716	79
Sabine		39	
San Antonio	27	472	651
El Paso	77	4,551	4,596
San Diego	7	4	1
Arizona		2,016	7,015
San Francisco			40
Washington	127	105	
Alaska		4	
Dakota		669	182
Duluth and Superior		4,811	2,270
Michigan	51	74,183	9,923
Ohio	250	323,843	3,072
Porto Rico			22
Total	277,197	2,400,821	42,077

BUNKER COAL

Customs Districts:	Tons
Maryland	91,603
New York	220,734
Philadelphia	49,236
Virginia	253,405

Coal and Coke Exported from New York During May

Exports of coal and coke through the Port of New York took a big jump in May of this year when compared with the shipments in the corresponding month of 1918 and 1919, but show a decrease in tonnage when compared with May, 1917, although the value of the shipments in May last was more than $12,000 greater than the value of the coal and coke shipped in May, 1917. In that year there were 19,609 tons shipped valued at $178,537 while in May of this year the shipments were 18,556 tons valued at $190,833.

The following tabulation shows the countries to which coal and coke was sent with the tonnages shipped:

ANTHRACITE

	1917	1918	1919	1920
Brazil	168	482	352	16
Canada	10,621	3,341	2,431	1,243
Cuba	1,396	70		125
Newfoundland	1,645	501	200	
San Domingo	2,301		589	50
Other countries	583	50	29	545
Totals	16,714	4,444	3,601	1,979

BITUMINOUS

	1917	1918	1919	1920
Austria				5,000
Brazil		7,437		487
France				4,666
Italy			50	1,500
Norway				2,700
San Domingo	646	575		50
Other countries	349	105	490	791
Totals	995	8,117	540	15,184

COKE

	1917	1918	1919	1920
Chile	1,258		40	56
France		1,540	405	
Panama	240	208		
Other countries	402	405	181	1,237
Totals	1,900	2,153	626	1,393

Comparison of the shipments in May in the four years shows the following:

	1917 Tons	1917 Value	1918 Tons	1918 Value
Anthracite	16,714	$133,327 00	4,444	$30,158 00
Bituminous	995	7,147 00	8,117	58,118 00
Coke	1,900	38,063 00	2,153	30,868 00
Totals	19,609	$178,537 00	14,714	$119,144.00

	1919 Tons	1919 Value	1920 Tons	1920 Value
Anthracite	3,601	$29,402 00	1,979	$21,263 00
Bituminous	540	4,517 00	15,184	$41,316 00
Coke	626	11,184 00	1,393	28,254.00
Totals	4,767	$45,103 00	$18,556	$190,833.00

More than 15,000 tons of bituminous coal were sent to other countries through the Port of New York during last May of which amount Austria got 5,000 tons, valued at $41,500, and France 4,666 tons, valued at $55,708.

Freight Rates to Europe Easier

W. W. Battie & Co.'s Coal Trade Freight Report announces that since the previous report a few steamers have been chartered each day for export coal, but the great difficulty is to secure cargoes, as steamers are reported to be plentiful.

Freight rates to European ports are a trifle easier, but to South American and West Indian ports there has been very little change.

Freight rates by steamer are as follows:

		Tons Discharged Daily
Malmo	About 16.50 —	1,000
Copenhagen	About 16 50 —	1,000
Gothenburg	About 16.50 —	1,000
Antwerp/Rotterdam	13.50/14 00 —	1,000
Hamburg	About 15 00 —	1,000
French Atlantic ex. Rouen	14.00/14 50 —	700
Algiers	16 00/16 50 —	800
West Italy	About 16 00 —	1,000
Marseilles	About 16 00 —	1,000
Piraeus	About 17 50 —	1,000
Trieste/Venice	About 17 50 —	1,000
Port Said	17.50/18 00 —	1,000
Constantinople	About 18 00 —	500
Gibraltar	About 15 50 —	1,000
Pernambuco	About 13 00 —	500
Bahia	About 13 00 —	500
Rio	11.50/12.00 —	1,000
Santos	12 00/13.00 —	600
Buenos Aires or Montevideo or La Plata	11.50/12 00 —	1,000
Para	About 13.00 —	500
Rosario	About 13 00 —	750
To Nitrate Range	About 9.00 —	750
Havana	About 6.00 —	500
Sagua or Cardenas	8.00/8 50 —	300
Cienfuegos	About 7.50 —	500
Caibarien	About 8.00 —	300
Guantanamo	About 7 50 —	500
Manzanillo	About 9.00 —	300
Bermuda	About 6.50 —	300
Bermuda p. c. and dis. free		
Kingston	7.50/8 00 —	400
Barbados	About 9 00 —	500
St. Lucia	About 9 00 —	500
Santiago	About 7.50 —	500
Port of Spain, Trin.	About 9.00 —	500
Curacao	ASout 9 00 —	500
Free p. c. Curacao		
Demarera	13.00 —	400
St. Thomas	About 8.00 —	500

All above rates gross form charter.

News From the Coal Fields

Northern Appalachian

PITTSBURGH

Coal Moves Freer, Due to Order of I. C. C.—Spot Prices Are Firm, but May Be Influenced by Offerings of Southern Ohio Coal.

It is now stated frankly by both producers and consumers that there is a better movement of coal, growing out of Order 7, now continued for another 30 days, from July 21, with the proviso that it is not to include flat-bottom gondolas with sides under 36 in. inside measurement, for the benefit of the steel trade.

Thus far the heavier movement has had no really noticeable effect on spot prices, which have been substantially as high during the past week as at any time. The market is likely to respond to psychological influences by prospective buyers being less rash in their bidding, even though their wants may not be greatly altered.

Open orders given to brokers have had something to do with the high prices, the consumer being in a hurry and giving the broker a high limit, and with coal so scarce the broker is encouraged to bid his limit to make sure of getting coal.

The prospective advance in freight rates, probably effective Sept. 1, encourages buyers for stock to be somewhat freer in making purchases at this time than they otherwise would be. An influence in the other direction is the offering of some southern Ohio coal to consumers normally tributary to the Pittsburgh district.

The spot market is quotable at about $10@$11 for steam coal and $10.50@$11.50 for gas and byproduct, per net ton at mine, Pittsburgh district.

FAIRMONT

Congestion Is Eliminated and Car Supply Improves — However, at Times There Were Many Idle Mines — Railroads Take 65 Per Cent of Loadings — Eastern Shipments Are in Excess of Western Tonnage, but Little Coal Is Exported.

An unusually large supply of cars in the Fairmont region early in the week ended July 10 was not the harbinger of any marked improvement in the car supply as had been expected, for after the accumulation had been worked off the car supply situation was back in its old rut.

While the supply of empties was erratic, nevertheless it was on a higher level than during the previous week owing to the fact that congestion had been eliminated. Still the shortage of cars was such as to force many mines and miners into idleness during the course of the week. When mines did resume operations after the Monday holiday there were in excess of 2,000 cars on the Monongah division of the Baltimore & Ohio R.R. alone.

Some of the congestion brought about by strikes on the Baltimore & Ohio had been relieved and the road was in a fairly good position to move freight. At the same time empties had begun to pour in from eastern points and particularly from the piers. However, by Friday cars were so scarce there were 110 mines in idleness on the Monongah division of the Baltimore & Ohio.

Although it had been hoped that there might be a fairly adequate supply of cars on the Monongahela R.R. even in that field, following a shutdown of two days for the mines, cars were extremely scarce on Tuesday, Scott Run mines securing a small supply. As a matter of fact, the larger portion of cars on the Monongahela were assigned for railroad-fuel loading.

Eastern shipments were in excess of western tonnage in the proportion, at times during the week at least, of ten to seven. Of the coal moving eastward, but little was for tidewater and consequently exports were comparatively small. So far in northern West Virginia the railroads have not abated the nuisance of the assigned-car supply to any appreciable extent.

CONNELLSVILLE

Coke Market Is Slightly Higher — Foundry-Coke Demand Exerts an Influence — Byproduct Ovens Are Doing Well, but Have No Surplus to Offer.

The Connellsville market for spot coke has gone still higher and thus another new historic record is made, with spot furnace sold at $18 and spot foundry at $19, with perhaps a few transactions in foundry at still higher figures. In the week containing Independence Day, production in the Connellsville region lost about half a day, as compared with the preceding week, and as the blast furnaces do not observe holidays this may have had an influence.

Usually the prompt market declines after Independence Day, through consumers having gone too far in making sure of a supply, but this year proves to be exceptional, no one having had a chance to buy more coke than needed.

Foundry coke has had an influence, as the coke cost is such a small part of a foundry's expense that price is altogether secondary, and as quality is now also secondary, blast-furnace coke being acceptable to many foundries, the foundry-coke market supports the furnace-coke market.

The byproduct ovens are working fairly well but apparently have no surplus to offer in the market, otherwise the Connellsville market would certainly decline.

The spot market is quotable at about $18 for furnace and $19 for foundry, per net ton at ovens. Contract coke is practically nominal at $12 for furnace and $12@$13 for foundry.

The *Courier* reports production in the Connellsville and Lower Connellsville region in the week ended July 10 at 162,390 tons, a decrease of 15,900 tons.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

BITUMINOUS COAL.

	1920 Week	1920 Calendar Year to Date	1919 (a) Week	1919 (a) Calendar Year to Date
June 26b	10,556,000	252,073,000	9,470,000	210,640,000
Daily average	1,759,000	1,663,000	1,578,000	1,389,000
July 3b	10,293,000	262,366,000	7,459,000	218,099,000
Daily average	1,716,000	1,665,000	1,492,000	1,393,000
July 10c	9,803,000	272,170,000	10,225,000	228,324,000
Daily average	1,961,000	1,674,000	1,704,000	1,404,000

ANTHRACITE

	1920 Week	1920 Calendar Year to Date	1919 (a) Week	1919 (a) Calendar Year to Date
June 26	1,820,000	41,912,000	1,855,000	38,655,000
July 3	1,730,000	43,642,000	1,394,000d	40,049,000
July 10	1,500,000b	45,141,000	1,849,000	41,898,000

BEEHIVE COKE

United States Total

Week Ended July 10	Week Ended July 3	Week Ended July 12, 1919	1920 to Date	1919 to Date c
363,000	375,000	325,000	11,269,000	10,098,000

(a) Less one day's production during New Year's week to equalize number of days covered for the two years. (b) Revised from last report. (c) Subject to revision. (d) Five-day week because of Independence Day. All figures in net tons.

NORTHERN PAN HANDLE

Empties Increase, but Labor Shortage Limits Production—Holiday Interferes with Output—Credit Is Given to Order 7 of I. C. C.

An increase in the number of empties in the northern Pan Handle of West Virginia marked the course of events in that field during the week ended July 10. The increased supply combined with general idleness in the mines on the fifth when few miners reported for duty tended to make open tops fairly plentiful during the balance of the week. However, labor shortage kept down production somewhat.

Credit was generally given by producers to the beneficial influence of Order 7 of the Interstate Commerce Commission. With railroad lines less congested than had been the case at the outset of the month, coal was moved somewhat more expeditiously, and that also tended to help to swell the inward flow of empties.

Just as there was improvement in the Pan Handle, so in the eastern Ohio fields cars were rather easier to secure, although similarly it is doubtful if there was any increase in production. But for the holiday, additional transportation facilities would have undoubtedly been conducive to an increased supply of coal.

Middle Appalachian

NORTHEAST KENTUCKY

Holiday Reduced Output of the Field—Demand Is Strong, with but Little Free Coal—Movement Is North and West.

The Fourth of July holiday had the effect of reducing the tonnage of coal mined in the northeast Kentucky field in the week ended July 10. Otherwise production would have been about the same as for the previous week. As it was the output averaged only about 46 per cent—a decrease of 12,000 tons. It was unfortunate that when cars were rather more plentiful that no marked gains were made in northeast Kentucky.

There was no diminution in the demand and producers found it impossible to meet such a market either for gas, byproduct or steam coal. Indeed they had all they could do to look after contracts, so that free coal was very scarce indeed.

Movement of northeast Kentucky coal was mostly to the West and North, only a small proportion of the output of the field moving to eastern points.

KANAWHA

Kanawha Output Is Far Below That of Previous Week — Holiday Season Cripples Production — High Volatile Being Embargoed to Tide, Coal Goes West and to the Lakes.

Production in the Kanawha field for the week ended July 10 was far below that of the previous week, a number of causes bringing about such a situation. First and foremost was the holiday at the very beginning of the week.

On Tuesday there were over 1,000 cars available, but it was only possible to load a portion of them, miners being extremely slow about getting back on the job again. And so it ran throughout the week; fully 1,000 cars, or approximately 50 per cent less being loaded during the week than had been the case during the preceding period.

There was also a very poor supply throughout the week on the Kanawha & Michigan R.R., so that production at mines on the north side of the Kanawha were affected quite appreciably.

A fairly plentiful car supply during the week was rather inopportune in view of the holiday and the fact that Kanawha coal was once again under embargo, insofar as tidewater shipments were concerned. As a consequence there was larger western movement, part of which went to the Lakes.

Quotations on spot coal, or rather offerings for spot coal from the Kanawha, ranged from $8.50 to $10 a ton and better, buyers even offering more in some cases.

LOGAN AND THACKER

Logan Loadings Were Cut Down 35,000 Tons for the Week, Due to Holiday—Williamson Field Shows Up Fairly Well Considering Efforts of Labor Agitators.

In the high-volatile Logan and Williamson fields less coal was loaded than during the previous week chiefly because of a holiday, although in the Williamson field production was also cut down because of the strike there. In common with other high-volatile fields, however, it is believed that more cars were available than during the previous week, but miners were slow in getting back to work again after their brief holiday respite.

Logan loadings reached only about 165,000 tons during the week ended July 10, the hole made by a general suspension of activities on Monday being sufficient to reduce the output 35,000 tons or more below that of the previous week. But for that holiday there might have been a slight increase since empties were fairly plentiful on the Chesapeake & Ohio.

Even less coal was moved eastward than during the previous week that being one of the results of a tidewater embargo which lasted over into the week beginning July 12. No high-volatile coal had been shipped to tidewater terminals of the C. & O. during the week ended July 10, and it was believed that an effort was being made to stop exports for the time being by embargoes, the effect being to augment western tonnage. Prices showed no tendency to reach any lower levels.

In the Williamson field, on the days succeeding July 5, there was a fairly large production, considering that the United Mine Workers were claiming an entire suspension of operations in the field. Official figures show that 867 cars of coal were produced and shipped for the week. Pond Creek mines do not appear to have been affected so far by the strike.

VIRGINIA

Production Dropped About 50,000 Tons for the Week — Large Output Is Predicted for Following Period — Prices Are Firm and Demand Strong.

Reduction in the production of the mines in southwestern Virginia was the sequence to a holiday. As mines had only five days in which to produce coal, the output for the various fields dropped from 151,000 tons to 102,000 tons, a loss of nearly 50,000 tons, the holiday of course not being altogether responsible. Indeed of the total loss of 68,000 tons, 43,500 tons were lost because of inability to secure cars, the balance of 25,000 tons being lost through a shortage of man power.

It is estimated that production reached about 60 per cent of potential capacity while the mines were actually in operation during the week. At the end of the week operators were rather optimistic of a larger output during the week beginning July 12 since there was no holiday in prospect and cars seemed to be coming in at a larger rate.

In fact it was felt there might be a supply equivalent to about 85 per cent of requirements; although in making such an estimate cars to be assigned were included, a very large proportion of the cars received in fact being assigned.

There was little change in prices in the field during the week. Certainly there was no decrease since the demand continued strong with no increased production to meet it.

POCAHONTAS AND TUG RIVER

Many Mines Work Five Full Days in Week Ended July 10—Tug River Holds Its Own on Output—Pocahontas Produces 330,000 Tons — Shipments Go East.

Production appears to be steadily on the increase in Norfolk & Western territory, at least in the smokeless fields reached by that road, the Williamson field constituting, of course, an exception. Additional equipment cut down car-shortage losses to an appreciable extent.

The observance of a holiday on July 5 tended to cut down the week's production as a whole, although during the other five days of the week, Monday's loss was to some extent overcome. Service Order is expected to increase output.

Many mines worked five days on a full-time basis. Of course the lack of necessity for so many cars in the Thacker field had a tendency to make cars somewhat more plentiful in the Pocahontas and Tug River fields, but there was undoubtedly a larger number of incoming empties.

Coal loading in the Tug River field

for the week ended July 10 was 78,650 net tons, or an increase of 200 tons over the previous week. Notwithstanding the holiday, output in the field ranked with some of the best production periods of the present year. Of course Tug River mines secured the benefit of cars which under ordinary circumstances would have been distributed among Thacker mines.

If mines in the Pocahontas region failed to produce as much coal as was the case during the week ended July 3, it was largely because of the holiday on July 5, production reaching about 330,000 tons against which there was a car-shortage loss of only 67,000 tons. A month ago there had been a car-shortage loss running well up to between 200,000 and 300,000 tons. Shipments from the field were largely to the East.

NEW RIVER AND WINDING GULF

Production Nearly Equals That of Previous Week—Tide Is Again Opened to Smokeless — Gulf Mines on Virginian Work Five Days, C. & O. Operations Only Three—Half of New River Tidewater Shipments Are Exported.

More coal was loaded in both the New River and Winding Gulf fields during the weekly period ended July 10 than might have been imagined in view of a holiday which gave the mines only five days in which to produce coal during the week; production did not fall far short of that for the preceding week, cars being somewhat more plentiful in both fields.

The car supply on the Chesapeake & Ohio was in excess of 50 per cent while on the Virginian it was even better. There was a better flow of empties both from the East and from the West.

The opening of tidewater piers to smokeless coal again during the week also tended to stimulate shipments to the East; at the beginning of the following week another embargo was imposed, no doubt to check the flow of coal to foreign ports.

In the Winding Gulf field, during the last five days of the week ended July 10, mines supplied by the Virginian Ry. having a full supply for each day were able to work to full time capacity, thus materially increasing the output of the field as a whole. Mines on the C. & O. were not quite so fortunate, being in full operation for only about three days out of the week. The pooling of equipment materially strengthened the supply of empties.

Mines in the New River field largely succeeded in making up for the idleness on July 5, during the balance of the week, loading about 120,000 tons of coal.

As the low-volatile embargo to tide had been lifted on the third, it was possible for New River mines to proceed with tidewater shipments; and it was estimated that probably half of the tidewater consignments were for export. Consequently western shipments tended to decrease.

Western

SEATTLE

Industry Feels the Shortage of Fuel Oil — Washington Coal Mines Will Be Busy, and Labor Is Scarce — Summer Trade Has Developed as Result of Coal Dealers' Campaign—Prices Hold.

The shortage of fuel oil in the Northwest, which promises to continue for the balance of the year, has raised havoc with industry depending upon this fuel, and wholesale conversion of oil burners to coal burners is being undertaken in many plants. Particularly is this true of the steamships, many of which have been threatened with a tie-up as a result.

The shortage of fuel oil, coal operators are confident, is going to add considerably to the production of Washington coal mines this year, many being doubtful whether the mines can meet the demand which has so suddenly been thrust upon them. Labor at this time is scarce and there is little possibility that at any time during the year will it be adequate.

The campaign of coal dealers and operators in Northwestern cities recently, urging the consumer to place his winter's contracts now, has resulted in the development of considerable summer trade, the experience of the last two winters having proved a bitter lesson to those who delayed ordering their winter's supply of fuel until the supply was wholly inadequate to care for the demands.

Prices have not made any material advance recently. The latest quotations are as follows: Newcastle, lump, $7.90; Black Diamond, mixed, $8; South Prairie, mixed, $8.10; Newcastle and Issaquah, pea, $6.20; Carbonado, mixed, $8.20; Bellingham, nut, $8.40; Carbonado, semi and nut $11.80@ $12.40.

Canada

VICTORIA

Shortage of Coal Is Predicted for Next Winter on American Continent—Some Factors Entering Into the Problem Are Noted—Local British Columbia Conditions Are Outlined.

G. W. Bowen, vice president and managing director of the Canadian Western Fuel Co., predicts that there will be a scarcity of coal all over the American continent during the winter of 1920-21 and attributes present conditions in the United States in this respect to the transportation problem. The increased demand for coal locally he explains by the shortage of oil and the greater population to supply.

The cost of production would govern prices, oil shortage and other contingencies having nothing to do with the matter. Discussing the latter question he pointed to the fact that his company was engaged in prospecting for coal, that what might appear to be a good body at the outset possibly would peter out on development; that in the Nanaimo mines not more than 25 per cent of those employed actually were engaged in the production of coal, so that the average output of coal per day per person would not run to more than a ton and a half.

The profits of the mines were not as great now as they were some years ago when coal was cheaper on the market. Little coal was being shipped from Nanaimo to the United States, whereas a few years ago the bulk of the output went to San Francisco, Cal. Now practically the only coal going south of the line was that required to fill small contracts with Seattle, Wash., dealers.

NOVA SCOTIA

In order to supply the local, Canadian and overseas demand for coal the Dominion Coal Co.'s output will have to be increased to at least 20,000 tons a day, and orders to this effect are said to have gone forth.

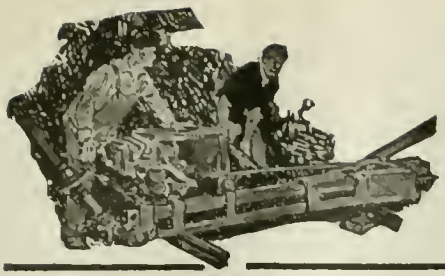
During the past three years the daily output at all the collieries has seldom passed the 12,000-ton mark. To cope with the present demand the Dominion company will have to open up more mines and contemplates the development of four additional openings in the near future. The outputs at all the collieries will be increased to some extent.

One of the new coal mines, it is stated, will be located in the vicinity of Dominion No. 1 colliery. Another new colliery will be started at Quarry Point and it is quite possible that operations there will begin within the course of a few weeks.

Where the other collieries are to be located has not been stated. Possibly one will be started in the vicinity of the O'Neil Point shaft, and another at Port Morien. The new colliery at Morien should be producing coal in quite a short time. Since the Hub stopped production three new collieries have been started—Nos. 17, 24 and Port Morien. Operations at the Port Morien mine are being pushed, and the officials plan to have the colliery producing coal within the next two months.

Alaska

At Bering Lake the construction of a motor truck road from the coal miles of the Bering River Coal Co. to Bering Lake, where the coal will be placed on sea-going barges and towed to local Alaskan markets, means that British Columbia coal is being displaced in Alaskan markets, according to advice received by the Alaskan Bureau of the Chamber of Commerce recently. The Bering River Coal Co. has spent about $200,000 in development work and is reported to have opened up a number of beds of high-grade coal.



Mine and Company News

ALABAMA

Birmingham—The Imperial Coal & Coke Co. has increased its capital stock from $120,000 to $300,000. This company operates the Bradford mines in the northern portion of Jefferson County on the Black Creek seam. The capital stock of the Majestic Coal Co. is also increased from $40,000 to $240,,-000. This company owns the Majestic mines, on the Black Creek Seam, in Jefferson County. Both compaines are owned and controlled by the Morris Bush interests, with head offices in Birmingham, Mr. Bush being president of the corporations as well as president of the Alabama Byproducts Corporation. The major portion of the output from these mines is consumed at the byproduct plant near Boyles.

The petition of the Corona Coal Co., on which a temporary restraining order was issued in the Circuit Court of Jefferson County against the Southern Ry. for alleged discrimination and preferential treatment in the matter of car supply, has been taken to the U. S. Circuit Court for final hearing looking to the dissolution of the injunction or its permanent establishment. No date has been set for the hearing.

ILLINOIS

Carlinville—Macoupin County now has over 200 cars per day shipped from its mines compared to two years ago when it was practically unknown to the coal trade. Coal men have predicted that within the next few years Carlinville (the county seat) will be one of the most important mining centers in the central part of the state. This is due mainly to the efforts of the Standard Oil Co., which has recently completed two large and up-to-date collieries near this city. The Carlinville Coal Co., also improved its mine in many ways recently. To show how the coal is moving from this new mining center, there was recently over 1,000 cars loaded with coal and tied up between Carlinville and Springfield, awaiting to be moved to their destinations.

Duquoin—Coal leases covering thousands of acres of land in Somerset and De Soto townships, south of here, are now being taken up by Dowell & Lafont of this city. All of the operations have not been made public as yet, however, it is stated that some of the leases are being taken out under the Midland Coal Co., and their tracts will be near the De Soto mine now in operation. Dowell & Lafont (coal-land dealers) were largely responsible for the locating of the large Kathleen mine, owned by the Union Colliery Co., of St. Louis, the mine being located at Dowell, four miles south of here, and named after Mr. Dowell of the firm.

INDIANA

Clinton—The last payday at the coal mines in the vicinity of this place, was one of the best for several months, the total payroll being about $500,000 for two weeks. The mines in this section now are operating about four days a week.

Indianapolis—E. A. Ogle, of this place, who recently purchased the Kimball-Pocahontas Coal Co. and the Cirrus Coal Co., has announced the consolidation and reorganization of these operations, which are located in McDowell County, W. Va. The new company is to be known as the By-Products Pocahontas Coal Co. Mr. Ogle represents a big coal interest in Indiana.

KENTUCKY

White City—Announcement has been made that the mines and two stores of the Kingston Coal Co., at this place, a few miles south of Evansville, Ind., have been sold to the Hart Coal Co., composed of Brent Hart, H. H. Holeman and W. V. Meers. The consideration was approximately $500,000. The deal was completed at Chicago. The mining property is regarded as one of the best in western Kentucky. The new company will be incorporated for $500,000 and Mr. Meers is slated to be president.

Ashland—The Porter Mining Co., recently organized, is arranging for the erection of a tipple and the installation of considerable mining machinery at properties secured recently from the Beaver Creek Consolidated Coal Co. The company plans for an output of close to 2,000 tons a day. S. S. Porter is treasurer and general manager.

Louisville—The Louisville Gas & Electric Co., is planning the rebuilding of its steel coal tipple at Echols recently destroyed by fire. The company's power plant destroyed at the same time, will also be rebuilt.

MARYLAND

Baltimore—The new coal pier of the Western Maryland Ry., at Port Covington, construction of which has been commenced, has been designed to replace the former coaling pier of the company in this district, destroyed by fire. The new pier will be 74 ft. wide and 792 ft. long, and will be electrically-operated with a capacity of 40 carloads an hour. The structure with equipment is estimated to cost about $1,000,000.

OHIO

Cambridge — The State Industrial Commission has revoked the right of the National Coal Co., one of the largest operators in the Guernsey County field, with headquarters at Cambridge, to carry its own liability insurance for employees. The authority to engage in this line was granted the company in 1917; complaints from employees regarding negligence on the part of the company caused the commission to set a date for a hearing of the matter; it is said that this hearing was entirely disregarded by the company, causing immediate revoking of exemption from carrying state insurance. It is further stated that the case will be carried to the Supreme Court for a decision.

PENNSYLVANIA

Altoona—The Old Colony Coal Mining Co. has been organized at a capitalization of $500,000 with Lawrence M. Ryan of Altoona as manager of the mining operations. The plant is located at Hooversville, Somerset County. Offices will be located in Boston and New York, with Mr. Ryan directing the mines from this city. Hooversville is on the Baltimore & Ohio R.R. The mines will be electrified. Mr. Ryan, the new manager, is general manager of the Cambria-Moshannon Coal Co., with offices in the Altoona Trust building. He recently sold his interest in the Heverly Coal Co. to H. B. Swope, of Madera.

Pittsburgh—It is stated that J. G. Patterson of Pittsburgh, Pa., has transferred 8,000 acres of coal land in Morgan Township of Greene County, Pa., to the Rainey interests, and information is also to the effect that the sale price was about $3,000,000.

WEST VIRGINIA

Beckley—The McQuail interests have purchased E. E. Hines' holdings in the Laurel Smokeless Coal Co., and from E. C. Taylor, the Fire Creek Smokeless Fuel Co. Both of these properties are on the Stone Coal Branch of the Virginian Ry.

Williamson—The Williamson Coal & Coke Co. is planning for improvements and extensions to its plant, including the installation of machinery for increased production. The company now has a capacity of about 30,000 tons per month. A. H. Land heads the company.

Recent Patents

Hoist Control. Alexander J. Nicht, Jr., Milwaukee, Wis., assignor to Allis-Chalmers Manufacturing Co., Milwaukee, Wis., 1,340,240. May 18, 1920. Filed Jan. 30, 1914. Serial No. 815,841.

Power Shovel. Charles A. Pratt, Chicago, Ill., assignor to Goodman Manufacturing Co., Chicago, Ill., 1,340,498. May 18, 1920. Filed June 9, 1913. Serial No. 772,521. Renewed Oct. 10, 1919. Serial No. 329,889.

Mining and Loading Machine. Edmund C. Morgan, Chicago, Ill., 1,340,731. May 18, 1920. Filed Aug. 4, 1913. Serial No. 782,766. Renewed June 17, 1918. Serial No. 240,524.

Coaling Device. Ysbrand Brouwers, Wageningen, Netherlands, 1,340,819. May 18,1920. Filed Oct. 21, 1919. Serial No. 332,340.

Coke-Oven Plant. Carl Still, Recklinghausen, and Carl Wessel, Borbeck, near Essen, Germany; Wessel assignor to Still, 1,340,990. May 25, 1920. Filed May 8, 1915. Serial No. 26,852.

Coke Oven. Henry W. Buhler, Boston, Mass., 1,341,257. May 25, 1920. Filed Jan. 21, 1917. Serial No. 144,169.

Electric Welding Device. Wm. P. Bovard, Mansfield, Ohio, assignor to The Ohio Brass Co., Mansfield, Ohio, 1,341,293. May 25, 1920. Filed Oct. 24, 1919. Serial No. 332,929.

Safety Device for Mine Cages. Slave Peskolich, Butte, Mont., 14,864. May 25, 1920. Filed April 21, 1920. Serial No. 375,906.

Skip for Hauling Coal. David Lloyd Gibson, Parnell, Auckland, New Zealand, 1,342,018. June 1, 1920. Filed Jan. 27, 1920. Serial No. 354,343.

Pulverized-Fuel Feeder. Lawrence S. Schmidt, Pittsburgh, Pa., 1,342,135. June 1, 1920. Filed May 11, 1917. Serial No. 167,897.

Personals

Bruno Schettler, secretary of the Southern Illinois Superintendents' Association, and formerly superintendent of the Benton Coal Co., at Benton, Ill., is in a critical condition in a hospital at Centralia, Ill. He was injured in a mine at Sesser, Ill.

John S. Rogers, until recently with the firm of Dowel & Lafont, coal land dealers in Duquoin, Ill., has accepted a position in the Claim Department of the Old Ben Coal Corporation, at its offices in Christopher, Ill.

James Taylor, superintendent of the Arrow Coal Mining Co.'s mines at Arrow, Somerset County, Pa., has purchased a coal mine near Clarksburg, W. Va., and expects to leave about Sept. 1 for the scene of his new operation.

An award of hero medals to seven miners for rescuing fellow workers, whose lives were endangered by mine accidents during the last three years was announced recently by the Joseph A. Holmes Safety Association, an organization created in memory of the first director of the Bureau of Mines and the humanitarian work started by him. Three of those receiving medals gave their lives in attempting the rescue of companions and the medals will go to their nearest kin. The four miners, now living, who will receive the medals are **John L. Boardman,** of Butte, Montana; **Daniel Biowitch,** of Biwalik, Minn.; and **James Collins,** and **James Dilimirk,** both of Mullen, Idaho. The three men who lost their lives were **Michael Conroy, Peter Sheridan** and **James D. Moore,** all of Butte.

J. W. Howard has been placed in charge of the branch office just opened in Clarksburg, W. Va., by A. R. Hamilton & Co., coal brokers of Pittsburgh, Pa. Prior to his association with Hamilton & Co., Mr. Howard was connected with the J. E. Long Coal Co., in Clarksburg, W. Va.

W. J. Wardick has been selected as superintendent of the mining operations of the Ephraim Coal & Coke Co., at Thayer, W. Va.

W. R. J. Zimmerman, of Charleston, who for some time has been the treasurer of the Smokeless Coal Operators' Association of West Virginia, has resigned that post owing to the fact that he no longer has any smokeless holdings. G. H. Caperton of Charleston has been elected in his stead.

W. B. Troxell has been appointed traffic manager of the New River Coal Operators' Association, with headquarters at Charleston, W. Va. Mr. Troxell will give his entire time to transportation and traffic problems affecting the operations in the New River field; this will leave Mr. Lewis, the secretary of the association, entirely free to devote his time to other matters. Mr. Troxell served for three years with the Car Service section of the American Railroad Association. For a number of years he was also identified with the Pennsylvania R.R.

Association Activities

Scotts' Run Coal Operators' Association

The coal operators of Scotts' Run in the Monongalia County, W. Va., field have organized the Scotts' Run Coal Operators' Association to take the place of the Monongahela Coal Operators' Association recently organized and which it has been decided to disband.

The Scotts' Run operators concluded that inasmuch as conditions on Scotts' Run were different from those in other parts of the county it would be wiser to limit the association formed to the Scotts' Run territory so as to avoid loading local problems on a county organization.

Many of these operators hold membership in the Northern West Virginia Coal Operators' Association, and the new association was organized to supplement the workings of the larger body in dealing with local questions such as car supply, etc.

Logan Operators' Association

The Logan Operators' Association is behind a movement to secure the extension of the Virginian Ry. Co. from Elmore, in Wyoming County, so as to secure an additional outlet for the mines of the Logan County, W. Va., field. A decision to ask for such an extension of the Virginian road was reached by the Logan Operators' Association after a conference with President George W. Stevens of the Chesapeake & Ohio, at Huntington, at which time the Logan operators were not satisfied with arrangements for handling the output of Logan mines.

A committee of the association was designated to confer with the officials of the Virginian Ry. at New York on June 24. It is stated that as a result of the New York conference, the prospects of the Virginian extending its line to Gilbert are quite bright, and that arrangements are being made to raise $2,000,000 in order to construct the line which would be about 50 miles in length.

Assurances have been given the management of the Virginian that the advantages of shipping over that road to the seaboard in the event of an extension to the Logan field would be such as to give the Virginian the bulk of tidewater tonnage from the Logan field in question.

Southern Indiana Coal Bureau

In the opinion of Harry W. Little, secretary of the Southern Indiana Coal Bureau (with headquarters in Evansville), Evansville in ten years hence will be the center of the Indiana mining industry.

At present Terre Haute holds that position. This is not due to the fact that mines in that part of the state are richer, but simply because the prairie city is in a more advantageous position since most of the coal mined in the state is sent to the North.

But—the time is not long off when the mines about Terre Haute will have become exhausted. Then it is that the industries of Indianapolis and of Gary will have to look to the coal fields of southern Indiana for fuel, of which Evansville will become the center. This change should take place within the next ten years, say mining experts who have studied closely the coal fields of the state.

The coal mined in this section is the No. 5 seam, which varies in thickness from four to eight feet, in some instances as much as 11 ft. thick.

The normal output of the mines of this section of the state is estimated at 3,500,000 tons annually. The total output of the state aggregates 30,000,000 tons a year. Indianapolis and Gary consume by far the larger part of the coal mined in Indiana.

At present there are 53 mines in southern Indiana, the majority of which are in the vicinity of Evansville.

There are prospects of a number of new mines being sunk in this vicinity.

Obituary

Charles E. Kimball, of St. Louis, organizer of the Mt. Olive & Staunton Coal Co., of Staunton, Ill., and St. Louis, died recently at his home in East Hampton, Long Island. He was also vice president of the Litchfield & Madison R. R.

A. P. Austin, aged 53, prominent banker and coal and coke operator, died at Uniontown, Pa., July 9, following an attack of paralysis. He had been in ill health for several months. He was president of the Plumer Coke Co. and of the Gilmore Coke Co., and was a member of the J. V. Thompson Creditor's Committee. He is the second member of the committee to die since its organization in 1916, Allen F. Cooper, of Uniontown, being the other deceased member.

Trade Catalogs

Machine Tool Control. Cutler-Hammer Manufacturing Co., Milwaukee, Wis. Publication 845. Pp. 46; 8½ x 11 in.; illustrated. Description of machine tool controllers and their application noted.

G.-R Expansion Joint. Griscom-Russell Co., 90 West St., New York, N. Y. Bulletin 1010. Pp. 7; 6 x 9 in.; illustrated. Description of expansion joints for low pressure work.

Lifting Magnets. Cutler-Hammer Manufacturing Co., Milwaukee, Wis. Publication 855. Pp. 8; 8½ x 11 in.; illustrated. Description of a circular type of lifting magnet.

Flexible Shafting. Stow Manufacturing Co., Inc., Binghamton, N. Y. Bulletin 20. Pp. 15; 6 x 9 in.; illustrated. Description of shafting and application to various tools.

Shovelodor. The Lake Superior Loader Co., Duluth, Minn. Pamphlet. Pp. 1, 15; 6 x 9 in.; illustrated. Description of a mechanical mucker and its operation.

Pennsylvania Air Compressors. Pennsylvania Pump & Compressor Co., Easton, Pa. Bulletin 100. Pp. 11; 6 x 9 in.; illustrated. Description of the different types of compressors made by the Pennsylvania company.

Bundy Oil Separator. The Griscom-Russell Co., 90 West St., New York, N. Y. Bulletin 1130. Pp. 11; 6 x 9 in.; illustrated. Description of the separator with some facts of interest to prospective users.

Coming Meetings

American Mining Congress will hold its annual meeting at Denver, Col., Nov. 15. Secretary, J. F. Callbreath, Munsey Building, Washington, D. C.

American Institute of Mining & Metallurgical Engineers will hold its fall meeting Aug. 20 to Sept. 3. It is proposed to leave Buffalo by steamer and cruise through the Lakes, the first stop being at Houghton, Mich., after which the party will visit Duluth and the Iron Ranges of Minnesota, spending a day or two in Minneapolis on its return. Secretary, Bradley Stoughton, 29 West 38th St., New York City.

New York State Coal Merchants' Association will hold its annual meeting Sept. 9, 10 and 11 at Richfield Springs, N. Y. Treasurer, G. W. F. Woodside, Albany, N. Y.

Illinois and Wisconsin Retail Coal Dealers' Association's annual meeting Aug. 4 and 5 at Milwaukee, Wis. Secretary, I. L. Runyan, Chicago, Ill.

The Rocky Mountain Coal Mining Institute, in conjunction with the Colorado Metal Mining Association, the local chapters of the American Mining Congress and the American Institute of Mining & Metallurgical Engineers, and the International First Aid Meet will hold its annual meeting Sept. 9, 10 and 11 at Denver, Col. Secretary, F. W. Whiteside, Denver, Col.

National Safety Council will hold its 1920 congress on Sept. 27 to Oct. 1, inclusive, at Milwaukee, Wis. General Manager, C. W. Price, Chicago, Ill.

Oklahoma Coal Operators' Association will hold its annual meeting Sept. 14 at McAlester, Okla. Secretary, F. F. La Grave, McAlester Okla.

COAL AGE

The Weekly Journal of the Coal and Coke Industries

Volume 18 NEW YORK, THURSDAY, JULY 29, 1920 Number 5

Hold Up the Hands of Your Leaders

MEN of the bituminous coal industry, your leaders are demonstrating their ability to lead. They are giving you a straightforward, honest program and they are fighting for it every inch of the way. It is up to you to follow with no hanging back. The men who are leading this fight are two-fisted, determined and wise. They are shaping their policy from the national viewpoint, for which you selected them as officers of your national association.

These men are sufficiently burdened with harmonizing your problems with the requirements of the railroads, the exactions of Government and the demands of consumers. Keep your petty, selfish objections locked up at home. The worst enemy of the coal industry today is the man who, his head turned by $10 coal, is saying that he will fight to the limit any move to make him ship to the Lakes or elsewhere. The blackest sin is not that you charge $10 for a ton of coal, but that you for an instant refuse to forego the sale of a single such ton in meeting the program that your leaders have adopted for the distribution of your product.

The full story may never be told of how close the coal industry has been, and is even yet, to renewed Government control and regulation. The interests that would have the authorities at Washington take over distribution and regulate the prices of coal are powerful and have good arguments and urgent necessities to back their request. Failure to meet the situation fully, to get coal to the Northwest, New England and to other sections and to preferred consumers, means Federal supervision before the winter is over, if its coming can be postponed that long.

"The coal industry is at a crossroads," Mr. Morrow has told you. "It will either go forward along the splendid pathway of individual enterprise and initiative or it will find itself treading the rocky pathway of everlasting Government regulation and control. The ability of private enterprise in this business and private enterprise in the management of railways is faced with a test of its sufficiency." Mr. Morrow says that failure at this juncture would justify Federal intervention, but he adds that there will be no failure. He asks you as shippers of coal to cheerfully accept the sacrifices necessary to put the program through.

Of course the fault is lack of transportation, but read this to the editor from one of your number whom you all know—we suspect it was inspired by the meeting of coal operators in Washington on July 12 and 13:

"Concerning the present coal supply situation, it occurs to me that too much damning of the railroads is going on and not enough careful, restrained thought given the matter of co-operation. It is my impression that the present shortage of transportation service cannot be blamed entirely upon the officers and executives of the railroads. Back of it there is a labor unrest which, until abated, will prolong the condition we now face. Railroad managers are as helpless to eradicate that evil as the coal operators were to make the miners work last fall. It is time, therefore, that some spirit of co-operation and helpfulness be fostered. The present epidemic of passing the buck has gained in momentum and will be a boomerang if a stop-gap is not furnished.

"Coal operators say their troubles are all a result of transportation, which, of course, is largely true; but to solve all difficulties they say: 'Give us 100-per cent service and everything else will solve itself.' *That is pure selfishness.* It is time some of us were doing something constructive instead of laying back and demanding that 'George do it'."

Orders Nos. 10 and 11 are designed by coal men, concurred in by the railroad officials and promulgated by the Government. They are your own orders, issued to yourselves. If they do not work it will be for the reason that sufficient of your number repudiate your leaders, and by so doing condemn your industry and your own business to some other form of control. These orders will not put the coal into the Northwest and into New England. You must do that. The orders are but an attempt to make you all go share and share alike in this venture.

England has had control of coal for a long time. The Government is trying to let go and give the business back to its owners. Reflecting on the difficulty that is being encountered, Sir Adam Nimmo, K. B. E., has just stated "It must be admitted that it is easier to put an industry, like the coal industry, under control than it is to set it free. Knots are comparatively easily tied, but very difficult to unloose."

The Role of Coal in World Peace

WITH an acute coal situation characterized by an almost continuous succession of complaints, pleas, and resultant priority and assigned-car orders to keep us on the anxious seat, it would scarcely be surprising if Americans had overlooked preliminary moves at the meeting of the Reparations Committee with German delegates at Spa. Agreement by Germany to the terms of the coal ultimatum of the Allies in any case will be matter for gratification in tending toward a settlement of the world's fuel problem.

It was to have been expected that the Teuton representatives would picture gloom and disaster to Germany as the inevitable concomitants of enforcement by the Allies of the terms of the treaty in the matter of supplying coal to France, with the usual outbursts of arrogance in unwary moments—tactics now recognized as salient features of Teuton diplomacy. In that regard the recent seekers of a place in the sun can always be depended on. The Germans displayed poor judgment, however, in selecting Messrs. Lloyd George, Millerand and Delacroix to humbug, as Herr Stinnes perhaps realizes now.

The original terms called for 2,200,000 tons of coal monthly for the use of France, Belgium and Italy, but in the course of the proceedings this was reduced to 2,000,000 tons, beginning Aug. 1. A stipulation that if deliveries fall below 6,000,000 tons for the first three months the Allies will occupy a further portion of German territory, either the Ruhr or another, should go far toward insuring strict compliance with the main terms of the indemnity.

How utterly without foundation are the prophecies of economic disaster that would be entailed by compliance with Germany's fuel obligations is conclusively shown in a study of the coal resources of that country by the U. S. Geological Survey and F. G. Tryon, printed in *Coal Age* Sept. 25, 1919. According to Mr. Tryon's data, the Westphalian coal field and four smaller bituminous fields, exclusive of the Sarre and Upper Silesia, have a normal annual production of 130,000,000 tons. In addition there are lignite mines with large reserves, a resource of great economic importance in the industrial life of Germany. At the same time the fact should not be lost sight of that a portion of the fuel reparation is certain to go to localities like Alsace-Lorraine—formerly German—which the Fatherland would have had to supply even if it had not been defeated in the war.

Whether Poland or Germany wins the Silesian plebiscite the Allies have assured Germany of a coal supply from that region also. An agreement, in fact, has been reached for immediate distribution of Silesian coal by a committee on which Germany shall be represented.

As none of the ravages of hostile invasion reached German mines and as Teuton aspirations to commercial and industrial supremacy are unextinguished—though retarded—a matter of 24,000,000 tons of coal per annum falls far short of disaster—save to pride, perhaps. The agreement made by the Allies to advance a loan of $100,000,000, based on the value of coal deliveries, and to feed the German mine workers, however, should go far toward soothing the injured feelings of the Teuton delegates. If further assurance were necessary it is to be found strikingly set forth in the arrangement recently perfected whereby Switzerland is to receive 40,000 tons of coal monthly from Germany.

With the assistance of Great Britain, Belgium and the United States, which have agreed to supply 750,000, 100,000 and 250,000 tons, respectively, the fuel needs of France will almost be met. Italy's requirements may be more difficult to supply, and Norway and Sweden also have coal problems, though a solution for the latter's may be foreshadowed in the recent delivery of coal from Australia—and at a lower price than has been paid for British coal.

All in all there is considerable ground for suspecting that the black man in the world's economic woodpile is named Coal.

Climbing Up the Golden Stair

THERE is no limit to climbing upstairs so long as one foot can find a purchase whereby to lift up the other. The mine workers' union long ago ascertained that interesting fact. It progresses just like any other biped which climbs stairs, for it has two legs, one anthracite and one bituminous, and it uses them alternately.

It lifts itself on the bituminous leg, using as a besinewed lever the fact that a man must make enough to live whether he works or rests and that what he earns should be based on his needs and not on his opportunities to labor. Then it rests on its bituminous leg, and uses the lever in its anthracite extremity to lift itself another step on the stairway. That lever is the "law" that as a man should not be penalized for working steadily he should make as much per day or unit of work whether he is a steady worker or a perforcedly casual one.

And the system of the union for raising wages works like walking up a stairway! The public is not sure what it believes, consequently it changes its belief with either argument as it is advanced. Now it is the right to live in comfort; then it is the right to equal pay for equal work. The public drifts along without a program and labor goes on up the golden stairs that lead to—higher prices—or a dislocation of business.

The unions—as also some others—always use the argument that will serve them the best. When cost of living rises they argue wages must go up. What will happen when prices fall? The union has an answer. It says that, whatever happens, never must wages be lowered. Labor claims that during the war the mine workers' wages rose less rapidly than the cost of living and that wages should be lifted to remunerate the mine worker for his lean years. The operator denies that the so-called lean years were lean, and every evidence points to the truth of that contention. But if by any chance a remuneration were provided in the form of an increased wage, would the mine worker consent to its removal after the lean-year deficits were fully met, and would he agree to allow a deduction for excessive earnings should the cost of living go down in advance of a decline in his pay? He assuredly would not.

We can hardly wonder at the mine worker's cunning use of changes in prices, inequalities in working hours, and irregularities such as seam thickness, purity and hardness to help himself upward in the standard of living at the expense of the public. But the public should form some judgment as to the conflict between the right to a living and the right to unit prices, the right to equal pay for equal product or the right to equal pay for equal effort, the right to have wages raised with living cost and the right to maintain wages regardless of living cost.

Transit Company's Coal Bill Increases 147 Per Cent

The Interborough Rapid Transit Co. of New York has announced that its coal bill for the fiscal year 1920 was $4,245,000, compared with $1,716,696 in the corresponding period of 1916. The company does not explain, however, what portion of the increase of 147 per cent in the total cost of fuel is due to increase in amount of coal used and what portion to increase in price per ton.

Germany Gets Good Terms For Her Coal

An Associated Press dispatch from Spa July 15 says: "The German Ministers are disposed to accept the note of the Allies and to answer in the affirmative tomorrow without qualification." The New York *Times* says: "Roughly speaking, the settlement is this: Germany agrees to deliver the 2,000,000 tons of coal monthly the Allies demanded. On the other hand, she gets a loan of about $80,000,000, based on the value of her coal deliveries, together with other concessions."

Price of Fuel Oil Raised at Panama Canal

A. L. Flint, chief of office, the Panama Canal, Washington, received the following cablegram July 16 from the Governor of the Panama Canal: "Price of fuel oil at Canal terminals will be increased to $3.50 per barrel effective Aug. 1, 1920. Bunkers will be limited to sufficient oil to reach next bunkering station. This will apply to all ships, whether they have contracts with local oil companies or not."

Senate Committee Holds Coal Hearing in New York

Senator William M. Calder, of New York, chairman of the Senate Committee on Reconstruction and Production, is holding hearings in New York on the coal situation. Mr. Storrow, Mr. Groverman and Judge McGee are among those who have been called to testify.

Movement of Coal to New York Continues to Improve

Movement of bituminous coal to New York, according to an official of the Tidewater Coal Exchange, continues to improve slightly, but is still far from normal. It was reported July 21 that there were 4,253 cars of soft coal at tidewater ports which was being unloaded at the rate of about 425 cars a day. There is less delay in dumping and delivering now because harbor conditions have improved. Public Service Commissioner Lewis Nixon gave out the weekly report of coal on hand from the public utilties companies July 20, showing a total of 239,041 tons. This is an increase of 18,000 tons over the preceding week, when the companies reported 220,396 tons on hand.

Shipping Board Receives Bids on 122,553,000 Barrels of Oil

Approximately 122,553,000 barrels of oil were offered the U. S. Shipping Board July 15, when bids for 1-year, 3-year and 5-year supplies of such fuel were opened.

Steel Trade Expects Relief with Rail Wage Settlement

In its weekly summary of conditions in the steel market as of July 22 the *Iron Age* says: "Appraisal of the effect of the 21-per cent advance in railroad wages is not easy in the absence of clear indications of the attitude of the unions. In the steel trade the more general opinion is that with the award retroactive for ten weeks and in view of its amount a widespread strike against it is not likely. The increasing signs of reaction in various industries are cited as having an important bearing. Steel manufacturers look for some relief from the desperate conditions of many weeks with the return to work of experienced railroad workers, but it is recognized that improvement will be slow and it is admitted that the accumulations of product are more than have been commonly known."

NEWS BRIEFS

Terse Items Chronicling Events of Interest to the Industry

Says Operators Get Excess Profits of $350,000,000 a Year

J. J. Storrow, Massachusetts Fuel Administrator, before the Congressional Committee on Reconstruction and Production, July 20, demanded a rigid government embargo on coal, following the policy of the British Government in restricting the amount of coal that goes out of the country proportionate to the amount needed for domestic use as a remedy for the present fuel situation. He charged that coal operators were taking in excessive profits from American people as much as $350,000,000 a year.

South America to Obtain British Coal

According to advices to the Department of Commerce export of coal from Great Britain to South America will not be prohibited.

Sweden Gets Australian Coal More Cheaply Than British

A British firm has completed the sale of 240,000 tons of Australian coal to Sweden, which, including all freight charges, will cost Swedish buyers in the neighborhood of $36 a ton, whereas British coal delivered in Sweden costs about $44 a ton.

New York Manufacturers Report Higher Efficiency of Labor

The efficiency of labor is increasing, according to reports from forty-nine manufacturers operating in forty different lines of industry in New York City. This testimony is submitted to the Industrial Bureau of The Merchants' Association by manufacturers who reported in September, 1919, that labor was about 70 per cent efficient.

To Assist in Super-Power Investigation

Mr. O. P. Hood, chief mechanical engineer of the Bureau of Mines, has been designated as one of the engineering staff to co-operate with the Geological Survey in its investigation of the super-power project.

Eastern Roads to Help Move Western Grain Crop

The Commission on Car Service has ordered the movement of 25,500 additional serviceable empty box cars from Eastern and Southeastern roads to Western lines to assist in handling new grain crops for a 30-day period beginning July 25.

Morrow Warns Operators Against Government Goblin

J. D. A. Morrow, vice-president of the National Coal Association, warns bituminous-coal operators that failure to meet the urgent fuel needs of the country at this time will mean continuous government control of the industry. Mr. Morrow urges immediate increased production and co-operation with the Interstate Commerce Commission in getting coal moved to the Northwest, New England and upper New York.

Car Relocation Orders To Be Made Mandatory

The Commission on Car Service of the American Railroad Association has issued a circular to the roads which suggests a method by which orders issued by it for relocation of cars between railroads may be made to have practically the same mandatory effect as orders of the Interstate Commerce Commission.

John Callahan

Traffic Manager, National Coal Association

WHEN it is considered that coal to the value of one and one-half billion dollars is transported on the railroads each year, the position of the traffic manager of the National Coal Association carries with it no mean responsibility. While all the coal transported is not the product of members of the National Coal Association, the efforts of that organiation to secure better transportation conditions have their bearing on all coal shipped. This work is in the hands of John Callahan.

The fact that there are many complex and difficult problems arising in an industry where the product comes from thirty-one states, and every railroad, large and small, is engaged in its transportation, does not worry Mr. Callahan. He looks after a multitude of individual complaints in addition to his more important activity of trying to secure the adoption of many fundamental principles which make for greater efficiency in the transportation of coal. He may or may not know that the railroads last year handled 435,513,226 tons of revenue producing coal, but he is entirely familiar with the rights of the coal shipper, a representative of the carriers have ample reason to know. Very frequently he is a thorn in the side of the Interstate Commerce Commission until it changes its views on matters which affect the transportation of coal.

Mr. Callahan was born in Lectonia, a little mining town in northeastern Ohio. His early education was obtained a few miles away at Salem, Ohio, where he completed the high school course. Immediately thereafter he accepted employment as a yard clerk at Salem for the Pennsylvania Railroad Co. For several years he worked in various capacities in the yard service and in the train service. Later he was assigned to divisional work on the same line.

Mr. Callahan feels that one of the most interesting portions of his experience came during the time that he was assigned by the Pennsylvania Company to travel over the lines of other roads with the idea of observing methods and practices which could be applied to advantage on the Pennsylvania. His next step upward came in an appointment as special agent in charge of the Pennsylvania's fast freight service. Later he was made inspector of freight transportation for all Pennsylvania lines west of Pittsburgh. He resigned in November, 1917, to take service with the National Coal Association as traffic manager.

Special Cars at Illinois Mine Promote Safety and Aid Operation

At Most Operations Mine Cars Are Used for Transporting Materials of Every Description—Special Cars Do This Work Better and Release Regular Equipment to the Purpose for which It Was Intended

By Donald J. Baker
Wilkinsburg, Pa.

IN THE design of mine cars for specific purposes Illinois operators have shown themselves resourceful and inventive. The ordinary mine car was designed and constructed for the one purpose of transporting coal, but the average layman might not receive that impression if he were to visit certain operations and see such cars used for transporting everything from hay to sand. No great amount of ingenuity is needed to build a special car for a special purpose and thereby provide an efficient carrier for materials of a distinct class. For instance, a covered car should obviously be employed in the transportation of powder or permissible explosives, as many concerns have learned through grim experience.

All the cars herein illustrated are in active service in the mines of the Saline County Coal Co. in southern Illinois and any of them may be constructed in such a shop as is usually found at the mines. With the exception possibly of the tank car all would find ready use in any mine. Such equipment will last almost indefinitely once it is constructed and will render a distinct service meanwhile. The cars are of simple construction and require no elaborate bills of material. With such rolling stock available any demand within the mine for a certain class of material may be effectively met.

An efficient transportation system counts for little if it does not provide that the material shall be delivered in proper condition. Hence the use of a special car. A potent factor for safety is introduced also when a covered car is used for moving explosives or transporting hay. The Illinois Mining Law demands that such cars be employed, but the statutes of other states are not so rigid. Far-sighted operators, however, in any coal field will employ them regardless of whether the law in their particular district calls for them or not.

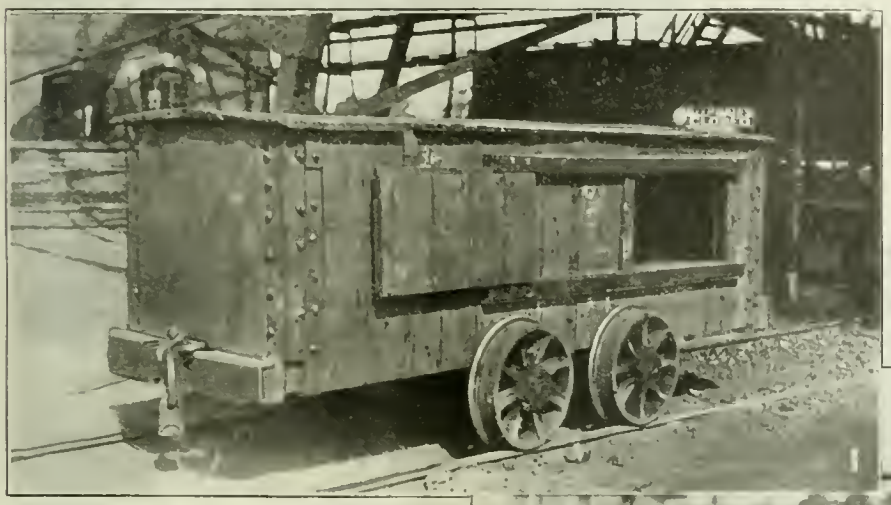


FIG. 1.

Powder Car

In which powder is taken from the surface and placed in the neck of every working room where it is needed. The door on the near side is at the rear end of the car, on the far side it is at the front end, but out of sight.

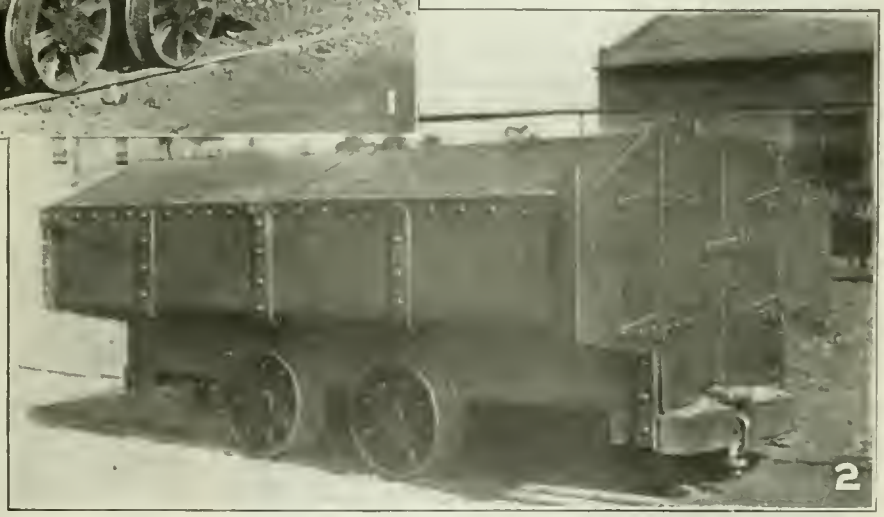


FIG. 2.

Hay-and-Grain Car

Where mules are kept below ground hay or grain must by law be sent down in a closed car. The terrible Cherry disaster of Nov. 13, 1909, was caused by an open torch igniting a carload of hay on its way to the mine stable.

Miner Finds Powder at His Room Neck

Fig. 1 shows a car that is used exclusively for transporting explosives. It is solidly constructed of planking and entirely covered. Access to the interior is gained through two doors located diagonally opposite each other near the end of each side. These are of the simple sliding type without hinges or other devices that

would be likely to get out of repair. The interior is lined throughout with ¼-in. fiber plate, a material possessing fireproof qualities. The body or box is 9 x 3 x 2½-ft. in dimensions and affords ample space for thirty-four boxes of permissible explosive, weighing 25 lb. each.

No miner is permitted to carry explosives with him. Instead he notifies the mine manager when he is in need of them and they are delivered for him at his working place ready for use the following day. A special force of men is detailed to the sole work of transporting explosives. This is accomplished at night when the plant is shut down and the power is off. The car is hauled from working place to working place by mules. The boxes are placed in each room, being laid near the neck but on the opposite side to that which is used in general by the machine men in paying out their cable. In this manner explosives are handled with the greatest possible care. They should never be handled in any other way. This scheme is well adapted to mines where coal-dust hazard is unusually severe.

With Hay Car Risk of Fire Is Avoided

In Fig. 2 is illustrated what might be called a "hay" car. As is the custom in many mines where mule haulage is still in use, barns are constructed underground so that the animals do not have to be brought to the surface. The pit is no place for a sick mule, and it behooves the officials to exercise the utmost vigilance in the feeding and watering of their stock. It is possible to obtain fresh water within these barns by a pipe line direct from the surface, but the fodder cannot be transported so easily. The problem of procuring fresh, clean and sweet hay is more often solved in a careless, line-of-least-resistance manner than otherwise, as is often attested by the bad disposition of the animals.

In the mines of the Saline County Coal Co. a covered steel car is used which admirably serves the purpose of delivering dry fodder in the best of condition. Except for a hinged double door in one end the car box is solid. Both top and sides are constructed of ¼-in. steel plate. Hay and straw are placed in the car in bales. About 640 lb. can be accommodated in this manner with a single loading. When it is desired to transport oats or corn from the surface to the underground stable the grain is placed in boxes before being loaded. The utilization of a car of this type guarantees the mules against subsistence on gritty, mouldy or evil-smelling forage and grain.

A sand car is shown in Fig. 3. Sand can be delivered to the bottom of a shaft mine through a borehole from the surface, but where that cannot be done the coal car still stands handy to the drier and is apt to be used for the purpose, but, though any car can be picked up at random, it has the disadvantage that the sand is certain to be mixed with many foreign substances if loaded into a car that has just been used for hauling coal. Moreover, most mine cars are not by any means tight containers for anything so elusive as sand. Little time need be consumed in building a special car for this material. The one here illustrated is constructed of rough lumber and lined with galvanized sheet iron. Strap-iron braces may be used to give the body more rigidity. The metal lining permits of greater ease in cleaning the bottom and also allows more material to be utilized from a single loading.

Sand for the locomotives at this company's mines is screened as well as dried on the surface. It is then loaded into this car and taken down the shaft. The filled car is placed on a siding at the bottom, where its contents are accessible to passing locomotives. When the car is emptied it is removed to the surface to be reloaded.

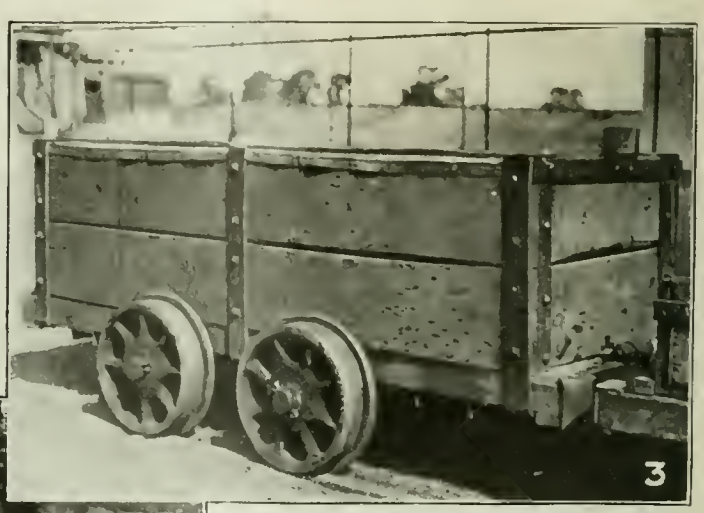


FIG. 3.

Car for Sand

Here a cheap car replaces an expensive one. Being built without flared sides it takes up less room in the roadway and having no end gate it does not leak sand. As it is used for no other purpose than hauling sand the contents are kept free from contamination.

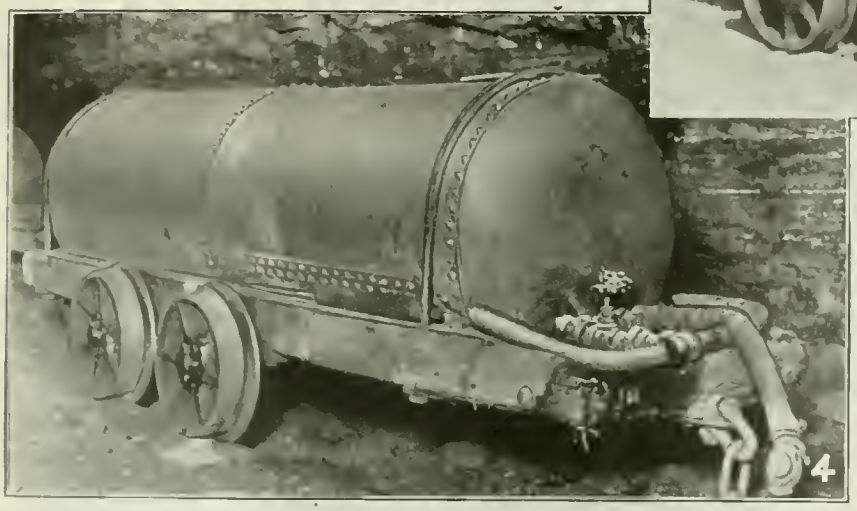


FIG. 4.

Sprinkler

This car is merely a tank on a wheeled platform. When water is allowed to run into it under pressure the air is forced into smaller and smaller compass till its pressure approximates that of the inflowing water. This air pressure supplies the force needed for sprinkling.

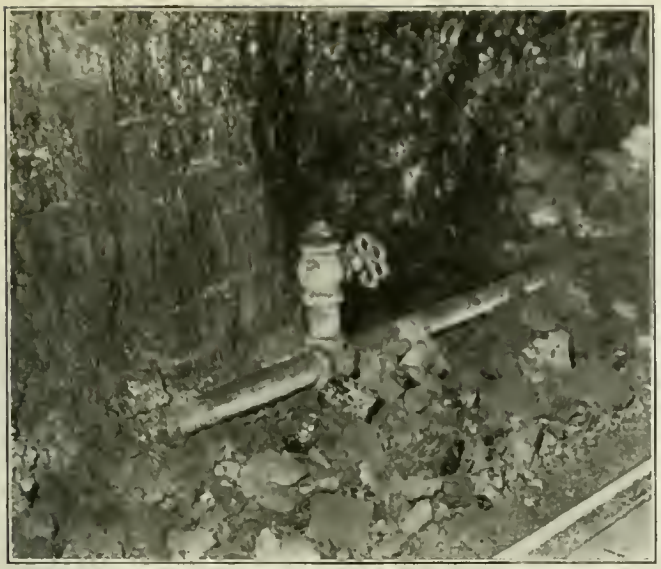


FIG. 5. TEE CONNECTION FOR SPRINKLER

Mine water is run in 2-in. pipes along every working roadway and at tee connections the sprinkler is able to get its supply of water without unnecessary travel. As the sprinkling has to be done as frequently as every other night it is important to lessen the time when the idle sprinkler is traveling to a point where it may receive its water supply.

The accompanying illustration of a tank car (Fig. 4) shows a type of rolling stock that is more or less local in its adaptation. The Illinois mines must be safeguarded against possible dust explosions arising from their extreme dryness, which is more marked than in operations in other fields. Consequently it is necessary to employ a car that will hold water and can be effectively used in sprinkling the floors of the entries.

The elimination of the possibility of a dust explosion is a problem that demands perseverance rather than a display of engineering genius. The Illinois operators endeavor to keep the floors of their mines damp at all times. Any dust that collects on the roof or the rib is washed down at regular intervals by a hose. Furthermore, the air in passing over the dampened roadways will, during the summer months, absorb the water from the floor and dampen to some extent the dust on the rib.

This type of tank car is of the simplest construction, being in the main nothing more than a steel cylinder or shell, 8 ft. long and 3 ft. in diameter, mounted on a heavy timber frame. Two strap-iron hoops hold the tank securely to the bed. The forward part of the cylinder is fitted with a short 2-in. pipe connecting with the interior.

Tee connections in this pipe permit of the tank being filled and emptied through this single opening. Two ordinary valves are attached to the stem leaving the tank. One controls the outlet to the sprinkling device and the other controls the inlet to the tank through the rubber hose. When it is desired to fill the tank this valve is opened and the other closed. With a reverse manipulation of the valves the pressure in the tank when full or nearly full forces the water through a 1½-in. perforated pipe bent in the form of a semicircle around the end of the truck frame.

A 2-in. water pipe traverses every roadway in No. 6 mine. At regular intervals along this line a tee connection is fitted so that the tank may be quickly refilled near the spot where it becomes empty. In the event of a mine fire these plugs or water stations could be used for a hose connection and any part of the mine reached with a comparatively short length of hose.

The water is delivered down the shaft to these feed lines in a 2½-in. pipe. This main pipe reaches from a tank 11 ft. in diameter and 12 ft. high placed near the power house. The shaft is 340 ft. deep, so that the water in the feed lines in the entries is actually under pressure from a head of about 360 ft. Mine water is used in spraying the roadway. This is collected at a sump underground and voided to the tank on the surface. In case of emergency it is possible to connect the water lines direct to the pump underground, when a greater pressure could be realized. For ordinary purposes, however, the head of 360 ft. suffices.

The main entries of the mine are sprinkled every other night, a mule furnishing the motive power for the movement of the car. The reason that a mule is used is that the natural gait of this animal is such as to allow the water to pass out of the perforated pipe at the correct rate of flow. There does not appear to be anything complex about this method of combating possible dust explosions. The system in a nutshell is to keep the mine wet. Yet, though this is simple, there is no question but that it is efficient if regularly practiced.

Before these tank cars were utilized in the No. 6 mine it was known as one of the most dangerous operations in the state, one where dust explosions had taken their toll of lives on more than one occasion. Today, however, it is ranked by state authorities just as high on the opposite side of the scale.

FIG. 6. TANK FOR HOLDING SPRINKLER WATER

As the shaft is 340 ft. deep and this tank is 20 ft. high the head on the sprinkler line is 360 ft, or 156 lb. The sprinkler accordingly fills quickly and discharges under good pressure.

Methods That Will Make Electrical Parts of Mine Locomotives Run Efficiently

A Discussion of the Possibilities of Failure in the Motors, Resistors, Storage-Batteries and Trolley Arms of Mine Locomotives and the Proper Steps To Be Taken to Circumvent Them and Cure Such Defects as Appear

By W. A. Clark*
East Pittsburgh, Pa.

TO OBTAIN the maximum service from the electrical parts of a mine locomotive and to prolong its life its care cannot be neglected. Some of the matters that should have careful attention will form the subject of this article. A thorough inspection should be given to the motors of a mine locomotive once every week and at the same time the cover of the commutator should be removed and the brush holders and windings cleaned. This is most easily done by blowing out the dirt with dry compressed air, or, if this is not available, the dirt may be blown out by means of a hand bellows. The brush-holders should be inspected to see that the brushes are long enough and work freely in the holder and that they are not chipped. Spring pressure should be checked and the shunt inspected. Any brushes not in proper shape should be put in proper condition or replaced.

Mine locomotives unless kept in prime condition do not give maximum tractive effort and run prematurely into old age. Given the necessary inspection, care and repair, they will have a long and useful life. This article shows the manager, superintendent, electrician and motor-barn boss what it is essential that they should know about the care of the electrical parts of the traction equipment.

Sandpaper Commutator if Black or Rough

The commutator should have a brown, highly polished surface. If it is black and rough it should be cleaned with sandpaper, which can readily be applied by means of a flat block of wood. Remove the brushes from the motor and apply the sandpaper, turning the armature slowly by running the locomotive at low speed under the action of the other motor, with the controller in the parallel position.

Care should be taken not to touch the brush-holders, as they are alive.

In case this does not clean the commutator satisfactorily, the armature should be removed and the commutator turned up. The commutator on a modern motor should not require frequent attention if the proper brushes are used and the bearings are kept in good condition. If an old motor develops commutator trouble, undercutting will sometimes overcome the difficulty.

Motor armature bearings are of several kinds. The oldest motors were fitted with babbitted sleeve bearings, grease being used for lubrication. Modern machines use bronze sleeve bearings with oil and waste lubrication, or ball bearings. Babbitted sleeve bearings with grease lubrication are not satisfactory. They require frequent attention and have a short life.

A number of operators have found it advisable to replace these bearings with bronze sleeves or to substitute ball bearings on the pinion end. When using babbitted bearings the air gap should be measured frequently, so that the bearings may be changed before there is danger of the armature rubbing on the pole pieces. On motors with sleeve bearings using oil and waste lubrication the waste should be inspected weekly to see that it is saturated with oil and is packed down in contact with the bearing. (See Fig. 3.) If the waste gets dirty or glazed, so that it does not carry the oil satisfactorily, the bearing should be repacked. However, it should not be necessary to repack it more frequently than once a year, but if the motor is overhauled for any reason it is well to repack the bearings before putting them back into service.

In packing the bearings long-fiber wool waste should be employed. This should be soaked in oil for twenty-four hours and the excess oil drained off for twelve hours before it is placed in the housing. The amount of lubricant required and the frequency of oiling should be determined according to conditions. It is the tendency of most motormen to oil too frequently, and use too much oil. This is wasteful. It also is detrimental to the motors, as the excess oil is likely to work to the interior of the motor case and get on the commutator or coils and cause grounds or short circuits.

Motors provided with ball bearings do not require attention every week. They are arranged for either oil or grease lubrication. Whatever lubricant is used it should be neutral, that is, without acid or alkali reaction, as both acid and alkali have a deleterious effect on the ball bearings.

All Parts of Controller Need Attention

The axle bearings usually are of the oil-and-waste type and should be inspected as described above for oil-and-waste armature bearings. (See Fig. 3.) However, in this case the excess oil cannot get into the motor to cause trouble. All oil and grease-box lids should be kept closed, and if broken off should be replaced, as otherwise dirt will work into the bearings, causing rapid wear.

All bolts, nuts and screws used in the makeup of the controller should be kept tight, as loose fingers or seg-

*General engineer, Westinghouse Electric & Manufacturing Co.

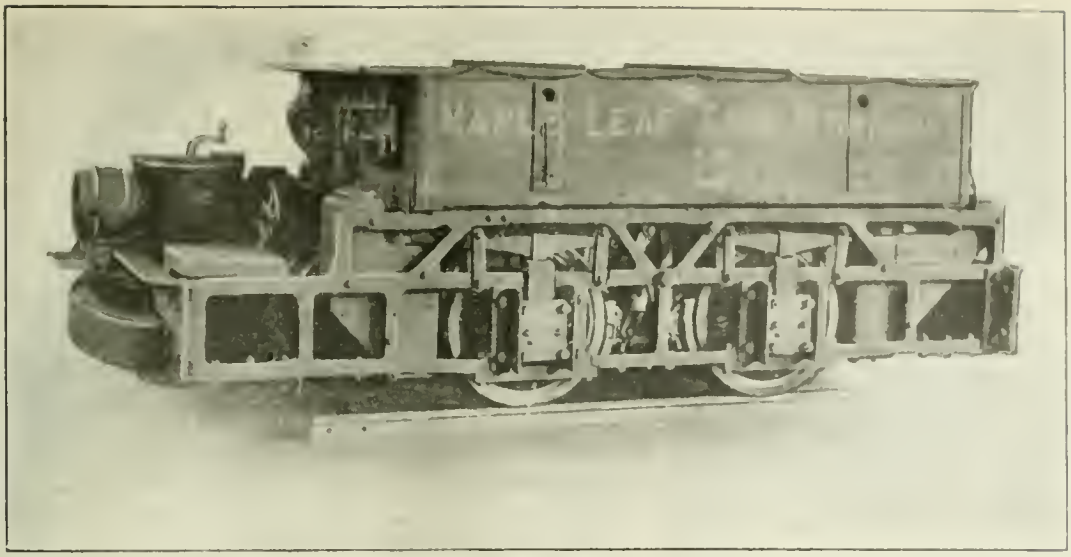


FIG. 1.
Storage-Battery Locomotive

Although the speed of the storage-battery machine is usually less than that of the trolley locomotive the same care must be exercised in its upkeep.

ments cause destructive arcing. Fingers, segments or arcing tips that become burned or badly blistered should be replaced, as operation of the controller with these parts in bad condition will cause rapid deterioration, while if the replacements are made as required the life of the controller will be extended indefinitely. Fingers and segments which do not require replacement should be dressed with a fine file or sandpaper, so as to make a full and smooth contact.

The pressure of the fingers on the segment should be adjusted. Arc-guard barrier plates should be replaced as soon as they become badly burned. If they have iron embedded in them they should be replaced before the iron becomes exposed. The inside of the controller should be kept clean of copper dust and other dirt. The drum shaft bearing, star wheel and pawls should be oiled once a day, using a drop of oil in each place.

In operating the controller the handle should never be stopped between notches. In accelerating, the handle of the controller should be moved deliberately and steadily, stopping on each notch just long enough for the locomotive to pick up speed. Dropping back a notch at a time has a tendency to burn the fingers and segments and should be avoided.

However, operating conditions at times may make it desirable to follow this procedure. Where a series and parallel controller is used, starting with the controller in the series position will greatly reduce the peak loads, and where energy is purchased on a power-demand basis, this method will have an appreciable effect on the power bill.

Resistors should be inspected weekly, to see whether there are any broken grids, loose grids or loose terminal contacts. Broken grids should be renewed at once, care being taken not to injure the insulation in making the replacement. All bolts should be kept tight. Dust should not be allowed to accumulate on the resistor or on the locomotive around it, as there is danger of dirt grounding or short-circuiting the conductors.

Blow Dust from Circuit Breaker Regularly

If there is a circuit breaker on the locomotive, its contacts should be kept smooth and clean. The breaker should be operated occasionally, so as to keep it in easy

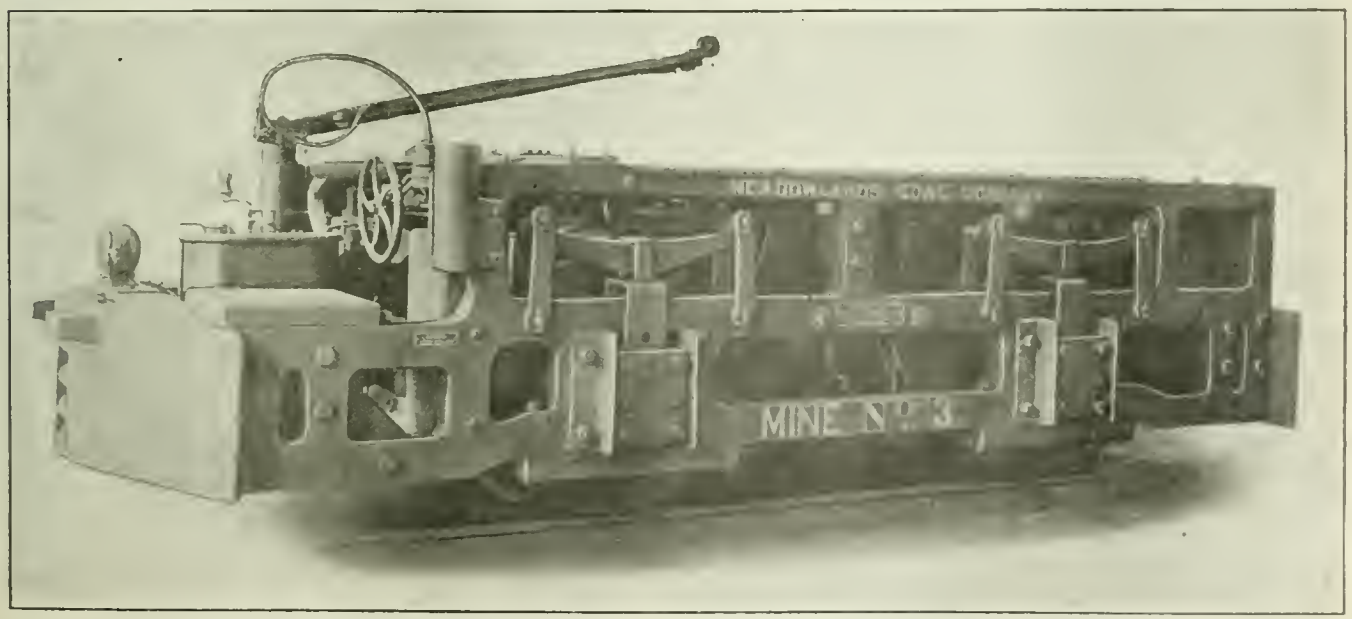


FIG. 2. AN OUTSIDE-FRAME FOUR-DRIVER MINE LOCOMOTIVE
Brake shoes and adjustment mechanism are readily accessible through the bars of the frame.

working condition. The device should be kept clean and free from dust. It should be blown out frequently, because if dust is allowed to accumulate, the device is apt to hang fire when it opens. This is likely to destroy the breaker and other parts.

A suitable fuse always should be employed to afford adequate protection to the electrical equipment. The vent in the fuse box should be kept open at all times, as otherwise there is danger of the box being destroyed when the fuse blows.

Oil Trolley Spindles; Tape Exposed Cable

Trolley poles should be inspected daily and a few drops of oil put on the trolley-wheel spindle. This will assist in preventing the wheel from jumping off the trolley wire. If when running on a straight, level track the wheel sparks badly, it should be replaced. The bushing in the wheel should be renewed before it is worn through and the terminal screws always should be kept tight.

The cable should be inspected for bare spots and these should be taped immediately, as otherwise there is danger of the operator receiving a shock in handling the trolley pole. If the cable is kept thoroughly insulated, there is no danger to the operator from this source. It will be found advisable to keep a complete pole assembled with head and wheel, as this will save considerable time in replacement in case a pole is broken.

Excessive Battery Discharge Undesirable

Instructions furnished with a storage-battery locomotive should be closely followed. The essential points to be remembered with a lead battery are that discharge should be stopped when the ampere-hour meter indicates that normal capacity has been taken from the accumulator. The battery should be changed promptly after it has been discharged. In charging it is necessary to pass through the battery as many ampere hours of current as have been drawn out, plus an excess to make up for unavoidable losses.

The ampere-hour meter is normally set to operate slow on charge in order to take care of these losses. If the charging current is maintained at the proper rate, practically all the current is useful for charging the plates. When the current is greater than this gassing will occur. Gassing is due to the formation of hydrogen and oxygen bubbles on the plates by the decomposition of water. This absorbs an amount of current proportional to the amount of gas generated, and in no case is this current useful for charging the plates.

Charging rates that produce violent gassing are wasteful of power and tend to dislodge the active material from the plates and produce an excessive rise in temperature, materially shortening the life of the accumulator. When the battery is nearly charged it is not necessary to reduce the current below the finishing rate. While this will produce some gas, it will be at a rate that will be harmless.

It has been found that if a constant potential of approximately 2.3 volts per cell at normal temperature (70 deg. Fahr.) is maintained constantly at the terminals of the battery, the charging rate will taper off and will be automatically kept below the value of the ampere hours out of the battery. If this method of charging is employed the voltage per cell should not fluctuate beyond the limits of 2.40 and 2.15 volts per cell.

FIG. 3. OIL AND WASTE LUBRICATION APPLIED TO AN ARMATURE BEARING

Such a bearing should be repacked whenever the waste becomes dirty or glazed so that it does not carry the oil well.

If the average potential is above 2.3 volts per cell, or the maximum over 2.4 volts per cell, overheating of the battery will result. If the potential falls below 2.15 volts, no charging current will be taken by the battery. If the average potential is between 2.30 and 2.15 volts per cell, the battery will charge at a reduced rate.

The battery should be given an equalizing charge at frequent intervals to keep it in good shape, and so that the ampere-hour meter will indicate properly the state of charge existing. Pure water should be added to the electrolyte as required to maintain this liquid at the proper height. Electrolyte as such should never be added.

As in the case of the lead battery, only pure water should be added to an Edison or alkaline accumulator to maintain the electrolyte level. In re-energizing an Edison battery, the charging current always should be at or above the normal charging rate. If charged below

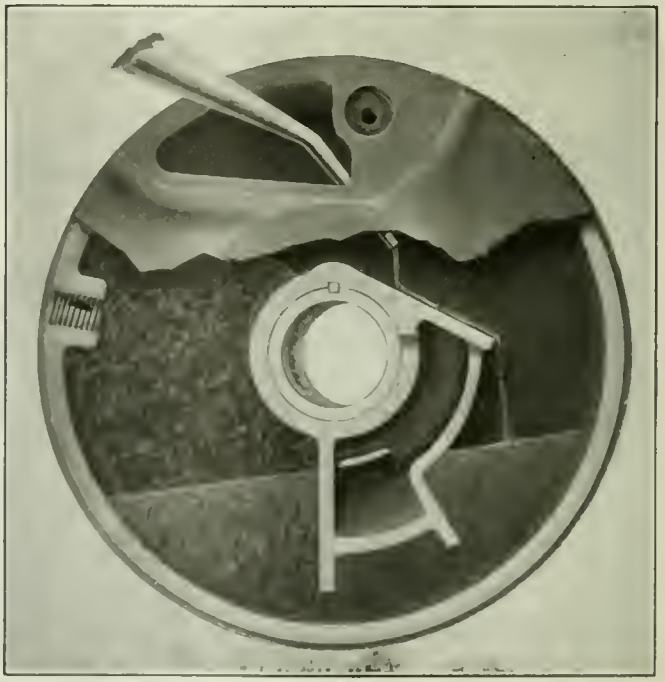


FIG. 1. WASTE-PACKED MOTOR COVER BOX

The oil level always may be readily seen by lifting the cover of the packing compartment.

the normal rate, while the ampere-hour meter may indicate complete charge, the battery will actually not be in this state, and the locomotive will operate sluggishly. The speed and mileage on the following discharge thus will be reduced.

The battery may be charged at rates considerably above the normal rate, provided the temperature of the solution in the cells does not exceed 115 deg. Fahr. The gassing, which results from a heavy current, does not have the harmful effect that it does on a lead battery. After the day's run it is advisable to remove the cover of the battery compartment and allow the battery to cool before starting to charge it; otherwise there is danger on charge of overheating the battery and, in consequence, shortening its life.

Repair Breaks in Cable Covering Smoothly

The conductor-cable reel, if this is part of the locomotive equipment, should be inspected daily. All worn places in the cable insulation should be promptly taped. When the cable breaks or is cut so that it is necessary to repair it, care should be taken to make a good and compact splice such as will not increase the size of the cable at that point, thus avoiding any tendency of the cable to drag on the guide insulator. If the reel is mechanically operated, the clutch and other parts of the mechanism should be carefully inspected to see that they are not likely to fail.

On a motor-operated reel the motor should be given the same attention as the main driving motors. The brushes should be inspected and the parts cleaned every week. The bearings should be oiled about twice a week, using only a small amount of lubricant.

If a traction or crab reel is employed, the various parts of this device should be given the same sort of inspection and care as is bestowed upon the corresponding parts of the locomotive and motor equipment.

The principal electrical troubles experienced on mine locomotives are open circuits, short circuits and grounds. If the circuit is open in the wiring, in the resistors, or in the motor field circuit, the locomotive will not start.

If the open circuit is in the resistor, the locomotive will start with a jerk as soon as the controller is thrown past the point affected. If the open circuit is in a motor field, the machine will not start in the series position of the controller, but will start in the parallel position. In this case the open circuit can be located in the motor affected by removing the brushes from first one and then the other, and operating the locomotive with the controller in the parallel position.

If the open circuit is in an armature coil, the locomotive will run, but there will be bad sparking on the commutator and it will tend to have a jerking, or non-uniform, rotation. An inspection of the commutator will readily show an open circuited armature coil, as the commutator segments between which the open circuit occurs will be blackened and slightly burned. If the open circuit is not corrected promptly, it may cause a flat spot on the commutator, which will necessitate its being turned up. Temporary relief can be obtained by putting a jumper across the open-circuited bars of the commutator. This, however, is only a makeshift expedient and should be replaced by proper repairs at the first opportunity.

A short-circuited armature coil will not be very noticeable, but it will cause local heating, that is, heating of the coil itself. This coil will burn out in time, and may even get hot enough to burn out the adjacent coils. If the condition of the coil is detected before it has burned out, temporary repairs may be made by open circuiting the coil and putting a jumper across the proper commutator bars.

Repairs can be made only by rewinding the armature. It may be possible to put one new coil in the armature, or possibly two or three, but if the coil which is short-circulated is not detected for some time it is probable that most of the armature coils will have been heated to such an extent that it will be necessary to rewind the armature completely.

A short circuit in a field coil will cause a higher speed of rotation, and if any turns are short circuited it is likely to cause flashing. In any case, because of the tendency toward higher speed, the motor so affected will take more than its share of the load when the motors are operated in parallel. The armature is, therefore, likely to burn out.

The field coil in which there is a short circuit probably will run slightly cooler than the other coils because of its lower resistance. It may sometimes be located by its lower temperature. A short circuit in a commutating field coil will have no effect except to cause sparking, while an open circuit in a commutating field coil will prevent the motor from operating. Trouble with the commutating coils, however, is likely to develop.

On a trolley locomotive operating with ground return, a ground on the resistor will cause the fuse to blow or the circuit breaker to open. A ground on a motor also will have similar results as soon as the resistance steps are cut out. If a ground occurs on the motor on the ground side when the motors are in series, the fuse may not blow as long as the motors are thus operated, but will blow as soon as they are placed in the parallel position.

If the locomotive is operated on an undergrounded circuit, or, in the case of a storage-battery machine, where neither side of the battery is grounded, a single ground anywhere on the electrical equipment will not cause trouble, but a second ground will cause a short circuit between the two grounds. If this short circuit is inside the battery, it will cause the section of the battery between the grounds to discharge, and therefore shorten the life of the accumulator. If, after the locomotive is rewired, it is found that it starts properly but accelerates suddenly on a certain notch of the controller, the connection between the controller and the resistor should be gone over carefully to discover which leads are crossed. If both motors will operate in one direction of rotation, and only one in the opposite direction, a field and armature lead have been interchanged on that motor, which fails to operate in both directions.

Where Some Coal Cars Were Last Month

ON SUNDAY, July 11, there were observed on the Baltimore & Ohio near Baltimore three coal cars containing Ford automobiles destined for Manchester, England, that had been carded at Detroit on May 25 and June 3 and 4. Also one car containing Buicks destined for Stockholm, Sweden, that had left the factory at Flint, Mich., on May 25. Two cars of pipe adorned the siding, having been shipped from Mansfield, Ohio, on May 21, and one car of skelp from Chicago, also for export, billed on May 10. These cars overstayed their welcome on the siding near Baltimore and were later pushed back, probably by congestion in Baltimore yards, to a siding near Washington, D. C.

Method of Dumping Rock Lightens Labor And Meets Labor Shortage

A Simple Device That Can Be Built at Any Mine Shop When Used in Conjunction with a Small Hoisting Engine Releases Eight Men to Other Employment

By Dever C. Ashmead
Wilkes-Barre, Pa.

DURING the last few years, or since the beginning of the World War, there has been no increase in labor from immigration. On the other hand there probably has been a slight decrease. This condition has caused a shortage in labor and has tended to decrease output in all lines. This decrease in the labor supply has made those interested in the production of raw and manufactured materials study various methods whereby output per man can be increased, with, if possible, a decrease in cost.

Probably in no locality has this decrease in the available amount of labor been felt as intensely as in the anthracite coal region. The sons of the present miners are leaving the industry and replacement must come from immigration, which at this time is not merely a negligible but is actually a minus quantity. This causes a serious shortage in man-power at the mines, which must be offset or counteracted by labor-saving machines or devices that will decrease the number of men required to do any certain piece of work.

As a result of a study of ways and means for decreasing labor expense the Philadelphia & Reading Coal & Iron Co. of Pottsville, Pa., has perfected an improved method of handling mine rock on the dump. This has been thoroughly tried out at the Silver Creek Colliery of this company. It is, however, adaptable to the rock dump at practically any mine, whether that dump is on level ground or on a mountain side.

As the dump at the Silver Creek Colliery is on a side hill the procedure there followed will be first described and later on it will be shown how the same general scheme can be adapted to any condition. Two separate sets of tracks are employed. The first of these is for the mine cars while the other set is for the dump carriage. For accommodating the mine cars there is a loaded and an empty track. These naturally have the same gage as the mine tracks, which in this case is 4 ft. The mine locomotive places the rock cars on the loaded track, which has a grade of about 2 per cent in favor of the loads.

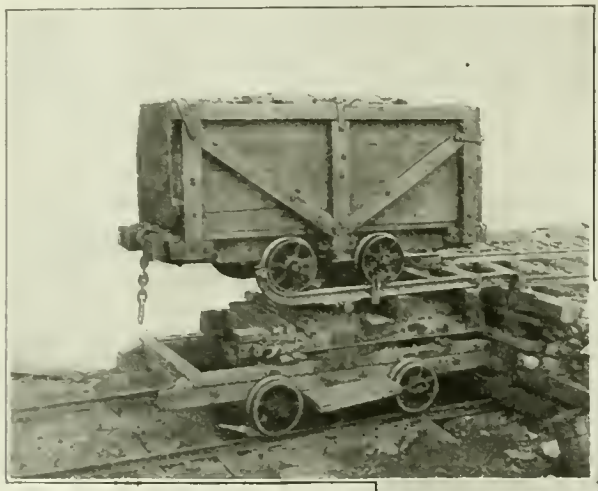


FIG. 1

Loading Car on Truck

Careful inspection will show the iron guide against the side of which the rail on the truck rubs. There is one on each side and between them they keep the truck rail in perfect alignment with the main track. Note the clevis on the rear wheel holding the car down to the rail of the revolving dump.

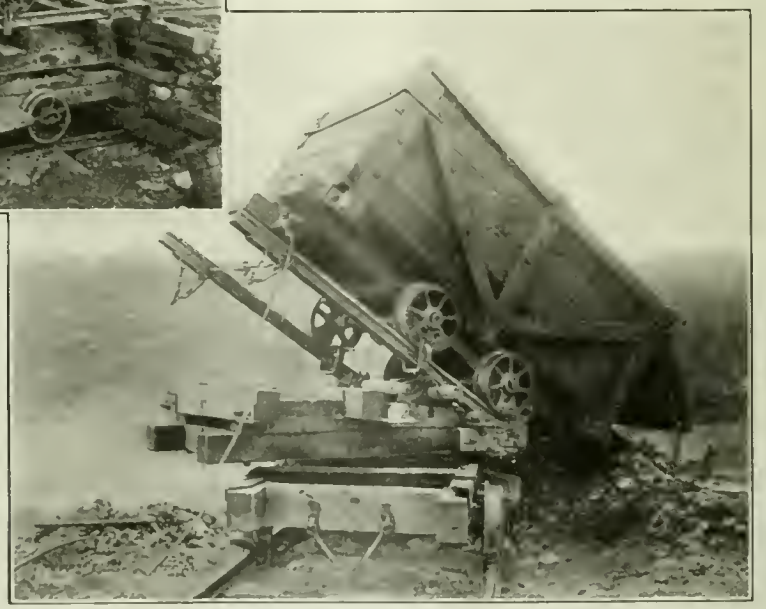


FIG. 2

Dumping Obliquely

Note clevises on the rear wheels of both car and truck. Thus shackled only the loose slate can pitch headlong over the dump edge. As the slate is dumped well away from the track with appreciable force and in any direction desired, a wide and permanent fill is made that does not need much trimming.

From this point the cars are dropped by gravity to either of the loading docks, or "bumping blocks," as they are locally called. The car is then run, gravity assisting, onto the dumping carriage. The empty tracks have a grade from the docks to a point beyond the switch which unites them of 2 per cent against the empties. The grade then changes until it is in their favor and permits them to gravitate toward the mine.

A 5-ft. gage is used for the dump carriage, the tracks for which are placed a sufficient distance below those for the mine cars so that the rails on the top of the carriage form a continuation of the loaded tracks. Rock cars may, therefore, be run onto or off of the carriage with ease.

Truck Surmounted by a Revolving Dump

Owing to its simplicity the dump carriage can be built at almost any mine shop. It is constructed almost entirely of wood and is reinforced with iron at the necessary wearing points. The bottom portion, or bed, is a rectangular crossbraced frame composed of 6 x 9 in. timbers. On top of this bedframe is placed a turntable 4 ft. 2 in. in diameter. This is made of steel 1 in. thick and 3 in. wide. Resting upon this turntable is the upper or movable part of the dump carriage. This is constructed of timber of the same size as the lower portion, or bed. Where this upper frame comes in contact with the turntable it is faced with steel plates.

Mounted upon the timbers and directly over the center of the turntable is a round steel axle. This is turned down at its ends, where it fits into pillow blocks. To this axle is fastened the rails that support the mine car and act as the dump proper. The forward end of each rail is bent in the form of a horn similar to those commonly used on the old-fashioned mine dump. The arrangement is such that when the mine car is in place on the carriage it will be slightly off center so that when release is made the car will tilt by gravity. In order to prevent the dump from operating prematurely two catches are provided to hold the mechanism horizontal until they are released for dumping.

For the operation of the dump a small hoist of some sort is necessary. At this mine a small Flory steam hoisting engine is used. The steam cylinders are each 6 x 8 in. and the drum has a capacity for 350 ft. of ⅝-in. rope.

Rope Attached to Mine Car, Not to Carriage

Before the loaded car is run on the dump carriage the end of the hoisting rope is attached to it. It is then allowed to run down the grade and onto the dumping carriage, to which it is fastened by means of two clevises which encircle the rails on the latter and the pins of which pass through the two rear wheels of the car. The carriage is then dropped down the grade by gravity to the dumping point.

A similar pair of clevises is here applied to the rear wheels of the carriage, fastening them to the main track. The first set of clevises prevent the car of rock from jumping off the carriage while dumping or from being pulled off the carriage by the rope while going away from, or returning to, the loading dock. The second set is to prevent the carriage from being thrown off the track or over the dump because of the sudden jar when the car tilts and discharges.

If it is desired to dump the car over the front end of the carriage all that is necessary is to release the catches which hold the car in place. The car, being beyond the center of gravity of the dump, then automatically tilts itself. If, however, it is desired to discharge the car to one side of the dumping carriage it is necessary when the desired point is reached to release the rope from the mine car and fasten it to either of two hooks at the forward corners of the swiveling frame. Which hook is used depends on which side of the carriage the car is to be dumped. After attaching the rope the hoisting engine is started and the upper part of the carriage with the car is turned to the desired position. The rope is then unhooked and reattached to the rock car, the catches released and the car dumped as in the first case.

After the car has been discharged it is not necessary

FIG. 3.

Layout of Tracks Above Dump Docks

On the left an empty car has just been pulled back from the dump and is approaching the dock, but without as yet being righted. At the other dock is a car loaded with slate which has been run forward onto the truck but has not yet been attached to the hoisting rope. These big cars hold three tons of coal and a much greater weight of rock. House protects dump hoist.

to right it. The clevises holding the carriage to the track are released and the hoisting engine is started. As the rope is attached to the mine car and it, we will assume, is standing at an angle to carriage the swiveling frame will first be revolved to its proper position. As soon as this is accomplished the rope draws the dumping carriage back to the loading dock. While the carriage is thus returning the clevises that fasten the car to it are loosened.

When the dumping carriage cannot go any further the rope tends to pull the mine car off the carriage and the car rights itself, simultaneously bringing the track on the swiveling frame in line with that on the loading dock. This alignment is assured by two guides that force the rails to come exactly into place. After the mine car has resumed its normal position on the carriage it is pulled off and up the empty track past a knuckle. Here the rope is removed, to be attached to the next load of rock.

The actual time consumed in discharging a load of rock from the time the loaded car is placed on the dumping carriage until it is taken off again is much less than is necessary to read the description of the process here given. Without allowing the men operating the rock dump to know that they were being timed it was found that it took exactly one minute and ten seconds to complete the operation.

Four men are required to operate the dump at this mine—one manipulates the hoisting engine, another uncouples the cars and attaches the hoisting rope, again coupling up when the dumping is finished, while two men are required on the dump carriage itself. When dumping is slack these men take care of the track, keep it clean and lay new track as it is required.

The installation of this system released eight men to other employment, since the dump as formerly operated required twelve men for its manipulation. Where the amount of rock to be handled is not as large as at this mine it might be possible to reduce the operating force to as few as two men.

This system of dumping is extremely elastic, as it permits the rock to be discharged at any angle to the track, for the carriage may be rotated 270 deg. The high angle at which the car can be tilted (45 deg.) insures that practically everything slides out and no shoveling is required. At this mine eighty 3-ton cars of rock are normally handled in a day. As high at 115 cars have been discharged in the same period without inconvenience.

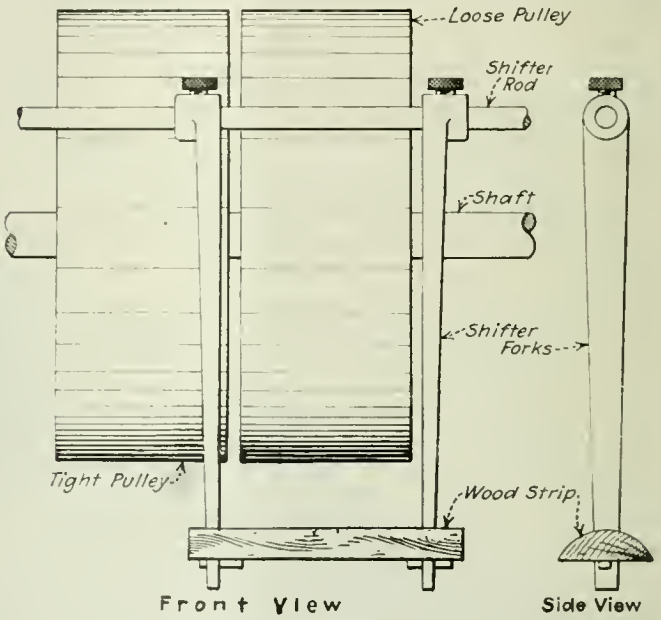
Variations of this system readily can be worked out. Thus if sufficient height is not available for a gravity dump pile the system can be reversed. Instead of letting the cars gravitate to the dumping point and hauling them back when empty a trestle could be built with the grade against the loaded carriage. It could be hauled up this grade by the hoisting engine and dropped back to the bottom by gravity after discharge. The only difference in the mechanical equipment required would be a sheave wheel located beyond the dumping point for the hoisting rope to pass around, for it would have to be fastened to the opposite, or forward, end of the mine car.

This type of dumping carriage has been used for many years, especially in the central Pennsylvania field. Its use with a hoisting rope materially adds to the speed of dumping and lightens labor. Where the heavy carriage and well-laden cars have to be pushed by man power on the uneven surface of an unequally and ever-settling rock dump the work is quite severe for the men who have to propel it unless the grade is in general so steep that the carriage with its load is at times disposed to run away. No small amount of inconvenience is suffered should such a runaway occur. Both carriage and car are apt to be seriously damaged; both have to be laboriously hauled around to the mine mouth and for a while another carriage has to be used or dumping plans of the simpler sort have to be followed till the work described is done. The rope is a safeguard against any such inauspicious happening.

Keeping the Belt in the Shifter Forks*

By L. G. Singer
St. Louis, Mo.

FREQUENTLY when a belt is shifted suddenly it jumps out of its proper position between tne shifter forks. This also may happen when the belt is loose or the shifter forks are too short. Such occurrences can be prevented by fixing (after the belt is in position) a wood



THE BELT-RETAINING CROSS BAR IN PLACE

strip across the lower ends of the forks, as shown in the accompanying illustration. The strip can be held in place with spring cotters, set in drilled holes as suggested, or by means of pieces of wire suitably bent.

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Doughnut Picking Table at Stockett, Mont.

ON PAGE 806 of the April 22 issue, mention is made of a doughnut picking table at Nanty Glo, Pa. I would like to call your attention to the fact that the C. O. Bartlett & Snow Co. built a similar picking table for the Cottonwood Coal Co. at Stockett, Mont., which was installed in 1913, and has been in continuous operation since that date.

The general scheme was conceived by F. C. Greene, a mining engineer, who lived in Cleveland, the Bartlett & Snow Company working out the details and building the equipment. Mr. Gertz, who calls attention to these facts, is of the impression that the idea was not an original idea of Mr. Greene, but something similar to a design he had seen in his travels abroad.

At What Height Above the Grate Should A Return Tubular Boiler Be Set?*

In Order to Secure the Best Results with Bituminous Coal the Boiler Shell Should Be Set as Near the Fire as Possible and Yet Provide Ample Room for the Gases—When Boiler Is Near the Grate It Prevents High-Temperature Distillation with Its Evolution of Heavy Hydrocarbons

By Henry Misostow†
Chicago, Ill.

A BOILER does well or ill as the combined result of the many factors which enter into its operation. Successful performance cannot be wholly claimed for, or attributed to, the height of the boiler setting. In fact, if any one factor should be given credit, it should be the men who operate the boiler—the engineer and fireman.

However, the height of the setting is quite important and worthy of careful consideration. To determine the best distance from the shell of the boiler to the grate try to visualize the factors and conditions in practice which determine this distance. As far as possible, the designer of the setting should provide such a distance from the shell of the boiler to the grate as will make it possible to utilize the greatest possible percentage of the heat that the fuel has furnished, provided, however, that such a setting does not prevent the furnace from burning the fuel in such a manner as to secure to the gases the maximum amount possible of its potential heat. To satisfy these conditions we must set the boiler as close to the source of heat, which is the fire, as possible, while still arranging to have a furnace which, in the presence of the boiler at the predetermined distance, will allow as perfect combustion as is possible under normal operation.

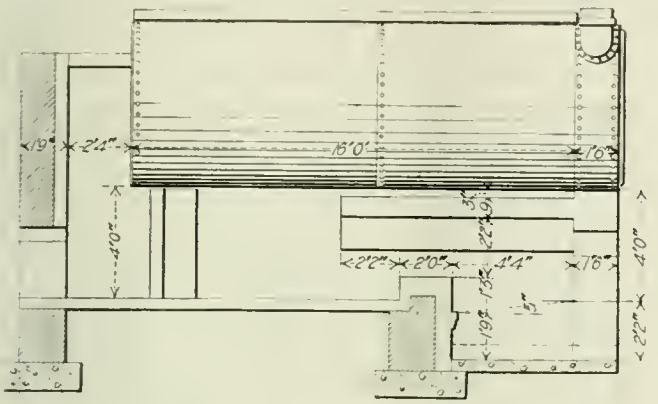

FIG. 1. RETURN-TUBULAR BOILER SETTING WITH LONG DUTCH-OVEN ARCH OVER FURNACE

The dutch-oven arch extended 26 in. beyond the bridge wall. A hot fire was what this setting contemplated. To this end it isolates as far as possible the cold shell of the boiler. The coal was subjected at once to an intense heat that drove off heavy hydrocarbon vapors which were imperfectly burned, making dense smoke for one to two minutes after each firing.

Taking for granted that the importance of draft and its utilization is fully appreciated, consider the combustion of bituminous coal. The characteristics of this coal in the process of combustion are unlike those of any other form of fuel, and yet it presents the combined characteristics of all other principal fuels, such as anthracite, coke, oil and gas.

Part of it burns on the grates, part is liberated as heavy hydrocarbons in the form of oil vapor to be broken up into gas above the fuel bed, part distills as light hydrocarbons and part appears as carbon monoxide. The monoxide and the light hydrocarbons are true gases and readily consumed. The preparatory process before actual combustion takes place, often termed distillation of the volatile, has an important bearing on the results to be obtained.

Importance of Progressive Combustion

The more violent the process of distillation the harder it is to obtain complete combustion. With bituminous coal there is less fixed carbon than with anthracite and there are more and heavier hydrocarbons to carry their free carbon above the fuel bed. The less violent the process, the smaller the quantity of hydrocarbons of heavy composition that will escape from the fuel. Such gases as will be evolved will be such as contain little or no free carbon. These lighter gases are easy to break up and burn. The rate of distillation, or rather, violence of distillation, is directly proportional to the temperature at which distillation occurs.

This characteristic of bituminous coal being well appreciated by most of the stoker manufacturers, each claims that his stoker is the best means to obtain

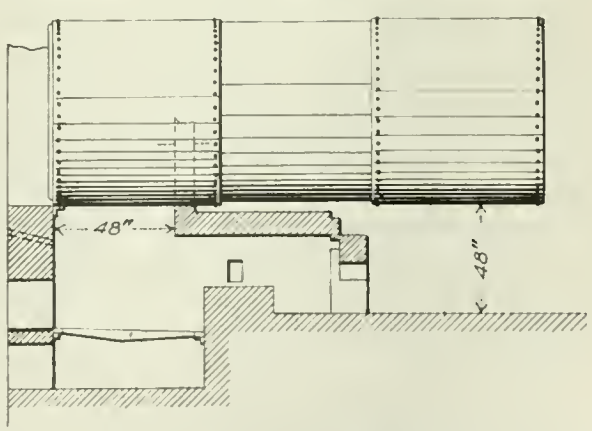

FIG. 2. DUTCH-OVEN ARCH CUT AWAY ABOVE THE FIRE AND DEFLECTION ARCH ADDED

Not content with the straight dutch-oven effect, a deflection arch was made to turn the fire downward still further from the cooling surface. It seemed, however, to improve results, probably because the tarry vapors were not consumed under the combustion arch and needed time and opportunity to burn without contact with, or proximity to, the relatively cool boiler.

*Abstracted from an article that appeared in *Power* June 29, 1920.

†Engineer, Smoke Department, City of Chicago.

progressive combustion—that is, coal is being slowly moved into the zone of high temperature, making possible slow distillation at low temperature and a high-temperature zone for burning the remaining coke or fixed carbon. So-called perfect mechanical firemen (stokers) that flip the coal into the furnace have failed in competition with stokers that make progressive combustion possible because in the design of the former the importance of slow distillation at relatively low temperature was not considered.

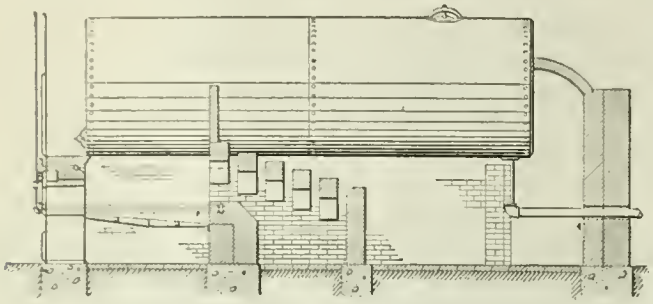

FIG. 3. ONE OF THE FANCY FURNACE DESIGNS WHICH SHOWED A SLIGHT IMPROVEMENT

With the boiler uncovered immediately over the grate the coal first receives a toasting rather than a burning heat. The gases are then directed in five streams upward toward the boiler. Just when the gases should be burned they are cooled and the resistance to their passage is surely excessive.

Seeing the foregoing conclusions are correct, close proximity of the boiler is desirable, not only to obtain better absorption but also to obtain better combustion by such a reduction in the furnace temperature as will reduce the violence of distillation and thereby minimize the difficulty of handling the volatile part of the coal. The time required for distillation in practice varies from three to ten minutes, depending upon the quantity charged and the furnace temperature, but on an average in hand-fired furnaces six minutes is ample.

During combustion the air admitted is heated to the furnace temperature, and naturally its volume increases. Any restriction of this expansion would delay combustion and interfere with the mixing of air and combustible gases. For this reason ample room must be provided for the gases rising from the fuel bed.

Burning Gases Seldom Impinge on Boiler

When the firedoors are closed, the gases on leaving the fuel bed tend to rise vertically until they are affected by the force of the draft; then they bend slowly toward the exit, and, when in line with or above the bridge wall, are entirely under the control of the draft and take a straight line to the rear of the boiler. Flames seldom impinge against the boiler at right angles, but travel parallel to it. This fact clearly indicates the direction that the gases travel. In fact, they do not ascend so as to hug the curved surface of the boiler, indicating that here and a little above the bridge wall the force of the draft gets full control of the gas travel.

The chilling effect of the shell, then, cannot have any material effect on combustion, as the flames travel parallel to the shell, scarcely touching it, for there is a gas stratum, or film, that covers the boiler shell and moves at comparatively low velocity, being impeded by the roughness of the metal. Therefore the space required for combustion will be that necessary to accommodate at the furnace temperature the gases rising from the fuel bed. Combustion will be carried outward and completed in the combustion chamber without ill effect from the boiler shell. As to this matter anyone can become convinced if he observes the facts in every-day practice.

Volume of Gases Augmented by Travel

The amount of gas per pound of coal in the furnace seldom exceeds 20 lb. This is augmented by infiltration until at the stack in some cases it runs as high as 35 lb. But in considering the furnace space above the grate an allowance of 20 lb. of gas per pound of coal should be ample. With the boiler set above the fire and free to absorb heat the temperature in a hand-fired furnace seldom exceeds 1,800 deg. F.; for practical purposes, there is, say, 52 cu.ft. of gas to a pound of coal.

The maximum rate of combustion for a hand-fired furnace can be taken as 25 lb. of coal per square foot of grate per hour. Gases rising from each successive longitudinal foot of the grate, traveling toward a common point and in a straight line, are bound to amalgamate, forming one mass at or beyond the last unit area at the front face of the bridge wall.

The gases rising from the front end as they pass over the second square foot will be doubled, and the gases over the last foot of grate will be as many times greater as the distance traveled by the gases rising from the first square foot of grate, granting that all grate surface is uniformly active.

Estimation of Space Needed for Gases

The maximum rate of combustion being 25 lb. of coal per square foot of grate per hour, and 20 lb. of gas per pound of coal at 1,800 deg. F., or 52 cu.ft. of gas per pound of coal, the required height to accommodate the gases will depend on the velocity. The velocity of the gases in the furnace is at first indefinite, then

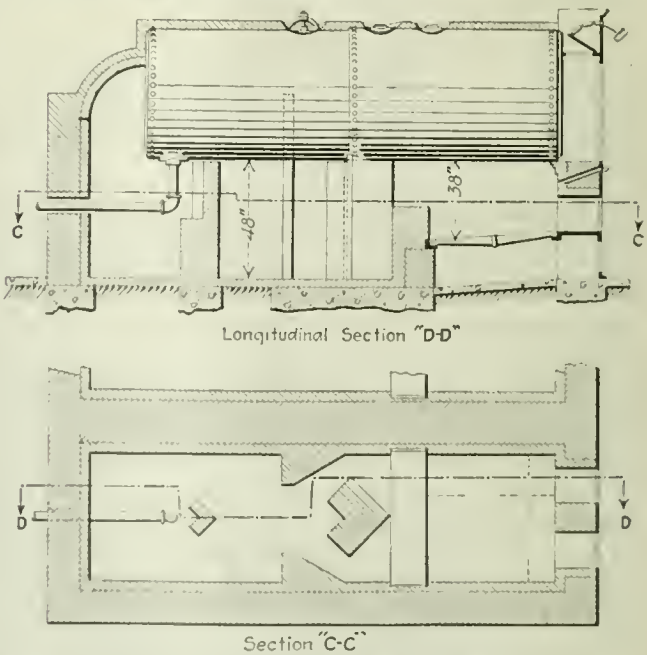

FIG. 4. FINAL DESIGN OF SETTING KNOWN IN CHICAGO AS A NO. 8 FURNACE

Here the coal is coked at a low temperature, generating gases rather than soot and tarry vapors. Nothing compels them to play on the cool boiler, so as soon as formed they burn in streams running parallel to the base of the boiler without touching it at any point. Smoky material is evolved in small quantity and whatever is made is readily consumed.

gradually accelerates as they move toward the bridge wall, and can be taken conservatively as 20 ft. per second. At the front, where the velocity is less, the gas body is smaller, so natural conditions almost compensate each other.

Allowance Necessary for Passage of Gases

The area required to allow the gases from a strip of grate 1 ft. wide and 6 ft. long to pass at a velocity of 20 ft. per second is $\frac{25 \times 20 \times 52 \times 6}{60 \times 60 \times 20} = \frac{13}{6} = 2.17$ sq.ft. As the unit width is 1 ft., the height required will be 2.17 ft., or 26 in. Taking the space requirement for the fuel bed plus the pitch of the boiler as 12 in., the required distance that the boiler must be set from the grate to provide a space for the change of direction of the gases from the vertical to the horizontal will be 26 + 12 = 38 in.

From this it can be seen that the 38-in. setting will take care of the combustion requirements, *provided the rate of combustion does not exceed 25 lb. per square foot of grate per hour.* Where the ratio of the grate area to the heating surface of the boiler is such as not to require this rate of combustion, the distance may be reduced accordingly.

Specific Case of Increased Economy

In ordinary practice boilers should be set at a height above the dead plate not less than 0.25 of the grate length plus the height of the bridge wall. In this case, 25 per cent of the grate length is 6 × 0.25 = 1.5 ft., or 18 in. The bridge wall being 18 in. high, then 18 + 18 = 36. Wherever the space is available, to this is added 2 in. to take care of the required boiler slope, making 38 in. from the dead plate to the shell of the boiler. Any variation from this may be an expensive luxury or an expensive economy.

As to the betterment in performance by reducing a 48-in. or higher setting to 38 in., it is difficult to draw a comparison, as most of the changes from higher to lower settings have been made simultaneously with other changes, such as redesign of the brickwork, and while the results obtained in each case were worth while, it would be difficult to ascertain the gain contributed by reduced height. However, I know of one case that may be of interest in more ways than one and that may help incidentally to clarify some of the hazy ideas that have been and are now being followed by some of the so-called combustion experts who persistently harp about the importance of high temperature, the chilling effect of the boiler and the disastrous results following the contact of the flame and the boiler shell.

Doubled Evaporative Capacity of Boiler

The accompanying illustrations are setting designs for the same boiler and can be considered as an index to the evolution of hand-fired furnaces for return-tubular boilers, each representing the prevailing idea at the time the change was made. Fig. 1 shows a full dutch-oven arch 9 in. thick extending 26 in. beyond the bridge wall. The arch is 8 ft. 6 in. long, and there is a 3-in. space between it and the shell of the boiler. The boiler shell is set 4 ft. above the grate at the front and 53 in. at the bridge wall.

In May, 1908, the furnace replaced a Hartford setting to prevent smoke and to improve economy. The results were not as anticipated. A boiler test showed an evaporation of only 3.84 lb. of water per pound of coal, high initial and final furnace temperatures and dense smoke after each firing for from one to two minutes. The capacity was but little over one-half of the rating. About six months later the furnace was modified as shown in Fig. 2, the significant features of modification being the addition of a doflection arch at the end of the dutch-oven arch and the exposure of the boiler shell above the fire by removing 4 ft. from the front of the dutch-oven arch.

The changes made improved the smoke condition, but not to a degree considered satisfactory. The initial and final furnace temperatures were reduced moderately. The capacity approached rating, and an evaporation test showed 4.25 lb. of water per pound of coal of the same quality as before.

Not Satisfied with Fancy Furnace

In 1914 this furnace was replaced by the fancy furnace shown in Fig. 3. A test showed an evaporation of 5.05 lb. of water per pound of coal, and the smoke condition was improved somewhat. Not being satisfied, the engineer kept on changing, and another commercial furnace was installed which showed on test an evaporation of 5.17 lb. of water per pound of coal.

During the same year, on my advice, the setting was changed from practically 53 in. from the grate to the shell at the bridge wall to 38 in. and the brickwork was redesigned, as shown in Fig. 4. A test with the same quality of coal used with the other furnaces showed an evaporation of 7.78 lb. of water per pound of coal. In a seven-day test the evaporation was 7.07 lb. of water per pound of coal. The chimney never will show dense smoke if the boiler has been properly fired.

In this case it is difficult to say how much credit for the improvement in evaporation is due to decreasing the distance from the shell of the boiler to the grate or how much is due to the brickwork rearrangement, but there is no question that it made a tangible contribution to the final results.

Working Facts About American Wire Gage*

By R. P. Beck
St. Louis, Mo.

THE abbreviation "A. W. G." means American, or Brown & Sharpe, Wire Gage. The term "American" has come into general usage because this gage is used almost universally in this country for measuring bare and insulated copper wire less than 1 in. in diameter. Facts that are convenient and easy to remember about the American, or the Brown & Sharpe, wire gage are:

Add 3 to any gage number to obtain the number of a wire having half its area; thus, 7 + 3 = 10; and a No. 10 wire has one-half the area of a No. 7. Subtract 3 from any gage number to obtain the number of a wire having twice its area; thus, 6 — 3 = 3; and a No. 3 wire has twice the area of a No. 6.

The ratio of the area of a wire to that of the next larger size is 1 to 1.26; to the next smaller size it is 1.26 to 1. The diameter of a No. 10 wire is practically $\frac{1}{10}$ in. and the resistance per 1,000 ft., provided the wire be of copper, is one ohm.

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Discussion by Readers

Edited by
James T. Beard

Height of Flame Cap Varies with Conditions of Testing

SPECIAL interest attaches to the question of the correct determination of the percentage of gas in air, by observing the height of flame cap produced in a safety lamp exposed to an atmosphere charged with gas. As mentioned in a letter on this subject that appeared recently in *Coal Age* [May 27, p. 1107], there is considerable difference in the height of flame cap, as given in different textbooks, for a given percentage of gas.

Attention has frequently been drawn to the fact that the height of the cap, for any given percentage of gas, will vary with the following conditions: 1. The kind of lamp used in testing. 2. The illuminant burned in the lamp. 3. The conditions under which the test is

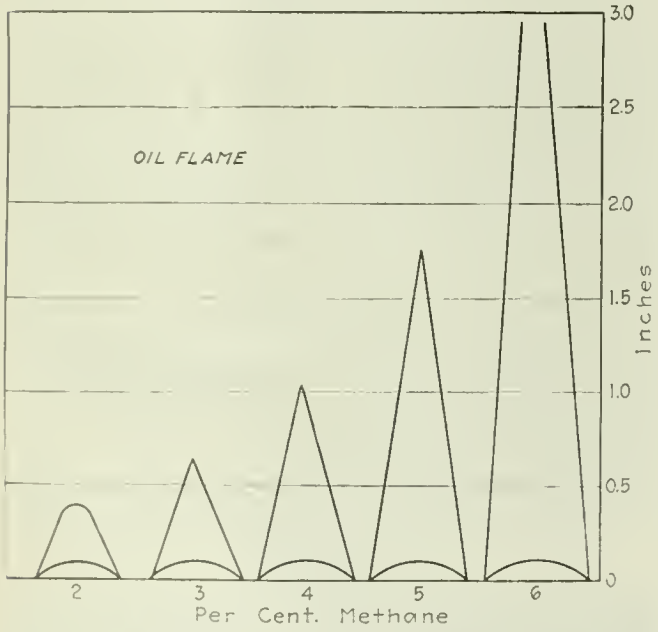


FIG. 1. SHOWING GAS CAPS WITH 3 MM. OIL FLAME

made. However, in the use of any type of lamp, the factor that has the greatest influence on the height of cap produced in a given mixture of air and methane is the heat of the testing flame.

It is, of course, true that all observers are not alike able to accurately gage the height of the non-luminous cap, owing to inequalities of eyesight. Moreover, the manner in which the gas-charged air is brought in contact with the testing flame, as well as the accuracy of determining, later, the actual percentage of gas in the air tested, greatly modify the results.

Probably no experiments to ascertain the correct height of safety-lamp flame caps were ever conducted with more accuracy and patience than were those made at my suggestion, by Professor Frank Clowes, who was then principal of the University College at Nottingham, England. These tests were performed on safety lamps of the Ashworth-Gray type, which were designed chiefly for the use of firebosses, with a view to secure the greatest possible accuracy in the estimation of the percentage of gas, by observing the height of flame cap produced in the lamp.

In the performance of the experiments by Professor Clowes, chemically pure methane was used. A large number of tests were made under varying conditions. The testing box was of fixed dimensions and all openings were water-sealed. Each charge of gas and air was carefully measured at atmospheric pressure, and equal uniformity was secured by the movement of a paddle installed in the box. The results of the tests were observed through a glass window in the box. To reduce the glare and reflection, the inner surface of the lamp glass behind the flame was smoked or colored a dull black. The correct height of each cap was agreed on by several observers.

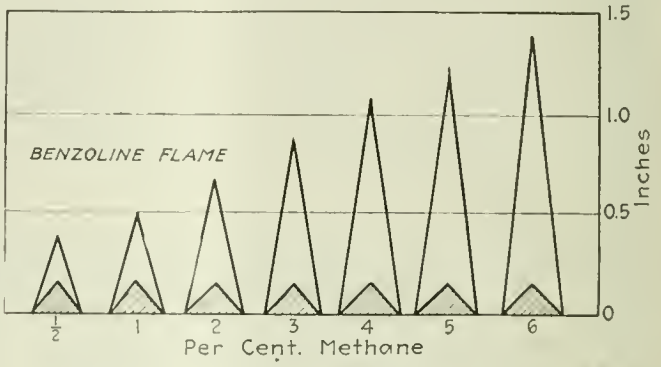


FIG. 2. GAS CAPS WITH 5 MM. BENZOLINE FLAME

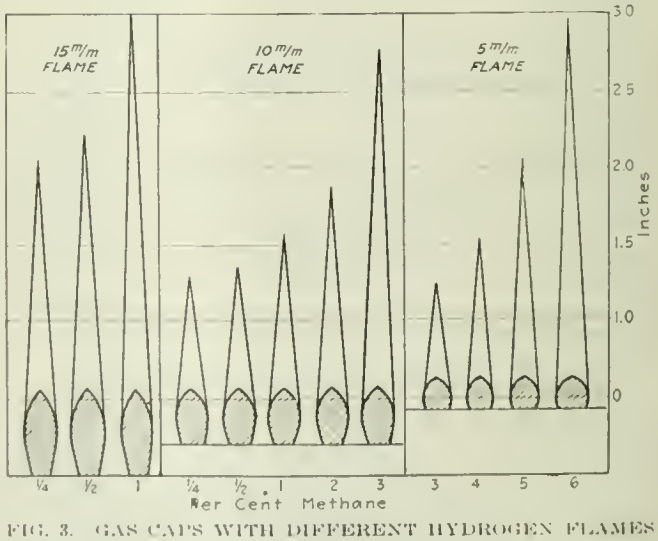


FIG. 3. GAS CAPS WITH DIFFERENT HYDROGEN FLAMES

For the information of those not acquainted with the Ashworth-Gray type of lamp, it may be stated that its construction is such that all air entering the lamp passes through gaged openings and must pass over the wick

flame on its way to the discharge opening at the top of the lamp chimney, which is of standard size.

The illuminants used in making the tests were, in the order of their excellence, as follows: hydrogen gas, absolute alcohol or methylated spirits, gasoline or benzolene, petroleum (mineral colza), mixtures of petroleum and vegetable or seal oil and vegetable oil only.

The heights of the flame cap, for different percentages of methane present in the air tested, are shown in Figs. 1, 2 and 3.

The sensitive nature of the hydrogen flame made it possible to make three sets of flame caps, by altering the height of the original testing flame, thereby covering a range of from ½ to 6 per cent of gas. These three sets of flame caps (Fig. 3) make it possible to compare at a glance the influence of the heat of the testing flame. For example, a 15-mm. testing flame gave a three-inch cap with one per cent of gas present in the air, while a 5-mm. testing flame only gave the same height of cap when 6 per cent of gas was present. Just here, it may be stated that the tri-wick flame of the Ashworth alcohol safety lamp also gives a three-inch cap for one per cent of methane.

In respect to safety in coal mines, when one observes a man boring a two-inch or two-and-one-half-inch hole, from seven to eight feet in depth, in a solid face of coal, and firing two or three charges of black powder in such a hole, it seems absurd to consider whether or not the presence of even one per cent of methane requires our serious consideration.

As to the standardization of safety lamps mentioned by the writer of the letter to which I refer, we may wait patiently for the report of the British Home Office committee, which is now engaged in considering the general question of safety lamps. However, it is not likely that the work of that committee will result in restricting mining practice to the use of any one particular safety lamp; but there may be required an increased lighting value in the lamp used.

JAMES ASHWORTH,
Livingstone, Alberta, Canada. Mining Engineer.

Working Three Seams of Coal in a Mountainous District

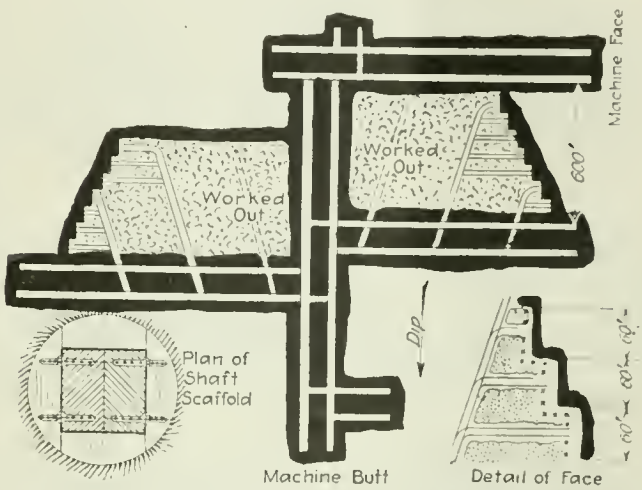
REGARDING the question of working three overlying seams of coal in the Kanawha River district, discussed in recent letters in *Coal Age*, it seems to me that particular interest attaches to the fact that the operation is conducted at the foot of a mountain, which makes it well to consider the effect of the extraction of coal in the mine to start a movement in the strata that would destroy the alignment of the shaft.

My experience in conducting mining operations in mountainous countries leads me to suggest, in this case, the sinking of two circular shafts, which would overcome any trouble resulting from a movement that would throw the shaft out of line. In one instance, I recall, such a movement in the mountain caused a 3,000-ton tipple to be thrown 60 ft. out of line when the coal was taken out too near to the edge of the mountain. However, in that case, no doubt, the great thickness of the seams that were being worked had much to do with the movement of the strata. One of the seams was 20 ft. in thickness and the other eight feet.

In a mountainous district, the subsidence of the overburden does not take place in uniform stages, as is common in a level country. In most cases, the weight of the mountain produces a crushing effect accompanied with a movement toward the river. On this account, it is always advisable to maintain adequate strength in the underground workings, particularly near the base of the mountain, especially where shaft openings are employed. As is well known, a circular shaft will withstand a greater pressure, and any lack of alignment is more easily remedied than when the shaft has a rectangular form. This alone is sufficient for recommending circular shafts.

The work of sinking is started where the location seems most suitable for the erection of a plant and the shipment of the coal. A temporary headframe is erected above the proposed shaft and a small steam hoist installed for the work of sinking. As quickly as the first seam is reached, the work of development in that seam is started and carried forward a distance sufficient to warrant safety to the sinkers when that work is resumed. As a further protection for the sinkers engaged in sinking the shaft to No. 2 seam, a movable scaffold should be erected in the shaft just below the landing at No. 1 seam.

As shown in the accompanying sketch this scaffold is supported by two girders thrown across the shaft,



SHOWING GENERAL PLAN AND DETAIL OF STEPPED LONGWALL AND SCAFFOLD IN SHAFT

which in turn support two cross-girders, the entire system thus outlining the two sides and ends of the hoisting compartment. The opening is closed by two doors hinged to the platform on each side, as indicated in the figure. When rock is to be hoisted, the doors are opened, but otherwise they are kept closed for the protection of the sinkers. The development in No. 1 seam is continued while sinking the shaft to No. 2 seam; and, as early as possible, a connection should be driven between the two shafts. When the shaft has reached the second seam and been sunk a few feet below to provide a good sump for drainage, the development in that seam is carried quickly forward in three shifts, but further sinking of the shaft is discontinued for the time.

Regarding the method of working these seams, no hard-and-fast rule can be laid down; but the nature of the roof and floor must be considered, which will generally prove the determining factor. Let me suggest, however, that No. 1 seam be worked on a longwall stepped plan, as I have indicated in the figure. This plan is by no means an experiment. It is one that I

used for several years successfully, in mining coal ranging from two-and-one-quarter to three feet in thickness and lying at a depth of 1,200 ft. below the surface.

The advantage of the stepped longwall plan is that no large break in the roof can cut off the working places, this being prevented by the steps at the working face. Success under any kind of longwall work is based on keeping the gob clear of timber, which should always be drawn to within three rows of the face. Also, all cogs and packwalls should be kept close to the face, the latter being well built. In No. 2 seam I would adopt a pillar-and-stall, panel system, ventilating each panel by a separate air split.

A system that appeals to me as good when working under a hard rock roof is that known as the Nelms' advance-retreating system, described in "Mining Methods," page 200, Coal-Mining Library, McGraw-Hill Co. The system has advantages in the concentration of work and economy of operation it affords. One of the chief features of this system is that when drawing pillars under a hard roof, too much space is not opened up before a cave occurs in the roof, thus avoiding heavy roof falls, which are always dangerous.

Danger in Driving a Road Under River with Only Three Feet of Cover

In order to reach the properties beyond the river, in no case would I recommend driving a road in No. 1 seam. Instead, a roadway should be driven under the river, in No. 2 seam, and a gravity plane driven up from No. 2 to No. 1 seam, at a distance of 300 ft. beyond the river. All the coal in No. 1 seam beyond the river can then be taken out by this incline, through No. 2 seam.

At a suitable time and whenever it is necessary to mine more coal to maintain the desired output, the sinking of both shafts should be continued to No. 3 seam, erecting as before a scaffold in the shaft, just below No. 2 landing, for the protection of the sinkers. By this time, I assume that a permanent tipple has been erected over the hoisting shaft, and the hoisting of coal is continuous.

The work of hoisting rock for the sinkers can be expedited by attaching a tail rope under the cage, by which means the bucket containing rock can be hoisted to No. 2 or No. 1 seam at the same time that coal is hoisted on the cage from No. 2 seam to the tipple landing. The rock thus hoisted can be taken to the surface during the night. With proper arrangements this can be done without interfering with the hoisting of coal from No. 2 seam.

If gas is encountered in considerable quantity in No. 3 seam, air pipes should be carried to connect with the return air-course, until the connection with the air shaft can be driven. The plan of working No. 2 seam can probably be employed to best advantage in No. 3 seam; namely, a pillar-and-stall panel system. As quickly as the development will warrant, I would drive an incline up from No. 3 seam to No. 2 seam and take out all the coal mined in the three seams by hoisting it from the bottom of the shaft. In that case, each seam should be ventilated by its own separate air split.

For the sake of economy, every effort should be made to standardize all equipment, using good cars with reliable bearings. One of the hardest problems, in my experience was that of attempting to haul coal with a cheap car having poor bearings, which kept the track constantly in bad condition. The hoisting shaft should be equipped with two cages, and a rotary dump should be installed on the surface, for an output of 1,000 tons per day of eight hours.

V. Frodsham.

New Castle, Colo.

Defer Judgment of Superintendent

ALTHOUGH I have never had a similar experience to that described in the inquiry that appeared in *Coal Age*, Feb. 12, p. 327, the recital of the electrician's failure to secure a change of position from the substation of which he had charge, to the work of bonding rails in the mine, interested me greatly.

The story of the request made to the superintendent and his abrupt and harsh refusal seems to be told in a fair, straightforward manner. However, as suggested by Richard Bowen, in commenting on the matter, every question has two sides, and the story told by the disappointed applicant gives his side of the case only. It is well, therefore, to defer judgment of the superintendent's action until the other side is known. No court of equity would pass judgement on a case without first hearing both sides of the matter in controversy.

It appears that the mine electrician considered the man at the substation capable of doing the work of bonding rails, or he would not have asked him to apply for a transfer and report to him in the mine. It can, therefore, be assumed that our man was not asking for more than he was capable of doing and the superintendent could not have refused him on the ground of his not being competent for the work. Though applicant may not have selected the best time for presenting his request, we can say that the superintendent could have refused the man without all the bluster which he is charged with making.

One cannot but wonder how this superintendent, himself, would like to be treated in a similar manner by the general manager, when making a like request of that official for a change of position where he could earn a larger salary. This is a day of discontent among miners and many of them are asking for a change of position; but when that is granted they are no better satisfied than they were before. My experience is that workmen who are the more easily dissatisfied with their work and want a change are the very ones who show the least improvement after the change is granted; but are still dissatisfied and want to be moving.

It is quite common for the younger class of miners to have a desire for the higher position and larger salary of older men who, through diligent study and application in their earlier years, have worked themselves from the bottom to the top. Younger men are very apt to want to slide into such a position for the asking, instead of preparing themselves for efficient service by the necessary years of study and application.

No superintendent should be censured too severely for using a few old-fashioned cusswords when he is suddenly confronted with an unreasonable and wholly unexpected request for a change of position, by a workman who is simply dissatisfied for no particular reason. On the other hand, some superintendents are selfish and autocratic. Such will fail to recognize the claims of a worthy young men who is aspiring for a higher position and who has been diligent in fitting himself for better work that will give him a greater earning power.

John Rose,

Dayton, Tenn. Former District Mine Inspector.

Inquiries of General Interest

Answered by

James T. Beard

Carbon Dioxide Produced in Respiration

SOME time ago, if I remember rightly, a writer in *Coal Age* made the statement, which he claimed was taken from Mauchline's "Mine Foremen's Handbook," that about 15 cu.ft. of carbon dioxide is given off in a man's breath in 24 hours. Is that correct?

Streater, Ill. STUDENT.

Both the rate of breathing and the volume of air respired by an adult depends chiefly on the exertion made by the individual at the time. For example, a man at rest (lying down) will breathe about 470 cu.in. of air per minute. The same man, when making violent exertion, may respire eight times this volume of air, or say 130 cu.ft. per hour.

Again, the percentage of carbon dioxide in the exhaled breath likewise varies with the exertion made at the time. For example, the air exhaled from the lungs of a person at rest contains about 2.6 per cent of carbon dioxide, while the percentage of this gas in the breath exhaled by a person while performing violent exercise may reach 6½ per cent.

Now, assuming that a man performing violent exercise exhales 130 cu.ft. of air per hour and that this exhaled breath contains 6½ per cent of carbon dioxide, the volume of that gas produced by the breathing of a man while performing hard work would be $130 \times 0.065 = 8.45$ cu.ft. per hour; or, $24 \times 8.45 =$ say 200 cu.ft. in 24 hr.

On the other hand, if the man is at rest and exhales each minute 470 cu.in. of air containing 2.6 per cent of carbon dioxide, the volume of that gas produced in 24 hr., under these conditions, would be $24 \times 60(470 \times 0.026) \div 1{,}728 =$ say 10 cu.ft., or practically $\frac{1}{20}$ of the volume of gas produced in violent exercise.

Maintaining Uniform Output by Proper Distribution of Men

THERE is one feature regarding the successful operation of a mine that has often perplexed me, and I would like to secure the opinion of *Coal Age* and its practical readers regarding the best policy to pursue in the proper distribution of men, with a view to maintaining a uniform output of coal.

It is well known that all portions or sections of a mine do not offer the same advantages in respect to mining the coal and hauling it to the shaft or slope bottom. Neither do all miners have the same productive qualities. The efficient mine foreman, realizing the importance of maintaining a uniform daily tonnage, estimates the number of cars that must come from each section of the mine, basing his estimate on the thickness of the coal, number of places working and the character of the men in each section.

It often happens that one of the most difficult features to arrange is the haulage proposition, which must be so planned that the motormen or drivers will not be required to wait for a full trip of cars. The length of haul and the number of cars mined in a shift will determine the number of trips to be made in each section. All of these matters a good foreman can generally arrange with satisfaction.

Owing to the varying capabilities of miners, the work of securing uniformity of output is another difficult problem. Naturally, the foreman wants to put the best men in places where they can produce the largest amount of coal, and he is prone to give less capable miners places where the coal is low and harder to mine. This may be the better plan to follow though it is not clear to my mind but that a more equable distribution of the men should be made, by scattering the less capable miners around where they could receive the assistance of their more capable fellows.

It is, of course, recognized that the low coal and wet places must be worked, as well as the higher coal where conditions are more favorable. What do our practical mine foremen have to say regarding this question of working all miners to the best advantage? MINE FOREMAN.

Cleaton, Ky.

The proposition presented by this correspondent is an interesting one and will doubtless bring out many opinions based on the experiences of foremen who have studied the question of distributing their men with fairness and justice to all, while at the same time seeking to maintain the required daily tonnage of the mine. Let us hear from many along this line.

Substitute for Friction Tape

PERMIT me to ask, if an electrician has no cable or friction tape at hand, but has plenty of old tape that has no cement or glue on it, can you name an ingredient or composition of ingredients that can be purchased at a local hardware or drugstore that would serve the purpose when applied to the old tape, until a new supply could be obtained. MINE MECHANIC.

Johnstown, Pa.

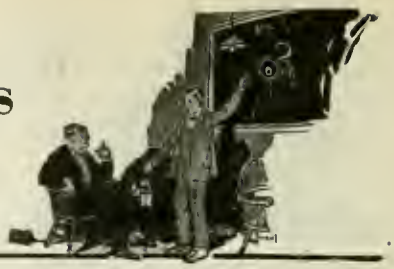
Friction tape is compounded of certain dielectric substances, its exact composition not being generally known outside of the trade. There are no adhesive articles to be purchased for application to the old tape that would renew its qualities as an efficient insulator. The original tape is a manufactured product, resulting from the treatment of a rubber base in a manner designed to give it a high resistivity and, at the same time, to increase its adhesive qualities.

The principal dielectric substances are mica, ebonite, shellac, India rubber, guttapercha, and paraffin, together with a large number of liquid hydrocarbons. We cannot recommend any makeshift application to renew the qualities of the old tape. There should be always kept on hand a good supply of tape to avoid that necessity.

Examination Questions

Answered by

James T. Beard



Miscellaneous Questions

(Answered by Request)

Ques.—A tract of coal land consists of 2,000 acres, with the coal seam 400 ft. below the surface. The seam is five feet thick and underlaid with three feet of fireclay and four feet of sandstone. Over the coal is five feet of slate and above the slate are sandstone and shale measures. The seam is known to give off gas. How would you proceed to open and develop the property for an output of 1,500 tons per day of eight hours?

Ans.—Since it is not stated in the question what the inclination of the seam is, we may assume that the coal lies practically level. Having selected a suitable location as nearly central in the property as possible and affording good shipping facilities, two shafts should be sunk at a distance of not less than 100 yd. apart. When the shafts have reached the coal a good sump should be sunk at the bottom of each and the seam opened out by driving the main headings four abreast, in each direction, say north and south, from the hoisting shaft. As quickly as possible connection should be made betwen the two shafts.

When the main headings have reached a distance of, say 50 yd. from the shaft, cross-entries should be started and driven three abreast to the right and left, respectively, of the main headings. As the cross-entries are advanced, butt headings are driven in pairs to the right and left of the cross-entries. The first pair of butts is started at a distance of, say 200 ft. from the main heading, which will provide for 50-ft. barrier pillars flanking the main headings and leave 150 ft. of solid coal on each side to form the first panels. Succeeding pairs of butts are driven on 190-ft. centers, leaving 150 ft. of solid coal between them.

As the main headings are advanced, cross-entries are driven three abreast to the right and left, at distances apart that will leave 100 yd. of solid coal between each respective pair of cross-entries. In this manner, the work is laid out in panels, from each of which the coal is extracted separately in regular order.

If possible and practicable, the extraction of the several panels should be performed on the retreating order. If this is not practicable, owing to the demand for coal or an inadequate capital making it necessary for early returns on the investment, the extraction of coal can be commenced as quickly as a panel is formed, by starting at the inby end of the panel, or midway between two pairs of cross-entries, and taking out the coal on the retreating plan, being careful to break the roof and allow it to settle on the waste as the coal is taken out.

The main headings being driven four abreast, while the cross-entries are driven three abreast and the butt headings in pairs, will provide separate return airways for each side of the mine and for each panel. Haulage should be performed on the intake air and air bridges constructed at the mouth of each set of cross-entries and at the mouth of each panel.

Ques.—State briefly how the several mine gases may be detected. In what proportion in the air are they fatal to life and in what proportion do they extinguish light?

Ans.—The presence of methane or marsh gas is indicated by the flame cap observed in the safety lamp, the height of the cap being an index of the percentage of gas present. This gas is not poisonous and when mixed with a sufficient quantity of pure air can be breathed with impunity, the fatal percentage of the gas depending on the resulting depletion of the oxygen of the diluted air. About 30 per cent of methane present in otherwise normal air will extinguish the flame of a lamp burning a non-volatile oil.

Carbon monoxide is a poisonous gas and is detected by the effect produced on small animals such as caged birds and mice. One-half of one per cent of this gas present in air breathed a considerable time will produce death and larger percentages are instantly fatal. The gas being inflammable is not extinctive of flame.

Carbon dioxide is detected by the dim burning of lamps or their complete extinction when about 14 per cent of the gas is present in the air surrounding the lamp. While this percentage of carbon dioxide in otherwise normal air may not prove fatal to a strong, healthy man, unless breathed a long time, it is never safe to remain where an ordinary lamp will not burn.

Ques.—What is meant by the term horsepower?

Ans.—The term "horsepower" is an arbitrary measure of the power required to perform any given work. The value of a horsepower is the power that will perform 33,000 units of work in a minute. In other words, a horsepower is the power required to lift 33,000 lb. through a vertical height of one foot in one minute, or 33 lb. through a vertical height of 1,000 ft. in one minute, etc.; the product of the weight lifted (lb.) and the vertical height (ft.) being always 33,000 ft.-lb.

Ques.—From what cause is one explosive stronger than another?

Ans.—The rapidity of combustion is the chief factor in the strength of a deflagrating explosive. In this class of explosives the combustion is transmitted from one particle to another by the comparatively slow process of ignition of each particle by contact with another particle that is burning. In that case, as for example with black powder, the strength of the powder depends on the fineness of the grain, the combustion being transmitted more rapidly in a powder of finer grain than in one of coarser grain.

On the other hand, detonating explosives, such as dynamite, obtain their great strength by reason of the ignition being communicated almost instantly throughout the mass, by means of a vibratory shock, the action being known as "detonation" and the entire mass exploding in an instant, as it were.

Many Mines in Alabama Strike for More Pay and Seek for Union Recognition

Daymen in Domestic-Fuel Mines Strike for Dollar a Day Increase and Are Offered 69c.—Try to Work Union Men Into Conferences with Managers as "Representatives of Miners"

ALABAMA mine workers are striking to get a provision which means the opening wedge for union recognition. They agree to the operators' proposition that "if any difference arises between an employee and the employer in or about the mines an attempt shall be made to adjust it with the boss by the person or persons affected. If no adjustment is reached, the question shall be referred to the mine foreman and mine committee. If they fail to agree it shall be taken up with the mine superintendent by the mine committee."

But here they part. The mine worker wants "a representative of the miners" to take up the question with the mine manager, while the operators, knowing that the representative of the miners will be a delegate of the United Mine Workers of America, would substitute the mine committee for that representative. Otherwise the operators and mine workers agree on the clause relating to the settlement of grievances. The manager and the other party—committee or representative—failing to make an adjustment, shall name a third party, "whose decision shall be rendered in five days and shall be final and binding on both parties." The difference seems small but it is in reality an important matter, for the entrance of the labor agitator as representative bodes nothing but trouble.

Another point about which the operators and mine workers disagree is the increase in wages to be given under the decision of the Bituminous Coal Commission. The operators would give an advance of 20 per cent to day laborers and monthly men as against $1 a day asked by the miners. Both factions assert that they are following their interpretation of the proposals of the commission appointed by the President, a commission before which the Alabama operators failed to appear. The operators quote this paragraph on page 38 of the report of the commission:

"We direct that this increase be apportioned between the different groups of workers and classes of work along the following lines: That tonnage rates, pick and machine, be increased 84c.; that rates for all yardage, deadwork, narrow work and room turning be advanced 20 per cent; that the compensation of daymen be advanced also 20 per cent. All these advances to apply to the rates prevailing on Oct. 30, 1919."

The union leaders refer them to paragraph F of the "award": "That all day labor and monthly men (the advance to monthly men to be based on the average of the usual number of days they are required to work in a month), except trappers and other boys, be advanced $1 per day. Trappers and boys receiving less than men's wages shall be advanced 53c. per day."

The operators accept the rule quoted in the first paragraph in both letter and spirit, declaring that $1 a day increase would not be a 20-per cent advance but an increase of over 27 per cent.

In the fields where the $1 a day increase is granted the minimum scale was $5 per day, and in that case a 20-per cent increase would be equivalent to an advance per diem of $1. However, the minimum wage scale in Alabama was $3.44 a day. Thus in Alabama a 20-per cent increase would be only 69c. per diem or thereabouts.

J. R. Kennamer, president of the Alabama section of the United Mine Workers of America, district No. 20, has made public correspondence between himself and the members of the commission, in which Rembrandt Peale says that he could not commit himself as to the manner in which Alabama operators should interpret the report of the commission, for they refused to come and submit their status with the mine workers. He says that for that reason he did not know how the decision of the commission would affect them.

J. P. White states that he believes the men should receive $1 a day increase. The operators reply that he did not sign the majority report of the commission and therefore could not tell what the majority really means by the order. Mr. Robinson's reply also states that the miners should receive their dollar a day, but the operators claim that Mr. Kennamer's letter to Mr. Robinson was somewhat misleading and they have made public a telegram received from him by the DeBardeleben Coal Co. in which he states that they should work out their own plans based on the former adjustment.

Mr. Kennamer has sent copies of this correspondence to the different local unions with the statement that they should do whatever they could toward getting the $1 a day advance but that they should not attempt to coerce the operators by a strike.

The operators have had further correspondence with Mr. Robinson and he again states that the Alabama operators and miners must work out their own plans, recognizing, however, the fact that a 27-per cent increase was all that was required of any operation. Both sides seem to be standing pat.

The strike at first was confined to the domestic fields, but it rapidly spread to the other fields where the coal mined is used for making iron and steel. Three mines of an iron company shut down on July 5 and it was stated that 3,000 men were out on strike.

About this difference there have been strikes at the Piper and Coleanor mines of the Little Cahaba Coal Co.; Garnsey mine of the Galloway Coal Co.; Marvel mine of the Roden Coal Co., all in Bibb county, at the Boothton mine of the Southern Coal and Coke Co. in Shelby county; at the Kellerman mine of the Central Coal and Iron Co., the Yolanda mine of the Yolanda Coal & Coke Co. and the Davis Creek mine in Tuscaloosa County; the South Corona, Corona, Patton, Coal Valley and Patton mines in Walker County.

Some of these mines have not worked for over a month, rations to the mine workers being provided by the union. Non-union men are still mining a little coal at Townly, Corona, Patton, and Coal Valley operations of the Corona Coal Co., but most of the men are out.

Mine Inspectors at Cleveland Convention Discuss Standardizing of Safety Regulations

Papers Presented on History of Mine Inspection, Avoidable Accidents, Standardization of Electrical Installations and Ventilation Requirements and the Sealing Off of Abandoned Workings

By James T. Beard

THE eleventh annual meeting of the Mine Inspectors' Institute of America met in the "Lattice Room" on the mezzanine floor of the Statler Hotel, Cleveland, Ohio, Tuesday, July 13, 1920, with a good representation of the different coal-producing states in attendance.

In the absence of the president, Thomas Graham, Cumberland, B. C., Canada, the meeting was called to order by the secretary, James W. Paul, Pittsburgh, Pa., who introduced Jerome Watson, chief mine inspector of Ohio, as temporary chairman. By vote of the members present Mr. Watson was made permanent chairman and the business of the organization proceeded without further delay.

The first item on the program was the appointment of a committee on membership, and the following were named by the chairman: James Sherwood, Kansas; W. L. Morgan, Illinois; Miller D. Hay, Oklahoma. The committee was instructed to consider at once the large number of applications that had been placed in the hands of the secretary and report the names for immediate action of the institute. This was done in order that the new members could participate in the work of the organization.

The other committess then named by the chair were the following: Committee on Resolutions—William Holland, Iowa; James T. Beard, New York; John Dunlop, Illinois. Auditing Committee—Lot Jenkins, Ohio; Walter Waite, Illinois; James Sherwood, Kansas.

History of Inspection in Last Decade

By vote of the members present Jerome Watson was made chairman of the entertainment committee and selected Frank P. Corey and Lot Jenkins, both of Ohio, to act with him on that committee. This being done the session adjourned till 2 p.m. in order to give the auditing and entertainment committees an opportunity to work.

The afternoon session was devoted to the reading of a paper entitled "A Decade in the History of Mine Inspection," by James T. Beard, editor for the institute. Secretary Paul then read an interesting and valuable paper that had been prepared by William C. Kidd, state inspector of mines, second district of Illinois. This paper declared that avoidable accidents in and about mines were largely due to indifference on the part of the mine officials whose duty it is to provide the employees, as far as possible, with safe working conditions. An animated discussion followed the reading of the paper and a vote of thanks was extended to its author.

The committee on entertainment reported that through the courtesy of F. K. Maher, president of the Pittsburgh Vein Operators' Association, they had completed arrangements for an all-day boat ride on the lake, and the meeting then adjourned to continue its discussions the following day on the quiet waters of Lake Erie. Although the weather was not as propitious as might be wished for the sail that did not hinder the members of the institute and their guests from assembling at the pier and at 8:15 Wednesday morning the steamer "Theodore Roosevelt" swung out into the lake with all on board.

Technical Session on Lake Erie Boat

After inspecting the boat in its many quarters and listening to an enjoyable musical program rendered by the ship's orchestra the institute withdrew to the privacy of the forward cabin on the upper deck, which had been reserved for its use. Here the members were called to order by Chairman Watson, who announced for discussion the first topic on the program, "Standardization of Electric Code for Mines."

The discussion was opened by Secretary Paul, who outlined in a clear manner the need and purpose of standardizing an electric code for use in mining. Others followed, enlarging on the conditions to be encountered in the application of a standard code to their several districts, and L. C. Ilsley, engineer in charge of the electrical department of the Pittsburgh testing station of the Federal Bureau of Mines, explained the work that had already been undertaken by the bureau as a preliminary to effecting such a standardization in electrical mining codes.

Other topics discussed in the sessions on the boat were: "Standardization of Inspection Routine" and "Standard Requirements for Mine Ventilation." The discussion of the last-named subject culminated in a motion instructing the committee on resolutions to draft a resolution for presentation to the institute embodying the conclusions reached. The session was then adjourned, to meet the following morning in the quarters at the hotel.

The closing session of the institute was called to order at 9:30 a.m. in the "Lattice Room" of the Statler Hotel Thursday, July 15, by Chairman Watson, who announced for discussion the final topic on the program, "Methods for Sealing Abandoned Workings," which occupied one hour and evoked much interest.

To Bring Mining Codes Closer Together

A brief address followed from S. E. Button, chief of the Department of Mines of Pennsylvania. In a happy manner Mr. Button expressed his pleasure at being present and congratulated the institute on the work in which it was engaged, emphasizing the need existing that the mine inspectors of the different states and provinces should thus co-operate.

The chair then called for the report of the committee on resolutions, and William E. Holland, state mine

inspector, first district, Iowa, chairman of the committee, responded and presented the following:

Resolved, that the Federal Bureau of Mines prepare an outline of standardization for such mine matters as from their experience and investigations they feel can be standardized, ever having in mind the varying conditions of mining obtaining in the several states engaged in the mining industry.

Resolved, that said outline of standardization be submitted by the Federal Bureau of Mines to the mining department or the mining board in each state, with the request that it receive the earnest consideration of the men composing that body, so that, as far as practicable, they may endeavor to secure the enactment of such laws in their respective states as will make effective the several requirements, and thereby establish the desired uniformity in all laws and methods pertaining to safe and economical mining.

Resolved, that the Mine Inspectors' Institute protest against the discontinuance of the monthly publications on mine accidents and Judge Thompson's "Abstracts of Decisions in Law Cases," realizing their importance and the constant demand for them, particularly those relating to mine accidents, on the part of state mine inspectors, officials of miners' organizations and liability-insurance men. Attorneys and safety engineers repeatedly make requests for Judge Thompson's bulletins.

Resolved, that it is the unanimous opinion of the Mine Inspectors' Institute that the adequacy or inadequacy of the ventilation of all mines should be estimated by some uniform method and that any such method must be based on such essentials as the quality and velocity of the air sweeping the working faces and circulating in every part of the mine. Be it further resolved, that the Federal Bureau of Mines render such scientific aid and suggestions that ultimately such methods will be perfected and applied as will be suited to the making of such determinations.

The balloting for officers for the ensuing year resulted in the choice of the following: For president, Jerome Watson; first vice-president, Charles H. Nesbitt; second vice-president, W. E. Holland; third vice-president, James Sherwood; secretary, James W. Paul; assistant secretary, Millar D. Hays; treasurer, Joseph Haskins; editor in chief, James T. Beard. By vote of the members present the next annual meeting of the institute will be held at Charleston, W. Va., beginning July 14, 1921.

Machine Men in Indiana Strike Against Night Work and About Bottom Coal

REFUSAL of machine men to cut coal at night has resulted in temporary suspension of work in half of the mines surrounding Bicknell, Ind. The miners declare they would not object to night work for a few nights or weeks if they had any assurance of a definite time when day work would be resumed. They state that it is an effort of the operators to put them on nights permanently.

Machine men at the Westphalia mine of the Knox County Fourth Vein Coal Co. returned to work recently after having been out for several days. The controversy originated over the bottom-coal question, which has caused trouble in some of the mines of the district. After some consideration the machine men agreed to go back under the terms of the contract. About one hundred men were affected.

Union Labor Stubbornly Opposes State Owned Mine in Indiana

STUBBORN opposition has developed in the State Legislature, which convened in Indianapolis July 12, to the proposal of Governor James P. Goodrich and the state purchasing committee that the state buy a coal mine and cars in order that coal may be provided at a lower cost to the state institutions than would prevail in case the coal were purchased on contract or in the open market. So far the chief antagonism has been from the coal fields where there is a large union labor vote. From present indications the hostility is such that the Indiana operators, who are known to oppose the proposition, but who have said little, may continue to keep their thoughts to themselves.

The organized labor opposition lies chiefly in the fear of unions that the state will either immediately or later attempt to operate the mine with convict labor. Governor Goodrich is known to favor such a proposition. In his statement to the Legislature the Governor deals with the cost of mining coal under private ownership and the relatively low cost which he insists the state could operate a mine on. He cites the low cost of the manufacture of various articles in the state penal institutions to prove the state might operate a mine below average costs.

Organized labor is searching for the "joker" in the plan. At a meeting held the second day of the session in the office of Charles Fox, president of the Indiana Federation of Labor, and attended by representatives of the different state labor organizations, a resolution was passed in which it was stated that labor would be in favor of a state-owned coal mine provided only union labor would be employed in the mine and that the mine were operated under the same contract which is entered into with the Indiana coal operators and miners.

Power to order 100-per cent railroad car service for mines supplying state institutions with coal would be conferred on the State Public Service Commission by a bill passed July 14 by the House of the Indiana General Assembly. The vote was seventy-eight to fifteen after the rules had been suspended by a smaller vote. Speaker Jesse Eschbach, preceding the passage of the bill, said that the "people have about lost patience in regard to the coal situation" and that a remedy should be brought about at once so that the situation might be improved. He further declared: "I am sorry that we cannot put every coal mine in the state under the jurisdiction of some state commission or board. I would like to see the coal prices handled the same as the rates of the water and light companies."

Spadra Miners Want Supply Prices Cut

THOUGH the strike has not been authorized the officials of the United Mine Workers at Fort Smith say that the strike of 800 mine workers in the Spadra (Ark.) field against alleged profiteering prices for supplies will not be ended until the condition is relieved. The operators say their changes are below cost now, but the mine workers feel that the old prices should rule regardless of the ability to buy supplies at such figures. The officials, who did not authorize the strike, seem, however, quite indifferent about the matter and are not disposed to counsel the men to return to work.

Hard-Coal Operators Meet Lauck's Statements That Miners Are Underpaid and Short-Lived*

Mine Workers Make More Than Lauck Has Declared—Budgets Presented Are Based on Conditions with Which Mine Workers Are Not Confronted—Coal Miners Are Not Subject to Premature Old Age

By Dever C. Ashmead
Wilkes-Barre, Pa.

IN CONTINUING the testimony of July 14 the operators completed the presentation of Exhibit No. 7, in reply to Miners' Exhibit No. 4, which latter exhibit appeared in full on pages 143-146 in our issue of July 8. In their exhibit the operators make a detailed analysis of the assertions made in the summary of the miners' exhibit and challenge every figure given by Mr. Lauck, giving the correct figures.

This exhibit, its analysis completed, winds up with a quotation from the testimony given during the cross-examination of the mine workers. Mr. Warriner, in the course of this grilling, had said to Mr. Lauck: "I will pass over the summary with this question: If the comparison as to annual earnings, deduced as you have deduced it, using one base for the anthracite region and another for the bituminous region, and if your assumption that 252 days were worked in the anthracite mines and 248 in the bituminous mines is proved incorrect, the general summary of conclusions which you have drawn from these figures would naturally fall?" Mr. Lauck answered: "Yes, sir . . . If the exhibit can be impaired the summary can be impaired."

Hoffman shows that it is not general practice of life insurance companies to require of anthracite mine workers that they pay a rate such as is charged to men in other occupations who are sixteen years their senior nor is it the practice to issue only endowment insurance to anthracite mine workers. A fairly high accident rate in the metal mines combined with an abnormal death rate from tubercular disease in metal mines producing siliceous ores is the reason why one company quoted by Mr. Lauck classes all miners as exceptionally poor risks. Hoffman proves that their expectation of life is about normal.

Following this was presented Operators' Exhibit No. 8, in reply to Miners' Exhibit No. 5, "Average Full-Time Weekly Earnings in the Anthracite Mines of Pennsylvania." In this the operators claim that the test of the exhibit is as misleading as the title, for the following reasons:

(1) The data from which the tables are compiled were inaccurate and not representative of actual conditions. (2) The number of cases taken were not sufficient to build up reliable averages. (3) The method employed in working up the data available was incorrect and could only produce erroneous results and conclusions.

In the answer to the miners' exhibit the operators show actual figures from companies producing 50 per cent of the output and thereby show how erroneous the figures are that were presented by the miners. The operators' exhibit shows that the comparison indicated in Table I exists.

The exhibit says that under cross-examination Mr. Lauck admitted that the earnings shown in the exhibit were hypothetical, but the best that his force could secure under the circumstances, and it winds up its analysis of the miners' exhibit by saying "In view of this admission, and in consideration of the figures submitted in this response, the operators claim that the entire exhibit is meaningless and of no value for the purposes of determining the present controversy."

The operators then presented their Exhibit No. 9, in reply to Miners' Exhibit No. 6, "Wage Rates in New York, Philadelphia, Pittsburgh and Buffalo." This exhibit points out that the rates of wages in the cities just mentioned have no relevancy with regard to the rates in the anthracite region, for the cities mentioned are remote from the anthracite field and the conditions there prevailing are entirely different from those that exist in the anthracite field.

Comparisons Ignore Seasonal Variations

Furthermore the rates with which comparison is attempted to be made vary considerably and the seasonal character of the industries is not taken into account in presenting the figures. This is an important omission, as the anthracite industry, with which the others are compared, is not a seasonal industry. The following conclusion is given in the exhibit:

"It is therefore respectfully submitted for the several reasons noted above that Exhibit No. 6, showing the rates for certain occupations in the large centers . . . are not germane to the subject of wages under discussion before this commission. They therefore have no weight or bearing in this reading and should not be considered a factor in the determination of the findings."

TABLE I. COMPARES MINERS' EXHIBIT WITH FACTS

	Miners' Exhibit No. 4	This Exhibit
Miners	$1,250	$1,784
Miners' laborers	933	1,309
Other occupations	935	1,356

*Previous articles on this commission are "Mine Workers Present Their Initial Argument to Anthracite Wage Commission," pp. 29-31; "Anthracite Mine Workers' Argument for a Larger Wage Presented by Mr. Lauck," pp. 80-82; "Warriner Shows Up Many Misinterpretations of Fact in Lauck's Voluminous Exhibits," pp. 123-128; "Anthracite Commission Decides That It Is Not Empowered to Consider Prices and Profits," pp. 181-184; Exhibit 4, pp. 143-146; Exhibit 12, pp. 138-142; Operators' Exhibits 1 and 2, pp. 193-205.

In Exhibit No. 10, in reply to Miners' Exhibit No. 11, "A Survey of Costs of Living of Anthracite Mine Workers' Families," the operators emphasize the fact that the mine workers' figures are based on a study of only 371 families, and allege that the data do not form a fair basis for judging family expenditure or for constructing a family budget, for the following reasons: (1) The figures were gathered in a way that would admit of substantial errors which would make the results unreliable. (2) The family of 6.5 persons, "including boarders," is not a fair standard unit and is not comparable with other standard family units. (3) The months of December, January and February, while months of heavy expenditure, do not, as claimed, offer a little more than average earning opportunity to the miner.

The exhibit then proceeds to show that if a standard family of five had been taken, the budget for practically every family would show a surplus instead of a deficit.

Earning Power, Not Wages, Is Criterion

The next exhibit was No. 11 and it contained a reply to Miners' Exhibit No. 12, "The Relationship Between Rates of Pay and Earnings and Cost of Living in the Anthracite Industry of Pennsylvania." The main purpose of this exhibit is to point out that while the mine workers show that a 31-per cent increase is needed to bring the pay of the anthracite miner to a parity with that of the bituminous miners, by the mine workers' own figures and by other figures that the mine workers failed to consider it can be shown than an 18-per cent increase would suffice to put the anthracite mine worker on a level with the bituminous worker.

This exhibit shows that instead of the miner not receiving sufficient increases for him to keep up with the cost of living he has actually received more than enough to do so. This is well brought out, for in Mr. Lauck's exhibit he considered only one of the three factors entering into the earnings, that of rate of pay, whereas the operators show all three factors that should be taken into consideration: (1) The rate of pay per unit. (2) The time required in producing that unit. (3) The number of days worked in the year. The exhibit reiterated a number of statements in regard to the correctness of the mine workers' figures, but they need not be repeated here.

During the hearing Mr. Murray made two objections, both urging on the commission that the operators were endeavoring to introduce testimony of a character that the mine workers had been debarred from introducing, and this testimony was stricken from the record. Mr. Murray stated that the mine workers did not accept the operators' figures as correct, either as to earnings or as to days worked, and he requested the commission to investigate those figures carefully, for until they have been proved correct the mine workers' figures must be accepted as being as reliable as those of the operators. The commission took this point under advisement.

The morning session of July 15 opened with the presentation of Operators' Exhibit No. 12, in reply to Miners' Exhibits Nos. 8, 11, 13, 14, 17, 18, 19, 20, 21, "Dealing with the Cost of Living and the Living Wage." At the outset of this exhibit the operators presented their epitome of the mine workers' arguments, and, as they view them, they are as follows:

(1) The lowest grade of unskilled workman in every industry has a right to a living wage.

(2) A living wage is to be arrived at:
   (a) By a study of theoretical family budgets which give both quantity and quality of commodities necessary for a standard of healthy and decent living.
   (b) By predicating these family budgets upon a so-called typical American family composed of man, wife and three children under fourteen years of age and supported by a single wage earner.
   (c) By translating these commodities both as to quality and quantity into prevailing prices.

(3) The principle of a living wage is sanctioned by many prominent men and women and by students of economics and social problems.

(4) The living wage can be attained in practice because the total amount of production shown in the 1914 Census of Manufacturers would suffice to supply all American families with the quantity of commodities required by the budget.

(5) Anthracite mine workers have not received in the past and are today not receiving such a living wage, because the wage rate prior to the war was below a living wage and the wage increases have not kept pace with the rising cost of living.

(6) Therefore wage rates of the common unskilled workman in the anthracite industry should be made $6 per day.

Operators Answer Economic Claims

In reply to these arguments it is submitted that:

(1) The anthracite operators have been and are paying living wages to their employees.

(2) Due consideration has been given in all wage agreements with the mine workers since the wage adjustment of Nov. 1, 1902, to conditions of living, the maintenance of health and comfort, and the general trend of wages in other industries.

(3) The establishment of a wage scale based on the budget plan is impracticable, due to individual differences in capacities and requirements and the necessity for equal compensation for equal service.

(4) However desirable it may be that every worker shall be paid a wage commensurate with his reasonable needs for the support of himself and his family, the value of the services performed must ever be an essential factor in the preparation of a wage scale.

(5) Finally, the only fair and practical test of the wage status of employees in a given industry is the actual facts bearing on them: (a) The general prosperity of the employees where the industry is the dominating one in the section. (b) The financial status of the banks, particularly savings banks. (c) The patronage given to places of amusement and the time taken for recreation. (d) The general evidence of comfort that prevails among the workers in that industry.

As far as the general proposition that every industry should pay its employees a living wage is concerned there is no difference in opinion between the operators and the miners.

The operators show that the arguments presented by the mine workers which deal with a living wage and the

cost of living should not be granted by the commission because:

(1) The methods employed by the anthracite miners in arriving at a so-called living wage are unsound and impractical. There is no general agreement in the opinions presented by the miners as to what a living wage should be. Miners have attempted to determine it by a study of budgets which are for localities other than the territory in question. They have, it is true, made a hasty attempt to obtain figures for the anthracite field, but these are extremely inaccurate. The budget plan is, however, economically unsound because it gives consideration to only one side of the problem, that is the miner's desires, and does not consider his productive effort.

Importance of Value of Service Performed

(2) The cost of living calculated on the budget plan for anthracite mine workers is too high. The figures presented by the miners are inaccurate, for, instead of forming a subsistence budget, as they claim, they are minimum-comfort budgets. At this point the operators show that budgets drawn for different parts of the country at the same time are higher in some places than in others, therefore a standard budget cannot be used. At this point Mr. Lauck requested the commission to have the Bureau of Labor calculate a budget for the anthracite field as had been done for the bituminous field. Mr. Warriner replied that the operators entirely reject the budget plan.

(3) No consideration is given in the argument offered by the miners to one essential factor in the preparation of a wage schedule—that is, the value of the service performed. Even the miners' representatives have considered that it would be bad economic law to pay a man more than he could produce. Provision, it is true, must be made to care for the incompetent, but the productive effort of the workman must nevertheless be measured and his reward must be adjusted accordingly. It appears further that no such wage is to be paid unless it is earned and that there are those who are incapable of earning a living wage.

(4) In reality the anthracite operators have been and are paying living wages to their employees. A group of workers cannot be running behind in expenditures month by month for so-called necessities and yet show every evidence of well-being in their method of living, in their dress and in their accumulation of a surplus in the savings banks. "The proof of the pudding is in the eating."

Men Are Not Fed on Economists' Statistics

The evidence presented in the mine workers' exhibit shows conclusively that the anthracite industry has become more and more stabilized, that the opportunity offered workmen has grown progressively better, and that wages have increased with each new agreement with due consideration of living cost, to the maintenance of health and comfort, and to the general trend of wages in other industries. Observation in the anthracite region will readily reveal the fact that workmen have time for recreation, that they have means to patronize places of amusement and that there prevails a condition of health and comfort among the workers.

This condition not only give the true test of a fair wage but also effectively contradicts conclusions drawn from theoretical, superficial and unreliable data collected in a hasty survey and not applicable to the anthracite situation. A fair test of a fair wage is whether it works out fairly to both employer and employees.

Nystagmus, Beet Hand and Beet Knee

The last exhibit, Operators' Exhibit No. 13, in reply to Miners' Exhibit No. 26, "Occupational Hazard of Anthracite Mines," while submitted by the operators, was prepared under the supervision of Frederick L. Hoffman. It begins by referring to the writings of Sir Thomas Oliver and Dr. Frank Shufflebotham, of England, and regretting that no reference was made to their findings in the mine workers' exhibit. Unfortunately the mine workers were only too ready to go to Europe to sustain their case whenever it seemed advisable to do so. They introduced the possibility that the miners and their co-workers in the United States might be affiliated with nystagmus, beet hand and beet knee.

The exhibit well says that "they are practically unknown in the mining industry of this country, and even miners' phthisis—a recognized occupational affliction [not of coal mining, however.—Editor]—is rarely met with in its true form in the anthracite region." Oliver's statements and those of Shufflebotham are germane to American conditions, but there is danger in taking Europe into the discussion, for while by so doing it may be possible to strengthen a perfectly good case against tuberculosis it is equally likely to bring in nystagmus, beet hand, beet knee and another disease which does not afflict our American coal miner but does afflict miners in other countries, namely, hookworm.

Perhaps It Is, but Then Perhaps It Isn't

The operators' exhibit well stigmatizes in the mine workers' document such overstatements as "Perhaps no industry is so subject to occupational hazards as the coal industry." It does not mean anything as evidence. Put the word "perhaps" at the end of the sentence and it then, without changing the meaning, makes it perfectly clear that the writer of the paragraph was in serious doubt himself but trusted that fact would not be apparent to the commission.

Worse yet was the statement "The general mortality of the anthracite miner is distinctly above the average of all occupied males." The operators well say of this: "There is no evidence in support of this statement, which is mere conjecture and guesswork and not a statement of fact, which alone is entitled to consideration. No really qualified comparison has been made of the mortality from all causes of anthracite coal miners and the corresponding mortality of men in all occupations."

The most striking hit in the miners' exhibit on "Occupational Hazards of Anthracite Miners" is this: "A large and representative life insurance company will accept coal miners only if they pay rates for sixteen years above their actual age, and even then it will permit them to have no cheaper form of policy than a 20-year endowment; only one occupation is subject to more drastic conditions."

What Becomes of New York Life Presentment?

The reply of the mine operators is: "The practice of the New York Life Insurance Co., to which the reference is made, is not representative of life insurance companies at large, and many of the foremost institutions differ essentially and fundamentally in their treatment of coal miners as insurance applicants. A much more representative company, which transacts a large

amount of business in the anthracite region and which has insured at the present time a considerable number of anthracite miners on the 'ordinary' plan, in addition to a vast 'industrial' business, accepts underground miners at 'medium rates,' and on the whole-life plan as well as on the endowment, which at the age of thirty compares with the non-hazardous risk as follows: The normal charge of this company is $20.80 per $1,000 of insurance, while the medium rating charged to underground anthracite miners is $25.64, or $4.84 in excess of the normal. The difference of sixteen years charged by the New York Life Insurance Co. would amount to $7.77, and if accepted as evidence of a correspondingly high mortality would lead to entirely erroneous conclusions."

Does Not Surrender Sixteen Years of Life

The exhibit continues by quoting a statement of the mine workers' document which reads thus: "While it may not be strictly accurate to say that a life insurance company regards the miner's life as sixteen years shorter than the life of a person in a safe occupation, yet that is what the above rating practically amounts to." The operators' exhibit says: "It is respectfully submitted that this is a most absurd conclusion, which cannot be accepted by anyone familiar with elementary vital statistics and is liable to mislead the commission in one of its most important conclusions."

But still more convincing is the following: "Furthermore, it requires to be said that the rating in question, largely as a matter of convenience, applies to both coal and metal miners and to anthracite and bituminous miners alike. Life insurance companies cannot go too far in refining extra-premium charges in their effort to do exact justice to every highly specialized group of applicants. Mining risks are, therefore, considered in general, but with due regard to local conditions cases are frequently adjudicated on their individual merits.

Anthracite-Mining Hazards on Decrease

"But the main point is that metal miners, or men working in the deep quartz mines of the West, are subject to a decidedly higher respiratory and tubercular hazard than men working in coal mines, and the so-called miners' phthisis, or fibroid lung disease, is rarely met with among anthracite workers, while relatively common in the copper, zinc and lead mines of the West."

The exhibit then considers the amazing statement, undated and unlocated as to source but credited to a report of the Director of the U. S. Bureau of Mines: "The hazard of (coal) mining is undeniably on the increase." "This statement," says the exhibit, "separated from the text and without precise indication of the period for which it is made, is likely to lead to serious misunderstanding." The exhibit points out that Messrs. Lauck and Harris terminate their tables in 1916, despite the fact that more recent information is obtainable in sources that could not be overlooked.

Here are the facts: The number of underground mine workers in Pennsylvania anthracite mines killed in 1915 was 516; in 1916, 474; in 1917, 467, and in 1918, 442. "It is true," says the exhibit, "that in 1919 a large number were killed, due to the extraordinary accident at Baltimore Tunnel No. 2, which was caused by purely fortuitous conditions suggestive of more stringent rules and regulations in the transportation of explosives rather than affecting actual mining operations.

Perhaps there is another explanation more befitting Messrs. Lauck and Harris and their kind. They seem to prefer ancient to modern history. They are prone to ask that correctives be applied today for conditions which long ago existed. They forget that the wage of today should be framed to meet today's problems and not those of many years back. The risk of 1920 might reasonably be considered to have some bearing on the wage of 1920, but not the risk of years gone by.

But on the other hand, the admirable efforts of the coal companies to promote safety first can hardly be considered as of bearing in the matter. The present accident and fatality rate is what really counts, and the anthracite mines have a record for fatalities which in the coal mines of many other states is unfortunately much exceeded. In the year 1918 the anthracite fatality rate was 3.20 per thousand 2,000-hour workers against 4.42 per thousand for Utah; 4.78 for Colorado; 4.89 for West Virginia; 5.87 for Washington and 6.27 for New Mexico.

Hard-Coal Fatality Record Lower Than Soft

The operators' exhibit quotes these rates and then adds: "The present fatality rate of the anthracite region is even below the corresponding rate for the bituminous region of Ohio (3.42) and for the whole soft-coal regions of the United States (3.24). It is, therefore, quite misleading to imply that anthracite mining is today exceptionally hazardous; as a matter of fact, present life-insurance practice with regard to this class of risks is decidedly more favorable or liberal than it was ten or fifteen years ago."

The exhibit takes exception also to the statement: "The leading causes of death are respiratory diseases and industrial accidents," declaring that "from such data as are known to us the conclusion would seem justified that organic heart diseases, for illustration, are more frequent among anthracite miners than lobar pneumonia." It meets the statement that "the total sickness rate among miners was 8 per cent higher than the general rate for white adult males" by stating that the report was prepared by two writers for the Pennsylvania Social Insurance Commission who were advocates of social insurance and who made no original investigations but relied on the sickness statistics of bituminous miners.

As meeting the allegation of the mine workers' exhibit to the effect that the non-fatal injuries chiefly resulted in a disability to arms and legs, with consequent inability to resume work on recovery, "the only statistics on the subject," say the authors of the operators' exhibit, "are those obtained in the statistical analysis of workmen's compensation insurance for the period 1916-1918 compiled by the Insurance Department of the Commonwealth."

These statistics, unfortunately, entirely omit anthracite mining in the tabulation of accidents causing fatal and major permanent injuries. It may therefore be assumed that if the experience had been sufficiently suggestive of serious conditions inherent in the industry it would not have been excluded in a report which represents the most painstaking investigation ever made in this or any other state."

The mine workers in their exhibit quote the Pennsylvania State Commission on Old-Age Pensions to the effect that "miners age prematurely." The operators respond that "this statement also is mere conjecture and easily contradicted by an appeal to such facts as are available at the present time. Neither the said

commission nor any other authority, however, has made a thorough inquiry into all the facts which require to be taken into account.

"It is an erroneous conclusion to assume that miners do not attain to old age, and, as shown elsewhere in the miners' exhibit, the proportion of all miners attaining to old age, or say 65 years and over, is not below but apparently above the normal for all occupations. In the experience of the Metropolitan Life Insurance Co., as shown in one of the tables of the mine workers' exhibit, this proportion was 23.3 per cent, but it is somewhat doubtful whether the term "miner" was not made to include persons who formerly had been following mining but at death were engaged in some other occupation. For all occupations, as shown by another table on the same page, this proportion was 20.3 per cent.

"In the corresponding experience of the Prudential Insurance Co. of America the proportion was 13.4 per cent. All insurance experience is subject to the restriction that everything depends upon the age distribution of the insured population.

Life Expectation of 51 Years Is Normal

"The most convincing experience, however, is the high average age at death for coal miners in the Metropolitan experience, given as 51.3 years, and the corresponding figure for the Prudential, which has been given as 49.4 years. In any adult population it is safe to say that an average age of 51 years is rarely exceeded by more than a year or two.

"Higher average ages are found in old New England communities, where the young have moved away, where the birth rate is low, and where otherwise exceptional conditions prevail. Much lower average ages at death are found in the Southern states where in former years conditions injurious to health materially diminished normal longevity. But an average of 51 years at death may safely be considered evidence that the statement made that miners age prematurely is contrary to the facts."

Reference is made later to the inadequate medico-actuarial experience based on the deaths of only 66 anthracite and 45 bituminous coal miners. On this slender foundation it had been stated by the mine workers' exhibit "that the anthracite miner has a death rate at least 91 per cent higher than the average." A later reference to this statement in the operators' exhibit says: "If this is so it would be interesting to have some explanation forthcoming as to why the average age at death should be 51.3 years."

Certain Industries Can Get no Insurance

The operators' exhibit, while denying that the practice of the New York Life Insurance Co. of adding sixteen years to the age of the applicant for insurance is followed by "any other representative insurance company transacting business in the anthracite coal fields," says that "There are numerous occupations which are not accepted at all and which are not mentioned in the list that forms part of the mine workers' exhibit, such, for illustration, as high-seas fishermen, manufacturers of explosives, aviators, submarine divers, etc., etc., all of which represent employments more hazardous than anthracite mining."

The fact that the miners' exhibit shows that "there are some companies that write ordinary insurance for miners" and charge only 10 per cent more for miners than for ordinary workers indicates over-emphasis on the practice of the New York Life Insurance Co.

The operators finished the presentation of their case in the morning and in the afternoon they cross-examined Mr. Dempsey in regard to an exhibit he presented as to prices in the upper field. The most interesting point that Mr. Warriner brought out in this examination was that Mr. Dempsey was strong at making mathematical errors.

Upon the completion of this examination Mr. Dempsey then answered a question asked some time ago by Commissioner Connell as to what the miners proposed to use in place of docking. Mr. Dempsey then read a brief on this point, discussing all the matters that led up to the conclusion and closing with the substitute for docking which the miners have suggested, which is substantially as follows:

"We suggest that in the matter of loading dirty coal, where it is found that the miner or his laborer has deliberately or carelessly loaded an unreasonable amount of refuse in the car, he shall be subject to such penalty as the colliery grievance committee and the mine foreman may jointly agree upon, which decision shall be final, and that a record of all cars loaded by contract miners will be made at the face of the working places or at the point where they are taken in charge by the company's representative, this rule to apply only where dockage systems are now in effect."

The balance of the afternoon was taken up discussing this point, and Mr. Huber showed that such a system would be nothing but one continued grievance. The commission adjourned at 4 p. m.

W. L. CONNELL, INDEPENDENT COAL OPERATOR

Now on the Anthracite Wage Commission and not only now but for many years chairman of the Anthracite Conciliation Board. Born at Minooka, near Scranton, he has been mayor of that city and is now president of the Connell Anthracite Mining Co.

When the Anthracite Coal Commission met on July 16 to hear the cross-examination of the operators, they probably little realized the difficulties to be confronted. Before the session ended the commission, nettled beyond measure, had been forced into declaring that it thought itself capable of doing long division without help from the mine workers.

Mr. Lauck opened with a question insinuating that Mr. Warriner had attempted to destroy the mine workers' testimony without replacing it with any constructive information. He intimated in his questions that while Mr. Warriner had agreed to the principle of a living wage he had not been as clear as might be wished in defining what a living wage is. Mr. Warriner declared that more than a living wage is now being paid, whereupon Mr. Lauck said, if that were so, why had the operators consented to an increase. Mr. Warriner replied that an increase in cost of living was always conceivable, and the rise in wage was excusable on the ground that the advance in wage would act as an assurance to the mine worker that despite such a change he would have no occasion for apprehension.

Does Minimum Wage Stifle Initiative?

Mr. Lauck asked Mr. Warriner if he believed that a minimum wage was impractical and unsound for the reason that it stifled initiative. Mr. Warriner assented, whereupon Mr. Lauck pointed out that the operators had already granted one of these stultifying minimum wages, namely that of $3.34 per day. Would it stifle initiative if it were raised to $6? Mr. Warriner replied that it would, seeing that a larger number of men than ever would be receiving the minimum wage and there would be no incentive when it was no longer possible to progress from smaller pay to larger.

Mr. Lauck questioned Mr. Warriner to know why, if the differentials were so important, the operators had rendered them less marked by giving flat instead of percentage increases in the three wage advances since 1914. The answer was easy, Mr. Warriner readily explaining that the operators had done it yielding to the pressure of the mine workers and not from any preference for flat increases.

Probably the most important discussion took place in regard to the table of annual earnings as presented by the operators. Both Mr. Murray and Mr. Kennedy made stabs at this table. In the first place they tried to show that a man would have to work more than the 273 days (which the operators themselves had said the mines were in operation) if he hoped to earn the average yearly return as specified by the operators. They took the concrete example of the laborer and showed that he would be required to work 378 days at the minimum of $3.34 per eight-hour day to earn the $1,264 as shown in the table or, granting that the man received the maximum rate of pay for this class of labor, which is $3.67, he would have to work 351 days.

Certain of the Men Work Every Day

Mr. Warriner readily explained this by saying that this table did not presume to show the hours worked, and further that the men had an opportunity to work overtime and so made extra pay, and also that this class of men worked not only when the breaker ran but practically every day of the year. The 273 days of breaker operation had nothing to do with their earnings, and the table was not based on the 273 days worked but on the actual earnings as taken from the company pay sheets.

The mine workers questioned the operators as to their statement relative to the deposits at banks in the anthracite region. Mr. Lauck declared that it included accounts that could in no way be held to belong to the mine workers. This Mr. Warriner conceded, stating that the welfare of the banks was a reflection of the prosperity of the workers in the region's chief industry.

Mr. Lauck endeavored to have Mr. Warriner admit that the rates for other kinds of labor than mining in the anthracite region should not be held of importance in discussing the continuance of the mining rates, because they were so greatly influenced by the mining rates, mining being the dominant industry in the section.

Allentown and Bethlehem Not Mining Towns

Mr. Warriner pointed out that the rates in Allentown and Bethlehem quoted by the operators in their exhibit were no higher than in the anthracite field. It could not be claimed that the wages in those towns were depressed by the low wages in the anthracite field, for they were both entirely removed from the coal regions.

On July 17 the so-called cross examination continued. The mine workers pretended to cross-examine but soon switched off into argument, the noise in the chamber often making it difficult to hear the testimony. The mine workers did their utmost to show that the long-time workers were subject to great mental strain and were liable therefore to brain fag and as a result were apt to endanger the lives of other men. Did not timber and supply hoists also raise and lower men? Did not fan engineers feel every moment the impressive burden of their duties to the men underground as they leaned back in their chairs and watched the progress—of the hands of the clock?

Hazardous and Exciting as Keeping Sheep

Mr. Warriner declared that if the fan stopped the men would note the stoppage of the air and leave the mine. He added that the fan men had little or nothing to do. They could not adjust machinery if it quit running; their duty was simply to keep watch over the machinery, prevent accidents and notify the engineer if the machinery did not run smoothly.

The questioning turned to union recognition, the mine workers asserting that the union members had for eighteen years given their money to benfit the non-union men and were entitled now to the support of all anthracite workers. To that end the union men believed that the right to the check-off should be conceded. Mr. Warriner said that the operators did not object to the union and believed it may have done some good, but they did not feel that one union should be recognized to the exclusion of all others nor that men should be compelled to join against their good will. The operators recognized collective bargaining but did not regard the United Mine Workers of America as sole representatives of their workmen in their mines.

Early last week the mine workers presented their final argument, being followed by the operators.

Mine, Shut Down Over Sunday, Explodes When Power Is Turned On

Shutting Down the Fan Appears to Have Allowed Gas to Accumulate and Explosion Followed the Turning On of Power—Exact Cause of Ignition Is Unknown

By Donald J. Baker
Wilkinsburg, Pa.

ONE of the most disastrous mine explosions of recent years in the Pittsburgh district occurred at 3 a. m. Monday, July 19, at the Renton No. 3 Mine of the Union Collieries Co., located at Renton near Unity, Pa. This disaster cost the lives of nine men.

The No. 3 Mine, which employs about six hundred men, is operating in the Thick Freeport coal of northern Allegheny County and is one of the newer developments of western Pennsylvania, initial construction of the surface plant having been started in 1917. W. R. Calverly, formerly general superintendent of mines for the Berwind-White Coal Mining Co., at Windber, Pa., is general manager of the Union company, which is owned by Pittsburgh interests.

As in many of the younger operations in this district, power is purchased from the West Penn Power Co. When this firm notified the operators of the Renton mine that the current would be off the high-tension lines serving the plant from noon on Saturday, July 17, over the following Sunday in order that needed repairs might be made, all men were withdrawn from the workings.

While the mine has always been considered a gaseous one, it was believed that no great quantity of gas would be generated during the time that the fan was to be shut down, and that no serious trouble would be encountered in re-establishing the circulation of air when the power again became available and the fan should be put in operation.

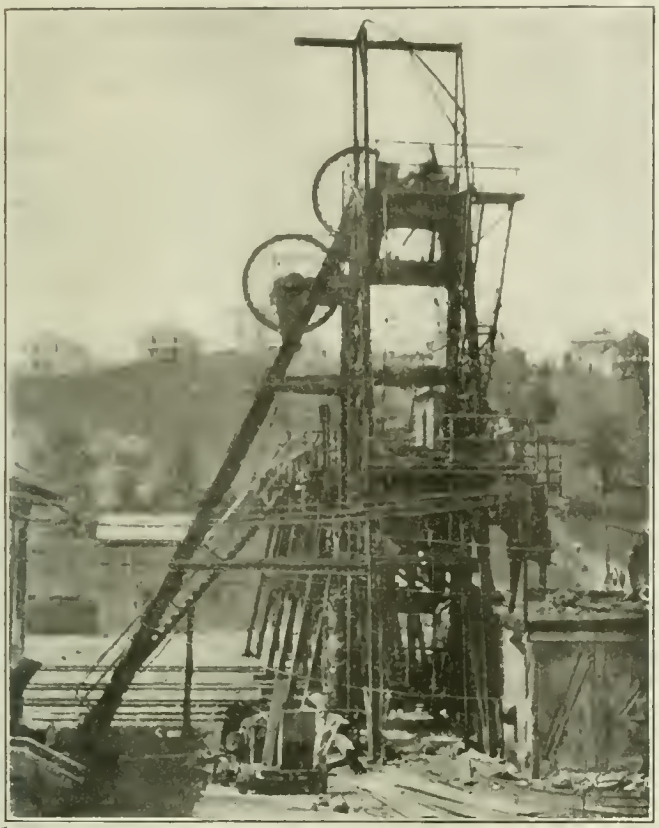
Consequently when power was restored to the line late Sunday evening, the fan was started and the night foreman, firebosses and pumpmen entered the mine to see that the ventilating system was in proper working condition so that the plant might operate on Monday. It had been decided earlier in the evening that the night shift of nearly two hundred men should not be permitted to go below. The inspection force had been in the mine but a short time when Mike Thomas, a lampman on the surface, received a telephone call from John Luteman, the night foreman, informing him that circulation had been established and that the mine was in working condition. It is said that he told Thomas to turn on the power so that the pumps might be put in operation, and that Thomas, did not consider the order from Luteman as being official, and in consequence refused at first to accede to his wishes. Later, however, he was prevailed upon to throw in the switch that controlled the underground sections. The explosion followed immediately.

What actually caused the explosion will probably always remain a mystery. Officials of the Bureau of Mines in charge of the rescue and recovery work think it possible that gas generated during the shutdown of

Fan House

While the building housing the ventilator was considerably damaged, the fan itself escaped unscathed. The work of the rescue parties was aided greatly by early restoration of air circulation.

the fan over Sunday accumulated in large quantities at several points and was ignited when the current was turned on by a short circuit on one of the trolley lines. It is believed that the roof, which is particularly friable, may have come down at some point when the mine was not in operation, carrying the trolley wire with it and bringing it into contact with a rail or other conductor on the floor. While some



EXPLOSIVE FORCE MOST EVIDENT AT AIRSHAFT

The headframe over the airshaft was badly wrecked. Note the broken sheave wheels at the top of the structure. Rails, timbers and girders were thrown up the shaft, among them a 12-in. girder that on its descent pierced the roof of the lamphouse, passed through a brick sidewalk and buried itself in the ground outside the building.

dust may have been ignited, the explosion was primarily one of gas, as no sign could be observed of a coking of the rib such as might be expected if the coal had been subjected to a high temperature.

The men in the mine at the time the gas mixture was ignited, all of whom no doubt were instantly killed, were John Luteman, aged 45, night foreman; Charles Reese, 35, and Edmund Higby, 28, firebosses; Mike Koskurd, 40, supply man; Louis Koffer, 32, and Mike Matuskenoch, 35, timberman; John Marks, 30; Mike Kosta, 40, and Cross DeBlatta, 35, pumpmen. All of these men resided at Renton. Luteman, Higby, Reese and Marks leave families.

Evidence on the surface of the terrific force of the expanding wave was, of course, centered around the main hoisting and air shafts. No serious damage resulted to any of the machinery in the fan house, although the building itself was nearly demolished. The structural steel of the headframe over the airshaft was badly bent and twisted, while the sheave wheels at the top of the structure were broken by rails and timbers ejected from the opening.

Within the main hoisting shaft, which is 517 ft. deep, many guides and buntons were ripped loose. One of the cages was demolished, while the other was blown upward through its compartment with so much force that it became wedged in the top of the headframe. None of the plant buildings entirely escaped damage. Débris blown out of the airshaft did considerable execution. Small pieces of steel, stones and other missiles traveling with high velocity broke window panes as if bullets had struck them. A 12-in. girder was lifted out of the airshaft, in its descent pierced the roof of the lamphouse and passed through a brick sidewalk to bury itself in the ground outside the building.

Below ground the damage wrought was heavy. Apparently every section of the mine received the full force of the explosion, for brattices, overcasts and stoppings were demolished. A 7-ton locomotive at the bottom of the main hoisting shaft was overturned and several mine cars were piled up in one of the shaft compartments. Entrance of rescue crews was made difficult by reason of the damage to the cages and it was necessary for a time to use improvised buckets for lowering the men.

As soon as news of the disaster reached Pittsburgh the Bureau of Mines dispatched a mine-rescue car and several trained men to the scene. Other operations in the immediate vicinity also placed men at the disposal of the Union company. Although the rescue crews were completely equipped with breathing apparatus, it was impossible for them to proceed any great distance from the bottom because of the total wrecking of the ventilation system. Members of some of the rescue parties were overcome with carbon monoxide and had to be brought to the surface to be revived.

Little toward recovering any of the bodies was accomplished by the rescue crews during the first twenty-four hours, it being first necessary to restore the air circulation to some extent. Early Tuesday morning the bruised and burned remains of Matuskenoch was found within 150 ft. of the bottom of the airshaft. Several days elapsed before a complete exploration of all of the workings had been made and the last body had been recovered.

Much credit is due the Bureau of Mine men as well as to the volunteers from other concerns for the rapidity with which the rescue and recovery work progressed. Working for days without sleep, these men often braved death in the hope that some of the unfortunates might be rescued, although it was early realized that small chance existed that any of the men in the mine might have survived. From the condition of the recovered bodies, all of the victims, it is believed, were killed instantly.

Non-Union Men Shot in Williamson Field

WHEN the Freeborn mine of the Portsmouth Solvay Coal Co. was attacked on July 23 by persons hidden in the hills on both the Kentucky and West Virginia sides of the Tug River two mine workers were wounded, and an attempt has been made by the state constabulary to track the murderers with bloodhounds.

The men are said to have been handling coal from the mouth of the mine on the Kentucky side of the river down to the railroad tracks in West Virginia. The assailants were well scattered, there being one party in the West Virginia hills and two in Kentucky. The injuries of one of the workmen are not serious, those of the other are. Guards are said to have returned the fire. Fully 1,000 shots are said to have been fired.

Exchange of Price Data on Trial

Value of Open-Price Bureaus to Coal Industry Unquestioned—Hope Expressed That Government Will Expedite Favorable Change in Laws

THE determination of the Department of Justice to probe minutely into such interchange of price data as may have taken place between members of associations of producers of soft coal again has centered attention on the scope of the anti-trust statutes. It long has been admitted that the anti-trust laws are so vague in many particulars as to work a real hardship on industry.

Disinterested economists point out that the coal industry just now is suffering a variety of growing pains. The relationship of the bituminous coal industry to the public is being worked out on a new basis. It is pointed out that the coal industry is moving rapidly toward an out-and-out classification as a public utility. The last thirty years are referred to as the age of trusts. The steel industry, the petroleum industry and practically all the fundamental industries of the country passed into the trust stage many years ago. This was not true of the coal industry, but its process of knitting together, while retarded, appears now to be in full swing.

It is admitted that competition has been responsible for most of the ills of the coal industry. The reporting of prices on past transactions was an effort to cure some of these ills. The effect is admitted to have been in the interest of the general public. Whether or not the practice came within the technical boundaries of the anti-trust laws remains to be threshed out. The enthusiasm for submitting price reports naturally disappears when prices are high and coal in great demand. Its benefits to the operator are confined almost entirely to periods when the supply is greater than the demand. It has been found to be a very effective checkmate to the reprehensible practice of certain buyers to beat down prices by reporting other purchases at lower prices than actually was the case.

Investments in coal-producing companies became really attractive for the first time during the war. During that time the Government actually encouraged consolidation of interests so as to make for economies and greater production. This tendency to consolidate is continuing, but the extent to which this consolidation has gone is not generally appreciated.

In view of the changed conditions surrounding the coal industry, the activities of the Department of Justice are welcomed in certain quarters in the belief that uncertainty will be eliminated and that certain economic truths will be brought out so clearly as to make possible changes in existing law which will expedite the building up of a coal industry, with due regard to the best principle of efficiency and conservation.

Shipments of Lake Coal by Originating Districts

STATISTICS of the movement of Lake coal to the end of June have recently been compiled by H. M. Griggs, manager of the Lake Erie Ore and Coal Exchange, showing by originating railroads and by ports the record for this year compared with 1919 and 1918. Toledo, Sandusky, Cleveland, Fairport, Erie and Ashtabula have this year made a very poor showing compared with either of the two preceding years. The mines on the Hocking Valley, Toledo & Ohio Central, Baltimore & Ohio, Pennsylvania, Erie and New York Central railroads supply these ports and it has been the failure of shipments from these mines that has been largely responsible for the low rate of movement of Lake coal this year.

Through Huron, Lorain and Conneaut, the Wheeling & Lake Erie, Baltimore & Ohio, and Bessemer & Lake Erie railroads have about equaled their records of 1918 and in the instance of Conneaut exceeded the dumpings of the record year of 1919.

These official figures show 2,069,546 net tons of cargo coal dumped in June of this year, compared with 4,098,828 tons in June, 1919, and 3,363,566 tons in June, 1918. This year to the end of June the tonnage of cargo coal was 3,566,850, as against 8,812,862 tons in 1919 and 7,266,258 tons in 1918.

In his testimony before the Interstate Commerce Commission recently Mr. Groverman, representing the operators of Lake docks, stated that the supply for the American Northwest via the Lakes had been contracted from sixty-one mines on six railroads in five states. The total quantity of bituminous coal under contract by these interests this season is understood to be about 13,550,000 net tons, of which approximately 7,250,000 tons is to come from mines owned by or affiliated with the dock operators, and the remaining 6,300,000 tons has been contracted with producers who have no dock interests. The largest dock interests that are known to have mine connections are M. A. Hanna, Northwestern Fuel Co. (affiliated with the Consolidation Coal Co.), Pittsburgh Coal Co., Berwind Fuel Co. (affiliated with the Berwind-White Coal Mining Co.), Superior Coal & Dock Co., Northern Coal & Dock Co., Pittsburgh & Ashland Coal & Dock Co., Clarkson Coal & Dock Co., Carnegie Coal & Dock Co.

BITUMINOUS COAL LOADED INTO VESSELS AT LAKE PORTS AS DUMPED BY DOCKS
For Season to End of June, in Net Tons

Ports	Railroads	1920 Cargo	1920 Fuel	1920 Total	1919 Cargo	1919 Fuel	1919 Total	1918 Cargo	1918 Fuel	1918 Total
Toledo	Hocking Valley	430,429	6,306	436,735	1,723,987	51,978	1,775,965	1,175,775	35,485	1,211,260
	Toledo & Ohio Central	273,447	18,074	291,521	473,666	13,179	486,845	624,499	18,049	642,548
Sandusky	Baltimore & Ohio	166,456	7,924	174,380	752,545	16,503	769,048	560,702	8,513	569,215
	Pennsylvania	205,543	3,791	209,334	534,094	15,655	549,749	705,597	17,839	723,436
Huron	Wheeling & Lake Erie	538,335	39,157	577,492	697,994	22,451	720,445	632,013	23,522	655,535
Lorain	Baltimore & Ohio	746,049	71,306	817,355	1,208,862	59,492	1,268,354	786,221	24,317	810,538
Cleveland	Pennsylvania	85,741	26,972	112,713	873,302	98,013	971,315	683,277	95,490	778,767
	Erie				70,754	2,481	73,235	234,425	7,129	241,554
Fairport	Baltimore & Ohio				16,692	12,954	29,646	363	13,875	14,238
Ashtabula	New York Central	204,936	59,783	264,719	761,279	48,078	809,357	511,706	65,569	577,275
	Pennsylvania	180,162	30,208	210,370	764,811	30,170	794,981	403,541	24,387	427,928
Conneaut	Bessemer & Lake Erie	709,702	14,033	723,735	534,607	1,755	536,362	713,350	11,865	725,215
Erie	Pennsylvania—West	17,245	932	18,175	300,502	14,055	314,557	179,580	10,792	190,372
	Pennsylvania—East	8,807	26,096	34,903	99,767	4,876	104,643	55,209	1,506	56,715
Totals		3,566,850	304,582	3,871,432	8,812,862	391,640	9,204,502	7,266,258	358,338	7,624,596

Coal Consumed by Electric Power Plants, January-April, 1920

ELECTRIC power produced in the United States during January, February, March, and April, 1920, according to statistics issued by the Geological Survey, required the combustion of coal in net tons is indicated by states in the following table:

	January	February	March	April
Alabama	29,211	17,654	17,819	16,950
Arizona	198	317	271	297
Arkansas	8,675	7,654	8,910	8,095
California	0	0	0	0
Colorado	43,406	39,154	40,545	36,510
Connecticut	75,529	66,497	65,601	51,280
Delaware	9,139	9,834	10,214	10,254
District of Columbia	23,237	21,104	22,171	18,850
Florida	2,333	2,342	2,423	2,204
Georgia	19,556	10,875	10,268	11,856
Idaho	150	60	150	50
Illinois	411,574	384,031	385,716	358,226
Indiana	197,258	184,096	182,537	172,966
Iowa	93,723	89,814	91,063	80,458
Kansas	39,710	36,950	36,422	34,617
Kentucky	43,181	39,521	40,127	38,981
Louisiana	7,589	11,855	12,073	10,665
Maine	8,410	3,523	813	389
Maryland	39,552	34,251	30,391	24,264
Massachusetts	176,514	151,496	142,034	126,161
Michigan	180,157	165,425	169,088	134,759
Minnesota	64,060	56,206	44,144	27,143
Mississippi	14,028	12,887	13,627	10,124
Missouri	91,538	92,867	102,429	96,211
Montana	4,551	4,353	4,276	3,918
Nebraska	37,926	38,939	36,279	34,179
Nevada	247	232	248	229
New Hampshire	6,768	5,780	3,645	3,284
New Jersey	156,280	129,816	134,991	128,338
New Mexico	4,788	4,278	4,675	4,715
New York	480,297	411,500	402,866	348,643
North Carolina	21,612	18,609	20,271	19,013
North Dakota	19,362	16,007	14,266	12,812
Ohio	400,731	361,998	373,329	349,274
Oklahoma	8,413	8,889	9,573	8,694
Oregon	190	197	635	200
Pennsylvania	527,198	489,055	502,727	452,623
Rhode Island	35,196	32,624	28,675	25,540
South Carolina	11,649	9,630	11,202	9,347
South Dakota	7,827	7,645	6,522	5,523
Tennessee	24,216	22,486	23,953	23,524
Texas	48,076	46,283	22,820	20,089
Utah	3	15	40	70
Vermont	1,748	2,250	441	261
Virginia	43,269	37,585	33,737	31,740
Washington	3,348	2,722	3,230	3,837
West Virginia	107,133	98,089	106,963	99,359
Wisconsin	77,051	76,734	83,187	68,316
Wyoming	13,718	13,516	13,380	11,249
Total	3,620,325	3,277,645	3,270,767	2,936,087

Urges Careful Loading and Direct Billing To Expedite Coal Production

STRESSING the necessity for co-operation in bringing about more efficient operation of the railroads, Jonas Waffle, secretary of the Indiana Coal Trade Bureau, has sent to members a notice embodying the following suggestions:

Approximately 200,000 cars of bituminous coal are loaded in the United States each week. If the loading of these cars is increased an average of 1,000 pounds per car, a total of 100,000 tons weekly, or 5,200,000 tons annually, additional production can be accomplished with the same number of cars. Mine managers and superintendents should give this problem their undivided attention. Personal supervision of the loading of cars at the mines will result in a substantial increase in production.

Reconsignments slow up the operation of the railroads by reason of extra switching and additional car mileage and accordingly reduce the available supply of cars. You are urged, therefore, to bill all coal from the mines to the ultimate consignee or dealer. Direct billing will enable carriers to utilize the most available routes in movement to destination, which they cannot do on reconsigned cars.

As far as practicable, producers should sell their coal in the territory which normally depends upon their field for its fuel requirements. Shipping of coal to distant points, involving hauls through other coal fields, should be discouraged. The importance of this recommendation is well illustrated by the results obtained from the zoning system in effect under the Fuel Administration. It is admitted by all well-informed coal men that the zoning system "saved the day" during the war, as hundreds of thousands of car miles were saved under that plan. This suggestion, if conscientiously followed in all fields, will furnish each district or zone with the coal it requires and will result in an enormous saving in car miles and a corresponding increase in the supply of cars at the mines.

Shipping clerks should be furnished with a list of the cars at the mines in the order in which they stand on the mine tracks, and in billing cars for various consignees or for various destinations or for movement via various routes, shipping clerks should select the cars so as to reduce to the minimum the amount of switching necessary to be performed by the railroad serving the mine.

While the responsibility for the transportation of coal rests primarily with the carriers, nevertheless it is the duty of producers of coal to do their part in the saving of transportation and we cannot urge upon you too strongly the necessity for your fullest co-operation.

Warrants Issued Against 35 Coal Concerns Charge Violation of Lever Act

CHARGING a violation of the Lever Act in that excessive prices were exacted L. H. Kelly, District Attorney for the Southern District of West Virginia, had warrants issued Saturday, July 17, against thirty-five coal companies operating in southern West Virginia, and their principal officers.

Coincident with the issuance of the warrants the following statement was made by Joseph N. Kenna, Assistant United States Attorney: "The warrants which have been obtained today for violation of the Lever Act in the sale of coal in this district were taken under direct instructions from the Department of Justice. The investigation of the coal situation is being carried forward and additional warrants may be expected at any time that further results of the investigation are deemed to justify them."

What constitutes a fair price for coal has not so far been stated by the District Attorney, although some time ago producers made an effort to learn from the above-named official what he considered a fair price so that they might be within the realm of safety. Therefore what constitutes a legal price and what constitutes an illegal price is considered rather vague. The warrants merely accuse the defendants of unlawfully making an unjust and unreasonable charge in handling and dealing in a necessary, to with, coal.

Companies Served with Warrants

Warrants against the following coal companies were issued:

Clifton Coal Mining Co., Columbia Coal Co., Ivy Branch Coal Co., Anchor Coal Co., Ashford Coal & Coke Co., New Export Coal Co., Superior Thacker Coal Co., Black Betsy Consolidated Coal Co., Eagle Byproducts Coal Co., Blue Ridge Fuel Co., Royal Block Coal Co., Aldridge Coal Co., Colcord Coal Co., Hackett Coal Co., French Coal Mining Co., Lewis Coal Co., West Virginia Coal & Manufacturing Co., Boone County Coal Corporation, Draper Coal Co., Camp Black Coal Co., P. M. C. Coal Co., Falkner Coal Co., Pan Coal Co., The Argyle Coal Co., Cub Fork Coal Co., Buffalo-Eagle Colliery Co., Manbar Coal Co., Peytona Mining Co., Rock Bottom Coal Co., Sterling Block Coal Co., West Virginia Eagle Coal Co., Charleston Co-Operative Coal Co., Mountain Eagle Colliery Co., Barren Creek Coal Co. and James R. Branch Coal Co.

Why Europe Should Not Be Denied Our Coal

No National Policy on Exports Has Been Announced — Government Restriction of Exports of Coal to Europe Considered Unlikely

COMPLYING with a request from the President it is understood that a report by the interdepartmental economic liaison committee has been sent to the White House. The report, it is understood, condemns any important curtailment of the exports of coal. The report is a confidential one and exact information concerning its recommendations is not available. Entirely apart from the humanitarian side of the situation, it is believed that emphasis is placed upon the fact that it is to our selfish domestic interest to do all we can to prevent an economic collapse in any of the countries of Europe, especially those where vast credits have been extended.

Italy requires a minimum of 750,000 tons of coal monthly. She has entered into an agreement with Great Britain for a portion of that tonnage and has asked our State Department to facilitate the obtaining of 350,000 tons per month in the United States. Italy produces practically no coal. Last winter the Italian Government was so strict in its supervision of coal that it prohibited the use of any coal whatever for heating purposes. All coal was reserved for the industries. When exchange is taken into consideration it means that Italian consumers pay from $100 to $125 per ton for American coal. That fact alone is a guarantee that it will not be wasted.

In France the best coal fields were destroyed by the Germans. Great Britain has agreed that 45 per cent of its coal exports are to go to France and it seems probable that France will receive larger supplies from Germany. Nevertheless this country must be relied upon for a certain amount of coal required in the French Republic.

There are almost as many reasons for furnishing Canada with coal as there are for furnishing New England an adequate supply, to say nothing of the fact that coal to Canada spells wood-pulp and news print. In like manner, coal for Cuba spells sugar.

Denmark produces no coal, but is an important producer of food products. Were Denmark to be cut off from American coal it would add materially to the unrest in western Europe, because it would mean a great curtailment in the amount of butter and other dairy products available. Sweden produces 400,000 tons of low-grade coal but must have much more than that for its industries. Next to the United States, Sweden is the largest producer of wood-pulp and paper. American consumers are able to secure these much-needed commodities from Sweden only when payment, or part payment at least, is made in actual coal. The coal shortage is such in Sweden that pulp-wood is being used to fire the mills. The Norwegian situation is almost exactly the same as that of Sweden.

According to advices to the State Department, Germany produced coal during the first five months of 1920 at the rate of 125,000,000 tons annually. When France has been furnished her quota of German-mined coal there is not enough left to go around in Germany. Rationing of industries and of domestic consumers continues.

The east coast of South America is only partly dependent on the United States for coal, but as it is greatly in the interest of every man, woman and child in the United States to hold the market which we have established in those countries there is great demand that our meager exports to South America be not curtailed further. Despite the demand for British coal 80,000 tons monthly has been allotted to South America.

Survey Issues Data on Coal Distribution of Rocky Mountain and Pacific States

IN RESPONSE to urgent requests the U. S. Geological Survey has issued advance statistics of the distribution of coal produced in the Rocky Mountain and Pacific Coast States during the calendar year 1918. The figures are drawn from "Coal in 1918, Part B, Distribution and Consumption," by C. E. Lesher, which is now in press.

The statistics are based in part upon reports submitted to the Geological Survey by the mines, in part upon distribution records kept by the district representatives of the Fuel Administration, and in part upon statistics obtained from the railroads.

It must be remembered that during the last three-fourths of the year 1918 the zones established by the Fuel Administration were in force, a fact which modified the distribution of coal produced in these States.

DISTRIBUTION OF COAL PRODUCED IN THE ROCKY MOUNTAIN AND PACIFIC COAST STATES, 1918 IN NET TONS

Use or destination	New Mexico	Colorado	Utah and Southern Wyoming	Montana and Northern Wyoming	Washington
Used in home State:					
Sold to local trade not shipped	39,000	436,000	119,000	256,000	74,000
Used at mines for steam and heat	40,000	311,000	258,000	266,000	194,000
Made into coke at mines	1,108,000	1,080,000	738,000	.....	155,000
Shipped to points in home State	217,000	4,519,000	1,987,000	1,512,000	1,088,000
Total used in home State	1,404,000	6,346,000	3,102,000	2,034,000	1,511,000
Shipped to other States:					
Arizona	225,000	10,000	.....	.....	.....
California	56,000	6,000	654,000	.....	18,000
Colorado	54,000	.....	17,000	1,000	.....
Idaho	.....	5,000	543,000	21,000	7,000
Iowa	.....	135,000	47,000	236,000	.....
Kansas	78,000	784,000	15,000	1,000	.....
Minnesota	.....	.....	.....	15,000	.....
Missouri	.....	6,000	2,000	14,000	.....
Montana	.....	.....	274,000	.....	.....
Nebraska	.....	1,133,000	344,000	590,000	.....
Nevada	.....	.....	445,000	.....	.....
New Mexico	.....	83,000	.....	.....	.....
North Dakota	.....	.....	.....	154,000	.....
Oklahoma	31,000	145,000	.....	.....	.....
Oregon	.....	.....	267,000	1,000	161,000
South Dakota	.....	30,000	12,000	251,000	.....
Texas	235,000	399,000	.....	.....	.....
Utah	.....	1,000	.....	.....	.....
Washington	.....	.....	157,000	105,000	.....
Wyoming	.....	54,000	.....	.....	.....
Total shipped to other States	679,000	2,791,000	2,777,000	1,389,000	186,000
Delivered to railroads by all-rail routes	1,736,000	3,247,000	5,553,000	4,183,000	1,871,000
Exported by rail	74,000	24,000	.....	.....	20,000
Shipped to tidewater	130,000	.....	70,000	.....	494,000
Total production	4,023,000	12,408,000	11,502,000	7,606,000	4,082,000

Indiana Production Advances Slightly

PRODUCTION of coal at 185 mines in Indiana in the week of July 17 is reported as 462,235 net tons, as compared with 440,933 net tons the week preceding. These mines operated 63.96 per cent of full time, with car shortage responsible for 28.67 per cent of time lost. Of the two other causes contributing to lack of production, mine disability and labor trouble, the latter accounted for only 3.51 per cent of time lost.

Embargoes Will Force Needed Coal to the Northwest and New England

Interstate Commerce Commission Agrees to Plan of Limited Embargoes on Markets Other Than Northwest and New England —Plan Is That Proposed by the Operators and Railroad Officials

PREFERENCE and priority in the supply of cars in the transportation of bituminous coal for the Northwest and for New England will bemade effective in the latest orders of the Interstate Commerce Commission by a system of limited embargoes. Order No. 10 of the commission, issued July 20 and effective on and after July 26, provides for such a system of embargoes on carriers originating Lake coal. This order is the first of the present series in the authorship of which the coal operators have collaborated.

Order No. 10 is, of course, a real priority order. Whatever coal is needed for the Northwest must now be shipped before any other consignee can be supplied with coal from these fields. Compared with Judge Lovett's Priority Order No. 1, of August, 1917, this would appear to be less severe. Judge Lovett's order provided that every empty car furnished a mine must be loaded for the Lakes. All other business was thus technically embargoed by the assignment of the cars to the one trade. The order that this season will be depended on to accomplish the same purpose will operate in much the same manner, with the important exception that not all the cars placed at the mines *must* be loaded for the Lakes. Order No. 10 provides that after a certain percentage of each day's loading has been billed to the Lakes the remainder may be shipped elsewhere. The percentage for each originating field is to be determined by H. M. Griggs, manager of the Ore and Coal Exchange, who has been appointed a special agent of the commission for this purpose. The several percentages are subject to change on one day's notice.

Program Has Difficult Features

The proper determination of the percentages of the loading in each field that must first be consigned to the Lakes each day is at once the most difficult and the most important feature of the program. It is obvious that the portion that is forced to the Lakes must not be greater than is absolutely required, by reason of the general condition of short supply and urgent demand for coal elsewhere, a demand that is largely responsible for the shortage in the Lake movement which this order is to correct. The proper determination of these percentages involves also a knowledge of the number of assigned cars in each field, for these are excepted from the order, and must involve also an estimate of the extent to which shippers will provide coal over and above the required amount. It appears that however carefully the first figures may be worked out frequent changes will be necessary in the earlier stages.

It is well to reflect that the Lovett order was a 100-per cent assigned-car order for the Lakes and that up to July 1 of that year (1917) there had been dumped at Lake Erie 6,329,600 tons of coal, compared with but 3,871,432 tons this year in the same period. If from about the middle of August to the close of navigation in 1917 the percentage of loading from each field was 100 for Lake, in order to get a total of less than 27,000,000 tons moved in the season, and if the new order this year starts under a handicap of 2,500,000 tons, what percentage will be required under Order No. 10 to get the desired 30,000,000 tons up the Lakes this season, production at the present time being at about the rate of 1917?

Although the plan avoids the use of the term "assigned cars" in describing the procedure it is obvious that up to the determined amounts the cars supplied each mine are actually assigned. The division is made equal and in this way the great objection of the coal operators to assigned cars—unequal running time—is overcome. In effect Order No. 10 operates as did the orders of the distribution division of the Fuel Administration to the district representatives; as, for instance, when Cameron was directed to supply 3,500 cars per week to New England, or Hurd and McKinney to increase shipments to the Lake by 1,000 cars per week. Lacking a district representative to whom the shippers are responsible recourse has been had to the railroads, which are responsible to the Interstate Commerce Commission. Lacking authority over the operators, the operators have imposed regulation over themselves through the only possible agency.

The scheme will not work unless the coal is bought. The railroads may take definite portions of each day's loading from the mines to either the Lake or Tidewater pools, but if the interests at the head of the Lakes or in New England cannot agree on terms of purchase, the terminal ports will soon become congested and they in turn embargoed. It is highly important, therefore, that the operator of *every* mine be approached by buyers for the Northwest and for New England and that all the coal that will be forced into these markets be bought before it reaches the boats. Already there are rumors that speculators will attempt to take advantage of the situation by buying the coal that is to be forcefully diverted to these two markets.

Text of Service Order No. 10

It appearing in the opinion of the commission that because of a shortage of equipment and congestion of traffic, aggravated by unfavorable labor conditions which continue to exist upon the lines of each and all the common carriers by railroad subject to the Interstate Commerce Act within the territory east of the Mississippi River, and because of the inability of the said common carriers properly and completely to serve the public in the transportation of coal, an emergency exists which requires immediate action; and

It further appearing that the people in the territory comprising the states of Michigan (upper peninsula), Wisconsin, Minnesota, North Dakota, South Dakota, Montana and Canada are in a large measure dependent upon bituminous coal, which must be transported from mines in Pennsylvania, Ohio, West Virgina, Virginia and Kentucky to the said territory by rail and lake during the season of Lake navigation ending about Nov. 1 each year;

It further appearing that the rate at which coal has been and is now being transported to the said territory by rail and lake is not sufficient to meet its requirements or to assure peace, health and welfare to the people thereof,

It is ordered that until the further order of this commission (the following railroads):

Baltimore & Ohio Railroad Co. from coal mines west of Grafton, W. Va., and Meyersdale, Pa.
Pennsylvania Railroad Co. and Pennsylvania Railroad Co., Western Lines, from coal mines on main and branch lines west of Latrobe, Pa.
New York Central Railroad Co. from coal mines in the state of Ohio.
Louisville & Nashville Railroad Co. from coal mines on and east of the line from Cincinnati, Ohio, to Jellico, Tenn.
Wheeling & Lake Erie Railway Co.
Hocking Valley Railway Co.
Toledo & Ohio Central Railway Co.
Pittsburgh & West Virginia Railway Co.
West Side Belt Railroad Co.
Bessemer & Lake Erie Railroad Co.
Pittsburgh & Lake Erie Railroad Co.
Pittsburgh, Chartiers & Youghiogheny Railway Co.
Montour Railroad Co.
Monongahela Railway Co.
Kanawha & Michigan Railway Co.
Chesapeake & Ohio Railway Co.
Norfolk & Western Railway Co.
Coal & Coke Railway Co.
Union Railroad Co. (Pennsylvania).
Sandy Valley & Elkhorn Railway Co.
Pittsburgh, McKeesport & Youghiogheny Railway Co.
Kanawha & West Virginia Railroad Co.
Long Fork Railway,

each of which is a common carrier by railroad subject to the Interstate Commerce Act, be, and they are hereby, authorized and directed to give preference and priority in the supply of cars for and in the transportation of bituminous coal consigned to the Ore & Coal Exchange (the address of which is Perry Payne Building, Cleveland, Ohio) at any Lake Erie port for transshipment by water as a part of a pool or pools of lake cargo or bunkerage coal at any such port; and to place an embargo on the supply of cars for or the movement of all other bituminous coal in carloads to any other consignee or destination;

Provided that this order shall not apply to coal loaded in cars furnished, placed or assigned under any order or direction hereinbefore or hereafter entered by the commission; *and provided further* that after a producer and shipper of bituminous coal served by any of said common carriers in the said territories has on any day shipped to the said Ore & Coal Exchange at any of the said ports a percentage (to be determined and announced for each coal producing district by H. M. Griggs, manager of said Ore & Coal Exchange, who is hereby designated as an agent of the commission therefor) of the total number of cars to which the shipper is entitled on the said day, then this embargo shall not apply to the said shipper for the remainder of the said day to ship the remainder of the cars to which he is entitled to any consignee and destination he may desire, including the said Ore & Coal Exchange and the said Lake ports.

It is further ordered that bituminous coal in carloads consigned to the said Ore & Coal Exchange up to the percentage hereinbefore referred to shall not be subject to reconsignment except upon a permit and direction therefor issued by the said H. M. Griggs, who is hereby designated as an agent of the commission therefor, which permit and direction shall be issued by him only upon a showing that the coal so to be reconsigned will go to a Lake pool or pools.

It is further ordered that the percentages hereinbefore referred to shall be subject to change from time to time by the said H. M. Griggs upon one day's notice to the carrier or carriers concerned.

It is further ordered that this order shall be effective on and after July 26, 1920, until the further order of the commission.

And it is further ordered that copies of this order be served upon the carriers hereinbefore described, and that notice of this order be given to the general public by depositing a copy hereof in the office of the secretary of the commission at Washington, D. C.

Senator Calder Starts Coal Investigation

CONSTRUCTION and building interests are believed to be behind the public investigation of the coal situation now being conducted in New York City by Senator William M. Calder, of Brooklyn. These interests are openly opposed to the policy of the Interstate Commerce Commission in giving preference to coal in the use of open-top cars, as expressed in orders Nos. 7 and 9.

This was strikingly brought out by Senator Calder in his examination of Mr. Storrow by questions and answers designed to show that Order No. 7 had been of no assistance to New England in obtaining coal. This line of reasoning was satisfactory to both Senator Calder and Mr. Storrow, because Mr. Storrow is maintaining that the only important obstacle to New England getting water-borne coal is foreign exports.

Mr. Storrow declared that restriction of exports should have been put into effect by the Interstate Commerce Commission before it had issued such a drastic order as the open-top order. He added that the "skyrocketing of coal prices" was caused by excessive and unrestricted exports of coal. These prices, he said, began to go up when exports suddenly doubled in April.

Mr. Storrow believes that a reasonable restriction of coal exports would tend to bring coal prices back to normal and put a stop to profiteering, although more activity by the Department of Justice also might have a good effect.

At the hearing on Wednesday, July 21, G. F. McGee, State Fuel Administrator of Minnesota, said the present bituminous situation was due to bad car supply and not to the exporting of coal. He said the mines were getting only about 35 per cent of the cars needed. Mr. McGee said that giving the Northwest priority coal shipments would settle the problems there, and that it might not be a bad thing to halt coal shipments to Europe for a time.

William H. Groverman, secretary of the Northwestern Coal and Dock Operators' Association, another witness, said that he is the author of Order No. 10, issued by the Interstate Commerce Commission. He declared a coal car should be designated and then every car should be used in carrying coal. If this is done, he said, we will have plenty of coal for the country and for export. Mr. Groverman could not see that the placing of an embargo on exports was going to solve the problem.

The fuel requirements of the public utility corporations in New York City were rehearsed before the committee at its hearing on July 23. John W. Lieb, vice-president of the New York Edison Co., stated that about 5,000,000 tons of anthracite and bituminous coal were consumed annually by the local corporations. At a conservative estimate, he said, owing to the necessity to purchase spot coal, the coal bill of the various corporations is running from $7,000,000 to $8,000,000 in excess of its normal amount.

Coal for Export Is Now Sold F.O.B.

REPORTS reaching officials in Washington are to the effect that the practice of making sales of coal on a c.i.f. basis has practically stopped, because of the delays and uncertainties occasioned by embargoes and regulations. As a result, it is stated, nearly all export coal is being sold f.o.b. at tidewater, leaving to the foreign purchasers the burden of the further handling of the coal.

Bituminous Costs and Realizations in Middle Appalachian Field

Federal Trade Commission Report Gives Data for Maryland, West Virginia and Virginia, Representing 18 Per Cent of U. S. Soft Coal Output—Average Cost, $1.63 to $3.09; Sales Return, $2.45 to $2.88 Per Ton

COAL produced in Maryland, West Virginia and Virginia represents about 18 per cent of the total soft coal of the United States. The Federal Trade Commission has just published a report covering the costs of production and sales realization from operations in these states for the year 1918 with comparable figures for a substantial portion of the operations for the years 1916 and 1917. This report is No. 6 of the series of cost reports the commission is publishing based on the data collected during the war for the Fuel Administration and used as a basis of scientifically regulating prices. The preceding reports, covering the more important bituminous fields in the East and Middle West and the anthracite field of Pennsylvania, have previously been reviewed in *Coal Age*. All operations for which complete reports were received for the year 1918 are included in the report and their output represents about 68 per cent of the total for Maryland, 89 per cent for West Virginia and 77 per cent for Virginia.

For these operations, at which was produced 90,169,992 net tons of coal, the average annual total f.o.b. mine cost ranged by districts from $1.63 to $3.09, and the average sales realization from $2.45 to $2.88 per ton.

The costs by quarters in 1918 and for the year, by districts, together with sales realization and resultant margins are contained in the accompanying tables.

TABLE I. COSTS AND SALES REALIZATIONS OF MARYLAND AND WEST VIRGINIA IN 1918

Period (1918)	Costs per Ton: Labor	Supplies	General Expense	Total F.O.B. Mine	Sales Realization per Ton	Margin per Ton
Upper Potomac, Cumberland-Piedmont District:						
January-March	$1.73	$0.26	$0 33	$2 32	$2.92	$0.60
April-June	1.74	.26	.33	2.33	2 84	.51
July-September	1 73	.25	.31	2.29	2 77	.48
October-December	1.90	.32	.39	2.61	2.77	.16
Year	$1.77	$0.26	$0 34	$2 37	$2 82	$0.45
Production for year, 6,855,916 tons.						
Pocahontas District:						
January-March	$1.07	$0.22	$0.29	$1.58	$2.67	$1.09
April-June	1.04	.24	.27	1.55	2.45	.90
July-September	1.08	.25	.27	1.60	2.35	.75
October-December	1.18	.30	.31	1.79	2.35	.56
Year	$1.09	$0.26	$0.28	$1 63	$2.45	$0.82
Production for year, 18,461,200 tons.						
Tug River District:						
January-March	$1.41	$0.24	$0 34	$1.99	$2.71	$0.72
April-June	1.43	.27	.33	2.03	2.73	.70
July-September	1.52	.31	.32	2.15	2.72	.57
October-December	1.66	.35	.37	2.38	2.71	.33
Year	$1.50	$0.29	$0 34	$2.13	$2.72	$0 59
Production for year, 2,895,664 tons.						
Thacker District:						
January-March	$1.25	$0.27	$0.31	$1.83	$2.91	$1 08
April-June	1.23	.30	.31	1.84	2.82	.98
July-September	1.31	.32	.29	1.92	2.64	.72
October-December	1.44	.41	.36	2.21	2.65	.44
Year	$1.30	$0.32	$0.32	$1.94	$2.76	$0 82
Production for year, 2,879,528 tons.						
Kenova District:						
January-March	$1.53	$0.23	$0.40	$2.16	$2.94	$0.78
April-June	1.63	.18	.43	2.24	2 89	.65
July-September	1.77	.15	.39	2.31	2.76	.45
October-December	2.08	.18	.54	2.80	2.89	09
Year	$1.72	$0.18	$0.43	$2 33	$2 87	$0.54
Production for year, 421,602 tons.						
Logan District:						
January-March	$1.10	$0 22	$0 34	$1.66	$2.86	$1 20
April-June	1 04	21	.31	1.56	2.69	1 13
July-September	1 13	26	.30	1.69	2.56	.87
October-December	1.27	.35	.37	1.99	2.51	.52
Year	$1 13	$0 26	$0 33	$1.72	$2.64	$0 92
Production for year, 8,555,680 tons.						
New River District:						
January-March	$1.46	$0 28	$0 36	$2.10	$2 95	$0 85
April-June	1 41	.28	.36	2 05	2.90	85.
July-September	1 47	.31	.35	2.13	2 82	69
October-December	1 58	40	42	2.40	2 84	44
Year	$1 48	$0 31	$0 37	$2 16	$2 88	$0 72
Production for year, 13,257,162 tons.						
Kanawha District:						
January-March	$1.41	$0 22	$0.32	$1 95	$2.66	$0 71
April-June	1 32	23	.27	1.82	2 60	78
July-September	1 35	23	26	1.84	2 60	76
October-December	1.44	.31	.32	2 07	2.56	49
Year	$1 37	$0 25	$0.29	$1.91	$2 60	$0.69
Production for year, 9,717,073 tons.						
Putnam County District:						
January-March	$2 29	$0 45	$0 46	$3 20	$2 37	1.83
April-June	2 15	.30	.36	2.81	2 86	.05
July-September	2 28	.41	.40	3 09	2 90	1 19
October-December	2.40	.50	.50	3 40	2.87	1.53
Year	$2 27	$0.40	$0 42	$3.09	$2 76	[1]$0 33
Production for year, 218,453 tons.						
Mason County District:						
January-March	$1 74	$0.27	$0 30	$2 31	$2 52	$0.21
April-June	1.77	.29	.30	2 36	2 78	.42
July-September	1.68	.26	28	2 22	2 84	.62
October-December	1.75	41	.37	2 53	2.81	.28
Year	$1 74	$0.30	$0 31	$2 35	$2.74	$0.39
Production for year, 104,500 tons.						
No. 10 District:[2]						
January-March	$1 35	$0 24	$0 33	$1 92	$2 51	$0.59
April-June	1 31	.23	.30	1 84	2 59	75
July-September	1.37	.24	28	1 89	2.64	75
October-December	1 50	.27	.33	2 10	2 62	52
Year	$1 38	$0 25	$0 30	$1.93	$2 59	$0 66
Production for year, 4,421,647 tons.						
Fairmont District:						
January-March	$1.40	$0 27	$0.37	$2.04	$2 69	$0 65
April-June	1 26	.25	.33	1.84	2 66	.82
July-September	1.32	.25	.31	1 88	2.52	.64
October-December	1.43	.31	.37	2.11	2 51	.40
Year	$1 35	$0 27	$0.34	$1 96	$2 59	$0 63
Production for year, 11,427,803 tons.						
Pittsburgh Seam District:						
January-March	$1 52	$0 27	$0 26	$2.05	$2.76	$.71
April-June	1.43	.26	.23	1.92	2.55	63
July-September	1 47	.28	.22	1.97	2.49	.52
October-December	1.52	.34	.27	2.13	2.43	.30
Year	$1 48	$0 29	$0 24	$2.01	$2 55	$0.54
Production for year, 3,077,779 tons.						

[1] Amount by which total f. o. b. mine cost exceeded sales realization.
[2] No. 10, Coal and Coke and Gauley districts (combined).

Period (1918)	Costs per Ton — Labor	Supplies	General Expense	Total F.O.B. Mine	Sales Realization per Ton	Margin per Ton
District No. 3:						
January-March	$1.68	$0.27	$0.38	$2.33	$2.74	$0.41
April-June	1.73	.26	.38	2.37	2.92	.55
July-September	1.82	.26	.35	2.43	2.83	.40
October-December	2.06	.37	.46	2.89	2.71	1.18
Year	$1.81	$0.28	$0.39	$2.48	$2.81	$0.33
Production for year, 456,095 tons.						
District No. 5						
January-March	$1.22	$0.30	$0.28	$1.80	$2.61	$0.81
April-June	1.23	.37	.29	1.89	2.61	.72
July-September	1.27	.35	.28	1.90	2.55	.66
October-December	1.36	.44	.34	2.14	2.56	.42
Year	$1.26	$0.37	$0.30	$1.93	$2.58	$0.65
Production for year, 7,419,890 tons.						

Illinois Miners Strike Against Commission's Award

Practically All Illinois Mines Are Idle—Daymen Want More Than Contract Provides—Operators Repudiate 'Tacit Agreement"

OF THE 375 mines in Illinois, 363 are idle, and those that are working are small and their output negligible. The day workers are determined that they shall have an increase larger instead of smaller than was conceded to the contract miners, wholly overlooking the fact that during the war it was the day workers who got the more liberal advances. They want a flat increase of $2 per day. Where the surface daymen were receiving $5.30 they want $7.30. Underground workers who are paid $6 per day want $8. They contend that as they have not been working steadily they have not had a living wage.

E. C. Searles, president of the Illinois Coal Operators' Association, has been in Washington representing the facts of the situation to the President. The operators deny the assertion recently made by union officials that they would be willing to increase wages if the Government would permit it, and they also declare that it is not true, as alleged, that they have reached a "tacit agreement that if a strike must come this would be the best time for it rather than in the winter." They declare that they are anxious to have the mines working at full capacity, feeling that any cessation of work coming on top of the serious lack of car supply must have serious consequences in curtailing the production of coal so badly needed.

In their letter to the President on July 19 they relate the fact that on March 31 they entered into an agreement with the scale committee of the union in accordance with the recommendations of the U. S. Bituminous Coal Commission in its award of March 10, and that subsequently an agreement was made with the mine workers in accord with that made with the scale committee. They state that the officials recently requested that a new agreement be made giving larger wage rates. A meeting was held July 14 and 15 at which representatives of the mine workers and of all three operators' associations were present.

The mine workers insisted that "the operators must agree to change our [the mine workers'] present wage agreements so as to give all shift hands and monthly men a much higher wage than it now paid and that the penalty clause in the agreement must be changed so as to remove its present automatic feature." They also "made it clear that black powder and permissible explosives must be furnished at a price that is reasonable and satisfactory to the mine workers of Illinois."

These demands are quoted from the letter of July 16 addressed by Frank Farrington, president; Harry Fishwick, vice-president; and Walter Nesbit, secretary-treasurer, to the officers and members of district No. 12 (Illinois), which letter is quoted by the operators. This same letter ends with these significant words: "In just what direction our efforts will take us or just what means we may have to employ we cannot now say, but we are determined, injunctions and indictments notwithstanding, to use every power and influence at our command to secure their attainment."

Four local unions, of which that at Pana is one, have demanded also time and a half for overtime and double time for Sundays and holidays. The operators are endeavoring to have President Wilson make a statement that will make the Illinois mine workers realize the impropriety and the evil consequences of their demand. International President Lewis of the United Mine Workers has declared that if the case is reopened for the Illinois men it will be necessary to open it for all the Central Competitive Region, embracing 210,000 men. For that matter the effect will be far more widespread, as the Central Competitive contract is the basis of all other coal wage contracts and a re-opening of the wage question in the mines would be a signal for a similar development in other industries.

Wage Advances Increased Cost of Coal In April

COSTS of production of bituminous coal in April were $2.74 per ton, an increase of 36c. compared with costs in the first three months of the year, according to the reports of 590 soft coal operators whose figures are included in a report just issued by the Federal Trade Commission. This report, which covers the month of April, contains data on production, sales realization and costs of production of 812 operators who produced about 23 per cent of the total output in that month. The average cost of production at these operations was $2.76 and the average sales realization was $3.26 per ton, showing an average realization of 50c. per ton, which compares favorably with that during the war year.

Of the total cost of $2.76 labor received $2.04, supplies cost 31c. and general expenses were 41c., leaving 50c. per ton out of which the operator must pay selling expenses, interest on investment and some other items before the amount per ton available for income and excess profit taxes, dividends or surplus can be ascertained.

Comparing the results at the 767 operations for which comparable reports for April and the first quarter of the year are available, the commission notes that the average working time was sixteen days in April, compared with an average of eighteen days in the three months preceding. The sales realization, the cost of the coal to the consumer, providing no jobber intervened, increased from $2.77 per ton in the first three months to $3.30 in April, so that though the mine cost increased

from $2.38 to $2.74 the resultant margin of these operators increased from 39c. per ton in the first quarter of the year to 56c. in April. The increase in cost of operation at the mines of 590 producers in April, 1920, over 1918 was 31 per cent, while their production in April fell 23 per cent below their average output in the year 1918.

The increase in total mining cost of the 590 operators in April as compared with the first quarter of 1920 and with the average for 1918 is explained as chiefly due to two causes: (1) decreased production in April as compared with the other two periods, and (2) the two awards increasing the wages of mining labor, one of 14 per cent effective in November, 1919, and in force throughout the first quarter of 1920; the other of 27 per cent (including the previous 14-per cent advance) effective April 1, 1920.

The bulletin concludes from a tabulation of those operators whose costs were least affected by changes in production that the probable increase in April total costs due to wage advances since 1918 was about 47c. per ton, or 22 per cent.

The average sales realizations, total reported f.o.b. mine costs, and margins per ton of 2,000 pounds of the entire 812 operators covered for April are shown by states, as follows, together with the number of operators reporting in each district.

State and District	No. of Operators	Sales Realization	Reported F.o.b. Cost	Margin (1)
Alabama	43	$3.47	$3.10	$0.37
Arkansas	18	5.21	5.59	(a) 0.38
Colorado	35	3.27	2.86	0.41
Illinois	76	2.75	2.38	.37
Indiana	46	2.80	2.55	.25
Iowa	16	3.67	3.32	.35
Kansas	17	3.75	3.39	.36
Kentucky	75	2.99	2.72	.27
Maryland, b Michigan and Missouri	24	3.58	3.40	.18
Montana	8	3.05	2.76	.29
New Mexico	6	3.57	2.93	.64
Ohio	85	3.48	2.69	.79
Oklahoma	22	4.26	4.25	.01
Pennsylvania	186	3.54	2.76	.78
Tennessee	20	3.45	3.02	.43
Texas	18	2.07	1.97	.10
Utah	7	3.01	2.98	.03
Virginia	7	3.13	2.62	.51
Washington	5	3.39	2.81	.58
West Virginia	75	3.50	2.51	.99
Wyoming	8	2.92	2.53	.39
United States	812	3.26	2.76	.50

(1) "Margin" is not the same as profit.
(a) Amount by which total f. o. b. cost exceeded sales realization.
(b) Includes Upper Potomac, Cumberland and Piedmont district of Maryland and West Virginia.

These figures of costs in April will be published in *Coal Age* next week in greater detail.

New England Shipments Increase

SHIPMENTS of bituminous coal to New England in the first three weeks of July were above those in the corresponding period of June. According to the Geological Survey the movement through the five important rail gateways in the three weeks ended July 17 was 17,392 cars, compared with 10,269 cars in the three weeks ended June 19. The dumpings at Hampton Roads for New England this month to date are reported to be about 10 per cent above those in the same period of June, although the actual figures have not been released.

June Exports of Coal by Tidewater Pass Two Million Mark

EXPORTS of bituminous coal from the Atlantic seaboard in June reached the total of 2,175,000 net tons, a new high record and one that probably is in excess of exports from Great Britain in the same period. The figures for Great Britain are not yet available, but it will be recalled that early in June a restriction to 1,960,000 net tons (1,750,000 gross tons) was decreed by the English government. Of the total exported 1,266,000 tons were dumped at Hampton Roads, an increase over 1,120,000 tons in May. Of the total gain in dumpings of 233,000 tons 146,000 tons were at Hampton Roads.

Total coal dumped at these ports in June was 4,699,000 tons, a gain of 263,000 net tons. All but 30,000 tons of this increase went to exports. New England dumpings dropped from 776,000 net tons in May to 772,000 tons in June, while the quantity dumped for bunkers and for local use, as at New York Harbor, increased 34,000 tons.

According to F. G. Tyron, of the U. S. Geological Survey, shipments of bituminous coal to tidewater during June were the largest in any month of record. The total dumped at the four North Atlantic ports and Charleston (4,699,000 net tons) was an increase over October, 1919—hitherto the maximum month—of 102,000 tons.

TIDEWATER BITUMINOUS COAL SHIPMENTS TO THE FOUR NORTH ATLANTIC PORTS AND CHARLESTON
(Figures in Net Tons)

	Coastwise to New England	Exports	All Other (a)	Total Dumped at Tide
1918-Total for year	15,248,000	3,740,000	23,921,000	42,909,000
1918-Monthly average	1,271,000	312,000	1,993,000	3,576,000
1919-Total for year	8,385,000	8,291,000	20,386,000	37,062,000
1919-Monthly average	699,000	691,000	1,699,000	3,089,000
1920-January	804,000	897,000	1,484,000	3,185,000
February	793,000	718,000	1,388,000	2,899,000
March	954,000	1,033,000	1,978,000	3,965,000
April	717,000	1,903,000	1,436,000	4,056,000
May	776,000	1,942,000	1,718,000	4,436,000
June	772,000	2,175,000	1,752,000	4,699,000
Total first six months of 1920	4,816,000	8,668,000	9,756,000	23,240,000
Monthly average to to date	803,000	1,445,000	1,626,000	3,873,000

(a) Includes bunker, inside capes, and other local and coastwise tonnage.

The record for the month shows little change in the relative proportions of the New England and export movement. Service Order No. 6 did not go into effect until June 24, so that the month's performance can not be regarded as a test of the effectiveness of that order.

By ports, the shipments were as follows:

TIDEWATER BITUMINOUS COAL SHIPMENTS, JUNE, 1920, BY PORTS
(Net Tons)

Port	Coastwise to New England	Exports	All Other (a)	Total Dumped at Tide
New York			968,573	1,145,563
Philadelphia	176,990	226,483	158,345	454,415
Baltimore	69,587	605,296	193,498	837,845
Hampton Roads	486,809	1,266,534	422,223	2,175,566
Charleston		76,486	8,985	85,471
Total	772,437	2,174,799	1,751,624	4,698,860

(a) Includes bunker, inside capes, and other local and coastwise tonnage.

Connellsville Region Ordered to Ship 300,000 Tons to Northwest

WITH more buyers than can be supplied willing to pay up to $12.25 at the mines for bituminous coal, operators in the Connellsville region received an arbitrary order to consign a total of 300,000 tons to the Northwest market, commencing Monday, July 26, under the terms of Service Order No. 10, with no provision made in advance as to price. Authority to enforce the order was given by the Interstate Commerce Commission to H. M. Griggs, manager of the Ore & Coal Exchange, Cleveland, and he has issued an announcement at Uniontown, Pa., that the region's allotment was 300,000 tons, of which 175,000 will be contributed by mines along the Monongahela R.R.

Opposition in the region to Order 10 is found in the fact that rates in the Lake market are at least $4 below prevailing prices here, and, inasmuch as the order to ship coal is mandatory, it would seem unreasonable that Lake consumers would voluntarily raise the price level. Six dollars is held to be a big price for coal in the Lake market and $8.50 per ton is the highest figure it has reached even in the present activity. When compared with the $11.50, $12 and up to $12.25 being received daily by operators at Uniontown their view of Order No. 10 can be readily appreciated.

The Monogahela R.R. has notified shippers that to enforce the order it will require 30 per cent of car rating, less certain provisions, to be consigned to the Great Lakes market before shipments will be moved to any other destination. Railroad fuel, priorities under Order No. 9 and individual cars are excepted from the ruling. The car placement for the Monongahela is now just a little better than 30 per cent, and any mine which does not ship to any of the priorities, it would appear, must consign its entire output to the Cleveland pool with no understanding about price and the consumers holding the whip hand.

Canada Embargoes Exports

FOLLOWING a conference between members of the Interstate Commerce Commission with F. B. Carvell, chief commissioner of the Canadian Railway Board, the latter board has declared an embargo on exports of coal from the Atlantic or St. Lawrence River ports of Canada, except to the United States or Newfoundland. This step was taken to carry out an agreement on the part of the Canadian representatives to take all advisable steps to conserve fuel in Canada.

Still Shooting Up Non-Union Men Along The Tug River

FOR the second time within a week or so striking miners concealed in the woods on the West Virginia side of Tug River fired several volleys at the tipple of the Borderland Coal Co. on the Kentucky side of the river at Borderland on Tuesday, July 13. Men on guard on the Kentucky side promptly returned the fire. There were no casualties, so far as could be learned. A number of deputy sheriffs were sent to the scene of the firing, but when they arrived those who had been firing across the river had escaped.

Within a few days after the shooting across Tug River a large detachment of state police was ordered into Mingo County by Governor Cornwell to preserve order and to prevent further clashes. Governor Morrow of Kentucky, it is learned, has asked the Governor of West Virginia to prevent further firing across the river into Kentucky.

Some of the larger companies in the Williamson field resumed operations on Tuesday, July 20. The fact that they were to attempt a resumption of operations was carefully guarded, but it became known in advance to some of the strikers, for the same tactics employed at Borderland upon two occasions were attempted near Thacker, in the Williamson field, on Monday, July 19, fully two hundred shots in all being fired. As on previous occasions the striking miners, secreted on a hillside, opened fire on the plant in order to deter the miners not on strike from going to work.

While up until Tuesday, July 20, forty-two of the seventy-three mining operations in the Thacker district had suspended operations and had settled down apparently to a test of endurance, the attempt was made as stated to resume operations at some points on July 21. The companies which have suspended operations are for the most part located on the main line of the Norfolk & Western R.R. between Iaeger and Williamson. Lathrop and Panther, although in McDowell County, are classed as being in the Williamson field, yet at last accounts they were operating at full tilt. So far only one company in the Pond Creek field has suspended operations.

Owing to this further evidence of disturbance, Governor Cornwell left Charleston Monday night for a personal inspection of conditions in the field, being preceded by Colonel Jackson Arnold, head of the state police, who now has the maximum strength of his force in Mingo County keeping order. Governor Cornwell is expected to stay a day or more in the Williamson field.

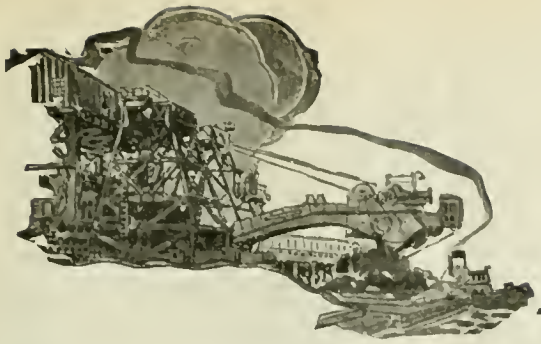
At the same time the Governor of the State of Kentucky has decided to call out the militia and use it to protect the border along Tug River, which separates Pike County, Kentucky, from Mingo County, West Virginia. In order to get the men into place rapidly it will be necessary to transport them through West Virginia, via Williamson, Mingo County, as otherwise it would be necessary to march them a distance of twenty-five to fifty miles. Governor Cornwell has given permission for this transference of troops on the soil of West Virginia.

Goodrich Bill to Regulate Indiana Coal Passes State Senate

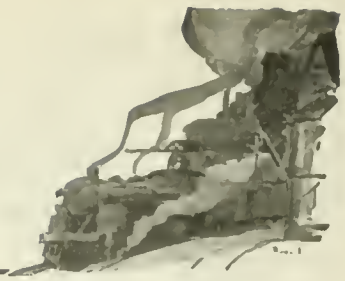
THE administration bill to regulate the price and distribution of coal in Indiana was passed by the Senate in the special session of the Legislature July 23 and now is being considered by a joint committee of both the House and Senate before being put up on the floor of the House. The bill as passed by the Senate by a vote of 27 to 12 eliminated many features incorporated in the House bill that was passed about a week ago. (See page 243, this issue.)

Among other things, the Senate refused to authorize the creation of a new commission of three members to regulate the coal industry and delegated such powers to the Public Service Commission. A section pertaining to the seizure of coal mines which was omitted from the House bill and adopted by the lower house by mistake was not included in the measure by the Senate. Political leaders look for the House to agree on the changes made by the Senate.

As the bill now stands the work of administering the law will fall on the Pubilc Service Commission, a duty that is being sidestepped by the commission on the plea of too much work.



Production and the Market



Weekly Review

Hopeful Conditions Resulting from Gains in Production Offset by Strike in Illinois—Movement to Lakes Not Gaining as Fast as Desired—Exports Set New High Mark—Prices Show No Recession and Gain in Some Sections

PRODUCTION of bituminous coal in the third week of July nearly reached the 11,000,000-ton mark. Preliminary reports for the week of the 24th indicate no great improvement; in fact, with the strike in Illinois a decrease may result. That the strike if not of long duration may not have serious effects is indicated by data in the recent weekly report of the Geological Survey which shows that the field comprising Illinois, Indiana and western Kentucky has already this year produced 102 per cent of the record of 1917 and within 4 per cent of that of the war year, 1918.

These figures also show that the large Eastern fields, Virginia and north, are 14 per cent behind 1918 and 10 per cent behind 1917. The present coal shortage is therefore shown to be largely localized in the large Eastern territory. It is from the coal fields in this region that the large exports to Europe are coming and it is from these same fields that extra coal for the Northwest and New England is to be provided under the latest orders of the Interstate Commerce Commission. When these orders have been actually at work for a short time further increases in prices may be expected for free coal to consumers not in the two sections protected by the orders. Until production in the East gains much beyond its present rate, withdrawal by limited embargoes of coal that has been moving to buyers in such markets as Ohio, Michigan and New York will boost the prices to these markets.

Cognizance of this is being taken in Michigan and it is reported that the Governor is to appoint a commission to take charge of coal that reaches that state.

Anthracite is in strong demand in the East, with Philadelphia away behind in deliveries. It is understood that the large companies are shipping west to fill orders there first.

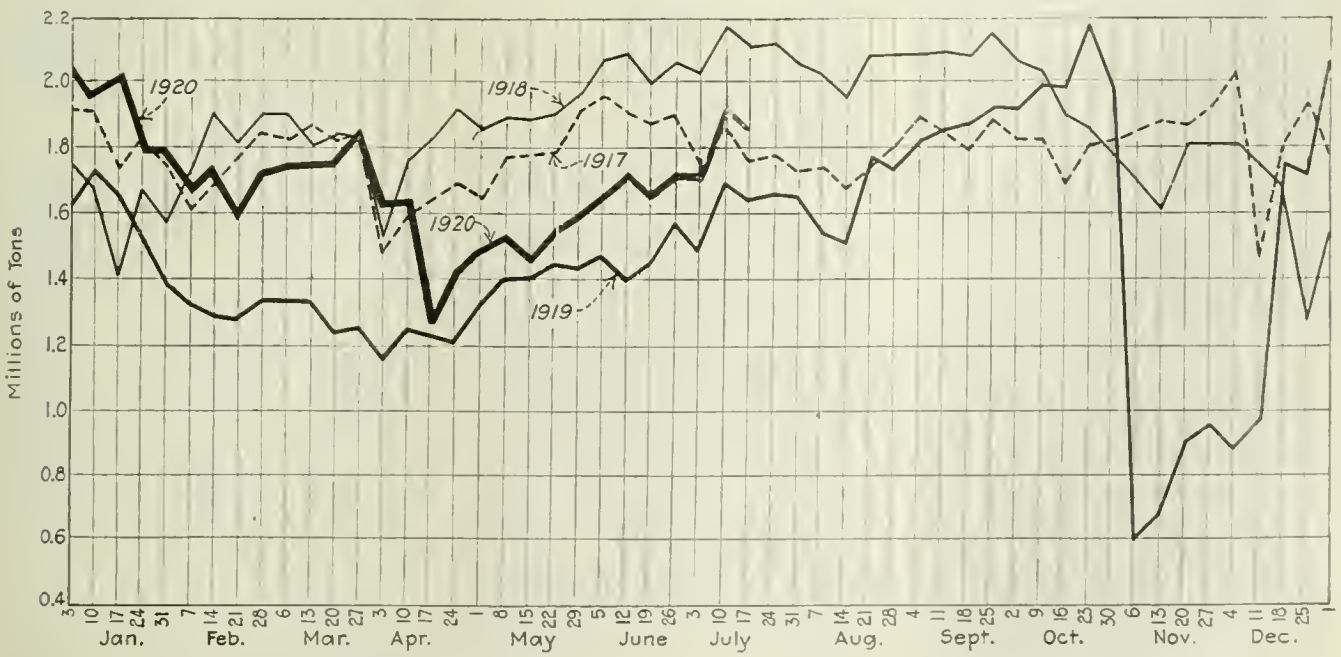
Coke is in short supply with prices high. It is not clear, however, that furnaces are actually suffering for lack of coke.

Lake Coal Dumped Season to July 24

(NET TONS)

	Cargo	Fuel	Total
1919.....	12,203,560	548,373	12,751,933
1920.....	5,611,192	425,741	6,036,933

Average Daily Production of Bituminous Coal*



*From weekly report of Geological Survey.

Reports From the Market Centers

New England

BOSTON

Embargoes Temporarily Restrict Movement All-Rail—Prices Drop, but Market Strengthens Almost Immediately—Hampton Roads Loading Improves—New I. C. C. Priority Order Is Expected—Anthracite Shipments Show but Little Gain, Either by Rail or Water.

Bituminous—For several days this territory was almost completely embargoed. The Boston & Albany lifted its embargo via West Albany on July 21, but to local points only. It is much better to tie things up completely for a few days than to attempt straightening out the tangle piecemeal. There is reason to hope that the last week of the month will show a distinct gain in movement all-rail to this market.

Because of embargoes, there was a mild recession in prices. For two or three days the sales were $10.50 per net ton f.o.b. mines on mediocre grades. However, by July 24 sales were again made on the basis of $13.75 at the mines.

Despatch at the Virginia terminals continues to show gradual improvement. A further increase in clearances for New England is observed, due to the prevailing high prices. About 50 per cent of coal exported is high volatile and a reasonable proportion of the smokeless coals is being moved to New England on contract, to the extent of 80 to 85 per cent of obligations.

A new priority is rumored, this to follow along the lines of the Lake priority. Undoubtedly it would mean close supervision on the part of agents of the Interstate Commerce Commission, but it remains to be seen whether New England buyers will absorb any considerable increase in receipts by water, especially on the price basis that will probably be asked.

Current quotations for bituminous at wholesale range about as follows:

	Clearfields	Cambrias and Somersets
F.o.b. mines, net tons	$11 00@$12 25	$12 00@$13 50
F.o.b. Philadelphia, gross tons	14 00@ 15 50	15.00@ 16.75
F.o.b. New York, gross tons	14 50@ 15 90	15.60@ 17.00

On cars Boston quotations of $17.50 @$20 are made on low volatiles.

Anthracite—Receipts of domestic sizes show little if any gain. Traffic conditions have much restricted shipments all-rail, and the difficulty of getting coal through to the piers has also materially curtailed shipments at tidewater.

Although at Port Reading progress was made last week in loading an accumulation of bottoms, yet the Port Richmond situation is still far from clearing. At the latter piers there is a great deal of difficulty over switching. As a result, one of New England's largest sources of supply by water is much crippled. From New York ports, other than Port Reading, loadings for eastern ports are nearly normal.

At retail, the demand is insistent. Prices to the consumer have not been changed, largely in fear of public criticism, but if the retail distributors are to be obliged to pay present premiums for spot coal as well as heavy demurrage at the loading piers, then it is only a question of time when a quite material advance will have to be made.

Tidewater

NEW YORK

Anthracite Domestic Demand Is Strong and Supply Short—Present Movement Is to the West—Steam Coal Is Unsteady—Turn in Bituminous Market Believed To Be Here—Demand Falls Off and Quotations Take a Drop—Improved Car Supply Helps Situation—Contract Coal Comes Forward in Good Shape.

Anthracite—Domestic coals continue to be in heavy demand but are short in supply. Local conditions show comparatively little change. Dealers are being pushed for deliveries by their customers, and while all have coal in their yards some sizes, notably stove, are hard to get in sufficient quantities to meet the demand.

Dealers continue to complain of slow shipment of company coal, but are hopeful that as soon as the West receives its quota, the movement to the seaboard will greatly improve. A slight improvement is noticed in towing conditions and barge movement is better.

Independent coal is in stronger demand than it would be otherwise, on account of the absence of company product, and as a result quotations are kept up around $11 to $12, the latter figure for the better grades.

There has been much unsteadiness in the steam-coal market. Quotations for independent coals fluctuate considerably. At the end of the week the better grades of buckwheat were quoted at from $4.75@$5 at the mines; rice, $3.25@$4.25, and barley $1.75@$2.50.

Current quotations for company coal, per gross ton, at the mine and f.o.b., New York Tidewater, lower ports, are as follows:

	Mine	Tidewater
Broken	$7.40@$7.55	$9.25@$9.40
Egg	7.40@ 7.55	9.25@ 9.40
Stove	7.65@ 7.90	9.50@ 9.75
Chestnut	7.70@ 7.90	9.55@ 9.75
Pea	5.95@ 6.35	7.70@ 8.10
Buckwheat	4.00@ 4.10	5.75@ 5.85
Rice	3.00@ 3.50	4 75@ 5.25
Barley	2.25@ 2.50	4.00@ 4.25
Boiler	2.50	4.25

Quotations for the domestic coals at the upper ports are generally 5c. higher on account of the difference in freight.

Bituminous—To many observers the turn in the bituminous market is here. Inquiries have fallen off considerably and there has been a noticeable slump in quotations with buying slowing down.

The most plausible reason for the changed condition seems to be that of increased car supply at the mines. Furthermore, in this harbor towing conditions have improved.

Large consumers are as a rule better supplied with coal than is generally supposed, having put in large tonnages of high-priced coal. With lower prices in sight these consumers have discontinued heavy purchasing and from now on will buy only for immediate needs.

The turning point in last week's market made its appearance about midweek when quotations for coal at the mines were around $11.50. Two days later some shippers quoted $1 less and on July 23, Pool 11 was quoted at from $10 to $11 f.o.b. mines.

Contract coals are coming forward in good shape and latest reports show that the public utility corporations are receiving increased tonnages. Quotations fluctuated considerably, but the better coals were generally quoted at around $16.50 alongside toward the end of the past week.

PHILADELPHIA

Anthracite Shipments Are Held Back by New Embargo — Stocks in Yards Are at Low Ebb—Production Is Affected by Car Supply and Attitude of Labor — Hard Coal Is Expected To Advance 10c. — Active Steam Market Prevails—Bituminous Is Shut Out by Embargo — High Prices Are Maintained—Utilities Get Supplies.

Anthracite—Conditions are distinctly unsatisfactory at this time, on account of the placing of an embargo against anthracite coal via the Pennsylvania R.R. The dealers on this road have some little stock on hand and can no doubt keep going until the end of the week, when the real effect of the embargo will begin to be felt.

Some of the larger dealers on the Philadelphia & Reading apparently have been enabled to get a modification of the embargo on this road. No information is forthcoming from the railroad officials as to when a general lifting of the embargo can be expected. This is said to constitute one of the worst situations the local dealers have ever been compelled to contend with.

The collieries are still affected by the car supply, although the last week has shown some improvement. The shippers realize that this loss of tonnage

is going to hamper them in their efforts to live up to the allotments made to their customers in the spring.

The operators also report that even when they do have an adequate car supply their men do not seem to be mining coal with their usual vigor. The wage uncertainty may have made some of them indifferent.

At this time no announcement is forthcoming from the companies as to their price program for the first of August. It seems quite likely that the larger companies will add 10c. to their circular prices. All dealers are careful in booking orders with their customers to amply protect themselves.

The steam market is strong, with buckwheat the leader as usual. The big shippers are declining new business on this size, and as a result the independents are getting increased premiums over the company price of $4.10 at mines. Probably most of the individual buckwheat is sold close to $4.50, and some report no trouble to get $4.75.

Rice in sympathy with buckwheat is enjoying an active season, with the price of all companies holding close to $3. Barley is strong enough to at least command its full price of $2.25 at mines.

Bituminous—Just as a moderate volume of soft coal was beginning to reach the city, the Pennsylvania R.R. declared an embargo against further consignments. Utility plants are unaffected by the embargo.

The spot-price market maintains its high position, with the $15 mark at the mines occasionally reached, although with the bulk of such sales made nearer $13.50 for the better Pennsylvania coals. Fairmont gas coals were selling recently from $12 to $14 per net ton at mines, the lower price being reached when that region for one day received its best car supply for months.

The utility plants in this district are now working under the new plan of filling out forms, whereby they secure assignment of a certain number of empty cars to the mines of the companies with whom they have contracts.

BALTIMORE

Prices Are Out of Control and Leading Coal Men Advise Moderation — Ships Unable To Get Coal Here Are Diverted to Other Ports — Hard-Coal Men Are Hard Hit.

Bituminous—The soft-coal situation here continues complex. It is admittedly out of control as to prices, the highest in the history of the trade being recorded. Sales are being made right along at from $11 to $13 a net ton f.o.b. mines, almost irrespective of grade. In this city sales are recorded f.o.b. piers as high as $17 and $18 a gross ton. Both export and domestic purchasers continue in the scramble for fuel.

Even the payment of high price, however, has not been able to meet either situation. At the outset of the present week about 70 ships were in the harbor for coal, some having been here for several weeks, and at this writing more than 30 have already been ordered to other ports.

The receipts at the Canton pier of the Pennsylvania R.R. have dropped to almost nothing and dumpings are negligible there. At the Curtis Bay pier of the Baltimore & Ohio, at this writing, there are some 2,000 cars, of which about 1,300 are pool-coal cars. The dumpings are running around 400 cars a day, and the amount of coal running to the pier about equals that figure daily. About 37 ships are now off the pier awaiting about 200,000 tons of coal.

Car supply is in the 40 to 50 per cent class on Eastern lines, and priority diversions cut the movement to tide here considerably below normal, the daily report of cars running on the B. & O. being only between 1,200 and 1,500. Another priority order for the Lakes of 4,000 cars a day, exacts some 200 cars from the B. & O., or 10,000 tons daily, and the Pennsylvania for around 9,000 tons daily. Many leading coal men here are advising moderation in prices, and during the past week addresses were made here by officials of the National Wholesale Coal Association to the Maryland branch members, advising a conservative course in the present coal crisis for the benefit of the trade itself as a whole.

Anthracite—The hard-coal men here are hard hit in many cases, despite the recent raise in retail prices. In the first place all are way behind in deliveries because the mines and railroads are backward in getting coal here. Then the proportion of extremely high-priced coal coming in is discouraging. Some dealers are paying as high as $10.50 a ton at the mines for coal. The situation is indeed trying for everybody concerned on this end, neither dealer nor consumer being satisfied.

Lake

MILWAUKEE

Lake Erie Priority Order Is Expected To Change Coal Situation — Lake Receipts Continue Slow and Rail Movement Is at Low Ebb — Market May Depend on Rail Coal During Winter.

Empty yards and slow receipts characterize the Milwaukee coal market. Dockmen are using every means to bring about a change and open up the flow of coal by Lake. The order giving priority to coal shipments to Lake Erie ports is hailed with joy by the anxious coal men, and everything will be done to take full advantage of it.

Lake vessels and the various shipping and receiving docks will have to be worked to the limit of efficiency from now until the close of navigation, if a distressing situation is to be averted the coming winter. A long fall season and favorable navigation conditions on the Great Lakes seem to be the only salvation.

In any event, coal men expect that Milwaukee will have to depend upon rail coal during a great part of the winter, and they are making preparations to handle coal from cars expeditiously. Little coal is coming by rail at present, however, and receipts by Lake are slow.

The receipts for the season up to this writing aggregate 340,902 tons of anthracite and 490,973 tons of soft coal, a falling off in the former of 5,732 tons and in the latter of 1,096,023 tons, as compared with last year's receipts.

BUFFALO

Bituminous Often Changes Front—An End of Extreme High Prices Is Looked For Soon — Anthracite Goes by the Lakes to Northwest—Coke Situation Is Unchanged.

Bituminous—So many new phases of the trade come up that shippers do not know how to size it up from day to day. At the same time the leading members of the trade are pretty nearly agreed that the indications point to an end of the extreme high prices soon. One thing that needs to be done is for consumers to stop bidding against each other at the mines for their coal. It is the competition in that way that has made such prices possible.

All that can yet be said of the price is that $10.50 net at the mines is rather low, although it is accepted. Certain consumers will still pay $12 and there are plenty of sellers who are asking it. At the same time it is pretty generally believed that the turning point is about reached and when the decline comes it will be decided.

The theory on which lower prices are looked for is that the production is now a little in excess of the consumption. Cars are slowly growing more plentiful. If these two changes continue, though they may be slow, they will eventually weaken prices.

Anthracite—The local trade is not in a condition satisfactory to the consumers, but the shippers are not disturbed, as they know that the thing to do now is to neglect the local and railline trade if that is necessary to keep up shipments by water to the Northwest. As these shipments are kept up well there is no real reason for complaint.

Lake shipments for the week were 109,700 net tons, of which 47,400 tons cleared for Duluth and Superior, 23,500 tons for Milwaukee, 15,100 tons for Chicago, 14,300 tons for Fort William, 6,600 tons for Sheboygan and 2,800 tons for the Sault.

Freight rates remain at $1 to the Sault, 65 cents to Chicago, 60 cents to Milwaukee, 55 cents to Sheboygan, and 50 cents to Duluth, Fort William. They vary about 15 cents between fast and slow docks.

Coke—The situation remains the same. Jobbers are obliged to pay $18.50 and up for 72-hr. Connellsville foundry and $17 for furnace. The demand is light for single-order coke, but the furnaces in this district are all active.

Inland West

CINCINNATI

The City Has a Good Supply of Soft Coal, but Little Smokeless and Anthracite—"Buy Early" Is Urged—Cincinnati Has Big Advantage in River Transportation.

There is now no shortage of soft coal in Cincinnati, but there is a scarcity of smokeless and anthracite fuel. Cincinnati dealers in reporting the demand for soft coal note the fact that the shortage on the other grades is due to continue for the balance of this season; also that demand for the fall months is tremendous, and while there is quite a good supply, every known means is being resorted to in having coal users put in their winter supply of fuel as early as possible.

In many cases where users of smokeless coal have held off placing their orders, there is now a feeling among them that their favorite fuel is not to be had, and they are placing orders for the soft coal.

While other cities are short of coal because of the scarcity of coal cars, Cincinnati has soft coal in abundance, due to river transportation. It is possible to obtain coal in the Queen City at $8.50 a ton; the same coal is being sold in Toledo for $4 more a ton.

ST. LOUIS

Coal Situation Is Acute Here—Most of Illinois Mines Close, Due to Labor Trouble—Movement of Cars Is Slow and Conditions Generally Are Unsatisfactory—Prices Are Advancing.

The situation on July 22 began to assume serious proportions in and around St. Louis. The steam proposition has been one of a few days' supply ahead.

On the nineteenth miners began quitting work in the Springfield district, and on the twenty-first the trouble reached Williamson and Franklin counties. On the twenty-second it hit the Mt. Olive and Standard fields and on the evening of the twenty-second nearly all mines were reported idle. On the twenty-third the men refused to go to work until the day help and drivers received anywhere from 75c. to $2 a day more than the present scale calls for.

The domestic situation locally is far behind what it should be at this season, but the tonnage of high grade available is not so small that the public is inclined to take the inferior grades yet. The country situation is rapidly growing desperate and many steam plants will have to suspend.

The Pennsylvania lines continue to haul empty cars east right through the mining field in Illinois day after day. The mines on this line have been idle for five continuous days while thousands of empty cars moved eastward.

The assigned-car evil continues to grow and the railroads of the Middle West seem unable to break up the practice.

No Carterville coal to speak of is coming in; up to the present about one-tenth of the coal ordered from that field has come through. The Mt. Olive situation has been the best of any. The future is quite uncertain.

Prices in the Standard field have been, on coal moving to Canada and as far east as Buffalo, as high as $6.50 and $7; Chicago shipments about $5 and local shipments about $4@$4.50.

Mt. Olive coal has been selling to its regular trade at from $3@$3.75 and $4. Carterville coal is selling anywhere from the old circular of $3.80 up to $6 or $7.

Retail prices in St. Louis advanced on the 22nd to $8 for Carterville; $6.50 for Mt. Olive; $5.75 and $6 for Standard. Smokeless coal, anthracite, Arkansas and coke are off the market, with no receipts.

DETROIT

Movement of Coal Into the City Does Not Improve—Governor Sleeper Is To Appoint Commission To Control State Fuel Supply — Scarcity of Anthracite Alarms Dealers and Consumers.

Bituminous—Jobbers and wholesalers in Detroit say there is no improvement in the movement of coal into the local market. With the summer more than half gone, while virtually no progress has been made toward creating reserves for industrial plants, public utilities and retail yards, consumers in all lines are becoming apprehensive that a coal shortage in Michigan will develop next winter that will occasion much hardship and suffering.

Under the direction of the Michigan Public Utilities Commission, a conference was held in Lansing, July 21, to discuss the situation and plan some method for increasing the supply of coal in the state. Nearly all sections of the state were represented and from each came reports of insufficient coal supply and ineffectual effort to obtain relief.

The appointment of a state coal commission of five or more members to be named by the governor was decided on; the commission will include men who have a thorough knowledge of the coal industry and of present transportation difficulties. Thus Michigan hopes to control the matter of supply and will exert every effort to increase the tonnage as speedily as possible. Governor Sleeper dispatched a message to the Interstate Commerce Commission urging the promulgation of an order shutting off reconsignment of coal.

The miner's strike in Illinois threatens to still further diminish the meager supply of coal that has been coming into the state.

Anthracite—Domestic consumers as well as the dealers in Detroit are becoming alarmed at the continuing scarcity of anthracite and the lack of results from efforts to increase the volume of shipments. Unless improvement develops speedily, many of the homes of the city will be without hard coal during the coming winter.

COLUMBUS

All Ohio Fields Show Increased Output, Due to Better Car Supply — Demand Is Strong with Prices Higher Than Ever—Priority Order Is Expected To Help Lake Situation.

All mining fields in Ohio report a better car supply and production is showing an increase as a result. This is not as noticeable now as it is expected to be within a week or two, when the full effect of the car-priority order is felt. But the net result is a better supply of empties at all Ohio mines, and production figures have advanced beyond the 50 per cent mark.

In the Hocking Valley field the output has been between 65 and 70 per cent and the same is true of Pomeroy Bend. In Cambridge and Crooksville the output is about 66 per cent. Eastern Ohio also shows an improvement with an output of about 55 to 60 per cent, a large part of which is going for Lake and fuel purposes.

Dealers are now in the market for larger amounts and to a certain extent their orders have been taken care of. Retail stocks are not large in any section and householders are clamoring for deliveries.

Retail prices are ranging higher than ever before. Hocking coal sells in the neighborhood of $9.50 @ $10.50 and the other grades at about the same levels. West Virginia splint sells from $10 @ $11 delivered and practically no Pocahontas to be had in the Columbus market. Some Kentucky grades are coming in but not sufficient to cause much change in general market conditions.

The steam trade is also active and bidding for the available supply is still the chief feature. General manufacturing is in the market for a considerable fuel tonnage. Public service concerns are now easier on the priority order news, while commercial users, outside of the preferred classes, are getting more anxious than ever.

Prices at the mines are still high and show a wide range. Concerns with contracts are still easy while those without connections find it difficult to keep factories going.

The Lake trade is holding up well at previous levels, but there is a marked deficiency in the tonnage moved and the falling off from the records of last year. Reports from the Northwest show a big recent priority order is expected to help this situation.

Prices at the mines for the principal grades consumed in the Columbus district are as follows:

Hocking lump	$5 00@$8 50
Hocking mine-run	6 00@ 8 50
Hocking screenings	5 50@ 8 25
Pomeroy lump	6 50@ 9 00
Pomeroy mine-run	6 50@ 9 00
Pomeroy screenings	6 00@ 8 50
West Virginia splint lump	6 50@ 9 00
West Virginia splint mine-run	6 50@ 9 00
West Virginia splint screenings	6 00@ 8 50
Pocahontas lump	7 00@ 9 50
Pocahontas mine-run	7 00@ 9 25

CHICAGO

Strike in Southern Illinois Alarms Manufacturers Who Face Shutdown from Lack of Fuel — Chicago Association Will Fight Reconsignment Ruling of Railways.

Chicago is extremely worried over the growing strike in the southern Illinois coal fields. Manufacturers who thought they were protected find now that they are face to face with a shut down on account of no coal and are bending every effort toward purchasing additional fuel. Mines in Indiana coal fields have not been affected as yet, and operators having mines in that state are being swamped with inquiries for coal. In the face of these conditions it can be easily understood, that the market is advancing.

Until this new complication came up the situation in Chicago was fairly satisfactory as the retail dealers had an opportunity to accumulate a little surplus, while buyers of steam coal were much better off than they have been since April.

At a meeting a few days ago of the Chicago Wholesale Coal Association, steps were taken to fight the recent reconsignment ruling of the railways. Wholesalers maintain that they have not held coal on tracks in Chicago, have not blocked terminals and that fuel shipped to them at Chicago has been reconsigned long before the coal had an opportunity to reach this city. It is said that the association has hired an attorney to fight the railways on the question.

During the past week or so some Pocahontas and smokeless coal has been coming into Chicago to the retail trade, but in quite small quantities. Public utility plants in Chicago are facing great difficulties because they are unable to get enough steam coal to satisfy their needs.

MIDWEST REVIEW

Midwest Faces Most Serious Situation — Wholesale Shutdown Confronts Industrial Plants — Market Takes Sharp Upward Trend — Mine Labor Trouble Closes Practically All Coal Plants in Illinois.

The coal situation in the Middle West is more serious than it has ever been before in the history of the industry in this territory. The strike in Illinois is spreading rapidly and those covered by a fuel contract are now faced with the probability that they will have to go without coal for the time being. The market has taken a sharp upward trend on every kind of coal from Illinois or Indiana.

Considerable dissatisfaction is felt in this territory that the Interstate Commerce Commission has not seen fit to take a firm stand with the railroads and force its rulings through. Cars continue to be scarce in the Illinois and Indiana fields, and conditions are quite unsatisfactory.

The trouble in Illinois is that day labor, at some of the Illinois mines, who have been putting over sporadic strikes for the past month, now come out in the open and demand an increase of 25c. per hour, time and a half for over time and double time for Sundays and holidays. According to the latest information, practically all of the mines in Illinois are idle.

The present situation boils itself down to the fact that unless this strike is settled quickly, it will mean a great many industries, both essential and non-essential, in the Middle West, will be forced to close down on account of no coal. Once more it is up to the authorities at Washington and it will be interesting to watch what happens. Needless to add, the operators are not too optimistic.

South

LOUISVILLE

Service Orders Increase Car Supply and Production Follows — Demand Is Strong and Prices Hold — Rumors Are Heard of Federal Control of the Coal Industry—Retailers Are Inactive.

Production at Kentucky mines is increasing as a result of a slightly increased car supply, which is steadily growing on account of regulations concerning empties.

It is claimed that prospects are steadily looking better, and that with a few more weeks of good car supply the industrial demand should let up and block coal be in better demand at lower prices. However, demand is keeping pace with production, and prices are about the same, there being some quite high levels reported from all fields, with little weakening as a whole.

Rumors have been floating around for the past few days relative to a possibility of an early return of the coal trade to Federal control, and there is some uneasiness being shown. There are also cases reported of agents of the Department of Justice entering local coal jobbing and other offices, and asking for records of receipts and shipments along with prices.

Retailers are still buying little coal, meanwhile sitting still awaiting developments and better supplies at less money. Consumers are not making inquiries just now, due in part to hot weather and vacations.

Prices are as follows: Eastern Kentucky gas mine-run, $9@$9.50; non-gas, $8.50@$9; Western Kentucky, lump, $5@$5.50, average; mine-run, $4,50@$4.75; screenings, $4.50@$4.75. However, some West Kentucky lump is selling at $6.75.

BIRMINGHAM

Production Shows Steady Gains as Labor Troubles Disappear—Transportation Is Fairly Good — Demand Is Excellent, but Little Spot Coal Is Available—Much Tonnage Is Lost on Contracts During Strikes.

The determination of Alabama coal operators to maintain "open shop" conditions, which have prevailed in the district for many years past, has resulted in resumption at a number of mines closed on account of the strike for union recognition; production is being increased daily as additional men abandon the organization and return to work, and it is expected that normal output will be reached in the course of ten days or two weeks. The increase in coal being moved is already quite noticeable.

The car supply is reported as adequate on the Frisco lines, while the Southern is fairly approximating the needs of most of the mines it serves, but has been a little short at some operations. Louisville & Nashville is about maintaining its quota of 45 to 50 per cent, as furnished for the past several weeks. The resumption of work at a number of mines, which have been idle for several weeks, will perhaps slightly decrease the allotment of cars to operations which have been going steadily.

Market conditions so far as demand goes are excellent, but no coal interests are in a position to take on additional orders at this time and there is little spot coal to offer, hence quotations are not being made by the larger brokers and agencies. It will take considerable time to recover from the tonnage lost during the strike period and catch up with deliveries on contracts in hand, and until this is done there will be little coal obtainable in this district.

The output for the week of July 10 was the smallest reported in many months, approximating 262,000 net tons. Alabama produced 15,928,196 tons of coal in 1919, as shown by the final tabulations of Chief Mine Inspector C. H. Nesbitt, or a decrease of about 3,900,000 tons from the record of 1918, the loss being attributed to slack demand during the first half of the year, poor car service, strikes, etc., when the market was strong but the coal not available.

West

SAN FRANCISCO

Bunkering End of the Trade Is Prospering and Domestic Market Is in a Healthy State.

With three of the fleet of barges of the King Coal Co. now fitted up with patented apparatus for the bunkering of steamships, great speed is being made in placing large quantities of coal in the holds of vessels at port. More large carriers are coming here than ever before. With the bunkering end of the coal business prospering and the domestic trade in a healthy state, dealers are not worrying much these days.

The bituminous prices, f.o.b. mines, wholesale, Utah and Wyoming, per net ton, are as follows: Stove and lump, $4.50. The bunker price is $13.55.

News From the Coal Fields

Northern Appalachian

CONNELLSVILLE

Coke Market Is Strong with All Offerings Absorbed — Car Supply Limits Beehive Output to 30 Per Cent — Byproduct Production Is Fairly Large.

The spot coke market is a shade stronger than a week ago. Undoubtedly many consumers, both furnace and foundry interests, are unwilling to pay present prices although in need of coke, but thus far there have been enough who are willing to absorb all offerings.

In some quarters it is thought that offerings in the spot market are slightly heavier, and it is possible that here and there an operator is offering spot coke when full shipments are not being made against contracts. Generally speaking, however, the offerings in the spot market are by operators who have few or no contracts.

Connellsville coke production is not increasing but indeed shows a remarkably steady rate, even though this rate is about 30 per cent below the rate obtaining for several weeks before the rail strikes began in April. Car supply, of course, remains the limiting factor.

The byproduct ovens are working fairly well, being almost completely supplied with coal, but they are offering no coke in the open market, so that the Connellsville operators have the demand to themselves. The Connellsville market is quotable at $18@$18.50 for spot furnace and at $19@$19.50 for spot foundry, contract being practically nominal at $12@$13 for furnace or foundry, all quotations being per net ton at ovens.

The *Courier* reports production in the Connellsville and Lower Connellsville region in the week ended July 17 at 171,795 tons, an increase of 9,405 tons over production of the preceding week, which contained the holiday, but a decrease of 6,495 tons from production of the week before that.

FAIRMONT

Northern Regions of State Improve Output, Due to Larger Run of Cars—Baltimore & Ohio Will Furnish 100 Extra Cars a Day—Railroads Still Take Much Coal—Fuel Goes to New England and the Lakes.

While production in the Fairmont and other northern West Virginia regions had its ups and downs during the week ended July 17, there was on the whole a decided improvement. There were only five working days during the preceding week, but aside from that there was a much larger run of cars, day for day.

During the first two days of the week loadings had eclipsed those for the entire preceding week. The total number of cars loaded was not far from 5,600 on the Monongahela division of the Baltimore & Ohio R.R., production as a result being the best since April.

Mines on the Monongahela R.R. in West Virginia were in somewhat better shape to produce more coal than during the preceding week, having a better supply of empties. An interesting announcement made during the week was that a compromise had been reached in the case pending before the Interstate Commerce Commission to force the Monongahela to make up a heavy deficit in the car supply, the railroad agreeing under the terms of the compromise to furnish 100 extra cars a day.

The fact that the car supply was somewhat short during certain days of the week did not prevent the railoads from securing all the coal they needed, and, even in the face of decreased placement, there was no decrease on any one day in railroad fuel loadings.

Curtis Bay shipments were heavier on Monday than on any other day of the week, but export shipments were still limited, since much of the coal consigned to Curtis Bay was for New England points. Although Lake shipments outranked those for the previous week they were still not particularly large in volume.

PITTSBURGH

Car Supplies Improve Slightly—Problems of Increased Lake Shipments Are Being Worked Out—Further Car Supply Increases May Uncover a Labor Shortage.

Following the renewal of Order 7, giving preference to coal mines in the matter of car supplies for another 30 days (to Aug. 19), the Interstate Commerce Commission has accorded priority in coal to the requirements of public utilities, hospitals, etc.

Operators, Lake shippers and railroad officials are working out jointly the details of a plan whereby each operator in the districts serving the Lake trade is required to sell a certain portion of his output for the Lake trade (if not already sold), the price being below that obtaining in the open market, and the decisions will be enforced through the medium of car supplies.

The new interpretation of Order 7, whereby flat-bottom gondolas under 36 in high (inside measurement) are not considered coal cars, does not seem to have taken many cars from the coal trade, since the iron and steel interests, who had urged the ruling, assert that they have received few additional cars.

A fair estimate seems to be that a car supply equal to 65 or 70 per cent of ratings would take care of all the coal the miners will dig, though the number on payrolls, working full time every day, would equal a car supply of 90 to 100 per cent.

The spot coal market is no higher, but it shows no signs of weakening. The market is quotable at $10@$12 per net ton at mine, Pittsburgh district, the minimum being the lowest at which even steam slack could be bought, while the maximum has been touched by ¾-in. gas, with byproduct falling between.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

BITUMINOUS COAL.

	1920 Week	1920 Calendar Year to Date	1919 (a) Week	1919 (a) Calendar Year to Date
July 3[b]	10,286,000	262,359,000	7,459,000	218,099,000
Daily average	1,714,000	1,665,000	1,492,000	1,393,000
July 10[b]	9,616,000	271,975,000	10,225,000	228,324,000
Daily average	1,923,000	1,673,000	1,704,000	1,404,000
July 17c	10,969,000	282,945,000	9,889,000	238,213,000
Daily average	1,828,000	1,678,000	1,648,000	1,413,000

ANTHRACITE

	1920 Week	1920 Calendar Year to Date	1919 (a) Week	1919 (a) Calendar Year to Date
July 3	1,730,000	43,642,000	1,394,000[b]	40,049,000
July 10	1,500,000[b]	45,141,000	1,849,000	41,898,000
July 17	1,790,000	46,931,000	1,795,000	43,693,000

BEEHIVE COKE

United States Total

Week Ended July 17 1920 (c)	Week Ended July 10 1920 (b)	Week Ended July 19 1919	1920 to Date	1919 (a) to Date
378,000	361,000	344,000	11,646,000	10,442,000

(a) Less one day's production during New Year's week to equalize number of days covered for the two years. (b) Revised from last report. (c) Subject to revision. All figures in net tons.

NORTHERN PAN HANDLE

Railroads Furnish Over 50 Per Cent Car Supply—Man Power Is Expected To Increase if Run of Empties Builds Up—Market Far Exceeds Output—Conditions Similar to Pan Handle Prevail in Eastern Ohio.

There was an upward trend to production in the northern Pan Handle during the week ended July 17, not only because of the larger number of working days, no holiday stopping production, but also because of a further slight improvement in the car supply. Railroads serving the district managed to maintain a car supply slightly in excess of 50 per cent.

Lack of sufficient man power still operated to some extent, however, to restrict production, but if railroads are able to maintain the supply of empties at or above 50 per cent for any length of time, then operators are confident that they will be able to build up their mine working forces.

Operators had no general complaint to make as to the movement of loads over all roads, such congestion as had existed having been cleared up. The fact that production was better, however, did not enable producers to catch up with the demand by any means, there being a market far in excess of the ability of operators to meet.

As conditions which affect the northern Pan Handle also apply to the eastern Ohio fields there was an upward trend to production in those districts, the car supply being about the same as maintained in the northern Pan Handle, or about 64 per cent.

Middle Appalachian

POCAHONTAS—TUG RIVER

Smokeless Fields Operate to 85 Per Cent of Capacity—Improvement Ascribed to Service Order 7—Large Pocahontas Tonnage Moves East, However, but Little Is Exported—Tug River Exceeds Record of Last Nine Months—Miners Do Not Load All Cars Offered.

Substantial gains in production were made in both the Pocahontas and Tug River fields in the week ended July 17 under the stimulus of a further improvement in the car supply, there being in the fields combined (it is estimated) about an 85 per cent car supply. In other words, mines were operating at the rate of about five full days a week at the least. The gain was all the more marked because of the shortened production during the holiday week.

Of course the two smokeless districts have fallen heir, as it were, to many cars which under normal conditions would be distributed among the mines in the Williamson field where a strike is now in progress. However, aside from that, incoming cars from both eastern and western points were sufficient to materially increase transportation facilities. The improvement, by many, was ascribed to Service Order 7 relating to the use of open tops.

Mines in the Pocahontas field forged ahead of the previous week in point of production not only because there were a larger number of working days available but also because cars were more plentiful. Mines in this field were able to put in nearly a full week, as production represented about 83 per cent of potential capacity, the increase in the ouput as a result being most marked.

The larger supply represented an actual gain in the run of empties from both the East and West. It was believed by operators that Service Order 7 had much to do with improvement, particularly as to the Western sources of supply. Only a comparatively small portion of the tonnage was being exported, although quite a large tonnage was being moved to eastern points.

Production records for the last nine months were smashed during the week ended July 17 in the Tug River field when the output reached a total of 102,000 tons, that being by far the best loading of any week in the period above mentioned.

There was a big improvement in the car supply, there being in fact more railroad cars than miners showed any disposition to load. Now that the car supply in the Tug River field is approaching 100 per cent, miners are much more indifferent about working, as is usually the case, though Tug River loading during the period ended the seventeenth was quite good.

The outlook for the car supply during the balance of the month is considered excellent, and the hope has been expressed that mine employees will take full advantage of the good car supply for their own benefit as well as for the benefit of the operators.

KANAWHA

Chesapeake & Ohio Mines in Kanawha and Coal River Territory Get 50 Per Cent Car Supply—Cars Were Scarce in Kanawha & Michigan Area—Export Shipments Are Curtailed and Coal Goes to the Lakes.

While it is true that more cars of coal were loaded in the Kanawha field during the week ended July 17 than during the period immediately preceding it, the difference was due more to the fact that there were six working days in one case and only five in the other, than to any increase in the car supply.

It is not believed there was more than a 50 per cent car supply at the most in the Kanawha and Coal River fields tributary to the Chesapeake & Ohio Ry. In the Kanawha & Michigan area on the north side of the Kanawha River, conditions were not so good, cars being extremely scarce in fact in that section. On some days not more than half as many cars were placed as during the same days of the preceding week.

Kanawha coal was still under embargo, in so far as tidewater was concerned, making it necessary for producers to go in the open western market and ship the difference to western pionts. It had the effect of course of swelling Lake shipments to a limited extent. Export shipments between July 1 and July 17 had been materially curtailed, as had no doubt been intended.

VIRGINIA

Shipments Increase from Southwest Virginia, Reaching a Capacity of 76 Per Cent—Commercial Tonnage Gains but Little—Demand Is Heavy.

Mines in the southwest Virginia coal field managed to reach a total production of 131,000 tons, or 76 per cent of capacity, that being an increase of nearly 30,000 tons over that of the preceding week. In addition to the above tonnage for shipment there were produced 32,000 tons to be converted into coke.

The entire loss in production in the field of 40,000 tons, representing 23 per cent of potential capacity, was due to a shortage of cars. The best car supply was furnished by the Interstate R.R., that reaching 90 per cent, the Norfolk & Western falling down to a greater extent than any other road supplying the district.

Since the first of the month there has been quite a material increase in the car supply, although a large proportion of cars furnished are assigned, and consequently there has not been much gain in the volume of commercial fuel produced.

The demand from all sources, as is the case elsewhere, continued to be quite heavy, with the tonnage of free coal available rather limited, as producers have about all they can do to take care of contracts.

NORTHEAST KENTUCKY

Output Decreases Due to Failing Car Supply—Labor Is Demoralized by Irregular Work—Most of Tonnage Is Shipped to Inland West Markets.

Instead of any improvement being in evidence in production in the northeast Kentucky field during the week ended July 17 there was a decided decrease in the output due to a failing car supply, the decrease in fact amounting to 7 per cent. Out of a total of 323,000 only 127,000 tons, or 39 per cent of potential capacity, was produced, the loss remaining being 195,000 tons, all but 7,000 tons of that loss being attributable to car shortage. During the same period of 1919 production amounted to 71 per cent of potential capacity.

The Interstate Commerce Commission's Service Order 7 has certainly not accrued to the benefit of the mines in northeast Kentucky. The car supply on the Chesapeake & Ohio slumped during the week to the extent of 11 per cent, while the mines located on the Louisville & Nashville were able to increase their working time to the extent of about 10 per cent. Conditions are so bad that working forces are becoming demoralized owing to irregularity of work. Between July 1 and

July 17 there had been only a 40 per cent car supply on the Chesapeake & Ohio and a 44 per cent supply on the Louisville & Nashville.

The greater part of the tonnage produced during the week ended the 17th (or 81 per cent) was shipped to inland West markets. The Lakes received 17 per cent of the outtput, showing a slight increase, railroads securing about 2 per cent of the total output. In other words, no eastern Kentucky coal was finding its way eastward. Market conditions throughout the week remained practically unchanged.

NEW RIVER AND WINDING GULF

Virginian Ry. Mines Operate 4½ Days and C. & O. Plants Three Days Out of the Six on the Gulf—Better Times Are Expected Within Month or So—New River Field Secures 50 Per Cent Car Supply—Embargo Limits Shipments to Tide and Increases Volume West.

Production in the New River and Winding Gulf fields fell short of expectations during the week ended July 17. There was not the increase there should have been. While, of course, there was a larger output than during the previous week, when a holiday interfered with operations, nevertheless it is doubtful if the output reached that for the week ended July 3. There was not more than a 50 per cent supply in so far as the Chesapeake & Ohio Ry. was concerned. Eastern shipments were limited to some exent by an embargo applying to low-volatile shipments to tidewater.

Mines on the Virginian Ry. in the Winding Gulf field had the edge on Chesapeake & Ohio mines to the extent of a day and a half when it came to operating, because plants on the first named road secured a supply of cars sufficient to enable them to operate about four and a half days out of the six. Not more than three full days' supplies during the week were vouchsafed mines on the Chesapeake & Ohio in the Gulf region, or approximately a 50 per cent supply.

Although announcement was made some time ago that the new 120-ton cars would begin to arrive on the Virginian Ry. in July, so far no 120-ton cars had been observed on the line. Producers on the Virginian are rather inclined to believe that within another six weeks there will be a supply of cars sufficient for all requirements, as there has been a steady improvement in transportation conditions during the last few weeks.

Rumors are in circulation to the effect that several more companies operating on the Virginian in the Winding Gulf field will change hands in the near future.

There was not as large an output in the New River field last week as the car supply during the early part of the week led producers to believe there would be, the empties furnished not holding up after the first half of the week; although total production for the entire week was somewhat in excess of that for the preceding working period, chiefly because there were six full working days. However, the car supply was more than 50 per cent of requirements. As compared with the first half of the previous week, there was an increase in the output.

After a week's leeway in shipping to tidewater the only coal which could be moved to such a point during the period ended July 17 was that to Pools 1 and 11. In consequence of such an embargo western shipments were enlarged in volume. It is hoped that next week's production will improve.

LOGAN AND THACKER

Lack of Adequate Transportation in the Logan and Strikes in the Thacker Field Curtail Production—Output Is About 30 Per Cent of Production—State Police Are Sent to Mingo County.

From one cause and another high-volatile production in the Logan and Thacker fields was much curtailed during the week ended July 1. Lack of adequate transportation facilities on the Chesapeake & Ohio was one of the principal causes; however, this did not affect production in the Thacker field. A strike was the main cause for low output in the Thacker field. Rather a heavy loss resulted, production in the fields named running not much over 30 per cent of potential capacity.

While during the holiday week mines in the Guyan field managed to produce 180,000 tons of coal (despite the holiday) there was a decided drop during the following week, when, as a matter of fact, there should have been a decided increase. However, it was impossible to accomplish that in view of the fact that there was only a 30 per cent car supply afforded mines for the week as a whole. Logan mines were still cut off from tidewater but some Logan coal was flowing eastward; however, the bulk of the production was going to Western markets.

Even with a Sunday accumulation of cars the mines only produced 49,000 tons on Monday. That tonnage had dropped to 29,000 tons by Tuesday and to 15,000 tons by Wednesday as against 24,000 tons for the same day of the previous week. On Thursday there was an output of only 22,400 tons as against 53,000 tons for the Thursday preceding.

There was little change in the labor situation in the Williamson field during the week, one or two mines closing down to await the outcome of the strike which has affected production in a part of the Williamson region. It is estimated that the tonnage loss as a result of the strike amounts to about 150,000 tons a week. Organizers of the United Mine Workers had made no headway in organizing Pond Creek mines and production was still continued on the usual scale at these operations.

At one or two points on the border between West Virginia and Kentucky, striking miners sought to intimidate miners still at work by firing into their midst. Again, when some of the larger plants in the field which had been closed down attempted to resume operations on Tuesday, July 20, the striking miners opened fire on one mine, 200 shots being exchanged. Owing to such tactics it became necessary to send a large detachment of state police back to Mingo County to prevent the sniping, in which the striking miners are engaging.

MINGO COUNTY

Branch Line of N. & W. Ry. Is Being Constructed Up Pigeon Creek in Mingo County — Kountze Interests Have Leased Number of Tracts to Local Parties—Coal Is Similar to That in Logan County.

Construction of a 19-mile branch railroad from Lenora, Mingo County, W. Va., up Pigeon Creek to Rockhouse and thence on that creek to its head, opening up coal lands is under way.

The railroad will cost probably more than $3,000,000. It joins the line of the Norfolk & Western at Lenora. It has been rumored that the Norfolk & Western would build a line from Ajax through the mountains to Kermit, crossing the river there and down the Kentucky side to Fort Gay.

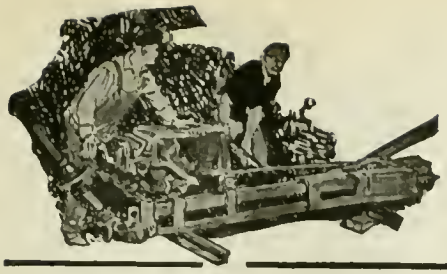
The deal for the railroad was put through some time ago between the Kountze interests, or the United Thacker Coal Co., New York, and the Norfolk & Western Railroad. The Kountze interests have leased a number of tracts of the coal lands to local capitalists, including Garner Fletcher, Elkhorn Piney Coal Mining Co., George S. Wallace, attorney, and associates, A. B. Rawn, Solvay Collieries Co., and H. H. Morris, West Virginia Standard Coal Co.

Similar coal to that mined on Island Creek in Logan County, including Chilton, Thacker, Winifrede and Coalburg seams, is found on Pigeon Creek. A 15,000-acre tract of timber will be operated by Harry M. Gorman and associates.

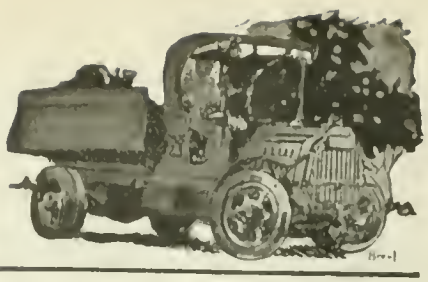
INDIAN CREEK VALLEY

Suit Is Entered Against Coal Operators by P. R. R. to Prohibit Them from Draining Mine Water Into Indian Creek.

The Pennsylvania R.R. has instituted suits against coal operators of the Indian Creek Valley in Fayette County, Pa., seeking to prohibit them from draining water from their mines into the stream. The railroad claims it has invested $7,500,000 in the water rights and distribution throughout the Monongahela division, but avers that water containing sulphur from the mines pollutes it to the extent that the water cannot be used in engine boilers. Suits have been instituted against the Indian Creek Coal & Coke Co., the Indian Creek Valley Coal Co., the Rogers Coal Co., the Crooked Creek Coal Mining Co. and the Warwick Coal Company.



Mine and Company News



ILLINOIS

Herrin—The Madison Coal Corporation, of Chicago, has completed a 2-mile switch to old Blairsville, northwest of here, and work has started on a new mine. It is expected that the mine, which will be one of the largest in the field, will be completed in about a year's time. The company will build a village on the new townsite, starting off with 25 houses; the second lot will include 75 houses. The mine will be a modern plant operated by electricity.

Murpheysboro—The American Coke & Chemical Co., of St. Louis, has purchased the mining properties of the Big Muddy Coal & Iron Co., which owns and operates five mines in the southern Illinois field. Two of the mines are in Williamson County and three are located in Jackson County.

The deal includes a large acreage of coal land. The purchasing company, according to report, has entered into an agreement whereby the Chicago, Wilmington & Franklin Coal Co., will operate the mines. The latter company is one of the largest producers of coal in that field.

The American Coke & Chemical Co. has also been taking up extensive coal options in Hamilton and Jefferson Counties and is now putting down drill holes on the lands.

Gillespie—All previous records of mine No. 3 of the Superior Coal Co. have been shattered during the month of June. In addition, the local shaft established a high mark for Macoupin County. A total of 110,103 tons of coal, or a daily average of 4,812 tons, were produced during the 22⅞ days the mine operated last month. Much credit is given by officials to the fast caging and emptying of cars. The best daily hoists were made on the following days: June 9, 5,020 tons; June 12, 5,106 tons; June 29, 5,128 tons and June 30, 5,140 tons.

KENTUCKY

Pikeville — Some 70,000 acres of Kentucky coal land, covered with vast forests of timber, will be developed on an extensive scale by the Virginia Coal & Coke Co., which has been organized recently in Roanoke, Va. The capitalization is $10,000,000 and the management is under the control of Roanoke and New York financiers and investors interested in the Virginia Iron, Coal & Coke Co., which is developing important iron and timber land and operating blast furnaces.

The 70,000 acres are located in the counties of Leslie, Letcher, Pike and Perry, where mills will be installed, mines equipped and railways constructed for thorough development.

Pineville—Announcement was made here recently that the Ford Motor Co., had purchased the extensive mining properties of the Banner Fork Coal Corporation in Harlan County, near Pineville, at a reported price of $1,500,000. It is also reported that the Banner Fork people represent Virginia capitalists. This coal plant is considered one of the largest operating properties in the state.

PENNSYLVANIA

Waynesburg—A deed was placed on record here recently for the transfer of almost 8,000 acres of coal in the vicinity of Clarksville, Green County, from J. G. Patterson, of Pittsburgh to the W. J. Rainey interests. Most of the coal lies in Green township between the forks of Ten Mile Creek. The consideration in the deed is $1; but the deed contained $3,000 in revenue stamps, indicating that the real consideration was $3,000,000. The coal underlies 27 different farms.

Pittsburgh — The Hillman Coal & Coke Company, of Pittsburgh, Pa., formerly the United Coal Corporation, is increasing its capital stock to $33,000,000, and it is reported it will merge into the one corporation all the associated Hillman companies now under the same management, including the Hecla Coal & Coke Co., Thompson-Connellsville Coke Co., Belle Vernon Coke Co., Clarksburg Gas Coal Co. and the Luzerne Coal & Coke Co.

At present the Hillman Coal & Coke Co. operates eight mines in Allegheny, Washington, Fayette, Westmoreland and Somerset counties, Pa., and Preston County, W. Va. The Hecla Coal & Coke Co. operates five coal and coke plants in Washington, Fayette and Green counties, Pa.; the Clarksville Gas Coal Co., one mine in Green County, Pa.; the Belle Vernon Coke Co., a plant in Fayette County, Pa.; the Luzerne Coal & Coke Co. and the Thompson-Connellsville Coke Co., each operate one plant in Fayette County, Pa.

The officers, all of whom are in Pittsburgh, are J. Harte Hillman, Jr., chairman of the board; Tracey W. Guthrie, president; William L. Affelder, assistant to the president; Thomas Watson, vice president and secretary; A. B. Sheets, vice president; Ernest Hillman, vice president; Robert W. Flenniken, treasurer; F. B. Lockhart, general manager of sales; Harrison T. Booker, general manager of mines; J. Dickenson Martin, chief engineer; Royal A. Miller,

Indiana—The Graceton Coke Co., at Graceton, Pa., owned by the Youngstown Steel Co., Youngstown, Ohio, has been sold to Warren Delano of New York for $750,000. Mr. Delano is principal owner of the Vinton Colliery Co., at Vintondale, Cambria County, Pa. An inventory is now being made and the new owners will take charge Sept. 1. Chester M. Lingle, general manager, will go to Greene County, where he will be general manager of the Buckeye Coal. Co.

Scranton—Two men were killed and a third man was mortally injured as the result of a tower collapse on the Marine No. 2 breaker of the Hudson Coal Co. at North Scranton.

All three men were employed as carpenters and plunged 125 ft. to the ground as the tower crashed down.

WEST VIRGINIA

Mt. Hope—Last June the stock of the Fire Creek Coal Co., operating in Raleigh County, was sold to the Smokeless Coal Corporation, a company in which eastern capitalists are said to be largely interested. It is understood that the sum involved was above $500,000. These mines have been in operation for some time in connection with the development of a leased tract of 1,600 acres.

Huntington—The Central West Virginia Coal & Lumber Co., which recently increased its capital stock from $250,000 to $500,000 with a view to an expansion of the business, has as the first step in such expansion opened an office in this city and has appointed Walter E. Morgan as its Huntington manager.

St. Albans—The Nellis Coal Co., is planning the erection of a new steel tipple at its properties in the Coal River district, Boone County. The structure will be provided with shaker screens and other up-to-date equipment. It is estimated that the improvements here will cost about $200,000.

Clarksburg—Connellsville, Pa., people among them being Thomas Love, and W. A. Furlong, have purchased a large tract of coal land from the New Superior Coal & Coke Co. in Clay District of Harrison County. It is understood that the consideration involved was $215,000.

Charleston—The Pointlick Coal Co. is going ahead with plans for the development of its lease on Campbell's Creek in the Kanawha County field. This company has perfected its organization by the election of the following officers: H. M. Davidson of Charleston, president and general manager; A. W. Alden, Bluefield, vice president; J. P. Cofer, Bluefield, secretary and treasurer.

Trade Catalogs

Airveyor—Guarantee Construction Co., 140 Cedar St., New York, N. Y. Bulletin 126. Pp. 20; 8½ x 11 in.; illustrated. Description of apparatus for handling various materials by means of pneumatic conveyors. Installations noted.

Superpump and Hydraulic Machinery—Traylor Engineering & Manufacturing Co., Allentown, Pa. Bulletin 101. Pp. 49; 6¾ x 9¼ in.; illustrated. Description of the new Traylor pump and other hydraulic machinery, including information of interest to users of pumping machinery.

Announcement—Vale & Towne Manufacturing Co., Stamford, Conn. Folder. Pp. 4; 8½ x 12 in.; illustrated. Announcement of the purchase of the Industrial Electric Truck Division of the C. W. Hunt Co., of Staten Island, N. Y., by the Yale & Towne company. The trucks and allied equipment are fully illustrated.

Personals

J. S. Niles has been appointed traffic agent in the Chicago district for Kennedy, Floyd & Co., of Chicago.

F. R. Wadleigh has been appointed export sales manager of the Weston Dodson & Co., Inc., with offices at 4006 Woolworth Building, New York City.

J. A. Galligan has resigned as sales agent of the Pickands, Brown & Co., of Chicago. **R. S. Dutton** has been appointed to fill the vacancy, and **F. L. Schulze** is assistant sales agent for the Coke Department.

D. C. Phillips, Jr., has been placed in charge of the newly opened branch office of the Southwestern Coal Co., at Huntington, W. Va., his title being that of district manager. **R. S. Magee** is the president of the company.

W. J. Heatherman, formerly chief of the West Virginia Department of Mines and now general manager of the Cleveland Cliffs Iron Company's mine at Ethel, in the Logan field, was operated upon the latter part of June for appendicitis.

D. R. Phillips has been selected as assistant to General Manager Garner Fletcher of the Elkhorn Piney Coal Mining Company, with headquarters at Huntington, W. Va. Mr. Phillips was formerly connected with the C. & O. car allotment commission.

A. S. J. Southworth has resigned as secretary-treasurer of the General Coal Company of Huntington and secretary of the United States Block Coal Company, effective July 1, Mr. Southworth having disposed of his interest in the companies named.

F. L. Poindexter, superintendent of transportation of the Chesapeake & Ohio R.R., has been appointed as assistant to the general superintendent in charge of fuel, car allotment and distribution, and in that capacity succeeds **Fred J. Glinn,** head of the Car Allotment Commission of the road during the last five years. The understanding is that Mr. Glinn is to become superintendent in charge of stations on the staff of the general superintendent. The office of chairman of the allotment commission has been discontinued.

Howard N. Eavenson announces that he has resigned his position as chief engineer of the United States Coal & Coke Co., with mines at Gary, W. Va., and Lynch, Ky., and has opened an office as mining engineer at 230 Fifth Ave., Pittsburgh, Pa., where he will conduct a general mining engineering business, specializing in reports and valuations of coal lands and coal properties, the design and construction of coal plants, particularly those for by-product coking purposes, the improvement of existing plants to increase their capacity, efficiency and safety and in town planning and building.

Harry M. Urban has resigned from the position of general manager of the Woodward Iron Co. and **A. J. Boynton** of the National Tube Co., Loraine, Ill., has been named as general manager to succeed Mr. Urban. This announcement was authorized by Frank H. Crockard, president of the company. The resignation of Mr. Urban is effective immediately and Mr. Boynton will take up his new duties as early as possible. Mr. Urban was for some time superintendent of the by-product division of the Tennessee Coal, Iron & Railroad Co., with offices at Fairfield. He left the position when Mr. Crockard became president of the Woodward company to take the position as general manager of the latter company. Mr. Urban has made no announcement as to his future connection.

J. Ira Thoms, who for some time past has been the mine inspector of the fourth bituminous district of Pennsylvania with headquarters in Du Bois, has been transferred to Johnstown, in charge of the new district 13, extending north from Johnstown in the Cambria district, including the Nanty-Glo and La José districts, and running as far east in Clearfield County as Smoke Run and Madera. The new district was formed as a result of consolidation and redistricting recently completely by the Department of Mines.. A change in the eighth district, in charge of Mine Inspector **Joseph Knapper,** of Philipsburg, relinquishes the mines along the river division of the New York Central from Clearfield to Keating, now taken over by the fourth district in charge of Inspector **Sangan,** of Dubois, formerly in charge of the old thirteenth which was abolished.

Association Activities

Winding Gulf Operators' Association

Home fuel needs are to be taken care of as a result of action taken by the Winding Gulf Operators' Association. In other words, through the instrumentality of the association it is proposed to supply coal to dealers at such towns as Princeton, Beckley, Mullens and possibly other points on the Virginian Ry. at the price of $4 per ton.

Operators take the position that they should aid to the greatest extent possible in helping people living in the Winding Gulf region or close to it in meeting their fuel requirements even though operators have found it impossible to take care of the demand outside of the district even to filling contracts. The association will receive requests from the towns already named and will then divide such orders among the various plants.

The E. E. White Coal Co. has made known the fact that it will furnish at the tipple run-of-mine coal at the rate of $4 a ton to those who apply for such coal in trucks or wagons.

Washington Fuel Merchants' Association

Retail coal dealers and mine operators clashed in the convention of the Washington Fuel Merchants' Association at Spokane, Wash., on the question of cutting the coal prices in spring and summer in order to stimulate production. B. D. Mills, of the Seattle Coal & Fuel Co., argued that the operators should reduce their prices in May, June and July and make up the margin in the latter months of the year. This was strenuously objected to by several operators, including H. Hayward, of Salt Lake, representing the Rock Spring company.

All the speakers agreed that the industry should be stabilized by educating the public to buy in the summer. It was proposed by the operators that a fair-minded committee of men from both branches of the industry take up the problem.

Claims for a shortage in coal shipments against a railroad company were also discussed. R. S. Brown, traffic manager of the Western Retail Lumbermen's Association, told the fuel men of methods that were successful and of others that had proved unsuccessful.

The railroads were loath to settle claims for shortage in weight, and asked that an allowance of two per cent be permitted. Individual effort would not be successful in bringing the carriers to the proper attitude on settlement of claims; only through co-operation could shippers cope with pilfering and other losses while coal is in transit.

Publications Received

Quarry Accidents in the United States During the Calendar Year 1918—By Albert H. Fay. Not illustrated; pp. 52; 6 x 9 in.

Safe Storage of Coal. By H. H. Stock. Department of the Interior. Bureau of Mines. Technical Paper 235. Illustrated; pp. 10; 6 x 9 in.

Development of Liquid Oxygen Explosives During the War. By George S. Rice, Department of the Interior. Bureau of Mines. Technical Paper 243. Illustrated; pp. 46; 6 x 9 in.

Perforated Casing and Screen Pipe in Oil Wells. By E. W. Wagy. Department of the Interior, Bureau of Mines. Technical Paper 247. Petroleum Technology 55. Illustrated; pp. 48; 6 x 9 in.

Electrometallurgical and Electrochemical Industry in the State of Washington. By Charles D. Grier. Engineering Experiment Station, University of Washington. Bulletin 5. Illustrated; pp. 45; 6 x 9 in.

Effects of Gasoline Removal on the Heating Value of Natural Gas—By Donald B. Dow. Department of the Interior. Bureau of Mines. Technical Paper 253. Illustrated; pp. 23; 6 x 9 in.

Artesian Waters of Northeastern Illinois. By Carl B. Anderson. State of Illinois, Department of Registration and Education. Division of the State Geological Survey, Urbana, Ill. Bulletin 34. Illustrated. Pp 326; 7 x 10 in.

Coal in 1918. Part A. Production. By C. E. Lesher. Department of the Interior, Bureau of Mines. II-27. Mineral Resources of the U. S. 1918—Part II (Page 695-813). Published May 28, 1920. Illustrated; pp. 119; 6 x 9 in.

Annual Report of Coal Mines for the year ending Dec. 31, 1919, for the State of Washington. James Bagley, State Mine Inspector, Seattle, Wash. Not illustrated; pp. 53; 6 x 9 in. Statistical data and information about the coal mines of the state.

Coal-Mine Fatalities in the United States in 1919. By Albert H. Fay. Department of the Interior, Bureau of Mines. Bulletin 196. Not illustrated; pp. 86; 6 x 9 in. In addition to data about coal-mine fatalities, facts are given relative to approved mining equipment and permissible explosives.

Mining Preparing Domestic Graphite for Crucible Use. By George D. Dub and Frederick G. Moses. With a chapter on methods of analysis used by the Bureau of Mines, by G. B. Taylor and W. A. Selvig. Department of the Interior. Bureau of Mines. Bulletin 112. Illustrated; pp. 80; 6 x 9 in.

Development of Liquid Oxygen Explosives During the War—By George S. Rice. Department of the Interior. Bureau of Mines. Technical Paper 243. Illustrated; pp. 46; 6 x 9 in. Attention is called to the possibilities of liquid oxygen and carbonaceous material as an explosive compound to serve as a substitute for powder and dynamite.

Coming Meetings

American Mining Congress will hold its annual meeting at Denver, Col., Nov. 15. Secretary, J. F. Callbreath, Munsey Building, Washington, D. C.

American Institute of Mining & Metallurgical Engineers will hold its fall meeting Aug. 20 to Sept. 3. It is proposed to leave Buffalo by steamer and cruise through the Lakes, the first stop being at Houghton, Mich., after which the party will visit Duluth and the Iron Ranges of Minnesota, spending a day or two in Minnenpolis on its return. Secretary, Bradley Stoughton, 29 West 38th St., New York City.

New York State Coal Merchants' Association will hold its annual meeting Sept 9, 10 and 11 at Richfield Springs, N. Y. Treasurer, G. W. F. Woodside, Albany, N. Y.

Illinois and Wisconsin Retail Coal Dealers' Association's annual meeting Aug. 4 and 5 at Milwaukee, Wis. Secretary, I. L. Runyan, Chicago, Ill.

The Rocky Mountain Coal Mining Institute, in conjunction with the Colorado Metal Mining Association, the local chapters of the American Mining Congress and the American Institute of Mining & Metallurgical Engineers, and the International First Aid Meet will hold its annual meeting Sept. 9, 10 and 11 at Denver, Col. Secretary, F. W. Whiteside, Denver, Col.

National Safety Council will hold its 1920 congress on Sept. 27 to Oct. 1, inclusive, at Milwaukee, Wis. General Manager, C. W. Price, Chicago, Ill.

Oklahoma Coal Operators' Association will hold its annual meeting Sept. 14 at McAlester, Okla. Secretary, E. E. La Grave, McAlester, Okla.

COAL AGE

The Weekly Journal of the Coal and Coke Industries

Volume 18 NEW YORK, THURSDAY, AUGUST 5, 1920 Number 6

Rail-Rate Increases

REHABILITATION of the railroads may be said to have just begun with the increase in rates of one and a half billion dollars, more than half of which goes to labor. The Interstate Commerce Commission in announcing its decision, the purport and extent of which was largely discounted in advance, comments on the fact that shippers' testimony regarding the proposed rate changes was more generally directed toward methods of application than on amounts of increase. This certainly has been the attitude of the coal industry.

The commission finds that shippers are far from unanimous in their views on this subject and that there are those who desire absolute preservation of differentials, those who favor straight percentage increases and finally those who advocate a percentage increase with a maximum. After discussing these various methods the commission concludes that with certain exceptions general percentage increases "must be considered for present purposes the most practicable." This conclusion is stated to be without prejudice to any subsequent finding in individual situations.

Coal, among the commodities accorded separate discussion, will have special and separate treatment in the application of the rate increases. The commission says that an effort should be made promptly to devise rates in each group that will yield, as nearly as practicable, the same revenues in the aggregate that would be afforded by the straight percentage increases. In other words, the commission has left to the coal and railroad men the task of working out the details of coal-rate increases and asks only that when completed the result give the carriers the specified total percentage advance. Between now and Sept. 1, when it is desired that the new rates become effective, there is time for agreement to be reached on but a few important base rates.

Common Sense Versus Panic

ON JULY 14 the manufacturers in New York State, outside of New York City, banded together in a group called the "Associated Industries of New York, Inc.," met in Albany to discuss the coal situation. According to reports they assembled with the idea that it was time to urge the Government to step in and before the meeting was well under way it was evident that the belief prevailed that a Fuel Administrator should be appointed, if not for the United States at least for the State of New York. New England had such an officer and perhaps was getting more than its share of the coal.

Before the close of the day common sense got the better of panic and the following resolutions were adopted. They are given here in full because they are so much better than might have been expected from a group of consumers who, in part at least, are short of coal and are paying high prices with no positive relief in sight. The men who adopted these resolutions did so in the same spirit that a real American crowd forms an orderly line before the ticket window, each awaiting his turn, not quite certain but that the seats will all be taken by the time he gets there.

Resolutions adopted by the Associated Industries of New York, Inc.:

"Whereas it is the consensus of opinion of this meeting that while there is a general shortage of bituminous coal, there is no reason for a panic, though such panic seems possible through an unnecessary fear of a drastic shortage of bituminous coal next winter; and

"Whereas it is apparent that the present stringency in the bituminous-coal market is not due to any omission of effort on the part of coal operators or railroad operators but that such stringency is due to lack of operating equipment caused primarily by excessive and hard war-time use of such equipment without necessary upkeep and repairs; and

"Whereas it is further apparent that present stringent conditions are due to a woful lack of co-operation on the part of the employees of railroads through so-called outlaw strikes and otherwise; therefore be it

"Resolved that it be the sense of this meeting that we urge our respective communities to co-operate with the railroads in their efforts to obtain the necessary funds and labor to rehabilitate their properties and to further co-operate by the prompt loading and unloading of cars and by the efficient use of their present equipment to assist in delivering more bituminous coal to consumers."

Federal Trade Commission to the Rescue

WHAT a consolation to the National Coal Association to be able to turn to "authentic governmental figures" to illustrate to the public "the slender margin of profit per ton" realized by the bituminous coal industry! In a press release to the newspapers for last Sunday, full advantage is taken of the figures of costs and sales realizations on bituminous coal for April issued by the Federal Trade Commission (*Coal Age*, July 29, page 258) in showing that the operators are not the ones who are gouging the public with high prices for coal. This story, prepared by Mr. Pratt of the National Association, is a fair statement of the facts, well written, and should convince the skeptical that the real source of high prices is not at the mines—that the producers are not the real offenders. The story would have fallen flat, could not have been written, in fact, without the Federal Trade Commission figures as a basis.

All is grist that comes to the mill of the writer of publicity, of course, and Mr. Pratt is fully justified in his use of these figures, but one cannot help marveling at his audacity. As far as the National Coal Association is concerned, the monthly cost reports to the Federal Trade Commission have ceased to be. Has

not Justice Bailey of the District of Columbia Supreme Court enjoined the commission from requiring these reports and on the plea of the coal operators? Has not the operators' association spent much good money in lawyers' fees to compel the commission to cease its activities in this direction? The plain intent of the National Coal Association so far has been to prevent and discourage operators from filing these monthly reports, and in this it has been fairly successful—the number reporting for April was 812 compared with 1,589 for January of this year. These same reports are proving of inestimable value to the operators, for, as we have said before, they have nothing to hide and everything to gain in making public this information.

The National Coal Association started the suit against the Federal Trade Commission to settle once for all the controverted question as to whether the commission has the legal right to *compel* the submission of data on costs, or whether, having the right, it could designate absolutely the form in which the producer should keep his books. So far as known, the association has not advised its membership that they should proceed to file reports voluntarily. No official encouragement has been given the Trade Commission in this work, the results of which are palpably of so much interest and value to the association.

At least 812 coal producers have no objection to reporting these figures to the Federal Government and there is a marked belief on the part of many influential coal operators that the effort to cut off the publication of these data was and is ill-advised. We are staunch advocates of the principle of voluntary submission of data to the Government. We believe that sufficient producers are or can be educated to the point of regularly making these and other valuable reports. It seems time for the National Coal Association to remove the wet blanket it has thrown on the efforts of the Trade Commission to compile and publish these data and to come out with a statement to its membership urging them to make *voluntary* returns of monthly costs.

What was avowedly a friendly suit to test the powers of the Trade Commission should be continued in that spirit. Purely selfish motives should impel the National Coal Association to urge on operators the necessity of making a better showing in the May cost statement than 812 reports out of the thousands who are in the business of producing coal.

Oil the Coveted

SAGHALIN, an island north of Japan, the northern half of which is Russian territory, has been seized by Japan. The area is described as barren, cold, and now but a location for a convict colony. The United States is openly opposed to the forceful acquisition by Japan of this Russian territory and it is reported that Great Britain also is concerned and watching the negotiations with unconcealed interest.

Perhaps the real reason for activity in this diplomatic game is that this island is reported by geologists as a very likely source of petroleum. Petroleum is a matter of world-wide concern today and nations are developing policies looking to the protection of supplies already developed and to the acquisition of control of new productive areas. If Saghalin is a potential source of oil in quantity, the diplomatic fight for its control has only begun.

Practical Men

OUT of his own experience, the practical man gathers his ideas. If his experience is narrow, he is nevertheless a "practical" man. A practical mining man may never have combated a mine fire, worked after a mine explosion, handled machinery or operated an up-to-date mine. Nevertheless he is still a practical mining man. He has practiced mining as mining is practiced where he got his experience.

Some things he has learned, things which can only thus be attained, but he may have much knowledge or little, according to conditions surrounding his experience. When a man asserts he is a practical mining man he should explain at what he is practical—at running a mine without gas, little water, no machinery or at a plant where all manner of up-to-date appliances are in use and every class of difficulty is to be met.

An all-round man is he who has ripened his practice in the sun of other men's diverse experience, whose grasp is lengthened by his ability to stand on the shoulders of others. The experience of one man is a sorry basis for the work of the modern world. Fortunately, no man is wholly practical. Every man today has drawn more or less from other men's experience and added it to his own. His own labors may mean as much to him as the labors of others, but the successful man is willing to accept, without jealousy, the experience of others and is not so profoundly immersed in his egotism as not to be anxious to avail himself of the labors of workers in his own or kindred fields.

Water Power Helps Coal Shortage

FIGURES recently published by the U. S. Geological Survey on power produced by central power stations and public utilities for the first four months of this year show the help water power has been to the country this spring. The combined output of power from all sources was approximately the same in April as in February and March of 1920, the 3-month period showing a material drop compared with the same period of 1919. Power developed from water this year, however, recorded a gain of 25 per cent from February to April, figured on the basis of average daily production. Power obtained by burning coal, and to a smaller extent oil and gas, decreased from 2,300 million kilowatt hours in the month of February to 2,100 millions in April.

It is particularly significant also that the mean daily output of power for the first four months of 1920 was 16 per cent greater than in the corresponding period of 1919—121.2 million kilowatt hours this year against 104.08 in 1919. A portion of this unusual load on the public utility plants is no doubt due to the transfer of consumers from isolated plants to central power, but undoubtedly largely the result of actual greater demand for power from industrial consumers and for transportation. The increase in power from fuel has been about 23 per cent, showing that, as is usually the case, coal is required to carry the peak load.

It is interesting to apply this slight but significant measure of increased demand for coal—coal is power—into terms of annual production of bituminous coal. The output in 1919 is estimated at 450,000,000 net tons. An increase of 16 per cent indicates a requirement for 1920 of about 520,000,000 tons—somewhat below the mark set by most observers.

Freight Traffic is Greater Than Last Year's

An increase of about 3 per cent in freight traffic on the railroads of the country during the first two weeks of July, as compared with the same period in 1919, has been reported by the Commission on Car Service of the American Railway Association. During July of this year 1,597,295 cars were loaded, according to the report, against 1,553,071 for the same two weeks of 1919 and 1,769,242 for the similar period of 1918.

Sees Crisis for Gas Companies

In a statement issued July 25 G. B. Cortelyou, president of the American Gas Association, said: "The emergency which faces artificial gas companies is immediate and far reaching. It embraces the entire gas industry. Economic conditions, many of them of worldwide extent and influence, affecting the supply of coal, oil and other essential materials required in the manufacture of gas, of labor and of the funds needed to maintain and develop our properties are not bogies invented by industry to secure preferential treatment. They are the facts."

New Barge Canal Will Ease Freight Congestion

A new canal barge line between Jersey City and Buffalo, by way of the Erie Canal, has been opened by which freight will be hauled between Jersey City, New York, Oswego, Buffalo and way points at a rate which, it is said, is less than is charged for railroad freight between Jersey City and Buffalo.

New York Customs Receipts Smash All Records

Collector of the Port Newton announces that receipts of the New York Custom House for the year ended June 30 totaled $230,083,885, as compared with $117,854,252 for the preceding year, and approximately $5,000,000 more than ever before collected in a year in the history of the Port of New York.

Railroad and Fuel Crises Curtail Steel Output

In its weekly iron market summary as of July 29 the *Iron Age* says: "Barring unexpected relief, the railroad situation in the Pittsburgh district will soon force steel works there to further curtailment of production. At Chicago also the week's developments have been unfavorable, the strike at Illinois coal mines bringing on a new fuel crisis. Five additional blast furnaces were banked there, so that the Steel Corporation has only 14 furnaces in blast out of 29 in the Chicago district. Generally speaking, new inquiry for finished products has fallen off, rails and track supplies, cold rolled steel, wire and pipe being exceptions. In the Middle West the railroads and implement manufacturers in particular are pressing for deliveries on contracts."

Coal Company Sues City of Scranton for $1,000,000

The People's Coal Co., owners of the Oxford Mine, Scranton, Pa., has entered suit against the city to recover $1,000,000 damage. The action was taken as a result of the closing of the mine two months ago by Mayor Connell and the police under the provisions of the Davis Mine-Cave Law. This was due to alleged destructive mining methods which resulted in the cave-in of streets and the tumbling down of many business places and dwellings in West Scranton.

NEWS BRIEFS

Terse Items Chronicling Events of Interest to the Industry

U. S. Steel Earnings $43,155,705 During Second Quarter

Despite railroad congestion, which reached its most acute state in June, net earnings of the U. S. Steel Corporation for the quarter ended June 30 were $43,155,705. The net earnings in the first quarter of 1920 were $42,089,019, and in the second quarter of 1919 they were $34,331,301. The results were the largest since the third quarter of 1918.

International Commerce Body Studies World Fuel Situation

The International Chamber of Commerce, composed of delegates from Belgium, Great Britain, France, Italy and the United States, recently held its first meeting in Paris. As the result of a discussion of the world's fuel stock a resolution was passed urging utilization of hydro-electric power, development of measures for the scientific and economical use of mineral fuel, and development to the utmost of research in the extraction of coal and oil resources of the world.

Coal Prices Soar in Illinois

Coal prices at Illinois mines have taken a jump of $1.30 to $3.30 a ton at mines and bidders are still running the figure up. President Farrington of the Illinois United Mine Workers asserts that twenty-two mines have signed agreements to pay shift men $2 more a day.

Corporation to Lend Funds for Equipment of Railroads

A corporation designed to furnish funds to railroads which now are in need of new equipment is being formed by S. Davies Warfield, president of the National Association of Owners of Railroad Securities, and is expected to be launched soon. Mr. Warfield has received assurances that securities of the proposed equipment trust corporation up to upproximately $25,000,000 will be bought by large insurance companies.

Says Natural Gas Will Last Only 25 Years

Natural gas will last only twenty-five years longer and not that long unless the supply is conserved, was the opinion expressed by Samuel S. Wyer, of the United States Bureau of Mines, at a natural gas conservation conference held under the direction of the Pennsylvania Public Service Commission at Pittsburgh, July 28.

Great Britain and France Form Oil Alliance

According to information from an authoritative source, Great Britain and France have concluded an agreement in connection with oil supplies designed to secure international co-operation and to eliminate competition which might give rise to friction between them.

Dr. Eaton Would Abolish Unions

At a recent luncheon of the New York Rotary Club in the Hotel McAlpin, the Rev. Dr. Charles A. Eaton, associate editor of *Leslie's Weekly*, told the members that he advocated the open shop and the abolition of unions, but that employers must first learn to do voluntarily the things that unions now force them to do. He recommended the education of all workers, particularly immigrants, in "the idealism that is the soul of America."

Cannot Make Enough Gasoline To Supply Demand

There is not enough gasoline to meet the needs of the public, notwithstanding that the Far West has never had so much gasoline as this year. Producing wells in this country and Mexico are unable to meet the growing demand.

A. G. Gutheim

Member of the Commission on Car Service, American Railroad Association

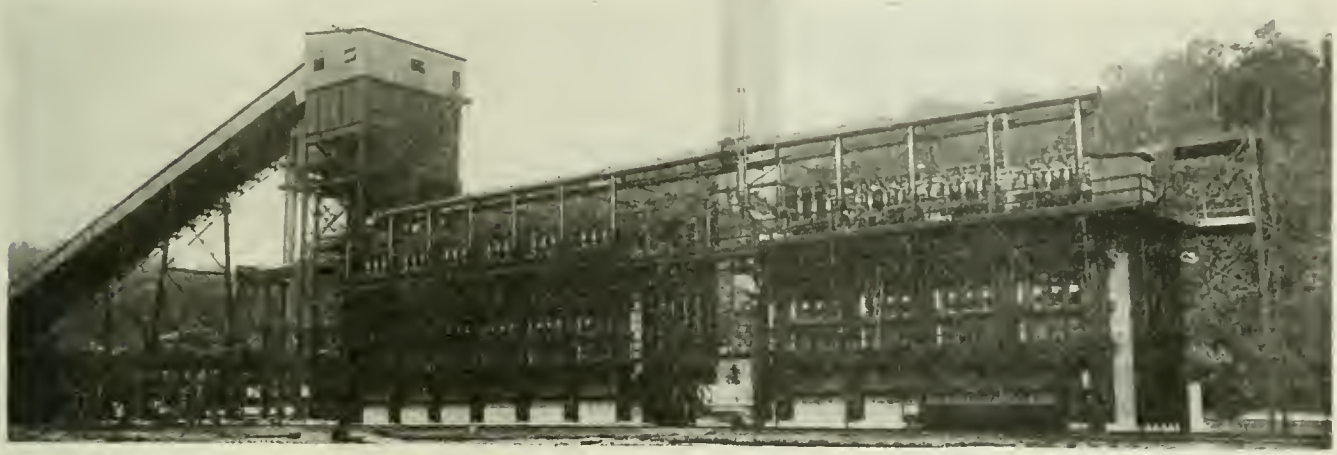
DURING the time that men in the military service were distinguishing themselves for courage and resource in handling the problems met at the front, equally important achievements were being scored by some of the men handling problems of production and distribution at home. When the war opened A. G. Gutheim was one of the legal examiners of the Interstate Commerce Commission. His special knowledge of car service led to his being assigned overnight to the operating branch of the Railroad Administration. Throughout the war he handled matters pertaining to car supply with such ability as to signally distinguish himself. Today he is regarded as one of the country's authorities on car service. It was he who was called upon by Daniel Willard, president of the Baltimore & Ohio Railroad Co., to present the problem of car service at the recent important hearings before the Interstate Commerce Commission in the case known as Ex-parte 75.

Mr. Gutheim was born in Cambridge, Mass., in 1878. His early education was obtained in the schools of that city, where he completed the high school course. His legal training was obtained at the Boston Y.M.C.A. Law School. He was engaged with the Fitchburg and the Boston & Maine railroads from 1896 to 1906. In the latter year he went to Washington as a special agent for the Bureau of Corporations. Two years later he entered the service of the Interstate Commerce Commission as an examiner of accounts. He served as special agent and finally became an attorney examiner for the commission.

At the outbreak of the war Mr. Gutheim was assigned to car-service work with the Interstate Commerce Commission, but was loaned to the Railroad Administration almost immediately after its formation. A considerable portion of his time was spent on coal-car questions. On March 1, 1919, he accepted an appointment on the Commission on Car Service of the American Railroad Association. In his new connection he is called upon to provide relief in all matters where difficulties arise in car supply.

Making the Smokiest Coal Smokeless While Saving Byproducts*

By George Esherick, Jr.
New York, N. Y.



Many Factors Make It Desirable to Cease Burning Raw Bituminous Coal and to Substitute Smokeless Fuels of the Anthracite Type—The Smith Process of Low-Temperature Carbonization Renders This Possible

EVERY civilized nation is devoting attention today to the problem of conserving its coal supply. The proposition presented is really one of utilizing coal more economically than heretofore. This is a problem not altogether new, and a fair degree of progress has been made toward its solution. Many improvements have been made in the methods of burning coal and in the ways and means employed in utilizing the heat energy derived therefrom. But by far the greatest progress has resulted from radically modifying the raw material itself before using it for fuel.

Along this line the production of coal and water gas has been developed to a worldwide industry, the trend being always toward a more complete gasification of the fuel. The final coke residue is, of course, a by-product of the process. The production of coke for metallurgical purposes meanwhile has progressed as an independent industry in which the main product sought is coke, the byproducts being largely wasted.

Production of coke has always been controlled by the demands of the steel industry, and this fuel has not come into general use either industrially or for domestic heating. One reason for this has been its high price, although the increasing market for coal-tar products has in recent years served to lower production cost. Another reason is that good coke can be made only from certain kinds of bituminous coal, and this limits to some extent the areas in which coke is available.

But the principal reason that coke has remained essentially a metallurgical fuel lies in the fact that it is not well suited for domestic heating, or for railroad use, or for industrial operations generally. Anthracite coal more nearly meets the demand for a smokeless, solid fuel of high heat value, but the supply of this coal is limited in quantity and in geographic distribution.

The burning of raw bituminous coal is uneconomical, as the market for coal-tar products has made the volatile portion more valuable for other purposes than for fuel. The coke industry has taken advantage of the increased market for byproducts, but has not developed a fuel which is satisfactory for domestic uses. In the burning of raw bituminous coal the volatile constituents are not even completely consumed, a considerable portion escaping as smoke. This is not only a waste of fuel but a nuisance, and many cities have already adopted smoke ordinances which prevent the use of bituminous coal, and these enactments have necessarily increased the demand for a smokeless fuel of the anthracite type.

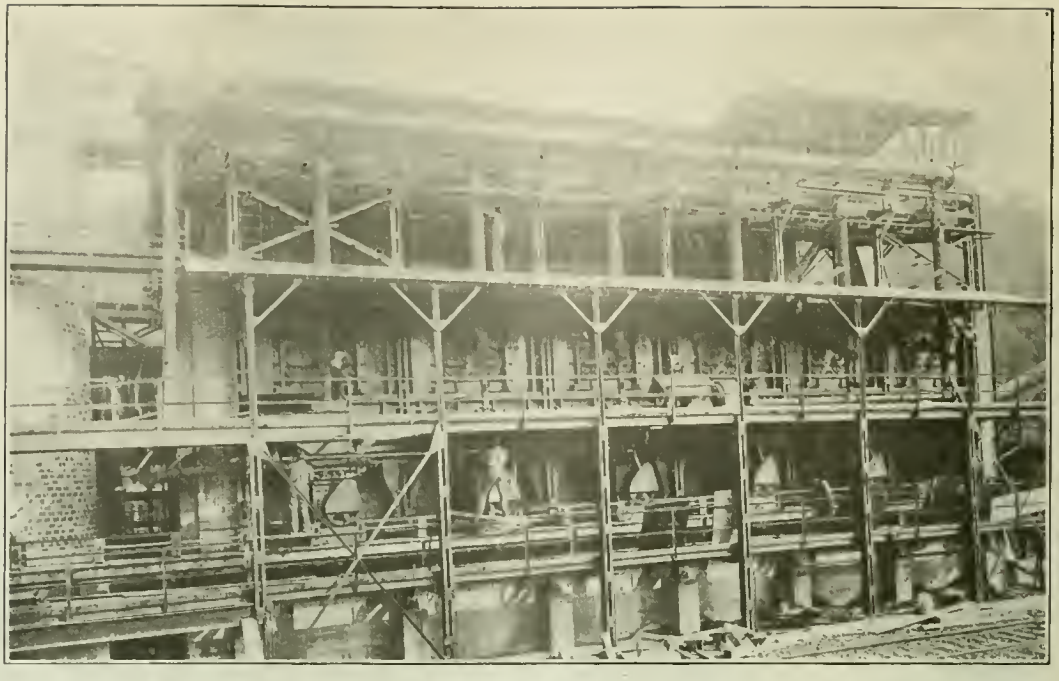
The conversion of bituminous coal in commercial quantities into a fuel resembling anthracite is an attractive problem from many angles. The requirements of such a fuel are primarily that it be smokeless, easily burned, but not too expensive. It should be as uniform in size as possible, have a reasonably high heat value, be easy to handle and safe to store.

The Smith process aims to accomplish the needs outlined by producing a smokeless fuel as good as or better in quality than anthracite, and one that can be sold at a price that will insure its general use. The name "carbocoal" has been given to the fuel secured.

*First half of a paper presented before the Kentucky Mining Institute, June 4, 1920, and entitled "The Low-Temperature Carbonization of Coal and the Future of Bituminous Coal."

Primary Retorts

This shows the discharge end of the retorts at the plant at Clinchfield, Va., receiving the finishing touches just prior to starting operation.



The method of its production is briefly as follows: Raw coal as it comes from the mine is crushed and fed continuously into low-temperature horizontal retorts by means of paddles. The volatile products of carbonization, i.e., the tar, gas and ammoniacal liquor, are treated essentially as in coke-oven practice. The semi-coke which is continuously discharged from each retort is quite different from ordinary coke. It is much softer, carries 8 to 10 per cent of volatile matter and burns readily. It could be used directly in a power plant, either as fuel under the boilers or in gas producers, but is not in condition to market for general use.

In the net step of the process this semi-coke, or semi-carbocoal, is ground, mixed with pitch, fluxed and passed through a briquet press. The raw briquets are then carried to inclined retorts and distilled again at a temperature of about 1,800 deg. F. for six hours. They are then dumped and quenched. The tar, gas and ammoniacal liquor from this high-temperature carbonization are collected and treated along with similar products from the low-temperature carbonization.

Why More Fuel and More Tar Is Obtained

Yields of carbocoal and the various byproducts obtained depend largely on the kind of coal used. Obviously, a coal of high volatile content will, in general, give a high yield of byproducts. If we take a coal of the following typical analysis: Moisture, 3 per cent; volatile matter, 35 per cent; fixed carbon, 55 per cent; ash, 7 per cent, the yields per ton of coal carbonized will be about as follows: Carbocoal, 1,400 lb.; tar, 30 gal.; gas, 9,000 cu.ft.; ammonium sulphate, 20 lb.; light oil from gas, 2 gal.

The yield of carbocoal is a little higher than the yield of ordinary coke from the same coal. This is because carbocoal has a slightly higher volatile content than coke, while about half the pitch used as a binder remains as coke in the finished briquet. The yield of tar is nearly four times that obtained in ordinary byproduct coke-oven practice. This results chiefly from the low temperature employed in the primary carbonization.

For the same reason the composition of the tar differs considerably from that of the similar product obtained in an oven. It runs higher in its content of valuable tar acids, with more cresols and less phenol. Furthermore it contains no naphthalene.

The ammonium sulphate yield is about the same as in byproduct coke-oven practice. As the yield of solid fuel is slightly greater and the tar yield much larger than in coke-oven practice, it follows that the amount of gas evolved must be less. There is, however, somewhat more than enough gas to heat both the low- and the high-temperature retorts.

Ammonium sulphate finds a ready sale as a fertilizer, the present market price being about 7c. per pound. The light oil from the gas is combined with the light oil from the tar distillation. This fraction is then washed with sulphuric acid and worked up into motor spirit, the present price being a little higher than that of gasoline.

Distillation of the tar yields about 20 gal. of salable oils per ton of coal carbonized. These oils have a high market value. The tar-acid content is approximately 40 per cent and for this reason the oils are highly desirable for making disinfectants, sheep dips, wood preservatives, flotation oils, etc. The manufacture of pure cresylic acid from such an oil is an easy step. This acid is now being imported into this country at a price of over a dollar a gallon. The pitch which results from the tar distillation is returned to the process, and is approximately the amount required for briquetting.

Carbocoal Almost as Dense as Coal

The main product of the Smith process is, of course, the carbocoal, which represents about 70 per cent of the weight of the material treated. This fuel as it comes from the high-temperature retorts is in the form of hard briquets of a density much greater than that of ordinary coke and only slightly less than that of coal.

As a domestic fuel carbocoal compares favorably with anthracite. It has a heat value of about 13,000 B.t.u. (assuming a coal with 7 per cent of ash, as above). Being of uniform size and quality, this product burns evenly in the fire bed, leaving under proper firing conditions a clean, light ash. In all cases the tendency

to clinker is much less than with the coal from which the carbocoal is made. There is no difficulty in banking the fire and it responds readily to draft control.

Carbocoal has been tested under stationary boilers with excellent results. In one test at the plant of the Fosdick Machine Tool Works, Cincinnati, Ohio, carbocoal gave an evaporative efficiency of 58 per cent and a combustion rate of 23 lb. per square foot of grate surface. This was on a 103 hp. horizontal return-tubular boiler operating at 116 per cent of rated capacity. In a similar test made with coal on the same boiler and under like conditions an evaporative efficiency of 45.2 per cent was found, with a combustion rate of 22.7 lb. per square foot of grate area, under a load of 97 per cent of boiler rating. During the carbocoal test there was no smoke from the stack, while during the coal test, as is usual, a large volume of smoke was discharged.

The higher efficiency of the carbocoal does not lie in a greater B.t.u. value, as the heat content of carbocoal is a little less than that of a high-volatile coal. It arises from the fact that practically all the carbon in the carbocoal is burned, there being no smoke and little combustible in the ash. With coal, on the other hand, smoke losses have to be added to the loss of that appreciable amount of carbon that remains in the ash.

Other tests comparing carbocoal with bituminous fuel have been carried out with the same general results. The following figures were obtained in a 24-hour test comparing carbocoal with run of mine from the Pocahontas region:

TABLE I COMPARISON OF CARBOCOAL WITH POCAHONTAS MINE-RUN

	Carbocoal	Pocahontas
Pounds of water fed per pound of fuel fired	8.15	8.66
Steam pressure, pounds per square inch	282..2	300.7
Pounds of water fed to boiler per hour	11,616	12,058
Equivalent evaporation from and at 212 deg. F. per pound of fuel fired	9.09	9.87
Efficiency based on coal fired	65.35	65.39
Efficiency based on combustible burned	69.55	68.11
Smoke density by Ringelmann smoke chart	0	41.6

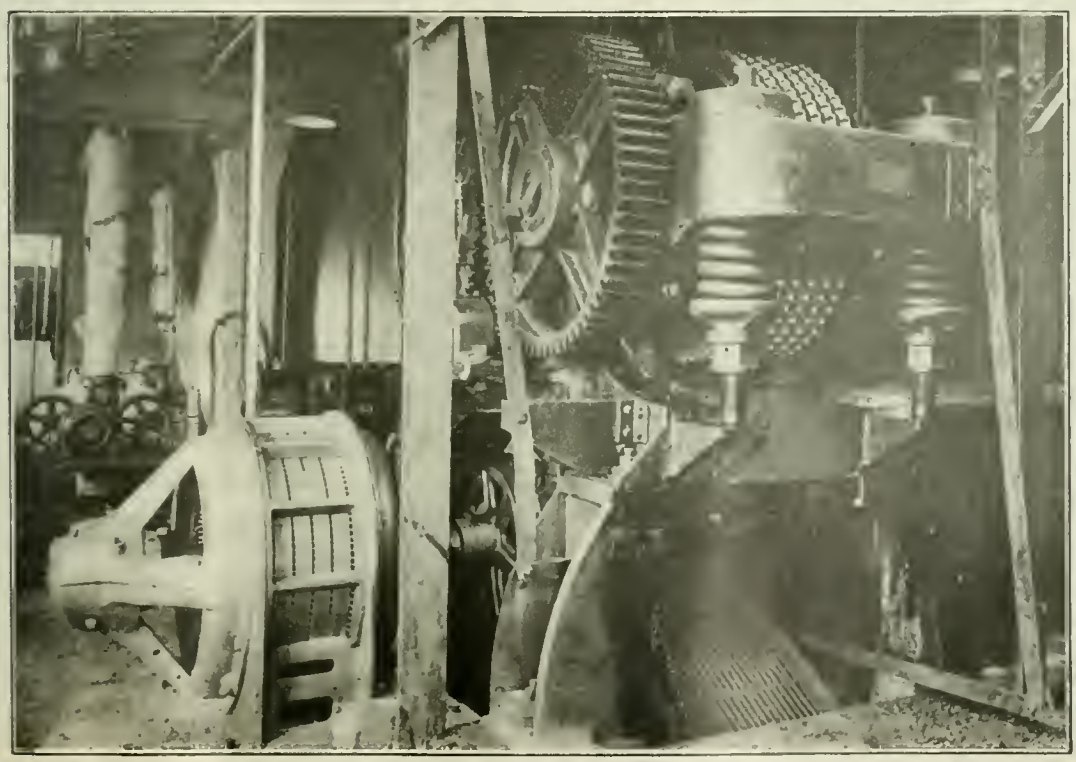
Carbocoal has been used experimentally in foundry cupolas with entirely satisfactory results. Its suitability for blast-furnace use as compared with coke also has been pointed out. It occupies only two-thirds as much space as coke, has a porosity in excess of 40 per cent, while its crushing strength has been proved by numerous tests to be equal to or greater than that of the ordinary grades of metallurgical coke.

Owing to the tonnage requirements of an actual blast-furnace test, it will be impossible to conduct such trials until the completion of the Clinchfield plant, but there is every reason to believe that carbocoal will soon be demonstrated to be an entirely satisfactory fuel for both cupola and blast-furnace purposes. Being able to produce a metallurgical fuel from a non-coking coal is particularly advantageous in the West, where high grades of coke are not locally available.

Pennsylvania Workmen's Compensation Act Is Interpreted

UNDER the Pennsylvania Workmen's Compensation Act it is not essential to recovery of an award that an injury resulting in death of a mine employee, or other employee, arise out of or be due to his particular employment; it is sufficient that the injury occur in the course of the employment. If death comes, however, during the course of employment in an ordinary way, natural to the progress of a disease with which one is afflicted, and with which he was smitten before the accident, there can be no recovery.

But if the death is brought about by an injury due to some mishap or accident happening during the course of the employment, the fact that deceased had a chronic ailment which rendered him more susceptible to such injury than an ordinary person would be, will not defeat the right to compensation. (*Pennsylvania Supreme Court, Clark vs. Lehigh Valley Coal Co., 107 Atlantic Reporter, 858.*)



Briquetting Press

Here the pulverized semi-coke mixed with a binder is pressed into briquets ready for "baking."

What the Deep Vein Coal Co. Has Learned About the Ship-by-Truck Movement

Five-Ton Motor Trucks Are Able to Haul Coal for Short Distances Cheaper Than Can the Railroads and Can Deliver It to the Customer's Cellar for Far Less Than the Combined Rail and Wagon Charge

By Donald Baker
Wilkinsburg, Pa.

QUICK to see the possibilities of the motor truck as an effective and economical means of transportation over short hauls, the Middle West today, perhaps, leads all other producing districts in the movement of coal by this method. Coal-producing firms around Terre Haute, Ind., have to a large extent forsaken the idea that unless railroad cars are available the mines cannot operate, and they are now advocates of the motor truck.

To stand on Wabash Ave., the chief business thoroughfare of this bustling city, is to gain a keener appreciation of what the "ship-by-truck" movement means to the coal operator. Trucks of all kinds with their burdens from the underground pass in an almost endless stream during the day. From the Ford with a remodeled body and a capacity of possibly a single ton to machines with 5- and 6-ton bodies equipped with sideboards that give them a capacity of from 6 to 8 tons, the parade moves past.

Overlooking the advantages of keeping the mine running when cars are scarce, of the fair prices which are often obtainable only during a shortage, of the return loads of mine material that can be carried and of the ability to use the trucks when some other kind of trucking is needed, a truck will pay for itself in one year and will make a $30,000 profit in six years where the haul is about five miles each way and the grades are not prohibitory.

The casual observer wonders where all the coal is coming from and what is its destination. One thing is certain: the Middle Western coal operators have learned something about the truck that is not generally appreciated elsewhere, and in so doing have made Terre Haute practically independent of the motive power of the railroads. Let us select one of the coal concerns of this city and see what it individually has learned about comparative costs of transporting coal by truck and by the better known method—by rail.

Coal Company Trucks 10,000 Tons in Month

Foremost among the coal producers of Terre Haute who are utilizing motor trucks to combat the car shortage is the Deep Vein Coal Co. During the month of June, just past, this firm moved 10,000 tons of coal over an average distance of five miles, making, of course, a total distance traversed by each truck of ten miles per trip.

The mine owned by the Deep Vein Company is not a large one, having an average daily output of 1,000 tons when business demands are such as to require the production of this amount of coal. It thus can be seen that this firm is actually moving over one-third of the mine output on the highways.

The amount of coal moved during the month mentioned is larger by far than that similarly handled in any previous month on record and presages a tremendous increase for 1920 as against previous years. As will be shown later, this is to be expected, for the company knows the true worth of the motor truck. The Deep Vein people have been experimenting with this means of transportation for the last three years.

During 1919 the company moved by truck from mine to cellar approximately 25,000 tons of coal. It was able to do this large business because all the company's product goes either into the bins of private residences, public buildings or business houses in Terre Haute. With the passing of last year the experimental stage terminated. Accurate cost data had been kept on all the expenditures connected with trucking and the company knew exactly what it cost. Its calculations proved that the business was on a firm financial footing.

Will Carry Eight Tons Without Trailer

To do the major portion of the hauling the Deep Vein Coal Co. is utilizing 5-ton trucks as manufactured by the Garford Motor Truck Co. Several details of construction embodied in these machines make them adaptable to the carrying of coal. In the first place, the wheelbase is only 128 in. long as against a 168-in. length found on most trucks. This not only allows more loading space but at the same time permits of a smaller turning radius. In this design of truck the engine is carried above the front axle and beneath the cab.

The all-steel body has a capacity of 135 cu.ft., which by crowning allows for a load of five tons. However, sideboards may be carried on the top of the body, thus permitting the capacity to be crowded up to eight tons if necessary. Four forward speeds and one reverse furnish a gear ratio indispensable to the movement of a truck of this size over all sorts of roads and grades. The maximum speed is 10 miles per hour. A centrifugal governor controls the throttle lever and holds the rotational speed of the motor between 900 and 1,000 r.p.m.

All the trucks used by this company are equipped with an oil hoist manufactured by the Wood Hydraulic Hoist & Body Co., of Detroit. With this device it is

Taking Coal From the Tipple

One of the three railroad tracks has been filled in with earth and the truck which uses it is loaded by the same methods as were the railroad cars it has displaced. The trip from the mine to town is five miles and in the month of June 10,000 tons were delivered by truck.

possible for the driver to discharge the load in less than a minute and a half. With a proper manipulation of the clutch a separate hoist gear located on the crankshaft engages the pinion which operates the hoist. The fore part of the body is elevated until the coal has been discharged through the suspended rear door. It then slowly settles back on the chassis.

The principle involved in the operation of the hoist in retreat is that of forcing oil through an ever-decreasing valve opening. A level within reach of the operator allows him to trip the door at the rear of the body without leaving his seat in the cab. In this manner ease and rapidity of dumping are assured. These are two all-important factors that go far toward determining the number of trips made per day.

Small Orders Filled from Stock Pile

Most of the business of the Deep Vein Company is with private property owners in the city. Today practically all the coal moved by truck from this concern's mine, which is located near West Terre Haute, about five miles out of the city proper, goes in relatively small orders into the bins of private, public and business houses. Some coal is sold to industrial plants, but not a great deal, as most of these latter buy in large lots and are so equipped that the railroad cars can be moved into a private siding on their own grounds. Orders for less than five tons are filled by smaller trucks operating from a storage pile that is maintained by the larger machines.

Arrangements at the mine are not particularly noteworthy. The property is an old one and was, of course, so designed that the coal could be shipped by railroad cars. Three tracks pass beneath the tipple. At present only two of these are being used for railroad shipment, even when cars are available. The bed of one of the tracks has been filled in so that the rails are scarcely visible. It is upon this track that the trucks drive under the tipple to a point beneath one of the loading chutes. The coal is then loaded into the truck in much the same manner as would be the case if a railroad car were being filled.

When there is a shortage of railroad cars, more trucks

Delivering Coal

These trucks take 13,000 lb. of coal from the mine to the consumer. This machine is dumping that amount of coal into the basement of a schoolhouse in Terre Haute. The dumping is done in 90 seconds, the driver not having to leave his seat.

are pressed into the truck service by the company and all three loading chutes may be utilized for that purpose. At present the shortage of cars is not felt, but if it were, more efficient operation of the trucks could no doubt be secured. Most of the time cars are available on both tracks. This leaves only one track for the loading of the trucks. It often happens that two or more machines may arrive at the same time on their return from the city. Some time is then lost through the taking of turns in loading.

Rumors around Terre Haute would indicate that this firm is soon to purchase a mine located near the city but inaccessible by railroad. If this purchase is made it is believed that the tipple will contain some new features of design in which more allowance will be made for truck loading than is found at any other mine in the country. The tipple of the coming mine, when located in or near a consuming field, will provide for truck loading almost to the same extent as for the loading of railroad cars. In particular will this be true of operations located near the large cities. The coal of the Deep Vein company is now weighed on the truck at a surface building provided for this purpose.

Usually No Return Load Can Be Secured

Upon their return to the mine the trucks usually are empty, although this is not always the case, for new machinery and equipment as well as supplies which the mine needs are delivered in this manner. At one time it was impossible to procure props by reason of the scarcity of railroad cars. The trucks came to the rescue and kept the mine in operation by hauling the timbers for a distance of thirty miles. This practice was continued until shipments by rail again became more or less normal. Other instances might be cited of times when the motor trucks have kept the mine working while other companies nearby were forced to suspend operations.

Employing the number of trucks that it does, this firm is able to purchase gasoline and oil in wholesale quantities and at wholesale prices. This means a considerable saving, but one that would be within reach of most companies engaged in moving any large amount of coal. During July gasoline was being purchased at 26c. a gallon and oil at 53c. Three miles of operation could be realized from one gallon of gasoline, while each gallon of oil furnished sufficient lubricant to the motor for 200 miles of travel. Labor, repairs and spare parts cost approximately a total of $25 per month per truck. The wages of the drivers will run about $130 monthly.

The type of Garford truck used is equipped with solid tires, the rear ones being dual. The front tires, which are 36 x 6 in. in size, cost $75 apiece, while the rear ones, 40 x 7 in. in dimensions, cost $85 each. Each truck is easily able to complete five round trips daily between the mine and the city. Sometimes as many as eight trips are made in a single day. A highly conservative estimate would be to allow each truck a travel of 1,000 miles monthly. Assuming that each truck makes this number of miles per month, let us see what the cost of operation is per mile, using the figures already presented:

COST OF OPERATING TRUCK, PER MILE

	Per Mile
Gasoline—3 miles per gal. at $0.26	$0.087
Oil—200 miles per gal. at $0.53	.003
Tires—$320 per set guaranteed for 10,000 miles	.032
Labor, repairs and spare parts—$25 per month of 1,000 miles	.025
Driver's wages—$130 per month of 1,000 miles	.130
Total cost	$0.277

The cost per mile of operation, the Deep Vein people estimate, closely approximates the figure of 27.7c. thus obtained. Hence the average cost of each round trip is roughly $3. This is not the per-ton cost, for each machine is equipped with sideboards and carries a load of from six to seven tons. In order to be conservative, let us assume that the average load is six tons. The cost per ton by truck transportation is thus 50c. This assumes that the truck returns to the mine empty. However, as was previously mentioned, this is not always the case. The movement of fifty tons of coal from mine to cellar by this firm costs approximately twenty-five dollars.

Freight to Railroad's Own Yard Is Higher

Now let us contrast this last-mentioned figure with the charge made by the railroads around Terre Haute for the shipment of a like amount of coal. If the material is moved by car from the mine to the railroad yards, the freight rate is 60c. per ton. This is the prevailing charge on both the Pennsylvania and Big Four lines. For a movement of fifty tons by rail the railroads demand $30. Thus there is a clear saving of $5 on every fifty tons moved to the city by this method.

The distance by rail from the mine to the city yards is four miles, while the trucks must take a longer route—one about five miles in length. This feature would be reversed in most districts, for as a rule the dirt road is shorter than the steel one.

While the trucks transport the coal over a greater distance than the railroads and yet do it more cheaply than they, the advantages by no means stop at this point, as the coal delivered by rail to the yards must be handled still further. Teamsters and truckmen in Terre Haute charge a flat rate of 75c. a ton for delivering coal from the yards to residences and business houses within the town. This rate probably is today lower than in any other section of the country. The advantage in this particular thus favors the railroads. The price asked for delivering coal from the yards includes labor cost for shoveling from the car into the wagon or truck and the upkeep of the teams or motor cars.

Fifteen Tons Is a Teamster's Measure

If an ambitious teamster handles fifteen tons of coal a day he is doing a man-sized job. Suppose he does load and haul that amount of coal—merely to load which from a good shoveling surface is often regarded as a big day in the coal mines. He receives the sum of $11.25 for his work, out of which he must feed his stock, or if he has a truck must foot gasoline and oil bills, to say nothing of allowing a fair sum for amortization of his equipment. Certainly under these circumstances no agent of the Department of Justice would camp on his trail for profiteering.

Seventy-five cents a ton on fifty tons amounts to $37.50. Add to this the amount collected by the railroads for freight ($30) and there is a grand total of $67.50. Subtracting the $25 that is required for the moving of fifty tons direct from mine to cellar by truck, and there is a balance of $42.50.

This represents clear money saved by the trucks against the combined railroad-and-team shipment. Each truck transports about thirty tons of coal daily. On every fifty tons transported $42.50 is cleared by using the ship-by-truck method.

The present cost of a 5-ton Garford truck is about $6,300, including war tax. The Deep Vein firm estimates that the life of one of these machines is about six years. According to these figures, little more than a year's time is required for a truck to pay for itself, and this Terre Haute concern is convinced that each of its investments of this kind has been retired in a year or less.

Assuming, then, that the life of the truck is six years, something like $30,000 will have been earned by the machine after it has paid for itself and before it has become so run down as to demand either selling as second-hand equipment or scrapping. Here is a figure well worth pondering over—$30,000 earned per truck life, in which time the original investment has been retired and upkeep expenses met and that during a period when the country is clamoring for railroad cars.

If the larger cities located in the heart of the various coal fields were served by trucks to the same degree as is this Middle Western town the number of railroad cars released for the longer hauls would reach a figure truly impressive. In fact, we would no longer be confronted with any car-shortage nightmare.

Of all the cities in the East, Pittsburgh lends itself most readily to the "from mine to cellar" movement, for trucks could serve not alone the bins underneath residences and business houses but many of the large industrial plants. Many of these latter could be equipped over night for rapid unloading of the trucks. The "Ship-by-Truck" slogan as applied to the movement of coal over short hauls is not a fanciful one, as is shown by what this single company experienced.

Three or Twelve Years for Mine Timber?

For Thirteen Years the Philadelphia & Reading Coal & Iron Co. Has Been Treating Timber and Has Been So Successful That It Is About to Erect Another Plant—It Now Uses Silicon Fluoride as a Preservative

By Dever C. Ashmead
Wilkes-Barre, Pa.

During the last few years the cost of timber has soared. Not only has the price kept rising but the supply has been steadily decreasing. This has made it necessary to haul what timber is used greater and greater distances, which in turn means an ever-increasing freight rate. At the present time the Philadelphia & Reading Coal & Iron Co. has to purchase all its timber from Virginia and North Carolina and has to pay a freight rate of over $4, which makes the transportation alone amount to more than the original cost of the lumber.

Anthracite mines probably require more timber than do bituminous operations of similar size and, as they have been operating for a much longer period than the bituminous mines, they have exhausted the timber supply near at hand and must perforce bring it from a distance. During the earlier days of mining no attention was paid to reforestation of the cut-over areas surrounding the mines, as no one had any idea how great was the drain that mining would put on our forests. Nowadays the mining companies, realizing the importance of a timber supply near at hand, are beginning to provide for the future by establishing forestry departments to which they commit the problem of reclaiming the idle forest lands around their operations.

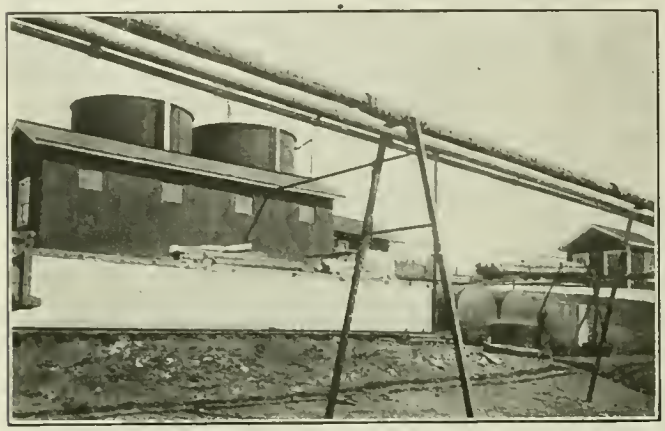
It is a noteworthy fact that the use of timber in the mines has been extremely wasteful. This was not

Gangway of Preserved Timber

This roadway was timbered ten years ago. In this mine, where three years is the usual life of timber, the use of preservative fluids has kept this timber in good condition for ten years and may yet keep it from decay for two or more years.

due entirely to the manner in which the material was employed but to the inherent conditions encountered in the mines themselves. The atmosphere in the mine is always damp. The ends of the timbers rest on wet ground or against wet surfaces. This causes them to rot rapidly, and in a short time, not over three years, a set of timber is destroyed and has to be replaced.

Let us suppose that a roadway is timbered with sets placed on 3-ft. centers with legs 9 to 10 ft. long and from 12 to 18 in. in diameter, and with caps 7½ ft. long. Such a set contains about 275 board feet, so



TIMBER-TREATING PLANT AT SILVER CREEK
The long building, covered with corrugated iron, houses the treating cylinder. The two large tanks to the rear of this building are the supply tanks. The building to the extreme right protects the hoisting engine. Between the two buildings are the mixing tanks.

that if the heading is 1,000 ft. long, approximately 92,000 board feet of timber must be replaced every three years.

In many instances such headings have to be maintained for 30 or 40 years. There is in addition to the cost of the timber the expense of the framing, lowering into the mine, the haulage to the point of use and finally the cost of taking out the old timbers and of installing the new ones.

About 1907 the Philadelphia & Reading Coal & Iron Co. started experimenting with various means to increase the life of timbers. At first it tried the open-tank method of treatment, and although longer life was secured from timbers thus treated than from those that were untreated the company felt that it was not getting the most satisfactory results. It was then decided to adopt a pressure treatment in order to get a proper penetration of the preservative used. In 1908 or 1909 it constructed its present plant at the Silver Creek colliery.

This plant has two supply tanks each with a capacity of 21,000 gal. For treating the timber it has one large cylinder, 6 ft. in diameter and 32 ft. long with a capacity equal to treating on an average ten mine sets. Two mixing tanks also are employed, in which the solutions are prepared for use in the treating cylinder. Two pumps are provided, one to place a sufficient pressure on the cylinder when the timber is being treated and the other to transfer the solution from the mixing to the supply tanks. A small hoisting engine is provided to handle the loaded cars from the yard to the cylinder and to withdraw the timber therefrom after treatment.

A short description of the method of treatment may be of interest. The timbers are first framed in the yard to the size required. They are then loaded onto the three treating trucks and pulled by the hoisting engine from the yard to the cylinder, into which they are allowed to run by gravity. As soon as they are in this chamber the end is bolted in place. The preservative solution is next allowed to run by gravity into the cylinder until the timber is entirely covered. Live steam is then turned on in order to raise the temperature to 212 deg. F.

The pump is started and forces the solution from the supply tanks into the cylinder until a pressure of about 100 lb. per square inch is provided. This pressure is maintained for a period of about two hours for seasoned timber and for from eight to ten hours for green timber. After the treatment is complete a valve is opened, and the solution is allowed to run into the mixing tanks, whence it is pumped into the supply tanks, to be ready for the next treatment. Ordinarily three treatments are performerd every eight hours.

Owing to the difficulty in getting sufficient penetration with green timber except after long treatment the company prefers to use seasoned material—that is, timber that has stood for about sixty days in the open after cutting. It tries to secure a penetration of the preservative at least 4 in. deep. Frequently this figure is exceeded and sometimes total penetration is attained.

Zinc chloride was the first solution used for the treatment of timber in this plant, but this chemical became so expensive that its use had to be abandoned. It also was found that it had a bad effect on the metal parts of the treating apparatus, and the cost of repairs consequently was high. The price of zinc rose from 4 to 16c. per pound. In 1910 and 1911 much gas tar was used, but about five years ago both of these reagents were abandoned, and a solution of a silicon fluoride has been used ever since.

When treating the timber with zinc the company tried to force about ½ lb. of zinc chloride into each cubic foot of wood treated. With the silicon fluoride, however, only 0.3 lb. was required per cubic foot. As this treatment used less preservative and as the latter was less expensive a large saving was effected. Silicon fluoride at the present time costs 14c. per pound, while zinc chloride costs 16c. It was found that the fluoride attacked the metal parts of the plant less vigorously than did the zinc chloride and therefore reduced the cost of repairs. It also has a greater toxic effect on the timber treated.

After Ten Years Timbers Are Still Good

In one of the accompanying illustrations may be seen a heading in the Silver Creek mine, showing the treated timber therein. Practically all the sets visible have been treated with either zinc chloride or gas tar. They have been in place for over ten years and all are in good condition at the present time. Untreated timber in this heading will last only three years at the most as against the ten that these treated sets already have stood, while their good condition promises still longer service. A clear gain of at least seven years is shown in the life of the timbers in these headings and they probably will last at least two years more.

From the foregoing it would seem that there is no reason why every mine that has to bring its timber long distances, or where much permanent timber has to be maintained, should not have its timber-treating plant and so make great savings in its bill for roof-supporting material. This is true, however, only for a mine or heading not undergoing a squeeze or movement of the roof.

Cars Without End Gates Can Now Be Used On Self-Dumping Cages

Solid-Body Mine Cars Possess Many Advantages Over Those of the End-Gate Type—A Cage Has Been Developed That Discharges These Cars More Quickly and with Less Degradation of the Coal Than Did the Old Style Cage

By Arthur M. Simpson
Chicago, Ill.

SOLID-BODY mine cars afford important advantages in all mining operations because of their lower cost, their greater strength and durability, and the fact that such cars will not leak material along the tracks of the mine. The naturally increasing desire to use solid-body cars at mines where skip hoisting is not feasible has created a demand for equipment that will hoist and dump them.

The solid-car self-dumping cage was developed primarily for the hoisting of boiler coal and rock in the airshaft of a mine that uses a skip hoist with a rotary car-dumper at the bottom of the main shaft. It showed such advantages in its easier dumping of the coal without breakage, its reduction of the power required for hoisting, and its decrease in the pressure on the guides in the dumping operation that it has been developed into a highly satisfactory cage for use in old mines already equipped with self-dumping cages or for small-shaft operations that do not have enough capacity to warrant a skip-hoisting installation with a rotary dump at the shaft bottom.

Hopper in Cage Fitted with Dump Cradle

Fig. 3 shows the general design of a solid-car self-dumping cage. The car is carried on a cradle which is mounted inside a hopper, the latter being provided at the lower end with a hinged discharge gate. The cradle is built in the form of a hoisting platform suitable for handling cars, men or material, as is the case with most mine cages. It is pivoted on heavy trunnion shafts passing through the hopper at each side, with the dumping arms and rollers fastened to their outside ends. The motion of the dumping rollers in the guides at the head of the shaft causes the cradle to rotate 135 deg. so as to unload the solid-body car into the hopper within which the cradle swings. Both the cradle and the gate are positively locked, except when at the dumping point, making the cage suitable for the hoisting of men and material whenever desired.

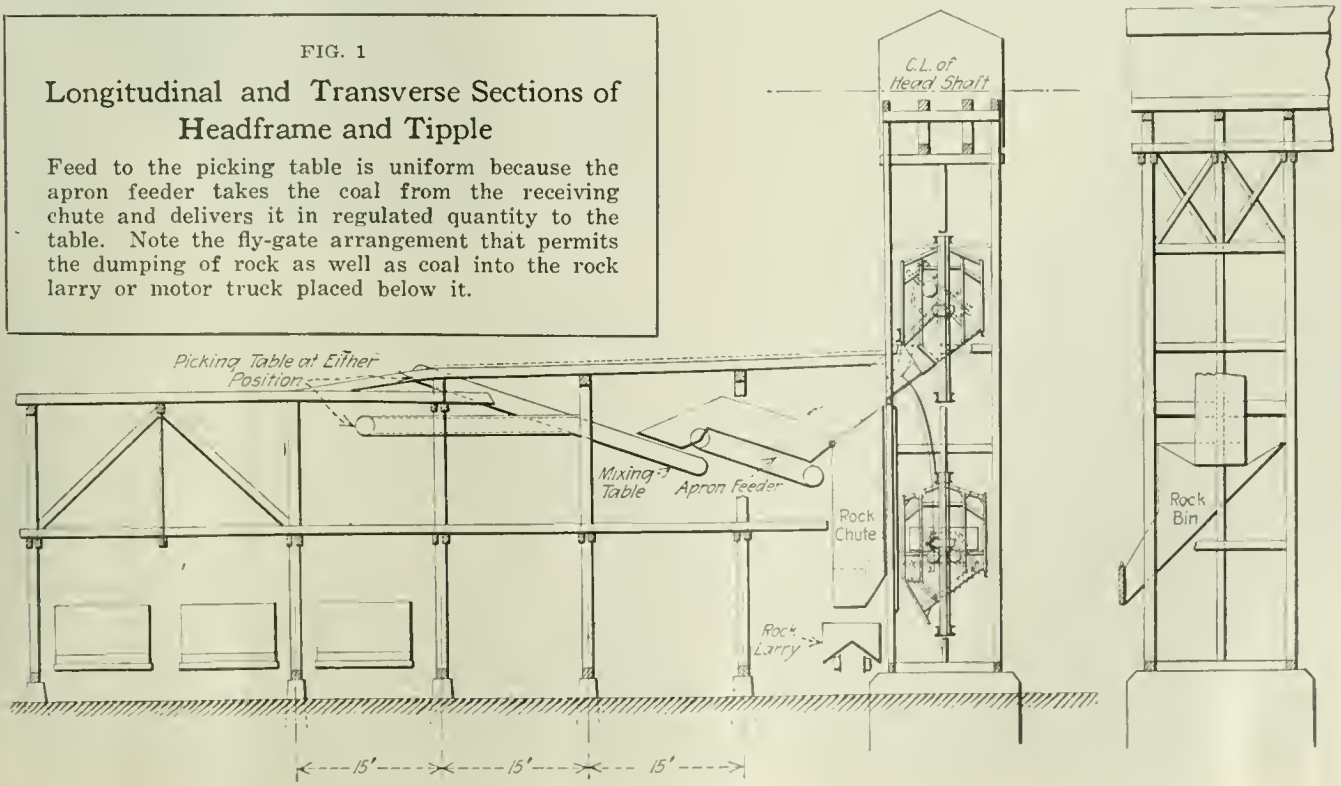
Fig. 2 illustrates the operation of the dumping mechanism. As the cage approaches the dumping point, the guides first operate to unlock the gate and the cradle in which the car stands. The rollers on the overturning arm next enter the main dumping guide, as indicated on the drawing, turning the cradle over in an easy rotation, until the car finally reaches the overturned position. In this connection it should be noted that the rotating cradle is pivoted at a point only slightly to one side of the center of gravity of the loaded car and cradle, so that the car is rotated on a center quite near the center of gravity.

The turning movement thus requires a minimum

FIG. 1

Longitudinal and Transverse Sections of Headframe and Tipple

Feed to the picking table is uniform because the apron feeder takes the coal from the receiving chute and delivers it in regulated quantity to the table. Note the fly-gate arrangement that permits the dumping of rock as well as coal into the rock larry or motor truck placed below it.



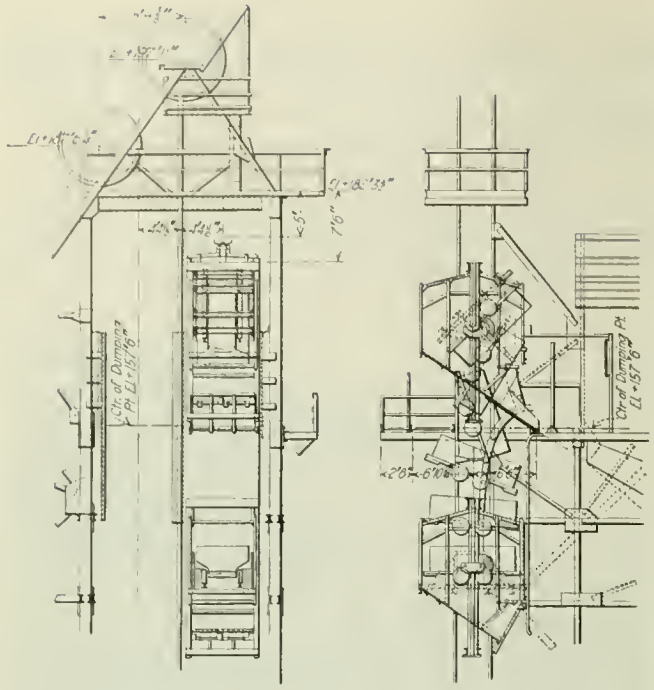


FIG. 2. ARRANGEMENT OF THE HEADFRAME

Movement of cage and car in dumping is shown as in a motion-picture film. The platform begins to tilt before the cage reaches the end of its travel and by the time the chute on the bottom reaches the dump level the car has been tossed over and the coal is ready to discharge.

pressure on the rollers and guides—a pressure less than one-half the guide pressure resulting from the operation of the old type of self-dumping cage. In addition to this, with the hopper under the car it is possible to make the dumping guide as long and with as easy a curvature as desired, so that the overturning movement may be gradual and smooth, eliminating any excessive stress or jar in the dumping operation, while the coal is spilled out of the car into the hopper easily, with breakage prevented by a dumping shield.

After the gate is unlocked it is held closed by the action of the dumping rails at the side of the shaft, so that the coal which is dumped into the hopper cannot be discharged until this gate is allowed to open at the dumping point. By the time this point is reached the coal has all been unloaded from the car and flows in one sliding motion immediately across the gate to the weigh hopper or screens without any fall whatever. The gentle handling of the coal in this dumping operation is a big advance over the old self-dumping cage, which pitched the load of the car out into the dump hopper, breaking a considerable percentage of the more valuable coal.

One advantage secured from this design is that the entire weight of the cage and car is always kept on the rope, giving a maximum counterbalance effect to assist in starting the loaded cage from the bottom of the shaft. This materially reduces the maximum peak load on the hoist, allowing the use of a smaller hoisting engine and, in the case of purchased power, securing a much lower maximum-demand charge.

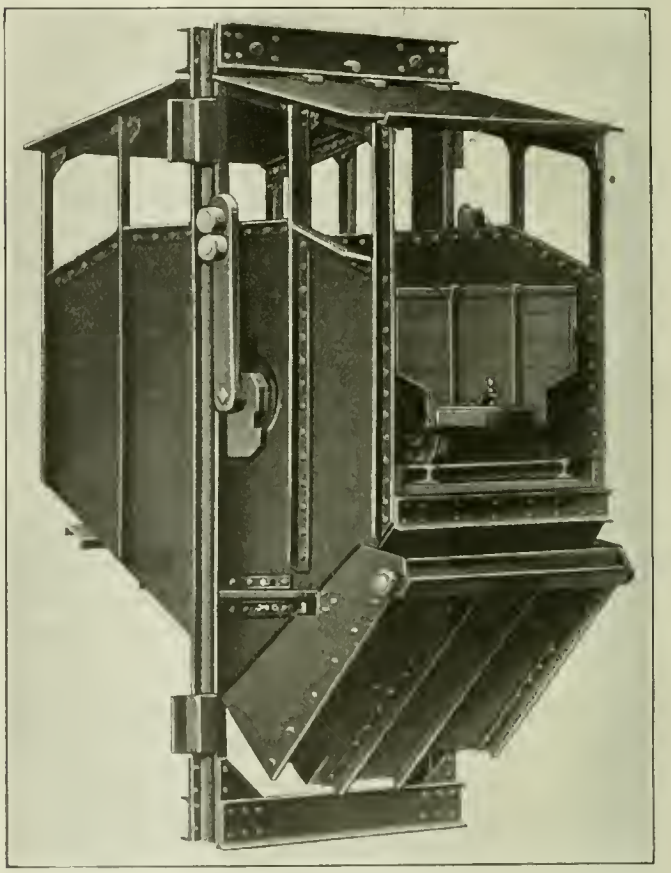


FIG. 4. DETAILS OF THE CAGE

A hopper is placed just under the floor of the cage, into which the coal is dumped and from which it slides to the receiving chute. On the floor of the cage men and material can be carried as on ordinary cages.

With this equipment there is no need to operate with a slack rope, as the dumping guides curve so gradually that the cage may enter them at a fairly high speed. The retarding action continues uniformly until the cage finally comes to rest in the overturned position, at which instant the load is discharged and the other cage lands at the bottom of the shaft. This eliminates the necessity of coming to a stop and then starting the engine again in order to pull the cage and loaded car into the dump without assistance from the counterbalancing effect of the other cage. This is what must be done with some of the old-style self-dumping cages

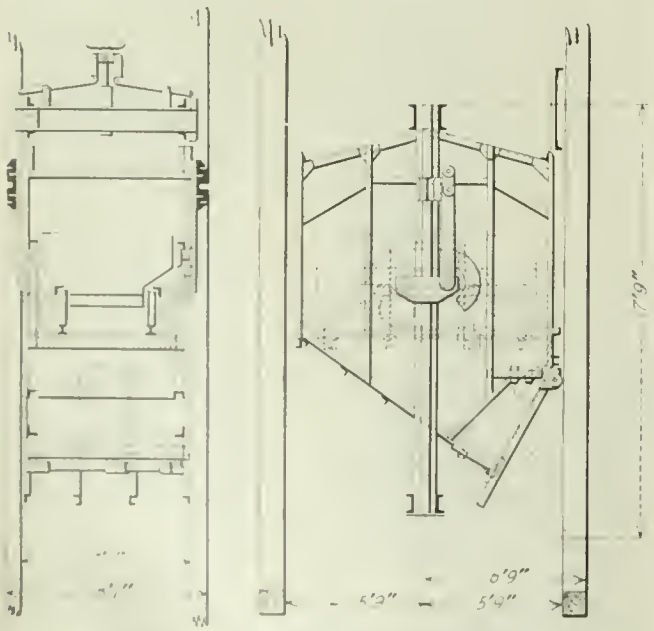


FIG. 3. CAGE AND ITS GUIDES

The button on the guide revolves 135 deg. as it passes along a slotted path. This revolution overturns the solid mine car, dumping its contents into the hopper

which had to make two stops at the dumping point. The result is an increase in capacity. There is also another saving in power through the elimination of the peak load on the engine.

Another advantage that appeals to every operator of a shaft mine is the fact that with a solid-car self-dumping cage which is manufactured by the Car-Dumper and Equipment Co., of Chicago, Ill., the dumping operation and the hoisting cycle are positive and regular. Every time the cage reaches the dumping point the load is discharged without chance of failure, whereas with the old-style self-dumping cage it is necessary to depend on the catching of the end gate by the crane. The frequency with which some cages miss the crane, requiring the taking of the dump a second time, is a continual source of lost time and annoyance, and demands constant watchfulness on the part of the tipple men and hoisting engineer.

For anyone not familiar with this condition at his own mine an investigation would be more than worth while. At one of the mines that several times during the last two years have held the world's hoisting record for the old style of self-dumping cage an extended test showed that 10 per cent of the cars missed the crane on the first dump and had to be lowered and taken into the dump the second time.

With the solid-car self-dumping cage this uncertainty is eliminated. The engineer knows he is going to make the dump every time and he merely has to stop and wait for his bell. The result is an increased hoisting capacity from this cause alone, and a much decreased chance of accident, as the hoisting operation is simpler and more regular.

Fig. 1 illustrates the general application of this type of cage. This shows the device in the head frame and indicates the relative positions of the dumping guides and the dumping rail, also of the cage when in the shaft and in the dumping position.

Thus the operating advantages of this cage alone make its use desirable, quite aside from the fact that it permits of the use of solid-body cars, in whose superiority every mine operator is vitally interested. The weakness of a box with one end knocked loose (the end-gate car) and the strength of the same box after that end has been firmly nailed in place (the solid-body car) are readily apparent. The differencee is one between a wobbly structure that is easily torn to pieces and a rigid construction that will stand much punishment.

The main reasons for the high costs of car repair practically disappear when the cars in a mine are built with solid boxes. End gates were put on mine cars only as a compromise between ease of dumping and strength of car. But surely the former condition was obtained at too high a price when the strength of the car, its life, safety and freedom from leaks were sacrificed and when the repair charges on the car were made excessively high. The end-gates weakened the cars greatly and thereby increased the cost of car maintenance. They also increased the first cost of the cars because of the extra work and material required in building them.

The gate makes a bad-fitting end in any car, one that leaks coal dust all along the entries of the mine, causing additional expense for track cleaning as well as creating a dusty condition which is highly conducive to mine explosions. It is a frequent cause of wrecks, because so much coal is spilled on the track that the rails are often buried. In fact under severe haulage conditions the gate may open during the transit of the car and a large body of coal be precipitated on the track. Builders of mine equipment know the weaknesses of end-gate construction and would much prefer to supply the simpler, more satisfactory and more substantial solid type of cars.

There is now available in the shape of the dump above described an inexpensive equipment that will empty the contents from a solid-body car with less effort, with less labor and with less breakage than was ever possible with a wagon of the end-gate type. It is not necessary where this device is installed to discard end-gate cars now in use. The end-gates may be permanently closed, making the cars essentially solid. Thus would be secured all the advantages of lower car cost, lower car maintenance, cleaner roadways, fewer wrecks, greater capacity, reduced labor and a better product. As additional cars are needed in future, they, of course, would be of the less expensive solid type.

The cost of the solid-car self-dumping cage for a new mine or for the replacement of old cages is not large. The actual amount depends on the size of the car and the general hoisting conditions. The life of the new equipment is much longer than that of the old style, because its operation is much easier and smoother, eliminating the stresses and shocks that rack and eventually wreck the old type of cage.

One Big Union Opposes United Mine Workers of America as Foreign Organization

W. H. ARMSTRONG, for the last three years director of coal operations for the Province of Alberta and the Southeast of British Columbia, denies the charge that the Dominion government has been attempting to force the coal miners to enter a foreign organization, which is the way in which the United Mine Workers of America is always regarded in Canada by those who don't like its methods and aims. Mr. Armstrong states that the United Mine Workers, which is in affiliation with the American Federation of Labor, three years ago entered into a two-year agreement with the Western Canada Coal Operators' Association. The agreement was carried out amicably on both sides and at its expiration was extended a year without formal renewal. On April 1 last the agreement was formally renewed, but a provision for the "closed shop," which did not exist in the old agreement, was made.

Formerly the operators, if they so desired, could employ non-union men, but under the new agreement the demand for the closed-shop principle was recognized. An arrangement between the men and the operators, such as is common in many other industries, was made for the collection of dues. The wage scale is based on the selling price of coal, which is now, for instance, at Drumheller, Alberta, $6.10 per ton at the pit mouth. This agreement was ratified by the men by a vote of nearly three to one.

"So far as the Dominion government is concerned," said Mr. Armstrong, "it had nothing whatever to do with the arrangement between the United Mine Workers and the operators. The agreement was solely between the men and the employers, and statements by the One Big Union or others to the contrary is in controversion of the facts." Mr. Armstrong added that the mines were all working and the men apparently were satisfied with the scale of wages and the conditions.

Modifications of Gathering Reels Which Will Prevent Destruction of Cables

With These Gathering Reels Spooling and Unspooling Are Accomplished with an Approximately Uniform Tension on the Cable—No Fixed Relation Exists Between the Peripheral Speed of the Reel and the Linear Speed of the Locomotive, so the Machine Cannot Run Over and Cut Its Cable

By D. E. Shroyer
East Pittsburgh, Pa.

ECONOMICAL delivery and withdrawal of cars from working places to a main or butt entry is a problem ever present with the coal operator. In the past this work has in many cases been accomplished by the miners themselves pushing the cars in and out of the rooms or by the use of mule power.

Mines have been electrified and many electric locomotives have been installed, but still this particular piece of mining work has been done in many cases by old methods. These methods cause the miner to lose time. In some mines the problem of how to bring cars from the room face to the entry has been overcome by the installation of locomotives equipped with motor-driven conductor-cable reels. The purpose of this article is to describe a horizontal-type of conductor-cable reel that has given highly satisfactory service.

"Horizontal" as here used refers to the position of the reel drum with respect to the locomotive and reel frame. This can best be understood by referring to Figs. 1 and 2, which show the reel mounted on the locomotive ready for operation.

The reel is entirely self-contained, with a shunt-type of motor mounted inside the reel drum and connected to the line through a canopy switch, fuse and permanent resistance, as shown in Fig. 3. The resistance is so connected and is of such capacity that the reel motor may be left connected across the line. It then will maintain approximately a constant pull on the cable while either reeling in or reeling out. This is a feature that is obtained only on this particular reel and is produced by the arrangement of resistance in the motor circuit.

By maintaining approximately constant pull on the cable in both directions of reeling it will be picked up off the ground ahead of the locomotive regardless of the speed of the latter, thus preventing the machine from running over the cable and cutting it, with resultant delay. The permanent resistance is divided into two sections. One section (*A*) is in series with the shunt field and armature, and the other section (*B*) is in series with the armature alone. (See Fig. 3.)

The resistance is of such capacity and so proportioned that the reel can be operated on any potential from one-half up to full voltage. The resistance units as shown in Fig. 4 consist of iron tubes (*A*), upon which is wrapped mica and asbestos insulation. High-resistance wire is wound on these tubes and held securely in place at the end of each tube by clamps. These also serve as connecting leads between the tubes. To protect the resistance wire or element, the surface of the tubes is coated with cement and the whole is then baked and dried.

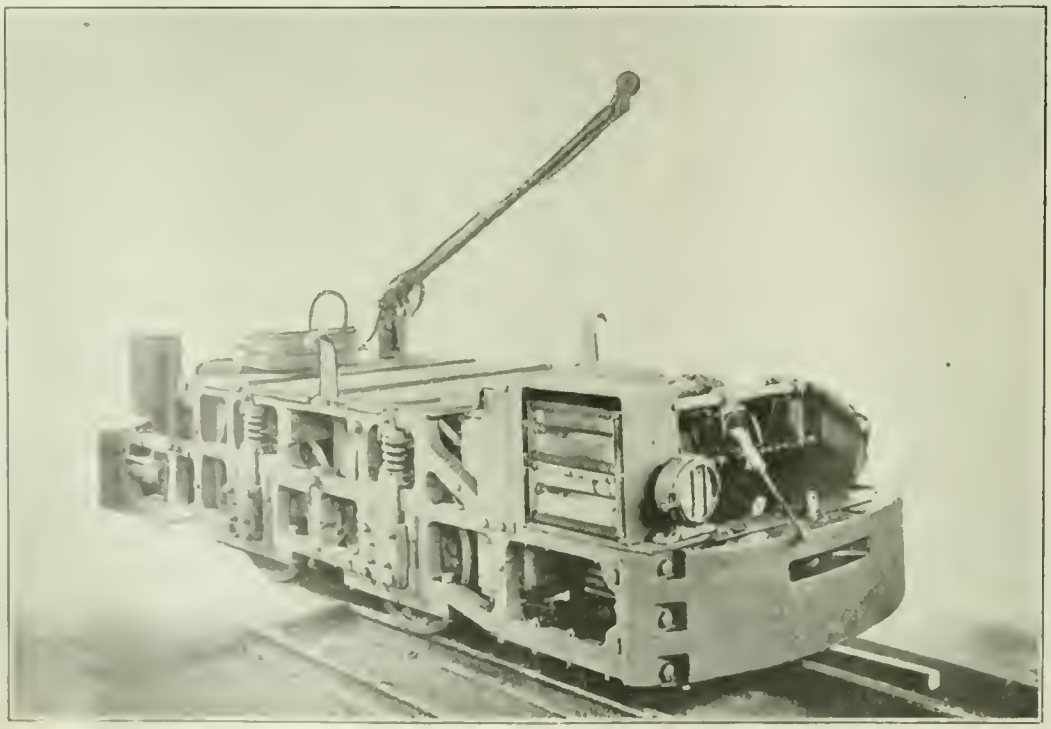


FIG. 1.

Cable-Reel Locomotive

The illustration shows the cable terminal hook and the resistance units, the former looking for all the world, in the position viewed, like a large screwdriver. It also shows the clips by which the trolley pole is kept in place when not in use.

FIG. 2. FRONT VIEW OF LOCOMOTIVE

Note the relative position of reel and resistance as well as the spooling mechanism.

Four resistance tubes are connected in series and taps taken off at predetermined points to give the following resistance values, T representing trolley; F, field, and A, armature:

For 250 Volts		For 500 Volts	
TF to $F+$	15 ohms	TF to $F+$	60 ohms
F to $A+$	6 ohms	$F+$ to $A+$	24 ohms
Total	21 ohms	Total	84 ohms

The resistance units assembled complete between the end frames are inclosed within an expanded-metal screen (*B*, Fig. 4) which protects the tubes and wiring. This makes the complete unit suitable for mounting in various locations on the locomotive. The terminal studs (*C*) in the end-frame (*D*) are of rugged construction and are brought through a hole in the frame insulated with mica washers and bushings built up so as to give ample insulation.

Reel Drum Insulated with Wood Strips

The reel drum (Fig. 5) is made from sheet steel of ample strength and insulated with hardwood strips (*2*) forming a casing around the entire periphery. The use of wood insulation on the reel drum greatly increases the life of the cable. It also prevents the cable from grounding on the drum, which in most cases would cause damage to adjacent parts of the reel. This wooden insulation is so applied that any portion of it can be removed with ease.

The spooling device consists of a casting which travels on a guide bar and lead screw. The guide bar (*1*) is located as shown in Fig. 6, directly above and parallel to the lead screw (*2*) and is of the same length. The lead screw limits and reverses automatically the travel of the spooling device (*3*) so that the cable is wound on the drum in even layers. The spooling guide is driven by a tongue (*4*) that engages with the lead screw, which is square threaded in both directions, that is, both right and left hand. This tongue is made from axle steel and given a special heat treatment.

One of these treated tongues has been in service on a certain property for approximately one and one-half years with no appreciable wear either upon it or the lead screw. The tongue is lubricated by applying a heavy grease or oil to the screw with which it engages. The rotary motion of the lead screw is produced by gearing so arranged as to feed either single or double-conductor cables. This is accomplished by means of suitable gears, the change from a single- to double-conductor cable requiring only the changing of one gear (*3*) and one pinion (*4*), shown in Fig. 5.

Porcelain Guide Increases Life of Cable

A porcelain guide (*5*, Fig. 6) is bolted into the spooling device. This has a bell-shaped opening through which the cable is guided onto the reel drum. The porcelain is double-glazed, which insures good wearing qualities. After the cable wears a slight groove in the porcelain in one position it can be turned to another position and so on until practically the entire surface of the opening in the porcelain has been worn away.

The shifting of the porcelain prevents the cable from being cut, thus giving it a largely increased life. When wood rollers are used as guides, they soon become grooved and cut the cable. Porcelain does not groove as quickly as wood, and although it costs slightly more the increased expense is repaid many times over in fewer cable replacements and lessened maintenance.

The reel has been so designed that all parts are readily accessible for inspection or repair without removal from the locomotive. It will be noted in Fig. 7 that it is necessary to remove only a few parts in order to

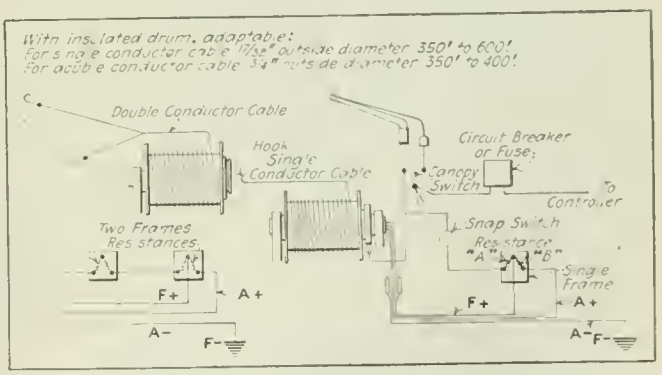


FIG. 3. DIAGRAM OF ELECTRICAL CONNECTIONS

Showing the relative positions of the trolley, reel, resistances, switches, circuit breaker or fuse, and the like.

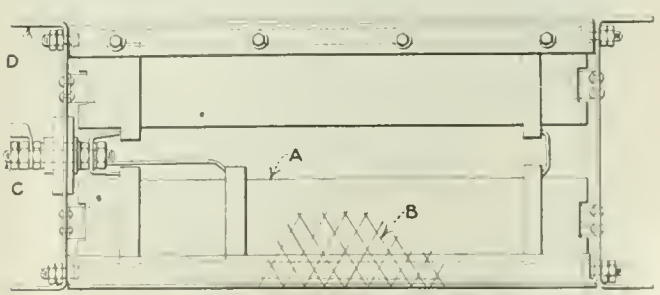


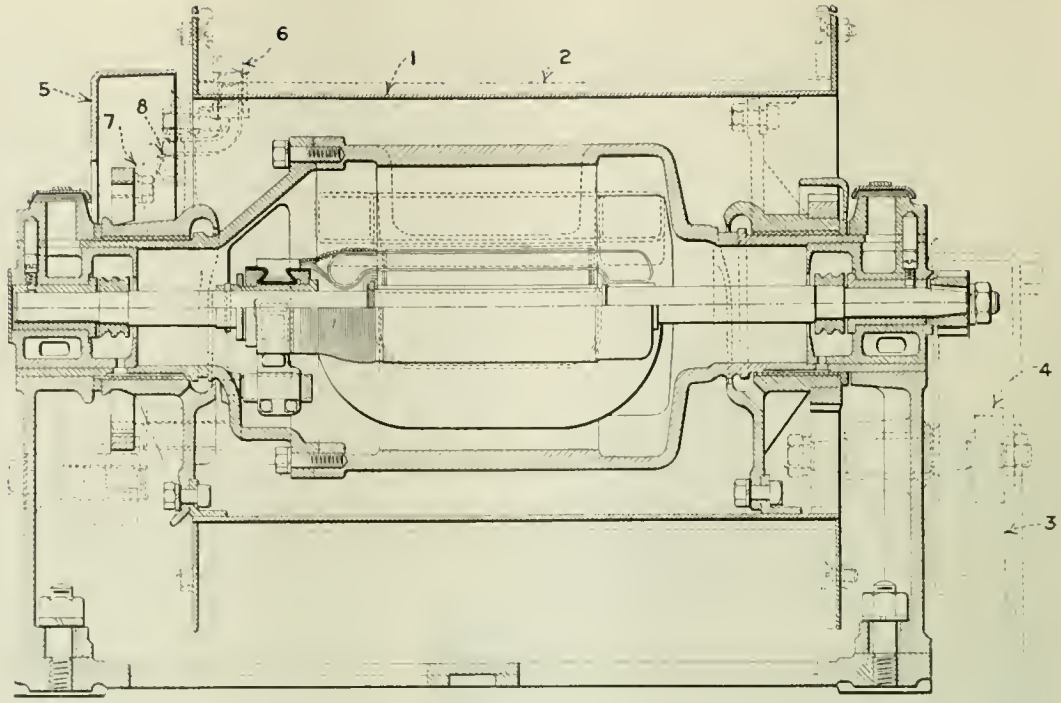
FIG. 4. SINGLE-FRAME RESISTOR

The resistance elements are inclosed for protection in a case of expanded metal. Section A is in series with the shunt field and armature and section B is in series with the armature alone. The resistance units consist of iron tubes (A) upon which are wrapped mica and asbestos insulation.

FIG. 5

Details of the Reel

The armature within the reel drum keeps a practically constant tension on the cable regardless of the direction or speed of travel of the locomotive.



overhaul the armature. The ease with which the armature can be overhauled on this reel can best be appreciated when this device is compared to the vertical reel. With a reel of that type it is necessary to remove the heavy drum together with the cable and other parts before the armature can be taken out.

The armature in this reel is of rugged construction and has operated satisfactorily without failure of any kind under the most severe working conditions. To make an inspection of the commutator and brushes it is only necessary to remove the guard (marked *5* in Fig. 5) over the collector. The bearings at both ends of the armature shaft are easily removed for inspection, repair or renewal.

The reel can be removed from the locomotive in approximately twenty minutes, as to accomplish this it is only necessary to remove four ¾-in. bolts and break wiring connections to reel resistance and to controller.

When using single-conductor cable one end is connected to the trolley-wire hook while the other end is led through a bushed hole in the barrel of the reel drum at the point marked *6* in Fig. 5. It is then connected to the terminal at point *7*, on the collector ring, which revolves with the reel drum. When double-conductor cable is used, the inside conductor on one end is connected to a trolley-wire hook while the outside conductor is connected to a rail hook.

The other end of the cable is led through a hole in the barrel of the reel drum and the inside conductor connected to the terminal (marked *7* in Fig. 5) on the collector ring, which revolves with the reel drum. The outside conductor is connected to the reel frame at the point marked *8* in Fig. 5, which is a part of the return circuit through the locomotive frame from the main motors.

Double-conductor cable as referred to above means

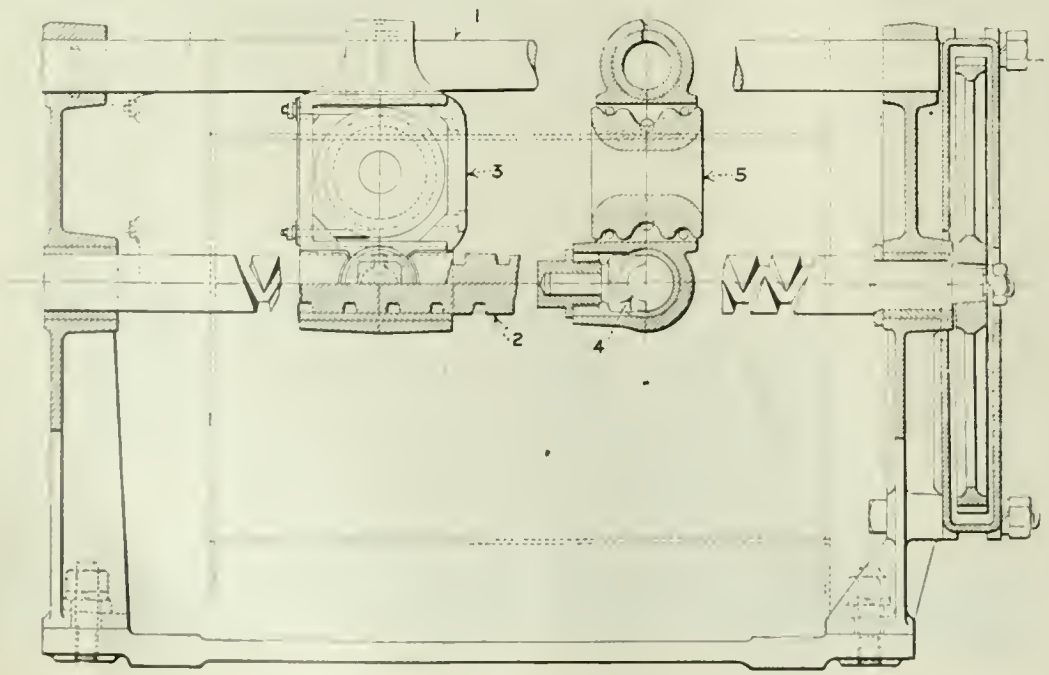


FIG. 6.

Cable-Spooling Mechanism

The right- and left-hand thread moves the guide back and forth across the face of the drum, winding the cable uniformly and smoothly into place. Detail 5 shows the porcelain guide which, bolted to the spooling device and having a bell-shaped opening, permits the passage of the reel without injury or excessive wear.

a concentric mining-machine cable. The inside conductor consists of forty-nine wires in seven strands around which is placed an insulation of rubber compound. This is then covered with a cotton braid and on top of this is placed the outside conductor, consisting of a layer of forty-one copper wires. Then on top of this outside conductor is applied a rubber compound, rubber-filled tape and two substantial cotton braids.

Single-conductor cable consists of forty-nine wires in seven strands around which is applied a rubber compound, a layer of rubber-filled tape and two layers of substantial cotton braid.

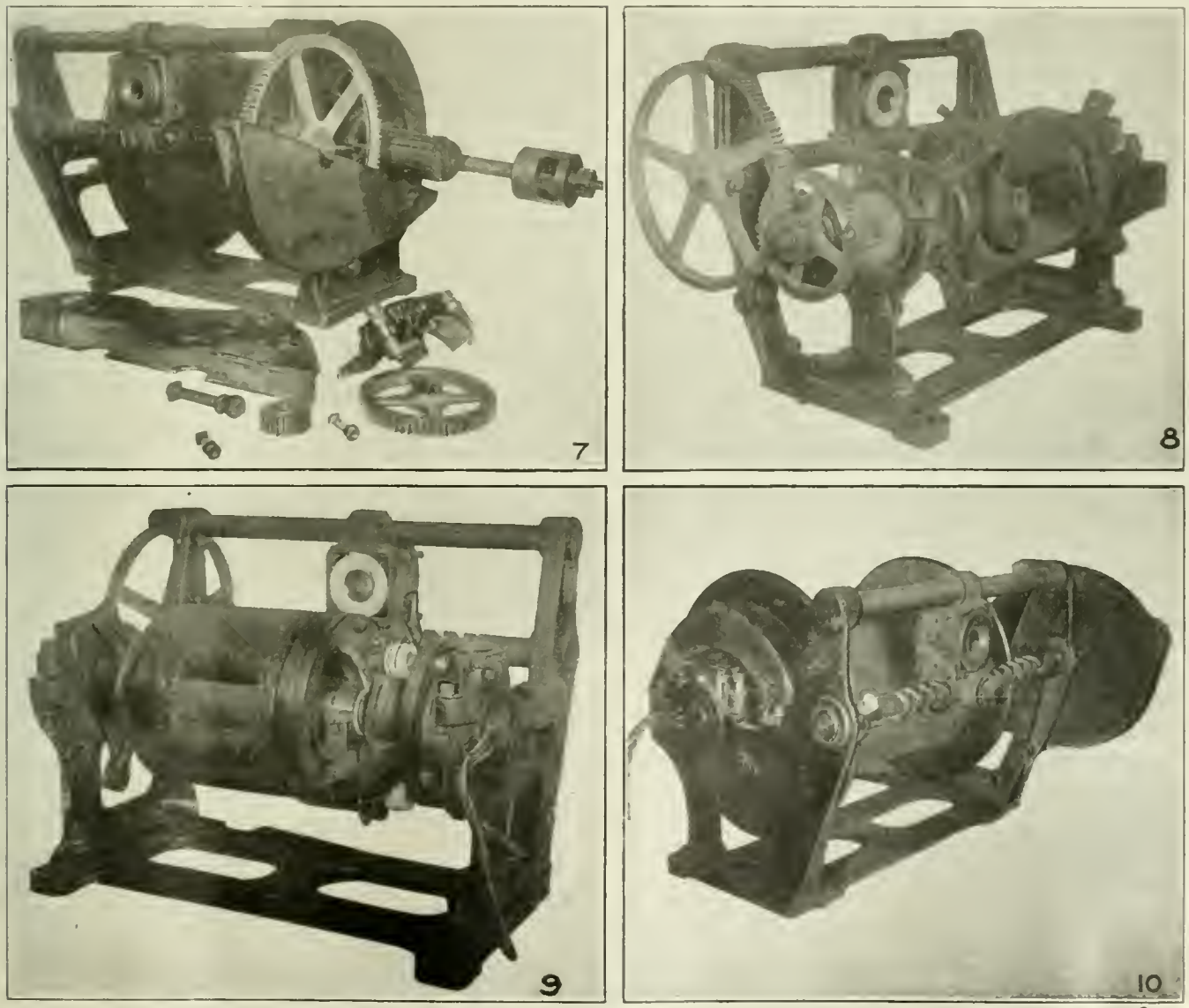
Advantages of Concentric Conductor Cable

The concentric double conductor cable is used for the following reasons: (1) It is easier to spool on the drum than twin or duplex cable. (2) It can be made to a smaller cross-section than the twin or duplex cable. (3) It weighs less per foot than the twin cable. (4) When the outside insulation wears off, the ground conductor only is exposed. This does not put the men using it in danger unless they should simultaneously touch both the trolley wire and this outside conductor. When the insulation wears off either of the conductors of a twin or duplex cable it is necessary to scrap it in order to prevent men from being injured in handling it and to avoid the possibility of placing a dead short on the line which might cause damage to the mine equipment. (5) The concentric cable has greater life than the twin or duplex cable.

Where either the single- or double-conductor concentric cable is used, the current for the main motors is taken from the collector ring by a brush and holder, then carried through leads to the controller and main motors.

The advantages inherent to this cable reel can be summarized as follows: The shunt type of motor with the arrangement of resistance here described has better operating characteristics than a straight series motor. The horizontal type of drum with the spooling device here used insures even and uniform cable winding.

Practically a constant pull is maintained on the cable at all times regardless of whether the locomotive is standing still, moving at variable speeds over level track or traveling down steep grades at high speeds. No fixed relation is required between the peripheral speed of the reel and the linear speed of the locomotive. The inertia of all the rotating parts, particularly that of the drum, is small. This affords a quick starting torque when picking up the cable.



FIGS. 7, 8, 9 AND 10. VARIOUS VIEWS OF THE REEL AND ITS STAND
The several parts or elements that make up the complete device as well as the assembled reel are here shown.

Freight Rates Influence New England's Choice of Coal

Freight Rate from Hampton Roads to Boston in 1914 Was 24c. Less by Water Than by Rail—Now It Is $1.88 Less by Rail—New Rates Expected to Reduce Margin—Change of Route Causes Difficulty

SUBSTANTIAL evidence on the reasons why New England is having trouble with her bituminous-coal supply this year is found in a study of the relation between all-rail freight rates from the coal fields in central Pennsylvania and the combined rail-and-water rates from the coal fields in West Virginia. The table of comparative rates shows how from a condition prior to the war under which Boston received coal cheaper by water than by rail the situation has changed and all-rail freight is now the cheaper.

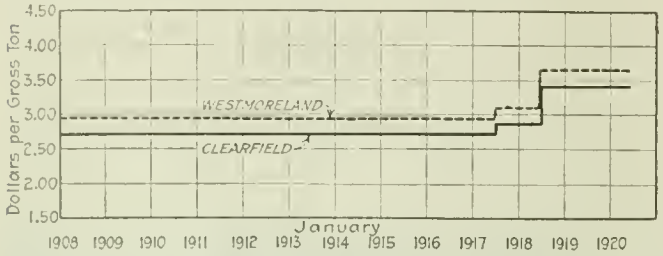


FIG. 1. RAIL RATES ON BITUMINOUS COAL FROM CLEARFIELD AND WESTMORELAND, PA., COAL FIELDS TO BOSTON, IN DOLLARS PER GROSS TON

In 1914 and earlier a gross ton of coal from the Clearfield region was carried to Boston for $2.60, and the rail-and-water rates on the same coal shipped through the port of Philadelphia was $2.26; through New York

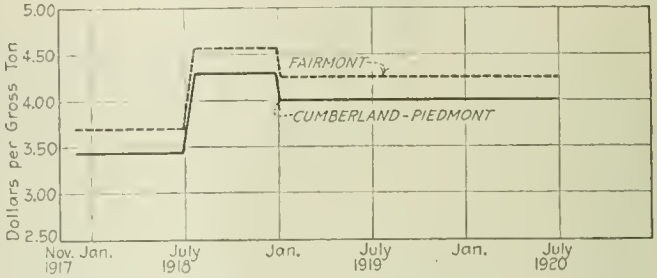


FIG. 2. RAIL RATES ON BITUMINOUS COAL FROM CUMBERLAND-PIEDMONT, MD., AND FAIRMONT, W. VA., COAL FIELDS TO BOSTON, IN DOLLARS PER GROSS TON

harbor $2.51, and Pocahontas coal was carried to Boston for $2.36. The advantage in rates in favor of water coal from Hampton Roads was then 24c. Today the freight-by-rail rate is $3.30 and by rail and water from the Southern port it is $5.18, a difference in favor of all-rail

Rates on Bituminous Coal to Boston, Mass.; Worcester, Mass.; Lowell, Mass., and Portland, Me., Via All-Rail and Via Rail and Water

From	Boston			Worcester			Portland			Lowell
	Present	Prior to June 25, 1918	Prior to War (1914)	Present	Prior to June 25, 1918	Prior to War (1914)	Present	Prior to June 25, 1918	Prior to War (1914)	Present
Clearfield Region:										
All-rail rate	$3.30	$2.75	$2.60	$3.40	$2.85	$2.70	$3.80	$3.20	$3.05	$4.00
Clearfield Region:										
Rail rate to Greenwich Pier	1.80	1.30	1.25	1.80	1.30	1.25	1.80	1.30	1.25	1.80
Boat freight from Greenwich Pier	1.00	2.50	.75	2.75	2.25	.65	3.25	2.65	.75	3.00
Marine insurance	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
Handling charge from boat to cars, including weighing	.38	.21	.21	.35	.21	.21*	.35*	.21	.21	.38
Rail rate	....	....	....	1.05	.90	.85	....	....	....	1.05
Total	$5.23	$4.05	$2.26	$6.00	$4.71	$3.01	$5.45	$4.21	$2.26	$6.28
Clearfield Region:										
Rail rate to South Amboy	$2.15	$1.65	$1.55	$2.15	$1.65	$1.55	$2.15	$1.65	$1.55	$2.15
Boat freight from South Amboy	2.75	2.50	.70	1.75	1.75	.40	3.00	2.75	.75	2.75
Marine insurance	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
Handling charge from boat to cars, including weighing	.38	.21	.21	.35	.21	.21	.35*	.21	.21	.38
Rail rate	....	....	....	1.05	.90	.85	....	....	....	1.05
Total	$5.33	$4.41	$2.51	$5.35	$4.56	$3.06	$5.55	$4.66	$2.56	$6.38
Pocahontas and New River Districts:										
Rail rate to Hampton Roads	$2.00	$1.50	$1.40	$2.00	$1.50	$1.40	$2.00	$1.50	$1.40	$2.00
Boat freight from Hampton Roads	2.75–3.25	3.25	.70	2.50–3.00	3.00	.65	2.90–3.40	3.40	.75	2.75–3.25
Marine insurance	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
Handling charge from boat to cars, including weighing	.38	.21	.21	.35	.21	.21	.35*	.21	.21	.38
Rail rate	....	....	....	1.05	.90	.85	....	....	....	1.05
Total	$5.18	$5.01	$2.36	$5.95	$5.66	$3.16	$5.30	$5.16	$2.41	$6.23

* Plus 50 cents a car weighing.
† Open market boat freights from Hampton Roads just prior to June 25, 1918, were approximately $1 higher than the boat freights shown above, which were U. S. Shipping Board quotations.
‡ Boat freights shown under Worcester are the boat freights to the port of Providence, R. I. To Lowell they are the boat freights to Boston.
§ Boat freights shown from South Amboy, prior to June 25, 1918, were open market rates.

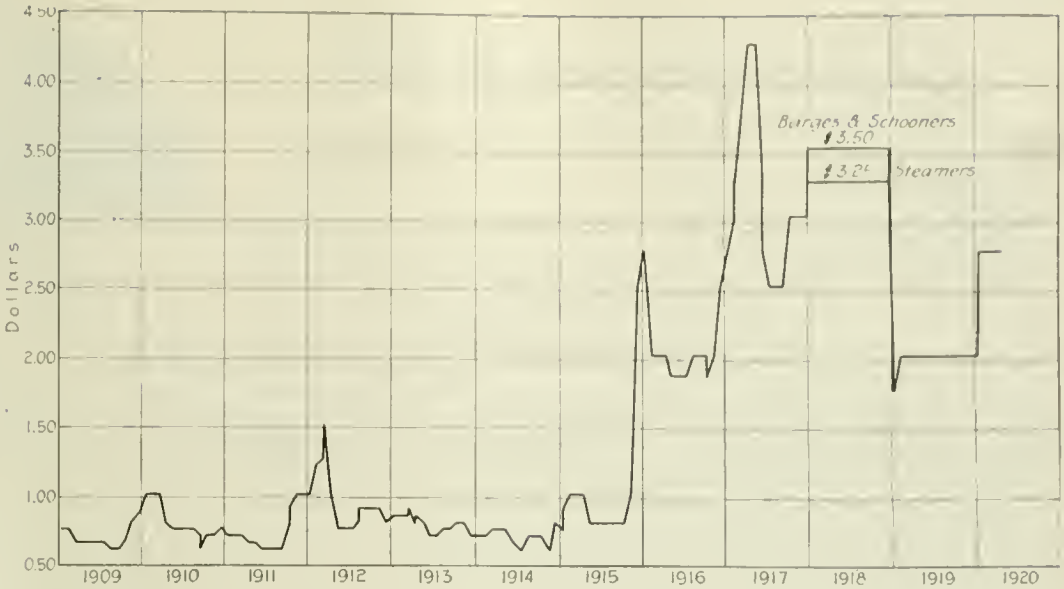


Fig. 3

Freight rates by water on bituminous coal from Hampton Roads to Boston, 1909 to 1920, in dollars per gross ton.

Fig. 4

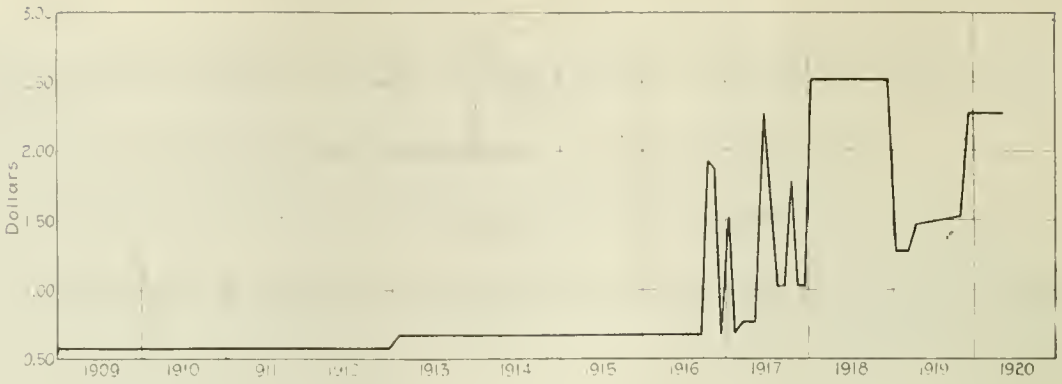
Freight rates by water on bituminous coal from Baltimore to Boston, in dollars per gross ton.

Fig. 5

Freight rates by water on bituminous coal from Philadelphia to Boston, in dollars per gross ton.

Fig. 6

Freight rates by water on bituminous coal from New York Harbor to Boston, in dollars per gross ton.



of $1.88. Unofficial estimates of the increases in freight rates contemplated for Sept. 1 are $1 for all-rail movement and 50c. for shipment by water to Hampton Roads, which will reduce the present differential in favor of central Pennsylvania of $1.88 to $1.38. In a similar way the rates have changed on coal to other New England consuming centers, figures of which for Worcester and Portland are given in the accompanying table.

The diagrams show the history of the changes in both rail and water rates to Boston from the several coal fields which normally supply this market. The figures for all-rail rates to Boston are those over the Boston & Maine. Prior to Dec. 3, 1918, there were no joint rates on bituminous coal from the mines in the Cumberland-Piedmont and Fairmont regions (Fig. 2) to Boston & Maine points, a through rate being obtained by adding to the Baltimore & Ohio rate the local rate of the Boston & Maine, which on shipments to Boston was 90c. per gross ton from November, 1917, to June 24, 1918, and $1.30 per gross ton from June 25, 1918, to Dec. 2, 1918. Prior to June 25, 1918, there were no joint rates on bituminous coal from the Clearfield district (Fig 1) to Boston & Maine points, a through rate being obtained by adding to the Pennsylvania R.R. rate the local rate of the Boston & Maine, which on shipments to Boston was 85c. per gross ton, Jan., 1908, to June, 1917, and 90c. per gross ton from July, 1917, to June 24, 1918.

Cargo rates on bituminous coal in dollars per gross ton are shown from the ports of Hampton Roads, Baltimore, Philadelphia and New York to Boston, in Figs., 3, 4, 5, and 6. These figures do not include marine insurance or handling charges at the terminal. Quotations for New York Harbor are from the piers at South Amboy, Perth Amboy, Elizabethport, Port Johnson, Hoboken, Port Reading, St. George, Weehawken, Guttenberg and Edgewater. The rates shown on this diagram (Fig. 6) for the years 1909 to 1917 inclusive are from the published tariffs of the Lehigh Valley Transportation Co., which rates are considerably lower than the open-market rates. For October and November, 1916, and for January, June, July and October, 1917, the rates shown on this diagram are the open-market quotations. For 1918 and 1920 the rates are those established by the Railroad Administration.

The fact that coal can be laid down in Boston at rates so much lower when shipped from the Pennsylvania fields by rail than when transported by water from any of the Eastern tidewater ports accounts for the fact that New England is today under-contracted for tidewater coal and over-contracted for all-rail delivery—over-contracted in the sense that the railroads cannot deliver through the gateways the coal from Pennsylvania that New England consumers would like to have. When demand for coal was slack last year, New England more or less abandoned the water route and today is suffering because of that course of action.

Decision Rendered in Tidewater Demurrage Case

THE Interstate Commerce Commission has rendered a decision in the complaint of the Wholesale Coal Trade Association of New York, Inc., et al., vs. the Director General of Railroads, as agent of the Baltimore & Ohio Railroad Co., et al. The complaints alleged that the demurrage charges and rules in effect since Nov. 11 1918, on coal held at Baltimore, Md.; Philadelphia, Pa., and at certain points in the vicinity of New York, N. Y., for transshipment by water beyond were and are unreasonable, unjustly discriminatory, and unduly prejudicial.

In its decision the commission held that:

(1) The demurrage charges assessed on tidewater coal from Nov. 11, 1918, to March 2, 1919, both inclusive, were not unreasonable.

(2) The demurrage charges assessed between March 3, 1919, and March 31, 1919, both inclusive, were unreasonable to the extent that they exceeded charges based upon five days' free time and a demurrage of $2 per car per day, and that the charges and free-time rule in effect since March 31, 1919, have been and are reasonable.

(3) The monthly period for adjusting credits and debits under the average agreement was not and is not unreasonable.

(4) The difference in treatment accorded the complainants and the Lake-port shippers does not constitute a violation of section 3.

(5) The tidewater regulations are not unduly prejudicial to the smaller tidewater shippers.

(6) The record does not justify a departure from the general rule with respect to denying relief from demurrage charges which accrued during strikes.

(7) Reparation awarded or collection of undercharges waived to the basis above found reasonable.

W. T. Thom, Jr., has resumed his work in the division of mineral fuels of the Geological Survey after having devoted a number of months to relief work in Austria.

William S. Murray has been made chairman of the engineering staff which will report on the Baltimore-Washington super-power plans. For the prosecution of that study the survey will open offices in New York City.

Discussion by Readers

Edited by
James T. Beard

Safe and Sane Practice in the Handling of Explosives

HAVING been employed as a powder demonstrator for a considerable time, I was naturally interested and pleased to note the discussion of some of the unsafe practices common among miners. Let us strive for more safe and sane methods in the use of explosives in mining.

The letter of a mine foreman of McKeesport, Pa., which appeared in *Coal Age*, July 1, p. 24, threw light on many of the dangerous habits and performances of the average coal miner. In addition to those he has mentioned, I will enumerate some in my own experience that are the cause of many fatalities in our mines due to the careless or reckless handling of explosives.

1. Miners making up their cartridges with a flame lamp in their cap, in direct violation of the state mining law.
2. Cutting off or shortening the match on the end of a squib, or dipping in oil before placing it in the hole, for the purpose of making it burn quicker.
3. Forcing a cartridge into a hole of too small a diameter and running the risk of breaking the cartridge and scattering the powder.
4. Using a steel or iron tamping bar when charging and tamping a hole.
5. Attempting to withdraw a charge or to mine out a shot that has misfired.
6. Attempting to thaw a frozen dynamite cartridge over an open light or by placing it on a hot steam pipe.
7. Cutting too short a length of fuse.
8. Crimping a detonating cap on the fuse by biting it with one's teeth.
9. Returning to the face to ascertain the reason why a shot did not explode.
10. Leaving explosives lying about on the gob or on the ribs or timbers where it is exposed and liable to cause an accident.

Safety Rules and Regulations Disregarded

Although the mining laws make many provisions to safeguard the lives of workers in mines, men are constantly taking chances. Many appear to be wholly oblivious to danger. Only a short time ago, a miner stepped on the cage at one of our mines here, to be lowered into the mine. On his shoulder he carried a 25-lb. keg of powder. He was at once followed by a short man who had a flame lamp on his head. The latter would have stood directly under the projecting keg, but for the warning cry of the cager who saw the danger in time to avoid disaster.

The McKeesport writer evidently took it for granted that the mention of the use of the "drillings" of a hole made into cartridges for tamping, referred to by a previous writer, had reference to coal cuttings. But such was not the case, as the drillings were stone dust, which made safe material for tamping a charge of powder.

The statement that some superintendents and foremen "shut their eyes" to practices they know to be dangerous is contrary to my experience. No one feels worse than the mine foreman when an accident occurs in the mine and no one tries harder than the foreman to prevent such an occurrence. As a rule the superintendent, though not as closely associated with the men, is equally anxious to make the mine safe at all times and would not stand for any practices that are unsafe.

Miners accustomed to handling explosives fail to realize the terrible force pent up in the innocent looking stick of dynamite or a cartridge of black powder. If they did they would use more care in handling those agents of destruction. Let us strive by moving-picture demonstrations and safety-first meetings, to educate our miners to the need of greater caution in the use of all explosives. So large a number of the men now employed in our mines can neither read nor write, the use of pictures and practical demonstrations are more needful than textbooks for them.

It has been estimated that there are sixty fatal accidents from the use of explosives in the anthracite mines alone, each year. Could we follow, in our minds, these sixty bodies to the grave and witness there the heart-rending scenes that follow, it would serve to impress on us the importance of this feature in coal mining.

Plains, Pa. RICHARD BOWEN.

Use of Cofferdams in Wet Shafts

WHILE the suggestion of Charles F. Sherman to encircle a wet shaft with water rings, at frequent intervals, and connect each ring with a drillhole cased with a four-inch pipe, as explained in *Coal Age*, June 17, p. 1279, is a good plan, it only applies to a shaft making water throughout its entire depth. Where the water comes from water-bearing strata at certain points in the shaft, however, it is better to adopt another plan, known as "coffering."

More properly described, this method consists of building one or more cofferdams for the purpose of completely shutting off the water from the shaft. The plan has the advantage of eliminating the necessity of pumping the water from the bottom of the shaft to the surface. My experience with boreholes conducting the water to the shaft bottom is that they frequently become clogged and require the use of boring tools to clear them out again, which is generally a difficult operation.

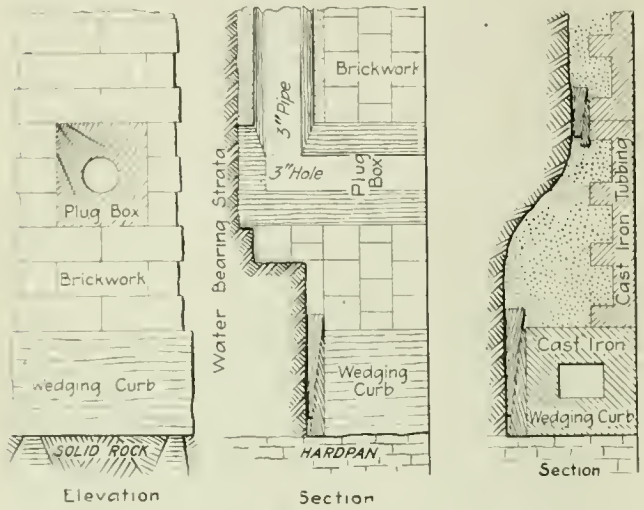
"Coffering," as I prefer to term it, is a simple and effective means of shutting off the water, particularly if the water-bearing strata lie comparatively near the surface, so that the pressure on the dam or shaft curbing is fairly light. Briefly described, the process is as follows:

The excavation in the shaft must be continued to a point where a strong shale or hardpan impervious to water is struck. At that point, the excavation is

widened all around the shaft, and the rock leveled off to form a solid ledge, which is to be the foundation of a wedging curb. It may be necessary to temporarily support the wet strata while building the cofferdam, which is started by laying the wedging curb in place on the rock ledge mentioned.

The wedging curb is 18 or 20 in. in width and 6 or 8 in. in depth, according to the size of the shaft and the thickness of the water-bearing strata. It consists of blocks of strong wood, cut to the circle of the shaft and fitted neatly together so that when put in place they can be wedged tightly from behind with soft pine wedges, as shown in the figure.

On this curb as a foundation, a walling of three or five courses of brick is laid, as shown in elevation and in section in the accompanying figure. These courses



SHOWING ARRANGEMENT OF PLUG-BOXES AND WEDGING CURBS

are laid in such a manner as to break joints both horizontally and vertically. The best quality of brick must be used and laid in a good hydraulic cement. In order to care for the flow of water while this wall is being built, it is sometimes necessary to insert a few plug-boxes. These are formed of blocks of wood 21 in. in length and 10 in. square in section. A three-inch hole is bored in the center of the block, to within two inches of the other end. Another three-inch hole is then bored from the top surface of the block to meet the first.

In order to keep the opening clear and drain off the water, which would otherwise wash out the cement before it could set, a wooden pipe is extended upward from the hole in each plug-box, behind the brick wall. This pipe is perforated with small holes to permit the water to drain into the pipe at intervals of three inches. As the wall is carried up three or four courses, these small holes are stopped with wooden plugs. The space around each pipe and behind the wall is now rammed with a loam or clay. The wall is then carried up another three or four courses and the same operation continued. This is repeated, until the water-bearing strata is passed. Where there is a considerable flow of water through the plug-boxes, it will be necessary to construct a temporary water ring to prevent the washing out of the cement from the brickwork below.

It should be mentioned here that the bricks in the walling of the shaft are all laid as stretchers, there being no headers at any point in the wall. The purpose of this is to prevent the leakage of water which would take place through the headers if these were laid. In order to break the horizontal joints, it is necessary to use bricks of one-half the thickness, in laying the middle row of brick in the first course when a wall of three bricks is being laid. If the wall is five bricks thick, half-bricks must be used in laying the first course of two of the alternate rows. After this first course, all bricks are laid of full thickness in each row. Finally, when the cofferdam is complete, in height, each of the wooden pipes behind the wall is filled with a grouting of cement, the hole in the plug-box being stopped with a plug of soft pine.

Where a heavier flow of water is encountered at a greater depth and giving a greater pressure, a process known as tubbing is employed. In this case, a heavier wedging curb is laid on a strong ledge of solid rock. This wedging curb may be constructed of cast-iron blocks. Instead of the brick walling built above the wedging curb, cast-iron tubbing is used in sections, as indicated on the right of the figure. Each of the series of tubs is tightly wedged with soft pine blocks driven behind, as indicated in the figure. As each layer of tubbing is put in place and wedged, the space behind is rammed with concrete.

Oak Hill, W. Va. WILLIAM DICKINSON SR.

More Labor Is Employed in Mines Mechanically Equipped

PERMIT me to refer to the letter of R. T. McKeen, *Coal Age*, July 1, p. 24, in which he cites a statement made by Floyd W. Parsons in the *Saturday Evening Post* of May 22 when, speaking of the attitude of labor toward the introduction of labor-saving devices and equipment, he remarked:

> They . . . know that the substitution of mechanical means for doing things has not only reduced the physical effort of labor, but has actually created vastly more jobs and higher wages.

In reply to the question asked by Mr. McKeen as to whether this statement of Mr. Parsons will hold good in respect to the coal-mining industry, let me say that it should apply to coal mining to the same extent as to any other industry except, perhaps, that of farming. Next to farming, the production of fuel is certainly a very vital part of our civilization.

Have not the ranks of coal miners been equally scattered and depleted through the war, the tide of emigration to Europe on the one hand and the ebb of immigration to this country on the other. For these reasons it became necessary, in order to increase production and secure greater efficiency in mining coal along side of a more favorable competitor, to use mechanical means for loading and marketing the coal.

If it is argued that there is plenty of labor to do everything required through sheer physical effort, it is nevertheless true that there are still plenty of jobs and plenty of work for everybody. The only difference is that there was more coal produced through the use of mechanical equipment, which should put cheaper fuel on the market. However, whether the coal is mined by machine or by hand, it does not appear to be a part of the producer's program to create a supply that will fully meet the demand.

Notwithstanding all that may be said, there is, today, the same prejudice in the ranks of labor opposed to the installation of machinery. Labor has not laid aside the antiquated reasons that have always prevailed among

its class. In respect to mining machinery, there is the fear of the loss of the few cents per ton that is the differential between pick- and machine-mined coal.

When it is explained that more coal is produced with less physical effort and more wages earned, the reply is, "We will not get the cars to load the coal mined," which is sometimes true. It would always be the case, if the management did not carefully plan and arrange the distribution of cars and men so as to keep both the machines and the men working on a 100 per cent efficiency basis.

Mr. McKeen asks, "If, in any instance, there was a decrease in the number of men employed, following a mechanical installation at a mine, how long a time elapsed before the number again reached the pre-machinery period?" In my experience I have never observed a decrease in the number of men employed in the mine, following an installation of machines. Instead, I have observed that where additional labor was available is was possible to actually increase the number of men over that employed previously.

Coal operators investing in mining machinery have an acreage to mine that warrants making the investment, and their guiding thought is *increased production.* Especially is this true at the present time. I have particularly observed that, at some of the most modernly equipped mines in the United States, usually the chief problem is the shortage of labor. It may not be as acute as with some of the pick mines, but the machine mines are always able to handle more labor and require more miners and loaders.

Formerly, when our social system was more balanced and producers were more earnest, rational and willing, conditions were the same. Unless there were car shortages, strikes or other abnormal disturbances in the ranks of labor, the majority of the better equipped mines were always able to increase their force of miners more readily than other mines.

As previously stated, I have never noted any decrease in the number of men employed because of the installation of machinery, except in a few instances where men have left the mine, not being able to overcome their prejudice against the machines. The installation of machinery, particularly at the present time, will not cause a decrease in the number of men employed, since every modern mine requires the best equipment obtainable to increase its production. Otherwise, of what avail would it be to invest so much capital?

Thomas, W. Va. W. H. NOONE.

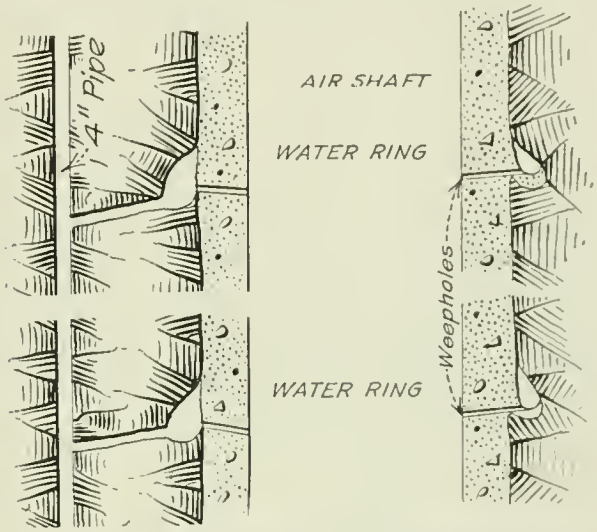
Water Rings in a Shaft Lined With Concrete

HAVING seen several shafts sunk through varying strata that, at times, contained much water, I was naturally interested in the proposition of Charles F. Sherman, in regard to taking care of the water he expected to meet in the sinking of an air shaft, *Coal Age*, June 17, p. 1279. If I am not mistaken, Mr. Sherman's proposition, was to sink a 4-in. borehole at a distance of 4 ft. from his shaft curbing and connect it with water rings established at frequent intervals in the shaft.

While this proposition is a good one, in my opinion, it may give some trouble from the freezing of the drain pipes and water rings in the winter season. The suggestion I would make is one that may prove a little expensive at the start, but will certainly pay for the investment by eliminating the trouble from freezing.

The plan I have in mind is to line the entire shaft with a good concrete curbing of sufficient thickness to withstand the pressure from behind. Then, as the work of lining the shaft proceeds, water rings should be established at points in the shaft where it appears the strata carry the most water. At such points, sufficient excavation should be made to provide a good water ring behind the concrete walling and surrounding the shaft. The water ring should be given an inclination that will insure its draining easily to the point on the side where the borehole is located. The pipe connecting the water ring with the borehole should also be given a steep inclination so that the water will run freely into the borehole and be conducted to the bottom of the shaft.

Each water ring or trough must be lined with concrete, the same being joined with the concrete of the shaft curbing. It will be well to leave at the lowest point of each water ring a small temporary weephole from which any accumulated water can drain into the shaft. When the work is complete, these holes can be tightly closed with plugs. Their purpose is merely to safeguard the shaft against the accumulation of water



CROSS-SECTION OF SHAFT SHOWING WATER RINGS BEHIND THE CONRETE CURBING

behind the curbing in case the borehole for any reason becomes choked so that it does not drain into the sump, which is a remote possibility.

The concrete curb must have a sufficient thickness to withstand any pressure that might result from the water gaining a head behind the shaft wall. Only the best grade of hydraulic cement must be used in the entire work. It will be observed that the borehole, however, will prevent the water from forming a head as long as the hole is kept clear.

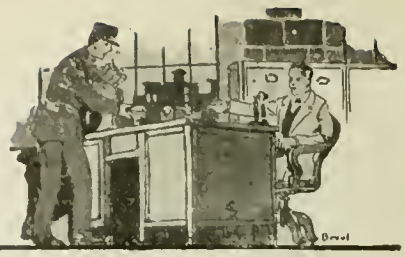
In making this suggestion, my idea is that the concrete walling of the shaft will not only support the strata but furnish a good protection against the freezing of the water in the water rings and drain pipes around the shaft. At the shaft bottom, the water is collected in a sump and pumped to the surface; or the borehole can be used as a column pipe to supply water to a spraying system in the mine entries, should this be thought desirable. The great advantage of a concrete shaft lining is that it is permanent and makes a clean dry job that eliminates the chance of future trouble by freezing or the decay of the shaft timbers.

Johnstown, Pa. S. W. F.

Inquiries of General Interest

Answered by

James T. Beard



Yield of a Steam Jet and Fan Working Together on the Same Air

REFERRING to the issue of *Coal Age*, June 10, p. 1213, permit me to draw attention to the method of solving the second question asked on that page. The question reads as follows:

> A steam jet and a fan, both acting together on the air in an upcast shaft, produce 75,000 cu.ft. of air per minute. When the fan is stopped the jet produces 15,000 cu.ft. per minute. What quantity of air should the fan give alone?

In the answer given to this question it is stated "The cube of the total quantity [of air] circulated by the combined action of the fan and the steam jet is equal to the sum of the cubes of the respective quantities circulated by each of these agencies acting alone." Then, if the jet acting alone will produce 15,000 cu.ft. per min., calling the required yield of the fan when acting alone x, gives

$$75{,}000^3 = x^3 + 15{,}000^3; \text{ and } x^3 = 75{,}000^3 - 15{,}000^3$$

$$x = 1{,}000 \sqrt[3]{75^3 - 15^3} = 74{,}800 \textit{ cu.ft. per min.}$$

But, in Fairley's "Ventilation of Mines," I find the following statement of a similar problem, which reads as follows:

> If we obtain a certain quantity [of air] by a furnace and another [quantity] by a steam jet or other means, the combined effect will be according to the square root of the square of the one added to the square of the other. For example, if a mine circulates 25,000 cu.ft. of air per minute by a furnace alone and 22,000 cu.ft. by a steam jet alone, the quantity of air that will pass with the two acting together will be:

$$\sqrt{25{,}000^2 + 22{,}000^2} = 33{,}300 \textit{ cu.ft. per min.}$$

Again, in a "Reference Book for Colliery Managers," by W. Wardel, appears the following:

> If the furnace and steam jet combined produce 46,706 cu.ft. per minute, and the furnace alone, 42,670 cu.ft. per minute, what will the jet acting alone produce?

The solution given to this question in the book just mentioned is as follows:

$$\sqrt{46{,}706^2 - 42{,}670^2} = 18{,}993 \textit{ cu.ft. per min.}$$

Now, according to these authors, the solution given to the question in *Coal Age* brings too large a result. Applying the square-root method, the yield of that fan when working alone would be

$\sqrt{75{,}000^2 - 15{,}000^2} = 76{,}485$ cu.ft. per min., instead of 74,800. Kindly explain the difference.

Connellsville, Pa. W. G. DUNCAN.

The difference in these two methods lies in the question of whether we are to consider the *power* on the air or the *pressure* as remaining constant or the same when the fan is working alone, the steam jet alone, or both are working together. It is quite apparent that the pressure due to the mine resistance will change when a mine is passing different quantities of air; and it is therefore an error to regard the pressure as being the same in each of these three cases.

On the other hand, it is reasonable to assume a constant power applied to the air, under the same conditions of the speed of the fan or the quantity of steam issuing from the jet, whether these means of ventilation are working separately or together. On this basis, the solution given in *Coal Age* is correct, since the quantity varies as the cube root of the power on the air. Attention was drawn to this in the introductory page of Ventilation of Mines, by J. T. Beard, published in 1894.

Mercury vs. Glycerine Barometer

KINDLY explain the difference in the readings of the mercurial and the glycerine barometers. When the mercurial barometer shows a reading of 30 in. what will be the reading of a glycerine barometer?

Benton, Ill. STUDENT.

The specific gravity of mercury is 13.56, while that of glycerine, at the same temperature (60 deg. F.), is 1.265. Therefore, since the heights of these two columns of liquid are inversely proportional to their densities, the height of the glycerine column corresponding to 30 in. of mercury is $(30 \times 13.56) \div 1.265 = 321\frac{1}{2}$ in., or 26 ft., $9\frac{1}{2}$ in.

Approaching Water Under a Great Head

CAN it be true, as I have heard it said, that there is less danger in driving a place toward old abandoned workings filled with water under a great head, than when the head is known to be small? It has always been my understanding that the greater the head the greater will be the pressure on the face of the coal, which would increase the danger of driving such places.

Spring Valley, Ill. STUDENT.

The answer to this question is very similar to that asking why it is safer to work around live wires carrying a high voltage, than when a low voltage is employed. There can be no doubt that the danger is greater when one comes in contact with a wire carrying a high-potential current than where the pressure is lower. Likewise, the pressure due to a great head of water is liable to be more destructive than when the head is less.

However, it cannot be denied that workmen in either case will use greater precaution in face of a greater danger; and, on this account, it is quite generally conceded that this greater caution on the part of the workers reduces the danger and makes it actually less than when the men become careless, believing that the danger to which they are exposed is small.

It can also be said that a great head of water will reveal the near approach to danger by the increased seepage of water through the seam and the inclosing strata. By this means, the men are warned more quickly than where the pressure head is not sufficient to force the water through the strata.

Examination Questions

Answered by

James T. Beard

Miscellaneous Questions

(Answered by Request)

Ques.—Find the horsepower required to raise, in three minutes, a car weighing one ton and containing one ton of material, up an incline 1,000 ft. long and pitching 30 deg., if the rope weighs 1,500 lb.

Ans.—Since the sine of 30 deg. is 0.5, the rise of this incline is 1,000 × 0.5 = 500 ft. A rough estimation of the work performed, in this case, would be to ignore friction and assume the total weight of the car, material and rope is lifted through a vertical height of 500 ft. in 3 min. The total weight being 2 × 2,000 + 1,500 = 5,500 lb., the required horsepower is (5,500 × 500) ÷ 3 × 33,000 = 27.7+ hp.

Ques.—(a) How much firedamp would have to be given off to foul a current of 6,000 cu.ft. of fresh air per minute, sufficiently to allow the presence of gas to be detected by the flame of a safety lamp? (b) Without further fouling this current, what is the shortest time in which it would be possible to remove a body of undiluted gas completely filling a pair of entries, each 300 ft. long, with four crosscuts, each 60 ft. long, both entries and crosscuts being 5 ft. high and 8 ft. wide?

Ans.—(a) A good fireboss will be able to detect gas, with an ordinary Davy lamp burning cottonseed or lard oil, when 2 per cent of gas is present. In that case, the pure air (6,000 cu.ft. per min.) is 98 per cent of the return current of gas and air. The volume of the return current is, therefore, 6,000 ÷ 0.98 = 6,122 cu.ft. per min. The quantity of methane that must be given off to produce this condition is then 6,122 — 6,000 = 122.3 cu.ft. per min. (b) The second part of this question is somewhat peculiar and indefinite. We assume, however, the meaning: Given a known volume of pure, undiluted methane, to determine how long it would take a fresh air current of 6,000 cu.ft. per min. to remove this quantity of gas, without the proportion of gas in the return exceeding 2 per cent.

The volume of pure gas filling the two entries and four crosscuts is 5 × 8 (2 × 300 + 4 × 60) = 33,600 cu.ft. If this gas forms 2 per cent of the return current, the time required for its removal would be 33,600 ÷ 122.3 = say 275 min., or 4 hr. 35 min.

Ques.—In sinking a shaft, how many long tons of rock can four men raise with a windlass in eight hours, from an average depth of 60 ft., the bucket being unbalanced and each man being able to do 1,400 units of work per minute in raising stone?

Ans.—Each man performing 1,400 units of work, the four men would perform 4 × 1,400 = 5,600 ft.lb. of work. Assuming three minutes per hoist, the work performed per hoist is 3 × 5,600 = 16,800 ft.lb. The weight hoisted is then 16,800 ÷ 60 = 280 lb. The number of hoists in 8 hours is (8 × 60) ÷ 3 = 160; and allowing, say 70 lb. for the bucket, the weight of material hoisted is 160 (280 — 70) ÷ 2,240 = 15 long tons.

Ques.—It is proposed to work a pump that it is estimated will require 23 hp. to drive. Give particulars of size of motor and dimensions of cable, assuming the pump to be 1,300 yd. from the dynamo.

Ans.—Allowing for the return current, the length of transmission is 2(3 × 1,300) = 7,800 ft. Also, assuming the efficiency of the motor driving the pump to be 90 per cent, the input to the motor is (23 × 746) ÷ 0.90 = 19,064 watts. Then, assuming the pressure at the end of the line as 500 volts gives, for the required current 19,064 ÷ 500 = 38.128 amp. Finally, allowing for a linedrop of, say ten per cent, in transmission, the size of wire required to deliver a current of 38.128 amp., under a pressure of 500 volts, at a distance of 3,900 ft. requiring a total length of wire of 7,800 ft., including the return, is

$$A = \frac{10.8 \times 7{,}800 \times 38.128}{500 \times 0.10} = 64{,}230 \ circ.mils.$$

Ques.—Give six reasons why the great majority of steam boilers are cylindrical or round shape.

Ans.—Assuming that this question has reference to fire-tube boilers, the following reasons may be given: 1. The cylindrical shape lends itself more readily to ease of construction, which makes it cheaper. 2. The cylindrical shape develops more uniform stresses in the shell of the boiler, which makes it safer. 3. The cylindrical shape permits a more uniform distribution of heat, which accelerates the generation of steam. 4. A cylindrical boiler permits of less time and expense in the setting of the boiler, which makes it generally popular. 5. A boiler of cylindrical shape is more easily cleaned than any other type of boiler. 6. The cylinder is the only practicable form of construction outside of water-tube boilers.

Ques.—Having to deliver 200,000 cu.ft. of air per minute from a fan and assuming 13 cu.ft. of the air weighs one pound, what would be the energy of the discharge into the atmosphere, through a chimney 4 × 5 ft. and through a chimney 20 ft. square, respectively?

Ans.—Energy is measured in foot-pounds and is found by multiplying the weight of air delivered, in pounds, by the square of its velocity, and dividing that product by twice the force of gravity, both the velocity of the air and the force of gravity being estimated in feet per second. In this case the weight of air delivered is 200,000 ÷ 13. The area of the smaller chimney is 4 × 5 = 20 sq.ft., which gives a velocity of 200,000 ÷ (20 × 60) = 500/3. Therefore the air discharged through the smaller chimney has an energy of

$$\frac{200{,}000}{13 \times 2 \times 32.16}\left(\frac{500}{3}\right) = 6{,}644{,}000 \ ft.\text{-}lb.$$

The area of the larger chimney is 20 × 20 = 400 sq.ft. and the velocity of the discharged air is therefore $\frac{1}{20}$ of that in the smaller chimney. Since the energy varies with the square of the velocity, the energy in the larger chimney will be $\frac{1}{400}$ of that in the smaller chimney, or 16,610 ft.-lb.

Readers' Views and Comments

Insists That Railroads, Not I. C. C., Must Solve Coal-Shortage Problem

Commenting on the testimony delivered by me before the Interstate Commerce Commission in connection with Car Service Order No. 7, July 8, 9 and 10, *Coal Age*, p. 118, says:

He does not suggest just how the Interstate Commerce Commission should go about fixing for each railroad the amount of coal which it is to be responsible for, nor more particularly how to care for the roads that have no coal traffic originating on them. These problems are believed to be relatively easy, however, it seems.

I have always felt a certain measure of hesitation in criticising a condition or in certain handling of same, unless I felt I could at the same time suggest a remedy. In this instance I made specific recommendations to the commission when I said:

The commission should *order the required measure* of coal transportation for each producing road to perform, which can be done by fixing the number of hours each week that each mine must be supplied with cars, loaded and empty coal cars to be moved in preference and at a rate that will serve to carry out the terms of the commission's orders. With respect to roads which do not serve mines but which deliver coal to the consumer either direct or as an intermediate carrier, the commission should exact a daily report of empty and loaded coal cars on each carrier's rails, the number of cars received from connections and delivered to connections, *the commission to enforce such general orders as it may issue, insisting on the executive officers of the individual railways performing the general task allotted them in their own way.* In substance, and insofar as possible, *re-establish the maximum measure of autonomy* for each railroad, *demanding that each railway executive answer to the commission and the public for his stewardship.*

I am still of the opinion that the stream of orders issued by the Interstate Commerce Commission or any other body, however able, will prove ineffective for the reason that such orders will be willfully disobeyed by a percentage of operating officials, ignored by others, misconstructed by another class and only obeyed fully and comprehensively by a relatively small percentage of the men they are addressed to. In addressing the commission I made the following further statement, which I believe to be an absolute truism:

The mines have a proven potential production in excess of 700,000,000 tons annually. Regardless of the fact that many mine workers have been driven to other lines of work through lack of employment, there are men enough left in the industry to get out all the coal required. *The shortage is one of transportation and not coal.* Any attempt to handle the detail of railway operation from a central point like Washington will fail. The job is too intricate; its complexion changes too frequently. The Interstate Commerce Commission can only act as an umpire between the railroads and the people and the railroads one with another. *Each railway's task in the matter of moving empty and loaded coal cars should be checked back to the chief executive of each railway as a duty to all the people that must be performed, he to judge what measure of partially essential or non-essential traffic or dispensable passenger service must give way to coal. The transportation available after moving enough coal should be prorated as near as possible among the shippers as a whole. Where coal equipment is wrongly located the commission should order and enforce relocation, applying the penalty that the Transportation Act provides for non-fulfillment of orders issued by the commission.*

With the passing of each succeeding day without any material acceleration of coal transportation service, the task is becoming more serious, and sooner or later—perhaps too late—somebody, and maybe all of the people, will say to the railroads that the fuel necessities of the nation must be moved even though some of the luxuries be pushed into the background.

Sincerely yours,
EUGENE MCAULIFFE.

Cites Savings in Use of Alternating Current For Coal Cutters

The article by Charles B. Officer in your issue of June 24 brings out very clearly the advantages of using alternating current for coal cutters. Having installed three plants of this character within the last six years, I have had considerable experience in this direction and find that the opposition which was first made to alternating current is gradually disappearing, because the safety of transmission of high voltage in protected cables has been fully vindicated in the installations I refer to, two of which are in the McAlester (Okla.) field and the third at Valier, Ill.

The only difference between the Valier and the Nokomis installation is that Valier uses 25-kva. transformers against the 75-kva. size at Nokomis. This makes a very mobile equipment and also shortens the length of secondary wires.

Coal operators are primarily interested in equipment if it effects a saving, and the experience at Valier has indicated that the use of alternating current for the motors, both above and below ground, with synchronous motors on the motor generators producing direct current for mine locomotives, effects a very material saving compared with a plant operating under the same conditions but converting all of the current into direct current at the top of the shaft.

An investigation discloses that one of the best electrically-operated mines, purchasing power at the same rates as the Valier Coal Co. and producing about the same daily tonnage, but converting all of the current into direct current at the top of the mine, has a purchased power cost of 5c. a ton and 1c. a ton for attendance and material in maintaining the large motor generator set.

The power cost at Valier, however, with the hoist loaded only to one-half of its normal production, is 3c. a ton with practically no expense for the upkeep of transformer stations. With the present output of 3,000 tons per day the saving in power alone is at the rate of $60 a day.

It occurred to me that these figures, which are representative, would be of interest to your readers contemplating installation of equipment, especially in the larger mines. Yours very truly,

CARL SCHOLZ.

Coal Shortage Is Explained by the Railroads

Daniel Willard Reviews Car Deficiency and Railroad Situation Before Interstate Commerce Commission — Reconsignment Privilege Abused, According to Willard and McAuliffe — Zoning System Not Considered Necessary Yet

THE voluminous record made by the testimony taken by the Interstate Commerce Commission in the matter of supply, exchange, interchange and return of open-top equipment is regarded as a document replete with interest and of great value to those interested in the transportation of coal. Some very interesting points were brought out by Daniel Willard, president of the Baltimore & Ohio Railroad Co. Among his observations were the following:

When the railroads were taken over by the Federal Government January 1, 1918, they had roundly 2,250,000 cars. Of that number of cars 5.7 per cent were reported in bad order. When the railroads were given back to the owners, March 1, 1920, there were turned over 2,360,000 cars, with 6.7 per cent in bad order.

There were 100,000 more cars than when the Government took them over, but there were 25,000 more bad-order cars. During private control it has been customary for the railroads to buy as many cars in each twelve months as the Government bought in twenty-six months, and still at the end of Federal control there were as many more cars on the railroads as the number that the Government bought. Something like 80,000 to 100,000 freight cars wear out and must be scrapped each year. During the period of Federal control this was not done by the Government. They were kept in service, but their condition was not such as to fit them for average service. Many cars were marked to carry cinders and other like materials. They had become incapacitated for ordinary commercial work.

Necessary to Reduce Bad-Order Cars

It is going to take six months or a year for the railroads to get the percentage of bad-order cars down to 4 per cent, where I think it ought to be. Every additional 1 per cent of cars out of service means 25,000 cars.

The highest mileage made per car per day on the American railroads was in 1916, when they made an average of 26.9 miles per day. During 1918, under Federal control, the average mileage was 24 and a fraction per day. A car is actually in trains and moving only 11 per cent of the time. Thirty-seven per cent of the total time of the car is at the disposition of the shipper. Thus 63 per cent, which includes the 11 per cent mentioned, of the total time of the car is under the control of the railroad.

The railroads can do a great deal to reduce the delays during their 63 per cent of the time. Incidentally 6 per cent of the time of the car is represented by Sundays and holidays. If the railroads, with the co-operation of the shippers, could increase the average miles per car per day just one more mile on the present basis of performance, it would add 100,000 cars, in effect, to our service. In times of active business demand, when there are no abnormal or interfering conditions, we should be able to make thirty miles per car per day. I believe we can accomplish thirty miles a day if we all work to that end. That would mean adding 300,000 cars to our equipment.

Carloads Larger Under Government Control

During the period of Federal control the average carload on the American railroads was higher than at any former period. It averaged twenty-nine tons. The average carload in the past has been twenty-five tons and lower. It has gone down to twenty-seven tons now. We have lost two tons on an average carload since the termination of Federal control. This tendency can be overcome if we all work together. An increase of one ton in the average load of all cars in the country would be equivalent to adding 80,000 cars to those available. The loss of two tons per car, in effect, withdraws 160,000 cars from the service. It is for the shipper to say what the carload will be. The railroad has very little to do with that. I am inclined to think that the engines available at the present time can move all business offered. I would not recommend the zoning system. I do not think the situation serious enough to require it.

During the remainder of the season it will be necessary to dump 4,000 cars of Lake coal per day. The assignment of that coal among the carriers in the same relative proportions as has been done in the past brings the task easily within their capacity. With the strike out of the way they will be able to do it.

Urges Waiver of Reconsignment Privilege

In periods such as the present shippers ought to forego the reconsignment privilege as much as possible. I have no criticism to make of that procedure under ordinary circumstances. While this shortage exists I think shippers should bill their cars through to the points where they are to be unloaded.

It is a generally held opinion that the testimony and exhibits of A. G. Gutheim of the car service committee of the American Railway Association formed one of the features of the hearing. Extracts from his testimony follow:

We are at a point where we have to make up a lost production of about 2,000,000 to 2,500,000 tons a week during April, May and a part of June. This is coupled with the fact that there are no stocks to speak of. Business is running at a tremendous rate. The road-building program, from the standpoint of money involved, is estimated to be three times as much as ever attempted before. The road-building activities are largely coal-car propositions.

Extent of Car Shortage Misunderstood

There is a very popular misconception as to the extent of car shortage. You hear it said that the mines have 30-, 40- and 50-per cent car supply. One hundred-per cent car supply does not mean a car supply sufficient to produce the coal that the country needs. It does not mean a car supply sufficient to bring out the maximum production that the country had during any sustained period such as the 13,000,000 tons produced just before the strike. When we explain that 100-per cent car supply, on the basis of present supply, we speak of potential production. If we get a 70-per cent car supply on a demand of 18,000,000 tons of coal, we load probably 12,000,000 tons of coal a week. That amount loaded each week now, if continued until we go into fall weather, would keep this country in good shape next winter. A 50-per cent car supply must not be construed as meaning 50 per cent of what the country needs, but 50 per cent of 70 per cent.

To get coal up the Lakes, it strikes me, you have one of three things to do. Either the Lake people must buy their coal and the operators must ship it at their own volition or you must have some authority over the distribution of coal in order to have some compulsion on the operators to make them ship on contracts. Thirdly, this commission must figure out whether or not under its priority powers it can assign cars to the benefit of Lake coal loading and say to the operators that these cars are here for Lake loading and must not be loaded elsewhere. This is substantially what was done in 1917 under Judge Lovett's orders.

There is great evil and great danger in handling situations to any great extent with assigned cars. It was done in 1917, first by force of circumstances by the Railroad War Board, then by the Fuel Administration. The Fuel Admin-

istration assigned so many cars for perferential loading that when Federal control began in 1918 there were no cars to assign on a good many railroads and there was no regular commercial distribution.

In the course of his testimony Eugene McAuliffe said:

I think the carriers have not been diligent in policing the distribution of coal cars to mines. It is not the duty of the operators to police that proposition. It is the duty of the carriers, and they are negligent in policing it. If they will exercise the same measure of activity which they employ in collecting the proper tariff rate they may be able to help the situation. The disposition of every operator has been to get cars and to get them at almost any price. The mere making of a misstatement has not restrained the operators from inflating their rating.

The privilege of reconsigning coal is grossly abused. There is no market situation that warrants two to ten reconsignments of coal in transit. Cars frequently are billed to fictitious consignees and destinations and thereafter reconsigned from one broker to another. Each levies a separate tax on the ultimate consumer and augments the difficulties of overcongested terminals. I think that the basis of the profiteering which obtains today very largely rests with that situation.

McAuliffe Advocates Zoning System

The re-establishment of the zoning system in force during the war period should be considered and restored through embargoes if found necessary to conserve transportation. Coal is moving from Illinois and Indiana to New York and to Toronto. Coal has been purchased in the western part of Illinois and moved through Indiana, Ohio and Pennsylvania, all heavy coal-producers, into markets as far east as the industrial area of New York City. I have in my possession an inquiry from a rubber company located on Long Island asking for coal in St. Louis territory. If coal were obtainable east of there, they would not ask for a relatively inferior product which has to move through three or four coal fields.

Dunsmuir Name Synonymous with Coal for Half-Century in Canada

JAMES DUNSMUIR, who died suddenly on Sunday, June 5, at his country lodge, Cowichan River, V. I., for many years was prominently identified with the coal-mining industry of British Columbia, having inherited extensive coal fields of Vancouver Island which were discovered and first operated by his father, the late Robert Dunsmuir.

HON. JAMES DUNSMUIR
Wearing Uniform of Lieutenant Governor of British Columbia

The name Dunsmuir has been synonymous with coal in western Canada for over half a century. The family is reputed to be worth many millions and the basis of the fortune was the coal of Vancouver Island.

James Dunsmuir was born at Fort Vancouver, July 8, 1851, the son of Robert Dunsmuir, one of the earliest pioneers of British Columbia. The elder Dunsmuir was the son of a Scottish coal master and was born at Ayrshire. Educated at Kilmarnock Academy, he married when a young man and set sail for the Pacific under the auspices of the Hudson's Bay Co. as one of a party employed to open up coal lands in the Fort Rupert district, Vancouver Island. This project not being entirely successful, he returned in 1854 to Nanaimo to assist in the development of the mines that afterward became the property of the Vancouver Coal Co.

In the course of prospecting on his own responsibility, however, he discovered and located what became known as the Wellington coal property. With others he proceeded with its development, finding a ready market for the product in the adjacent states, particularly in California. The Dunsmuir interests entered the field there in a large way, having their own steamships, wharves, bunkers, etc. Ultimately the late Robert Dunsmuir bought out his partners and before he died was the prime mover in the construction of the Esquimalt & Nanaimo Ry., in connection with which work he received a large grant of land, together with its coal and other minerals, on the southeastern coast of the island.

On succeeding to the estate James Dunsmuir took active charge of the business. He continued the policy of his father for years, enlarging the scope of his operations to meet the contingencies of the market. It was not until 1910 that he withdrew from personal control of the coal industry, in that year selling his collieries at Wellington, Comox and Alexandria to Messrs. Mackenzie and Mann, the prominent Canadian railroad contractors and owners. The consideration was reported to be $10,000,000. Subsequently he disposed of the Esquimalt & Nanaimo Ry. and the lands in connection therewith, placed at about 1,500,000 acres, to the Canadian Pacific Ry. The coal contained in the latter, however, was reserved and passed to the Canadian Collieries (D), Ltd., which concern is at present the largest single operator on the island.

Railway Heads Say Roads, Having Deficient Supply, Cannot Traffic in Coal

THE charge that railroads that own coal mines or that have mine contracts are taking all the bituminous coal possible and reselling it to dealers, making big profits because of the present scarcity of coal, is made in a statement issued July 13 by Ellis Searles, one of the organization of the United Mine Workers of America and the person who generally gives out the official statements from headquarters. "Present coal prices are the highest on record, but by no stretch of the imagination could the miners be held responsible for them," said Mr. Searles.

Officials of the Big Four and the Pennsylvania Lines say that the reports are untrue. According to an official of the Pennsylvania Lines not only is it illegal for the railroads to rsell coal but they could not do it even if they wished, for the reason that their own supply is insufficient to meet present needs.

International First-Aid and Mine-Rescue Contest

By F. J. Bailey
Assistant to the Director, Bureau of Mines

AS FAR as the million miners of the United States are concerned, the event of the year is the International First-Aid and Mine-Rescue Contest that will be held Sept. 9, 10 and 11 at Denver, Col., under the auspices of the Bureau of Mines. The contest will be open to all bona fide first-aid and mine-rescue teams connected with mining and metallurgical companies of the United States, Canada and Mexico, and prizes of gold medals, cups and banners will be awarded to the teams most proficient in the art of saving human life.

The miners' occupation being continuously filled with hazard, the rescue and first-aid teams at the mines are looked up to as leaders in a great cause and there is much local and regional pride in the proficiency of their men. The teams that come back from the Bureau of Mines contest with honors are greeted as conquering heroes by their communities.

Ready for Action

Type of rescue team maintained at many mines of the country. Men fully equipped with rescue apparatus and capable of meeting any emergencies in the mines.

With the advent of the trained rescue miner, wearing oxygen rescue apparatus, has come the trained first-aid man who takes the victom of a mine disaster and gives him the emergency aid that oftentimes is the difference between a dead miner and a live one, between a man disabled for life and one restored to the full use of his powers, or between a man deprived of his earning capacity and one who can support and protect his wife and children in comfort.

Today there are more than one hundred thousand men in this country trained by the Bureau of Mines in modern first-aid or mine-rescue work or both, all of them volunteers, ready to help their own or those in some other place, no matter where, for there is no distinction in the saving of the life of a fellow-man.

There is perhaps no other industry in the United States that has such hazards; there is no other industry that has such help from the Government. The Bureau of Mines maintains in this work ten fully-equipped mine-rescue cars with trained rescue crews that visit as many mines throughout the country as they can, training men in modern life saving, and now and then stopping their work to rush to a disaster and assist in a practical way in the saving of men from death. The bureau also maintains ten mine-rescue stations and five mine-rescue trucks that perform similar duties. In this work altogether the bureau employs fifty trained mine-rescue men.

There is such interest among the miners in these contests that teams in mining states have been busy all the summer in local and state contests preparing through competition for the big events. California, Kentucky, Alabama, Indiana, Oklahoma, Virginia, Iowa and West Virginia have all held meets and selected their best teams for the Denver meet. The Lehigh Valley Safety Division of Pennsylvania recently held a "No-Accident" week and picked out the best teams in that locality to partake in the contests in September.

Last year the contests of the bureau were held at Pittsburgh, Pa., with 108 teams participating. This year the entries close Aug. 26, and must be filed with the bureau at its Pittsburgh office. D. J. Parker, head of the rescue service of the bureau, will have charge of the meet.

One of the spectacular events will be a demonstration of the utility of the airplane in rescue work in quickly transporting engineers and oxygen rescue apparatus to the scene of mine disasters. While the mine-rescue teams are showing their proficiency on the field an alarm of a supposed mine disaster will be telegraphed or telephoned to the nearest airplane station of the U. S. air service. An airplane will be immediately

dispatched to bring Bureau of Mines men and apparatus to the field as quickly as possible. So many of the miners have been trained in rescue work by the bureau, there is unlikely to be much difficulty in promptly obtaining rescuers at a mine accident anywhere. The airplane will then be used in bringing engineers qualified to direct rescue work.

Another feature of the meet will be the formal presentation of gold medals to miners for deeds of bravery in saving life in the United States during the last three years. The awards will be made by Dr. Frederick G. Cottrell, Director of the Bureau of Mines, in behalf of the Joseph A. Holmes Association, of which he is also president. The gold hero medal is to be presented to four Western miners and to the nearest living relative of three others, who sacrificed their lives in their attempts to rescue fellow miners from death.

That the meet will cover the entire mining industry of the country is shown in the number of teams already entered, such as the Homestake Mining Co., Lead, S. D.; Lehigh Coal & Navigation Co., Lansford, Pa.; Keystone Coal & Coke Co., Greensburg, Pa.; Hailey-Ola Coal Co., Haileyville, Okla.; Union Pacific Coal Co., Rock Springs, Wyo.; H. C. Frick Co., Pittsburgh, Pa.; United States Fuel Co., of Indiana; State of Kansas First Aid Association; Temple Coal Co.; Luzerne, Pa.; St. Louis Rocky Mountain Pacific Coal Co., Raton, N. M.; the Colorado Fuel & Iron Co., Pueblo, Col., and the Huntington team of the Arkansas Mine Rescue Association.

Cushing Explains His Estimate of American Coal Situation

At Meeting in Washington American Wholesale Coal Association Passes Unanimous Vote of Confidence in Managing Director

WIDE publicity has been given to statements by George H. Cushing, speaking for the American Wholesale Coal Association, to the effect that there is no real coal shortage. This attitude has been severely criticized. This led the executive committee of the American Wholesale Coal Association, which met in Washington July 20, to consider, among other things, whether Mr. Cushing's position met their approval. The result was a unanimous vote of confidence in Mr. Cushing. As the publication of his views has been fragmentary, the following verbatim statement by Mr. Cushing may be of interest:

When I study the situation today I see that in many respects it is similar to what it was when F. S. Peabody came to Washington in 1917. That is, prices are high, the people are in a panic, and various official groups are taking a hand in trying to straighten things out.

The latter are trying to do now what they tried to do then—jockey the coal man into a position where he admits that it is all a question of price and to compel him to accept battle on that question. If we ever accept battle on that ground we are whipped before the fight starts. We cannot justify the spot market prices now prevailing in the East nor can any one name a price which will satisfy anyone else. Rather than try the impossible, I prefer to select our own battleground and compel the official group to fight upon it. I prefer, in a word, to put them on the defensive.

My first effort has been to try to make them justify their long-time program of regulation of the railroads. They have killed the railroads. I want the country to know it. I want to show that even they admit it.

My second effort is to make them justify their cry of coal famine. I want them to admit that they caused these prices by alarming the people without real reason.

Before I am through I am going to select two or three other available battlegrounds and make them fight upon them. If I can get them to accept battle all over the lot—and don't have to waste my efforts fighting the beneficiaries of my policy—the public will realize that there is something more than price involved in this coal question.

Coming now to my statement that there is no famine: I don't know whether there is or is not. *No one else does.* But if I assume there is a real famine, I face certain considerations which I have to explain, and which I do not want to be forced to explain. Also, I face certain consequences to the trade which I would do anything to try to avoid.

First—We coal people are admitting a famine at home and at the same moment are increasing our exports. If the famine is real, we have no right to export a point. Which position shall we take?

Second—The alleged shortage in New England is the result of a mistake in judgment on the part of the New England consumers. They guessed that the market was going down when it was actually going up. They wanted a more opportune time to buy. Now that they are caught on the short side of the market they have organized a political cabal to come here and have the consequences of their mistake removed by governmental action. If we accept their solution of the difficulty, we invite politics into the coal business as a long-time proposition to correct all mistakes of judgment by the coal buyers. That is a movement which I am not willing to start.

Third—Every cry of famine gives birth to new wagon mines or snow birds. Those temporary mines kill the car supply of the permanent mines; add unnecessarily to the burden of the railroads by compelling them to switch cars in more places to get the same tonnage of coal; encourage the mining and loading of dirty coal; advance wages to rob the legitimate mines of their labor, and bring on another demand for a wage increase, and perhaps a strike of the miners, such as you now have in Illinois, and advance prices still more because they represent an element which is attracted into coal by the price alone. This is killing the coal industry, and because it is doing so it represents a policy which I do not care to adopt or to further.

Fourth—To preach famine only scares the public. When it buys through fear, prices rise. High prices anger the public. The higher the price now, the harder the coal trade will have to fight for freedom when Congress reassembles on Dec. 6. I can't be a party to any such scheme.

Fifth—To say now that a real famine cannot be avoided next winter is for the coal man to say that private operation of the railroads is a failure. That is exactly what the old Railroad Administration and the railroad brotherhoods want said. Such a policy alienates the friendship of the railroads at a time when coal needs every friend it can get and leads to the demand that coal be regulated to match that of the carriers and the public utilities. When I see the consequences I cannot subscribe to the doctrine.

Sixth—To admit that there is a famine now makes inevitable the placing of an export embargo. If that is ever done, America will confess to the world that we can do nothing to meet the world demand for coal for years to come. This is fatal. Every successful commercial nation has based its plea for foreign trade upon the coal it had to give. Coal was to constitute our most forceful bid for foreign trade. We want that foreign trade. We have spent three and a half billion dollars of the people's money to build ships. We now own one-third of the world's shipping. We have built a shipping board to outline our shipping policy. We are creating American routes over which American ships may travel. Our coal exports alone justify those ships and those routes. If we stop the exportation of coal now we must aim a deadly blow at both our foreign trade and our merchant marine. But we cannot continue to export coal if it is true that there is a real coal famine at home.

Seventh—I have met in concrete form the demand that we, as a people, regulate coal to match the possibilities of the other regulated industries—the railroads and the public utilities. If we say, therefore, that there is a coal famine now—and hence that present prices are justified by the law of supply and demand—we must admit that the railroads cannot get coal without an assigned-car order and that the public utilities cannot buy it all at a price which they can afford to pay. There is only one answer to that admission. That answer is another fuel administrator to fix coal prices.

So, when I see the inevitable consequences of continuing to cry out that a coal famine exists, I want first to be almighty sure that there is a famine. I can see how it is possible—by begging a premise—to prove that a famine exists.

I can also see how it is possible—by begging another premise—to put an equally good foundation under my statement that there is no danger of a famine.

I do not know which premise is correct. No one else does. So, voluntarily I assume that there is no famine. I merely select the safer course and do so to avoid the inevitable consequences which I have outlined.

Having said so much I have explained myself. I am speaking boldly these days because I realize that we are now making those policies which must govern the coal industry for five years at least. I cannot believe we are safe if we decide the questions which are necessarily involved, out of consideration only for the immediate profit to any group. I am not convinced that we are safe if we decide our trade policy without some consideration being given to the points which I have raised. Even so, I know that these points are only the beginning of the complexities of the present coal situation.

Commission Orders Additional Shipments of 500,000 Tons to New England

Service Order No. 11 Directs a Total of 1,250,000 Net Tons of Bituminous Coal to Tidewater Ports for New England—J. W. Howe and E. M. Graham Have Been Named as Agents to Execute Order

FOLLOWING the same general lines as Order No. 10, which provides for increased Lake shipments, the Interstate Commerce Commission on Tuesday, July 27, issued Order No. 11, directing the railroads serving Eastern coal fields to ship specified minimum monthly quantities of bituminous coal to tidewater pools for New England delivery. The order specifies that 250,000 tons shall be dumped at New York, 100,000 tons at Philadelphia, 250,000 tons at Baltimore and 650,000 tons at Hampton Roads. This represents an increase over dumpings in June for New England account of 500,000 net tons. The monthly rate called for is nearly the average for 1918 and is not quite twice the average rate at which New England took tidewater coal in 1919.

The rates of dumping called for by the order will require increases of 15 per cent on Sewalls Point piers over present performance, more than 40 per cent over Lamberts Point piers and 30 per cent at Newport News. It is reported that the New Haven has arranged for its supply of fuel coal all rail via Hell Gate Bridge from Pennsylvania and West Virginia fields, which if true will increase the rail receipts in New England beyond expectations and decrease the demand for water-borne coal.

Coal is now being delivered through the New England all-rail gateways at the rate of 6,000 cars a week, which, figured at 50 tons per car, represents 300,000 tons a week—a rate in excess of any attained during 1918, when the movement was under great pressure. If this rate is maintained for even a short period, demand will certainly decrease for higher-priced water-borne coal, and there is serious question whether New England will

Allotments of Lake Coal Under Service Order No. 10

(The quantities shown are to be shipped in 100 working days beginning July 15)

Originating	Ohio				Pennsylvania			West Virginia			Ky.		
On	No. 8	Cambridge	Hocking	Middle	Freeport	Pittsburgh	Connellsville	Fairmont	Kanawha, Thacker, Kenova	Smokeless		Total Tons	Cars‡ per Day
Baltimore & Ohio	1,750,000	150,000	60,000	20,000	....	125,000	36,000	650,000	.....	....	....	2,791,000	558.2
Pennsylvania	900,000	750,000	.....	.....	60,000	2,500,000	23,000	.....	.....	....	....	4,233,000	846.6
Wheeling & Lake Erie	1,000,000	....		25,000	....	.....	.....	.....	....	....		1,025,000	205 0
Hocking Valley	.....	.....	1,240,000	.....	....	.....	.....	.....	....	....	....	1,240,000	248 0
Toledo & Ohio Central	.....	....	1,000,000	.....	....	.....	.....	.....	....	....		1,000,000	200 0
New York Central	150,000	....	....	205,000	....	.....						255,000	71 0
West Side Belt	200,000	....			....	700,000						900,000	180 0
Buffalo & Lake Erie	.....	....	....	....	540,000	....						540,000	108 0
Pittsburgh & Lake Erie	.....	.....	....	....	....	800,000						800,000	160 0
Pittsburgh, Chartiers & Youghiogheny	.....	.....	.....	....	....	75,000						75,000	15 0
Montour	.....	.....	.....	....	.....	800,000						800,000	160 0
Monongahela	.....	.....			....	....	175,000	150,000				325,000	65 0
Kanawha & West Virginia	....	.....	200,000	....	....	....	....	....	660,000			860,000	172 0
Chesapeake & Ohio	....	.....	.....	....		.....			2,750,000	*200,000	250,000	3,200,000	640 0
Norfolk & Western	....	.....	.....	....		....			300,000	†800,000	.....	1,100,000	220 0
Sandy Valley & Elkhorn	....	....			....						80,000	80,000	16 0
Coal & Coke	....	....			....				40,000			40,000	8 0
Louisville & Nashville	....	.....			....						450,000	450,000	90 0
Long Fork	....	.....			....						120,000	120,000	24 0
Union	.....	.....	.....	.....	.....		66,000					66,000	13.2
Totals	4,000,000	900,000	2,500,000	250,000	600,000	5,000,000	300,000	800,000	3,750,000	1,000,000	900,000	20,000,000	4,000

* New River. † Pocahontas. ‡ Estimated at fifty tons per car.

be able to absorb 1,250,000 tons a month of tidewater coal. It is reported that New England wholesalers who must handle this coal have already expressed their apprehension over Mr. Storrow's evident intention to flood the market with coal, as in 1918.

The text of Order No. 11 is as follows:

It appearing in the opinion of the commission that because of a shortage of equipment and congestion of traffic, aggravated by unfavorable labor conditions which continue to exist upon the lines of the Pennsylvania Railroad Co., New York Central Railroad Co., Baltimore & Ohio Railroad Co., Philadelphia & Reading Railway Co., Western Maryland Railway Co., Chesapeake & Ohio Railway Co., Norfolk & Western Railway Co., Virginian Railway Co., Interstate Railroad Co., Norton & Northern Railway, Monongahela Railway Co. and Cumberland & Pennsylvania Railroad Co., each and all of which are common carriers by railroad subject to the Interstate Commerce Act, and further because of the inability of said common carriers properly and completely to serve the public, an emergency exists which requires immediate action with respect to the transportation of bituminous coal to tidewater coal transshipment piers at and north of Hampton Roads, Va., for transshipment by water to New England;

It further appearing that the inhabitants of New England are in a large measure dependent upon bituminous coal which to meet their requirements must be transported from mines in Pennsylvania, Maryland, West Virginia and Virginia to New England by rail and water at the rate of approximately 1,250,000 net tons each month;

It further appearing that the rate at which bituminous coal has been and is now being transported to New England by rail and water has been and now is short of the aforesaid requirements to the extent of approximately 350,000 net tons each month:

It is ordered that Order No. 6, entered June 19, 1920, is hereby superseded and rescinded, effective Aug. 2, 1920.

It is further ordered that effective Aug. 2, 1920, and until the further order of the commission the common carriers hereinbefore described be, and they are hereby, authorized and directed to give preference and priority in the supply of cars for and in the transportation of bituminous coal in the following respects:

New York Harbor

(1) To the extent determined to be necessary by J. W. Howe, who is hereby designated as agent of the commission therefor, to cause the transportation and consignment to the Tidewater Coal Exchange, Inc., New York, N. Y., for transshipment by water to New England as part of a pool or pools of tidewater coal as nearly as may be each calendar month the quantity of bituminous coal hereinafter designated, namely, from coal fields served by:

	Net Tons per Mo.
(a) Pennsylvania Railroad Co. east of Pittsburgh, Pa.	122,000
(b) Monongahela Railway Co.	5,000
(c) Baltimore & Ohio Railroad Co. on and east of Connellsville and Monongah divisions, including Cumberland & Pennsylvania Railroad Co.	84,000
(d) New York Central Railroad Co. in the State of Pennsylvania	20,000
(e) Western Maryland Railway Co.	19,000
Total	250,000

Philadelphia Harbor

(2) To the extent determined to be necessary by the said J. W. Howe, who is hereby designated as agent of the commission therefor, to cause the transportation and consignment to the Tidewater Coal Exchange, Inc., Philadelphia, Pa., for transshipment by water to New England as part of a pool or pools of tidewater coal as nearly as may be each calendar month the quantity of bituminous coal hereinafter designated, namely, from coal fields served by:

	Net Tons per Mo.
(a) Pennsylvania Railroad Co. east of Pittsburgh, Pa.	50,000
(b) Baltimore & Ohio Railroad Co. on and east of Connellsville and Monongah divisions, including Cumberland & Pennsylvania Railroad Co.	40,000
(c) Western Maryland Railway Co.	5,000
(d) New York Central Railroad Co.	5,000
Total	100,000

Baltimore Harbor

(3) To the extent determined to be necessary by the said J. W. Howe, who is hereby designated as agent of the commission therefor, to cause the transportation and consignment to the Tidewater Coal Exchange, Inc., Baltimore, Md., for transshipment by water to New England as part of a pool or pools of tidewater coal as nearly as may be each calendar month the quantity of bituminous coal hereinafter designated, namely, from coal fields served by:

	Net Tons per Mo.
(a) Baltimore & Ohio Railroad Co. on and east of Connellsville and Monongah divisions, including Cumberland & Pennsylvania Railroad Co.	160,000
(b) Pennsylvania Railroad Co. east of Pittsburgh, Pa.	50,000
(c) Western Maryland Railway Co.	40,000
Total	250,000

Hampton Roads

(4) To the extent determined to be necessary by E. M. Graham, who is hereby designated as agent of the commission therefor, to cause the transportation and consignment to members of the Lamberts Point Coal Exchange, Norfolk, Va., at Lamberts Point, Norfolk, Va., whose coal is consigned to designated pools in care of said exchange, or to the Newport News Coal Exchange, Inc., Newport News, Va., at Newport News, Va., or to the Sewalls Point Coal Exchange, Inc., Norfolk, Va., at Sewalls Point, Norfolk, Va., for transshipment by water to New England as part of a pool or pools of tidewater coal as nearly as may be each calendar month the quantity of bituminous coal hereinafter designated, namely, from coal fields served by:

	Net Tons per Mo.
(a) Norfolk & Western Railway Co. east of Welch and Jacobs Fork Branch Junction, W. Va.	360,000
(b) Chesapeake & Ohio Railway Co. east of Huntington, W. Va.	85,000
(c) Virginian Railway Co.	185,000
(d) Norton & Northern Railway	20,000
Total	650,000

It is further ordered that the common carriers hereinbefore described in the territory hereinbefore designated, be, and they are hereby, authorized and directed to place an embargo on the supply of cars for and the movement of all other bituminous coal in carloads to any other consignees or destinations, provided that this order shall not apply to cars furnished, placed or assigned under any order or direction heretofore or hereafter entered by the commission, and with respect to territory affected by Service Order No. 10 shall apply to each producer and shipper on each day only after said Service Order No. 10 has been complied with and not before, and

Provided further that after a producer and shipper of bituminous coal served by any of the said common carriers in said territories has on any day shipped to any of the said coal exchanges as hereinbefore provided at any of the said ports a percentage (to be determined and announced for each coal producing district served by the Pennsylvania Railroad Co., New York Central Railroad Co., Baltimore & Ohio Railroad Co., Cumberland & Pennsylvania Railway Co., Philadelphia & Reading Railway Co., Western Maryland Railway Co. and Monongahela Railway Co., by the said J. W. Howe, who is hereby designated as agent of the commission therefor, and the Chesapeake & Ohio Railway Co., Norfolk & Western Railway Co., Virginian Railway Co., Interstate Railroad Co. and Norton & Northern Railway, by the said E. M. Graham, who is hereby designated as agent of the commission therefor, of the total number of cars to which the producer and shipper is entitled on said day then this embargo shall not apply to the said shipper for the remainder of the said day, and he shall be permitted during the remainder of the said day to ship the remainder of the cars to which he is entitled to any consignees and destinations he may desire, including the coal exchanges hereinbefore set forth and the said ports.

It is further ordered that bituminous coal in carloads consigned under this order in the manner hereinbefore set forth shall not be subject to reconsignment except upon a permit and direction therefor issued by the said respective agents of the commission, which permit and direction

shall be issued by them only on a showing that the coal so to be reconsigned will go to a pool or pools at one of the ports hereinbefore referred to for New England.

It is further ordered that shippers having credits in a pool at any of the tidewater ports hereinbefore referred to, which credits have been obtained by the shipment into the said pool of coal consigned under this order, shall not be permitted to draw against the said credit and ship from the said pool to any destination except destinations in New England.

It is further ordered that the percentages hereinbefore referred to shall be subject to change from time to time by the said respective agents of the commission upon one day's notice to the carrier or carriers concerned.

It is further ordered that each of said common carriers by railroad shall establish such rules and regulations respecting the placement of cars for unloading and of vessels for loading at such piers as will effect the preference and priority in transportation hereby directed, including the dumping of cars.

And it is further ordered that copies of this order be served upon the carriers hereinbefore described, and that notice of this order be given to the general public by depositing a copy hereof in the office of the secretary of the commission, at Washington, D. C.

How Order No. 11 Will Be Applied

J. W. HOWE, commissioner of the Tidewater Coal Exchange and agent of the Industrial Coal Commission at the three northern Atlantic ports, has announced the percentages of net mine ratings, after deducting other priorities, that shall govern shipments from mines in order to provide coal for New England under Order No. 11.

The New York Central must furnish 2.7 per cent of net rating; the Baltimore & Ohio, 14 per cent; the Pennsylvania, 3.3 per cent; Western Maryland, 10 per cent; Monongahela, not yet determined. These are percentages of ratings and not of production. If, for instance, output is but half of rating, the percentage of production required to be shipped on this order would be twice that given above.

Lake Priority Order Requires Third of Production in West Virginia Fields

THERE was a general compliance on the part of West Virginia operators with Service Order No. 10 during the first week in which that order was in effect, though in some fields, particularly the high volatile fields of southern West Virginia, it worked a hardship owing to the fact that not only were no additional cars provided but transportation facilities were even more limited than had been the case in previous weeks. As high as 30 per cent of the car ratings of some fields was required to meet the terms of the new order.

Under Order No. 10 the Logan field is required to load 204 cars per day, that being 15 per cent of the daily allotment or car rating. But 15 per cent of the rating on the basis of present car supply means 30 per cent of the total loading, or output, of the field—that is, to fill the order nearly one-third the present production must be shipped to the Lakes.

Although Kanawha mines were allocated only 15 per cent of their rating as their proportion of coal to be shipped to Lakes, it required virtually 25 per cent of the output to meet the requirements of the order, owing to limited car supply.

One hundred and eighty-five cars a day was the proportion of loads required to be shipped from the Fairmont fields to the Lakes. An increased car supply in this field made it fairly easy to meet the new demands.

New River mines were required to furnish 2½ per cent of their rating as their proportion of Lake fuel under the Lake order. Seven per cent of mine rating was the allocation made to Norfolk & Western mines as their proportion of the tonnage to be shipped to the Lakes. Cars were plentiful in Norfolk & Western territory, so that it was easy for these mines to comply with the order.

Mines on the Kanawha & Michigan were required to furnish 30 per cent of their car allotment under the provisions of Service Order 10. Seventeen per cent was the proportion alloted to Kentucky mines reached by the Chesapeake & Ohio.

Tidewater Coal Dumpings Are Increasing

DUMPINGS of bituminous coal at tidewater during the week ended July 24, according to reports of the American Railroad Association, totaled 25,690 cars. This included all coal dumped over tidewater piers at the ports of Charleston, Hampton Roads, Baltimore, Philadelphia and New York, whether destined for New England or other coastwise and local use, for bunker or for export. That this was a very heavy movement is indicated by the fact that it is 2,890 cars greater than the weekly average for June, 1920, the record month. The total movement for the first twenty-four days of July was 77,365 cars. If continued for the seven remaining days of the month this would mean a total tidewater movement for July of 4,800,000 net tons.

Weekly dumpings by ports since the first of June are shown in the following table. Except for the week of Independence Day (July 4-10) there has been a gradual increase in the volume of movement through New York and Hampton Roads. Dumpings at Baltimore, on the contrary, have not yet been restored to the rate maintained in early June.

CARS OF BITUMINOUS COAL DUMPED OVER TIDEWATER PIERS AT FOUR NORTH ATLANTIC PORTS AND CHARLESTON

Week Ended	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Totals
June 5	5,204	3,013	4,505	7,617	496	20,835
June 12	7,254	3,600	4,330	8,653	571	24,407
June 19	7,575	3,099	4,523	8,267	460	23,924
June 26	7,562	1,731	3,468	9,012	271	22,044
July 3	7,528	2,232	2,410	8,746	283	21,198
July 10	6,009	2,018	2,558	8,871	353	19,809
July 17	8,338	2,768	2,795	7,970	430	22,300
July 24	8,424	3,456	3,683	9,601	526	25,690

Rail Shipments to New England Set Record

THE rail movement of bituminous coal to New England during the week ended July 24 was the largest of the year and one of the largest on record, according to the Geological Survey. Cars forwarded to New England destinations through the five Hudson gateways of Harlem River, Maybrook, Albany, Rotterdam and Mechanicsville numbered 7,033. This was an increase of 2,506 cars over the corresponding week of 1919 and of 3,729 cars over the average for the first half of 1920.

These figures represent the greater part though not all of the rail shipments to New England, and are thoroughly comparable from week to week.

CARS OF BITUMINOUS COAL FORWARDED THROUGH HUDSON GATEWAYS DESTINED FOR NEW ENGLAND POINTS

Week Ended	1920	1919	Week Ended	1920	1919
May 29	4,335	3,467	July 3	4,962	4,105
June 5	3,571	3,444	July 10	6,276	3,834
June 12	2,817	3,164	July 17	6,154	3,682
June 19	3,881	3,962	July 24	7,033	4,527
June 26	4,112	4,134			

Stocks of Coal in the Hands of Consumers March 1 and June 1, 1920

COMMERCIAL stocks of bituminous coal in the United States on June 1, 1920, are estimated at 20,000,000 net tons. This was considerably less than stocks carried on Oct. 1 of the years 1916 and 1917, and was very much less than the stocks accumulated at the close of 1918. From March 1 to June 1, 1920, stocks decreased 4,000,000 tons, or 17 per cent.

These figures are estimates prepared by F. G. Tryon, of the U. S. Geological Survey, which attempt to account for coal in the hands of railroads, industrial consumers, public utilities, and retail dealers. They do not include coal in the cellars of domestic consumers, coal in stock for steamship fuel, or coal in transit. The stocks on the Lake docks are not included because they are properly to be regarded as coal in transit and because naturally they vary greatly from winter to summer.

Information available concerning stocks of coal in the past is summarized in the following table:

TOTAL COMMERCIAL STOCKS OF BITUMINOUS COAL IN THE UNITED STATES, OCT. 1, 1916, TO JUNE 1, 1920
(Net Tons)

Oct. 1, 1916	From 25 to 29 million	probably 27,000,000
Oct. 1, 1917	From 26 to 30 million	probably 28,100,000
July 15, 1918	From 38 to 42 million	probably 39,700,000
Oct. 1, 1918	From 58 to 60 million	probably 59,000,000
Day of the armistice	From 62 to 64 million	probably 63,000,000
Jan. 1, 1919	From 57 to 59 million	probably 57,900,000
April 1, 1919	From 38 to 42 million	probably 40,400,000
March 1, 1920	From 22 to 26 million	probably *a*24,000,000
June 1, 1920	From 18 to 22 million	probably *a*20,000,000

a Subject to revision.

The figures for 1916 and 1917 are less accurate than those for later dates, but indicate that in those years the consumers of the country had on hand in the fall from 25,000,000 to 30,000,000 tons of coal. By the middle of 1918, the next date for which figures are available, the efforts to increase production had built up stocks to a little under 40,000,000 tons. Throughout the summer and fall of 1918 production continued at a rate far in excess of current consumption and stocks increased rapidly, reaching on Oct. 1 59,000,000 tons, more than double the figure on that date for the two years preceding. On the day of the armistice commercial stocks were about 63,000,000 tons.

In its program of increased production the Fuel Administration had in view the prevention of a repetition of the fuel shortage of the first winter of the war, and the provision of a reserve against the expected decrease in output as the draft made further inroads on the number of mine workers. The stocks thus built up proved to be much greater than were needed for the slackening industrial activity which followed the Armistice, especially in view of the mild weather during the winter of 1918-1919. For months consumers drew upon their reserves to meet current requirements, and the store of coal above ground diminished to 57,900,000 tons on Jan. 1, 1919, and to approximately 40,400,000 tons at the opening of the coal year 1919-1920.

Decline in stocks continued during the first half of the year 1919. They probably reached the low point in August of that year, and thereafter began to rise again, the rate of increase being markedly accelerated in the last weeks before the great bituminous coal strike of Nov. 1. It is clear from the way in which the country withstood the effects of the strike that reserves at the outbreak of the strike were considerable. It is equally clear that by the close of the strike reserves above ground were low and that in the territory between the Mississippi and the Hudson, including the Southern Peninsula of Michigan, they had been reduced to the minimum. Progress in rebuilding stocks after the strike was made possible by the large production of January and February, 1920, but as shown by the canvass of stocks on March 1, last, the reserves were still below the pre-war level of October, 1916.

From March to June 1 the diminished production resulting from the switchmen's strike was insufficient to meet the demand, and as a consequence further drafts upon stocks were made, particularly in the northeastern section of the country. Total commercial stocks on June 1, 1920, reached the level of 20,000,000 tons.

The collection of the figures of stocks for March 1 and June 1, 1920, given above, was made possible by funds provided by the Bituminous Coal Commission.

Arrest 15 Tennessee Operators as Profiteers; 50 to 60 To Be Taken Later

FIFTEEN coal operators and brokers were arrested at Knoxville, Tenn., Sunday, Aug. 1, charged with profiteering. They will be prosecuted under the Lever Act. Between fifty and sixty more, it was reported, would be arrested in the next few days for exacting exorbitant profits in the sale of coal.

The margin of profits in the individual cases vary, but in one the Government alleges that the defendants sold coal in carload lots at $7, $7.50, $8 and $8.50 per ton, which cost only $2.90 per ton to produce.

The arrests were the result of a quiet investigation of the books of the coal operators of the Tennessee-Kentucky field made by order of U. S. Attorney W. P. Kennerly.

Coal brokers in Chattanooga are said to have refused to open their books to Federal officers. No arrests have been made there yet. It was stated that the Government probably would take the necessary steps to force these operators and brokers to produce their books.

Those arrested Aug. 1 gave bonds to J. Pike Powers, United States Commissioner, or arranged to do so. Preliminary hearings are expected to start the latter part of next week. Those arrested are:

N. S. Jenkins, president and general manager of the Clinch River Coal Co., wholesalers; L. I. Coleman, president and general manager, Tennessee Jellico Coal Co. and Block Coal & Coke Co., miners and shippers; John L. Boyd, Bear Wallow Coal Co. and Tennessee Southeastern Co.; Guy D. Darst, sales manager, Bewley Darst Coal Co., wholesalers; Jake Bewley, Bristol, president Bewley Darst Coal Co., wholesalers; Homer W. Van Benschoten, Cross Mountain Coal Co., miners and shippers; William H. Van Benschoten, Cross Mountain Coal Co., miners and shippers; James R. Woodridge, Woolridge, Tenn., miner and shipper; Charles M. Moore, president Red Ash Coal Co., miners and shippers; G. Edward Moore, secretary and treasurer Red Ash Coal Co., miners and shippers; George N. Camp, Coal Creek Leasing Co. and Coal Creek Coal Mining Co., miners and shippers; E. C. Clark, Coal Creek leasing Co. and Coal Creek Coal Mining Co., miners and shippers; Carroll W. Henderson, president of Cambria Coal Co. and secretary-treasurer Coalfield Coal Co., miners, shippers and retailers; Frank F. Floyd, vice president Jellico Coal Mining Co., miners and shippers; Arthur Groves, Jellico Coal Mining Co., miners and shippers.

National Coal Association Again Takes Lead

Will Take Whatever Steps May Be Found Necessary to Clean House of Speculators in Coal Frankness Is Shown

COLONEL WENTZ, president of the National Coal Association, has been keeping in close touch with developments in the critical situation at Washington brought on by the efforts to force coal prices downward. Indications are that Colonel Wentz, who at the invitation of Mr. Palmer visited him at his home in Stroudsburg, Pa. on Sunday, impressed the Attorney General with the prospects of success for the various measures that are being taken by the National Coal Association in its efforts to clear up the present situation in coal. The Attorney General was told in detail of the progress of the coal operators and their constructive program to right conditions. Colonel Wentz offered to call together the Board of Directors of the National so that Mr. Palmer could confer with these representative coal operators, but after his talk with Colonel Wentz he did not consider that necessary.

It is significant that immediately after his conference with the president of the National Coal Association Mr. Palmer indefinitely postponed the meeting of the committee scheduled for Monday, August 2, that was to have advised him in regard to curbing prices. This committee, it will be recalled, came into being as a result of the efforts of the jobbers in New York City to have the Government define profiteering for them.

In a signed statement to the members of the National Coal Association issued on Tuesday Colonel Wentz says:

"Members of our association and coal producers generally doubtless want to know how the officers of the National Coal Association are dealing with the present situation in Washington. In a word, we are using the utmost frankness with all officials of the Government who are interested in this matter. Mr. Morrow and myself have been careful to put all the cards on the table.

"We have been keeping the Interstate Commerce Commission, the Department of Justice, Shipping Board, State Department, Department of Commerce and the White House currently informed of the constructive steps which were being taken by the association to meet the emergencies arising out of the present conditions so far as the authority of the National Coal Association permits activity on our part. While the orders with respect to the Northwest and New England were being worked out in co-operation with the railway executives the Government was kept currently informed of our progress. We have also kept these officials currently informed of developments which have arisen in the application of these orders and the steps which are being taken to meet them.

"One of the conditions most severely criticized at present is the rank speculation in coal in the tidewater territory. The export business is largely blamed for this condition by the public. As a matter of fact it is due to the transportation methods of handling shipments to tidewater. Executives of the Government have been assured that the National Coal Association would take this matter up and endeavor to work out some constructive plans for improvement. With that end in view a meeting was held in Washington on Friday, July 30, of coal producers interested in the export business to discuss this situation. A committee consisting of W. L. Andrews, (chairman) vice-president, Consolidation Coal Co., Baltimore, Md.; T. F. Farrell, second vice-president, Pocahontas Fuel Co., Inc., New York City; Lindsay McCandlish, second vice-president, Hutchinson Coal Co., Philadelphia, Pa.; C. B. Ebbert, manager sales, White Oak Coal Co., Washington, D. C.; E. J. McVann, secretary, Smokeless Coal Operators' Association, Washington, D. C., and J. W. Searles, general sales manager, Pennsylvania Coal and Coke Corporation, New York City, was appointed to go into the matter in detail and prepare suggestions for discussion with the railways interested. We hope that definite and effective measures may be taken which will cut out the unjustifiable speculation in coal and the misuse of transportation facilities for that purpose along the Atlantic seaboard.

"Information in the hands of the committee leads us to believe that some 5,000 cars are now being diverted to speculation in coal. We have assured the Government of our intention to cut those cars out of use by speculators and put them to work hauling coal from the mines to the consumers. If it is possible to accomplish this result, the committee will do it. This piece of housecleaning is expected of us by the public and the Government. We hope we will have the support of every member of the association in putting it through."

Freight Differentials on Coal To Be Preserved

THE essence of the rate-advance decision of the Interstate Commerce Commission as it relates to coal will be found in the following extract from the official text:

"Carriers serving the Pennsylvania-Ohio-West Virginia coal fields propose to continue the existing differentials in coal rates and have worked out a scheme of rates to effect that result. Carriers in the Southern and Western groups propose to ignore existing differentials in coal rates within those groups. *The proposal of the Eastern lines to preserve existing relationships is approved, and carriers in the other groups should work out a similar plan for restoring the relative adjustments of coal rates now obtaining in those groups.* An effort should be made promptly to devise rates in each group that will yield, as nearly as practicable, the same revenue in the aggregate as would be afforded by a straight percentage increase on the bases herein approved."

It is understood that the Eastern lines have already worked out new tariffs that, using the Westmoreland rate east as a base, will give the required total percentage increase in revenue and also will preserve existing differentials. No delay is expected in having these approved and put into effect.

Gives Instance of Buying Panic That Prolongs Coal Crisis

THE Department of Justice has no delusion as to the influence of exports upon the domestic coal situation. Judge Charles B. Ames, first assistant to the Attorney General, told newspapermen July 29 that it is not exports but a buying panic that is causing the trouble. He vouched for an actual incident by way of example. He said that one of the largest manufacturers in the country purchased a lot of coal at $7 a ton. Before the coal was delivered it was re-purchased by one of his own agents at $9 a ton.

Palmer Seeks Definition of Coal Profiteering

Committee Is Appointed to Determine the Limit of Reasonable Prices—Export Business Will Be Affected—Conference Postponed.

PRESSURE of public opinion against the prevailing high prices for spot coal has stirred up the Wholesale Coal Trade Association of New York and a serious attempt is being made to interest the Government and other branches of the industry in a concerted campaign to lower prices. The association called upon Attorney General Palmer to meet its members in New York on Wednesday, July 21, to discuss ways and means. Judge Ames attended this meeting for Mr. Palmer, and as a result of the conference the Attorney General issued invitations to a number of men interested in the subject of coal, particularly those who he understood were exceptionally well versed in the intricacies of the present situation, to meet him in New York on July 27.

Conference Called to Obtain Information

It is understood that Mr. Palmer made it clear in his invitation that he asked for the conference solely to obtain information and advice to guide him in the performance of his duties. The general feeling is that the administration has no desire to reintroduce Government regulation of prices; all are tired of that sort of thing; but the insistent demand that something be done to reduce the unjustifiably high prices now quoted on free coal and that "profiteers" be jailed has made it necessary for the Attorney General to do something. He does not know where to draw the line—whether a price of $4 represents profiteering or whether $6 is the line above which he should order prosecutions. It is well known that the coal men have in several instances asked the Department of Justice what prices they will be allowed to charge for coal without being in danger of prosecution, and that they have in no instance been given an answer.

The desire to clear the air and assist the Governernment fix such a level or levels below which the trader in coal would know that he could proceed with his business in safety probably is what has been in the minds of those in the wholesale trade who have brought the Attorney General into the proceedings.

Committee to Stipulate Top Price

The meeting in New York on July 27 resulted in the appointment of a committee who have been asked to report to Mr. Palmer with recommendations on how to handle the situation. There is no intimation as to how the committee will handle the situation except that there is a feeling that the best thing to do is to determine a figure representing clearly the top level at which any producer can be justified in selling coal under present-day conditions. A margin for wholesalers also probably will be suggested and possibly some intimation as to how to handle the reconsignment problem, the alleged abuse of which has been the cause of so much adverse criticism of the jobbers.

The committee which was appointed by Mr. Palmer consists of Vance C. McCormick, former chairman of the Democratic National Committee, and William C. Potter, who was Fuel Administrator of Pennsylvania during the war, as representatives of the public; J. W. Lieb, vice-president of the New York Edison Co., representing the consumers; G. N. Snider, of the New York Central Lines, representing the railroads; while the representatives of the wholesale dealers are Willis G. Towne, of Archibald McNeil & Co.; Charles A. Owen, Imperial Coal Co.; Harlow Voorhees, of Philadelphia, and Charles L. Couch, of Buffalo, who is president of the American Wholesale Coal Association. The National Coal Association has been invited to name the representatives of the producers to be added to the committee. Charles S. Allen, secretary of the Wholesale Coal Trade Association of New York, will be the executive secretary of the committee.

Officials and Operators Attend

Others who attended the conference included United States Attorney Francis G. Caffey, southern district of New York; G. H. Capeton, Charleston, W. Va.; John H. Jones, Bertha Coal Co., Pittsburgh; C. Andrade, Jr., president, and Gibbs L. Baker, of Washington, general counsel of the Wholesale Coal Trade Association of New York.

At the conclusion of the conference the committee issued the following statement:

"Attorney General Palmer has asked this committee to consider the feasibility of naming a fair margin of profit for producers and dealers in bituminous coal. It is not the intention of the department to fix prices, but merely to ascertain a maximum margin of reasonable profit beyond which prosecutions under the Lever Act will be commenced.

It is expected that the members of the committee will advise the Attorney General on this matter within a few days. and it is the purpose of Attorney General Palmer upon receipt of that advice to instruct the United States attorneys and his special representatives that a producer or dealer selling coal at or under that figure will be presumed to be within the spirit and the letter of the Lever Law and that as to those who exceed the margins, whether producers or dealers, such action will call for an investigation on the part of the department.

"It is felt by Attorney General Palmer and concurred in by the committee, representing, as it does, producers, wholesalers and consumers, that this action on the part of the Department of Justice will have a deterrent effect upon those who are now taking excessive profits, and it is hoped that it may result in a decline in the price of bituminous coal.

Determined to End Profiteering

"The Lever Law against profiteering applies to export as well as domestic coal and the Attorney General is determined that profiteering shall cease. In this purpose he has the unqualified support of the advisory committee."

The Department of Justice, through the acting Attorney General, has announced that the conference between representatives of the Department of Justice, the Navy, Shipping Board, Interstate Commerce Commission, Department of Commerce and this committee scheduled for Aug. 2 in New York City, has been postponed indefinitely, although the officials at the Department of Justice express the opinion that it will be held some time in the near future. It is understood that the reason for postponement was because some of the representatives on the committee from the coal industry could not be present on the date specified.

State Mine Project Beaten. Indiana Operators Contract to Supply State Institutions

A CONTRACT whereby members of the Indiana Coal Operators' Association will provide all coal needed by state institutions beginning Aug. 1 and ending May 1, 1921, at $2.95 a ton for screenings, $3.20 a ton for mine run and $3.35 to $3.50 a ton for coal of prepared sizes, is to be entered into between the association and the State Joint Purchasing Committee, according to Maurice C. Shelton, secretary of the committee. The action of the two bodies follows the complete defeat of the administration bill presented during the special session of the State Legislature which would have provided for the purchase of a mine and cars by the state in order that coal might be provided. Incidentally, it is the first time on record when the coal operators as an organization have guaranteed state institutions coal.

Operators Attack Speculators

National Coal Association Seeks Abolition of Reconsignments to Cure High Prices—Committee Plans to Eliminate Opportunists

SPECULATION in coal along the Atlantic seaboard, made possible by liberal reconsignment privileges extended to shippers by the railways, by demurrage and other provisions of the tidewater coal pools which are managed and operated by the railways under sanction of the Interstate Commerce Commission and by the methods of handling tidewater shipments in vogue on different railways, in the opinion of the National Coal Association, has had much to do with the upset market conditions that have recently prevailed.

A committee of operators who have been in the business of exporting coal for many years has been appointed by Colonel Wentz, president of the association, to devise measures to largely limit the practice of reconsignment of coal in transit, as it is believed that this practice results in excessive delays to cars of coal, promotes congestion in yards and fosters speculation. The committee is reported to have stated that under present methods of handling tidewater shipments of coal more than 5,000 cars a day are needlessly in use and that these are the cars with which the speculators are playing the coal market. This misuse of transportation by speculators or jobbers, who are described as conscienceless and without real interest or responsibility in the production of coal or the welfare of the industry, is affecting the production, transportation and distribution of coal in all the territory east of the Allegheny Mountains.

All responsible operators in the bituminous coal industry have been endeavoring to keep the public supplied with coal, and at low prices. Where exorbitant prices for coal are being exacted the public ought to understand that it is not the responsible mine owner or operator who is to blame, but the speculator, who always springs up in such an emergency as has existed under the prevailing coal shortage. The operators have tried to break up the system of reconsignment of cars, with the consequent speculative opportunity, but up to this time without avail. In the meantime speculators have run prices to consumers up to $10 and $12, or even more, a ton, as against prevailing average prices of $3.25 to $4 a ton at the mines. The operator cannot control the coal after it leaves the mine.

The blame is placed squarely upon unscrupulous handlers, or speculators, in no way related to the operators, who have been exacting exorbitant prices in the open market for coal which they have obtained at low prices prevailing at the mines.

The National Coal Association, whose membership embraces operators with over two-thirds of the entire soft-coal output of the country, is determined to drive these speculators out.

Indiana Legislature Agrees on Commission Bill to Regulate Coal Prices

MEMBERS of the House of Indiana's General Assembly have concurred in a conference report on the Winesburg-Bonham Coal Commission Bill. Its passage now is almost certain. The questions raised and decided by the Senate were adjusted in the House without debate. As changed by the conferences, the measure designates the State Board of Accounts as the body to carry out the provisions for regulating the price of coal and investigating the prices of the necessities of life, with a view to recommending legislation to the next session on the latter subject.

Briefly the bill provides for the employment of necessary engineers, clerical help and attorneys in carrying on the work of investigating and regulating the price of coal by the accounts board. Broad powers are conferred on the commission to compel persons engaged in mining coal or in the wholesale or retail coal business to produce for inspection all books, records, etc., and to give evidence of any fact bearing on the price of coal. Refusal to obey an order of the commission is punishable on conviction by imprisonment at the State Penal Farm for not more than one year and a fine of not exceeding $5,000.

Mining operators are required to take out a license, the fee for which is $25; wholesale dealers must also take out licenses, the fee for which is $10, and retailers must take out licenses at a fee of $5. These licenses are subject to revocation by the commission, and a fine not exceeding $5,000, to which may be added imprisonment up to one year at the penal farm, is provided for those engaged in the coal business without licenses.

The commission has the "right and it shall be its duty, after affording to all persons interested a full opportunity to be heard, to adduce evidence and to be represented by counsel, to regulate and fix the price at which all coal moving in intrastate commerce in the State of Indiana shall be sold to jobbers, wholesale and retail coal dealers and to the public, provided that no price fixed shall be confiscatory, nor shall it be less than the actual cost of the coal plus a fair and reasonable return on the property used in the production and sale thereof."

Power is conferred on the commission to ascertain the average amount of coal required monthly in Indiana for all purposes and to require sufficient output of the mines for this purpose. A fee of one cent for each ton of coal mined is to be paid into the State Treasury, the money to be used to defray the expenses of the commission. An emergency clause makes the bill effective immediately on its passage. The commission's powers under the bill shall expire March 31, 1921.

The commission also is empowered to investigate the high cost of living and profiteering with view to making recommendations for legislation at the next session of the legislature.

The Labor Situation

Edited by
R. Dawson Hall

Broad Top Miners Reject Arbitration

SETTLEMENT of the mine workers' strike in the Broad Top field of Pennsylvania by arbitration July 23 failed when representatives of the men are said to have rejected a number of propositions submitted by the operators.

A joint meeting of the operators and officers of District No. 2, United Mine Workers, and William Muir, member of the international board, was in session all day. The men have been on strike about three weeks and work virtually is at a standstill.

Colorado Coal Miners Strike in Protest Against the Use of Electric Lamps

FOLLOWING an order by the Colorado Fuel & Iron Co. installing electric safety lamps, six hundred coal miners employed by the company at Rockvale, Coal Creek and Fremont went on strike July 12. At the office of James Dalrymple, state coal mining inspector, it was said Dalrymple requested the company to install the electric lamps "for the protection of life."

The miners have been using open lamps and assert that the electric lamps do not give light sufficient for efficient work. Open lamps previously have been considered safe, according to officials in the office of the state inspector. Recently, however, gas was found in the Rockvale mine. This resulted in the order to use electric lamps.

Pittston Miners Decline to Refer Contract To President's Commission

LEADERS of the striking miners of the Pennsylvania Coal Co. at Pittston, Pa., announced July 27 that the men have refused the proposition of the company to refer the contract system question to the President's commission, and have declared the strike will continue. They added the announcement that the number of strikers had increased over night from 7,000 to 10,000 and said that before the week was over every colliery of the company would be idle.

The company officials dispute these figures, but are preparing for a long period of idleness. About 15,000 tons of coal and $35,000 in wages are lost daily, besides the profits of the company.

James J. Kennedy, Mayor of Pittston, has held meetings with the clergy of Pittston and surrounding towns, representatives of the miners and business men of the city in an effort to arbitrate the matters at issue, but without avail. The Mayor, referring to the killing of Detective Sam Lucchino, said there was no telling where the trouble would end if the men failed to get together.

Enoch Williams, who was active in the miners' union for a number of years and who was a candidate for president of District No. 1 at the last election of the union told the Mayor that the company violated its contract in hiring contract miners and argued that if the company could violate its agreement, the men who were suffering from the violation had a perfect right to refuse to work until such time as the company learned to respect its agreement with the men.

Ohio Miners Refuse to Report for Work On Saturday

IN THE Sunday Creek valley field of Ohio, as far south as Chauncey and extending clear into the edge of Perry and Hocking counties, several thousand coal miners failed to report for work Saturday, July 24. So few were on hand that little coal was mined.

The demand of the men for a holiday on Saturday seems to have been at the bottom of the trouble, as it was stated that at many mines where the men failed to report the mines were marked up for work and cars were on hand to be loaded.

The men were warned by their officials not to lay off on Saturday because this was in violation of the areement The demand for coal was never so great as now, operators report.

In the upper Sunday Creek valley only two mines were reported to be working full time July 24. One of the three mines on Sugar Creek did not work, and a report from Chauncey states that little coal was being loaded in the Bailey Run district on that date. Cars were on hand but so few men reported at each mine that only a part of a day was gotten in.

Indiana Bottom Coal Controversy Ended

AT A CONFERENCE recently held by the operators and officials of the United Mine Workers in the western part of Indiana, an agreement was made which interpreted the recent contract in regard to the cutting of bottom coal by machine men, this detail having caused much trouble in some portions of the coal fields. The new agreement runs as follows:

"Recognizing the extreme difficulty of cutting coal in exact and literal conformance with the contract, we, the joint executive board of the Indiana Bituminous Coal Operators' Association and district 11, United Mine Workers of America, interpret section 1, article 6, of the Terre Haute agreement, effective April 1, 1920, as follows:

"(1) Machine men shall cut the coal as nearly in accordance with the contract as is practicable, but under no circumstances shall machines cut into the bottom. (2) Where bottom coal left after machines is loose and can be shoveled up, it shall be shoveled and loaded by the loader. (3) Where bottom coal is hard and is allowed to remain, the loader shall cut through the bottom to set his props. (4) Machine men shall be relieved of any obligation to take up or pay for bottom coal, except where it is left in excess of 4 in."

The above interpretation is to apply to No. 4 vein coal only.

Alabama Mines Work More Steadily

Many Mines Working with Depleted Forces—Some Evictions Attempted—Two Killed and Three Wounded at Carbon Hill

SOME progress has been made toward the ending of the long strike of Alabama mine workers, which had its origin in their demand that the management discuss labor difficulties with their representatives—that is, with the union. Recently Montevallo Straven, Galloway No. 10, North Pratt, Smitt Pratt, West Helena, Brookside Pratt, Sloss and Jagger resumed operations. Piper, in the Cahaba coal fields, started work on July 27, and Coleanor is getting ready to reopen soon; both have been idle since May.

Yolande, of the Yolande Coal & Coke Co., has twenty-seven men at work and its output is increasing. Davis Creek is now producing a creditable output. At Corona and Coal Valley, in Corona County, 664 men were at work on Monday, July 26, and the output was 1,313 tons. Another mine now working is the Borden mine. It was idle only a week. Montevallo Straven resumed work on July 18 with only ten men. The number has steadily increased. There are now thirty and the output runs between 50 and 100 tons daily. At No. 16 mine, Blossburg, the Pratt Consolidated Coal Co. has 110 men at work.

At Marvel B. F. Roden, of the Roden Coal Co., has at length wearied of waiting and he now purposes evicting the men who occupy his houses and will not work. They say they will leave if the union lawyer, Frank S. White, tells them to do so. They must be loath to leave, for Marvel is a model mine in every particular and takes place alongside those of the Tennessee Coal, Iron & Railroad Co.

Mr. Roden says he cannot afford to maintain the water works in the town or the electric lighting for idle men, but it is said there is a degree of coercion, for it is noted that the buckets in the wells have been removed. The men say the "Blue Book," meaning thereby the union contract, must be signed. They contend that it is not their fault if the failure of Mr. Roden to sign the "Blue Book" makes people go without coal, nor should they be evicted, seeing it is Mr. Roden's unwillingness to sign up that is the cause of the whole trouble.

Mr. Roden's men came out May 8. On July 20 forty were back at work and the output was 100 tons a day. The men had lost $750,000 by their adhesion to the exact verbiage of the "Blue Book." Mr. Roden certainly has reason to feel sorely tried by the direction matters have taken. With himself and his wife active in taking care of his mine workers he has had four strikes in the last few years. The men like him, but the union is their union and they are bound it shall rule.

In all the course of the Alabama trouble there was nothing of a violent nature till the affair at Carbon Hill, Walker County, when Ben Barrett, deputy of the western division of that county, and Oliver McDade, a non-union miner, were shot and killed by Will Hicks, a striking miner, who himself is at the point of death as a result of the shots returned. A young boy, Bryan McDonald, was seriously wounded by a stray bullet and a sister of McDade also suffered in the same way.

Miners of Washington State Get New Scale

WHEN the Bituminous Coal Commission was in session the operators in Washington State steadily opposed any award of a new scale and none was granted. The mine workers, however, did not cease to agitate for a revision, and on Saturday, July 31, a special commission awarded an increase of 20 per cent to contract labor and a raise of $1 per day to all day labor.

Representatives of the Washington Coal Operators' Association announced as soon as the award was made that they accepted its provisions. A convention of No. 10 district of the union was called to meet Aug. 3 to discuss ratification.

President Tells Illinois Miners to Return to Work and They Obey

DECLARING that "the violation of the terms of your solemn obligation impairs your good name, destroys the confidence which is the basis of all mutual agreements and threatens the very foundation of fair industrial relations," President Wilson on the evening of July 30 urged the mine workers of Illinois to go back to work, adding that "No organization could long endure that sets up its own strength as being superior to its plighted faith or its duty to society at large."

He pointed out that if contracts may be broken by workmen they may be broken by employers and that if the integrity of contracts is weakened by the employees the operators also may disregard their contracts at any time on the plea that they are unable to sell coal at the existing cost of production.

On Sunday, meetings were held all over the Middle West at which it was decided to return to work in accord with the desire of the President of the United States and the mandatory order of John L. Lewis, international president of the United Mine Workers, which order promptly followed the President's letter.

The men are returning to work as unanimously as they formerly quit. When the strike was at its height, Indiana and Illinois were hardly turning a wheel. With the walkout of one hundred mine workers at the Diamond coal mine at Evansville, Ind., only two mines in southern Indiana were working. On Aug. 1, however, the Bicknell and American No. 1 local, which was the first in Indiana to walk out, voted to return to work. In Illinois a similar compliance with the orders of the union and the request of the president is in evidence.

Developments in the Mine Workers' Campaign to Unionize West Virginia

State Police Sent to Mingo County to Halt Shooting—Three Plants on Coal River Settle Strikes—Sabotage in New River Field—Penn-Mary Strike Only 11 Per Cent Effective

MOST of the state police of West Virginia were concentrated in Mingo County again during the week ended July 24 in order to frustrate, if possible, the series of attempts made to close down several plants trying to operate.

Miners at different plants throughout the county have signified a desire to go to work but have been deterred from doing so through fear of being shot at by striking miners trying to prevent resumption of operations by firing upon plants. With the arrival of the state police in Mingo, while there was no general resumption of operations, men were at work in larger numbers at several plants, the Borderland No. 1 plant at Borderland, W. Va., among others.

All Trouble on Coal River Cleared Up

There has been a settlement of strikes at the plants of three companies operating on Coal River, an agreement under which the men returned to work having been announced on July 22. Miners employed at the plants of the Madison Coal Co., the Superior Eagle Coal Co. and the Five Block Coal Co. were directed to cease work on July 1 by W. M. Blizzard of sub-district No. 2 of district 17, because, it was stated, the managements of the companies had not entered into a contract with the miners covering wages, working conditions, etc. With the signing of contracts by the three companies the miners returned to work. All trouble on Coal River having been cleared up, as all operations in that field have entered into an agreement with the miners.

Trouble still exists at several plants on Elk River, the Rex Colliery Mine and the Barren Creek Co. mine still being closed down because of a strike. These companies refused to become a party to any closed-shop agreement.

Willis Branch Co.'s Power Poles Blown Up

As a part of the campaign being waged by members of the United Mine Workers to stop operations at the plants of the Willis Branch Coal Co. and other companies in the New River field operated on an open-shop basis, poles supporting the high transmission wires of the Virginian Power Co. from which the Willis Branch Company secures its power were dynamited at an early hour Saturday morning, July 24, at Willis Branch, putting the mines out of commission until the damage could be repaired. This is only one of a series of efforts to stop production at open-shop plants in the New River field.

At the Willis Branch plant and other open-shop in the field most of those now at work were formerly members of the United Mine Workers, but last year they broke away from the organization and are now said by their employers to be better satisfied than they were as members of the union. Frequent trouble at Willis Branch is due to the fact that only a railroad track separates the open-shop mines from a company operating closed-shop mines. As a result of their proximity to the union miners, life is made miserable by the organized miners. However, the former members of the union will not permit organizers to talk to them, declaring they are better off now than when they were members of the union.

Union Makes Little Headway at Penn-Mary

The strike called against the Penn-Mary Coal Co. and other companies operating on the Morgantown & Kingwood R.R. in Preston and Monongalia counties is only about 11 per cent effective insofar as can be gathered, although the claims of both sides conflict. Railroad officials, however, state that while the supply is late mines are working at about 50 per cent of capacity, most of the loss being due to car shortage. Mines of the Penn-Mary company have not in fact been greatly crippled by the strike, but people of Masontown, Reedsville and Kingwood are apprehensive lest the strike lead the company to close the mines.

General opinion is that the United Mine Workers will be able to make little headway in achieving recognition of the union and an acceptance of the closed-shop principle. The Penn-Mary mines were operated on a closed-shop basis prior to the time they were sold to the Penn-Mary company by the Elkins interests, but since October the mines have been operated on an open-shop basis.

In the face of an assertion by W. M. Rowan, organizer of the United Mine Workers in charge of the strike, that fully 95 per cent or more of the men were on strike and were not in any mood for accepting the Penn-Mary Coal Co. open-shop policy, Samuel Steinbach, general superintendent of the company, on July 22 made a statement in which he said "The strike was called on July 12. No response was made by any Penn-Mary men until July 14. The rating of the Penn-Mary mines is 43.8 cars a day. In the six days from July 14 to 20 we were entitled to 262 railroad cars according to this rating. We actually received, however, during that period only 167 cars, or 63.8 per cent of the rating. Record of the Morgantown & Kingwood R.R. will show that we loaded during that period 138 cars, or 52.7 per cent of our rating.

"A little substraction will show that we have had a loss of 11.1 per cent because of the strike. Most of the men out are being kept away from work by intimidation and threats. Twenty-two Italians armed with clubs put on a demonstration at the Sabraton mine Tuesday and attempted to keep our workman away, but we told the American miners we would give them protection, and we did."

Officials of the Connellsville Basin Coke Co. categorically denied Mr. Rowan's statement that their mine was entirely closed down. "We have fired some men," an official said, "but all our men we didn't fire are at work." Asked if the men discharged were union men, the official said "You might call them that. Most of them are men who live right around here. I don't know whether they are union or not." It was stated that the mine was operating and loading all cars furnished.

Production and the Market

Weekly Review

Production the Last Week in July Lowest Since Early May — Illinois and Indiana Strike the Cause—Men Ordered Back to Work—Lake and Tidewater Shipments Increase—Strenuous Efforts Being Made to Curb High Prices.

SEVERE shortage of coal in the Middle West has resulted from the strike in Illinois and Indiana, consumers grasping for every car available as the strike spread and extended into the second week. The effect on the production of the country is indicated by the figures of the Geological Survey, which show 10,601,000 tons in the week of July 24, a drop of 3 per cent compared with the previous week. Loadings July 26-28 indicate a total of 9,000,000 tons the last week of the month. This will put production below the corresponding weeks of the last three years and will represent a decline to the rate during the first few weeks of the switchmen's strike of this spring. Anthracite output declined by 1.3 per cent in the week of July 24, while beehive coke increased slightly.

The feature of the past week has been the effort of the Attorney General and certain of the coal distributors to find a means of lowering the present high prices on spot coal. Conferences with Mr. Palmer scheduled for this week have been cancelled and simultaneously the operators have opened an attack on speculators, who are blamed for the bad name the coal man is getting as a profiteer. The Department of Justice continues to seek indictments for selling coal for high prices and has served warrants on a number of distributors in the South.

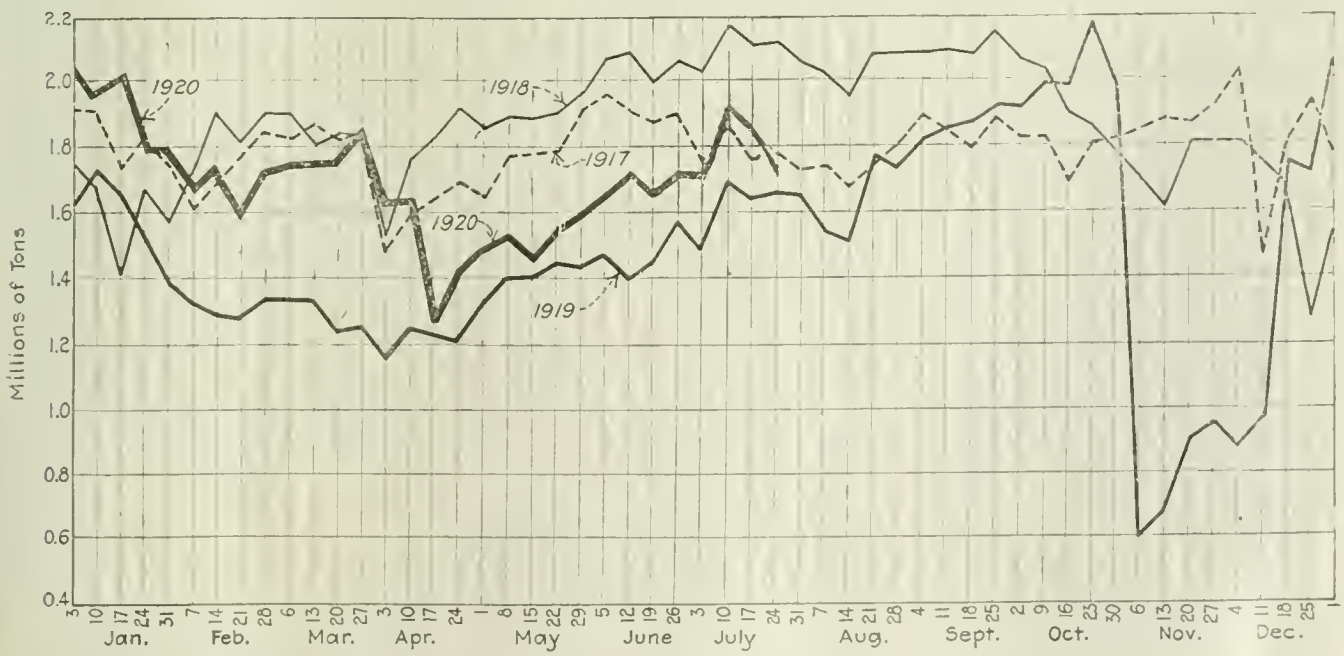
Correction of flaws in the distribution of soft coal, for which the coal operators and railroads have been co-operating, is proceeding satisfactorily. Lake shipments are slowly gaining—in the week just closed dumpings were nearly 800,000 tons, a gain of more than 27 per cent compared with the preceding week. Shipments to New England both by water and rail have shown steady increases the last few weeks.

Lake Coal Dumped Season to July 31

(Net Tons)

	Cargo	Fuel	Total
1919.....	12,617,285	570,738	13,188,023
1920.....	6,327,448	465,686	6,793,134

Average Daily Production of Bituminous Coal



*From weekly report of Geological Survey.

Reports From the Market Centers

New England

BOSTON

Spot Prices Affected by Traffic Restrictions, but Demand Continues Strong—New England Priority Is Not Fully Understood—Fair Dispatch at Hampton Roads—Anthracite Prospect Is More Hopeful—Retail Demand Is Strong.

Bituminous—Prices for spot coal sagged slightly for a few days, due largely to continued embargoes. Boston & Maine territory is still cut off from shipments all-rail, and there is no near prospect of this route being re-opened. As a result, an extra volume of steam coal is being thrown via West Albany. Prices on that line have softened, in some cases nearly $2 per ton. On the other hand, sales of coal en route to Boston & Maine destinations have been made at prices well up to quotations of a fortnight ago. There has also been a strong demand for prompt shipments by water, and in the judgment of the trade the recession in prices f.o.b. mines is only temporary.

The so-called New England priority is by no means fully understood. There is a feeling here that the quota assigned Hampton Roads will probably be forthcoming, but not so much is expected of the proposed movement via Baltimore, Philadelphia, and New York.

Traffic troubles on most of the carriers to tidewater, it is believed, will seriously interfere with the program. Further provisions for assigned cars will also have their bearing, and it is easy to see the new priority will meet with many obstacles.

While switching and loading conditions at the New York and Philadelphia piers have improved materially the past week it is clear that much of this movement, so far as New England is concerned, will be confined to railroad fuel. The fact that so much of the additional coal, which the new priority seeks to provide, will come from high-volatile districts only confirms the opinion of the trade that relatively little commercial coal will be shipped in addition to what is now coming forward.

Current quotations at wholesale for bituminous range about as follows:

	Clearfields	Cambrias and Somersets
F.o.b. mines, net tons	$11.00@$12 25	$12 00@$13 50
F.o.b. Philadelphia, gross tons	14 00@ 15 50	15 00@ 16 75
F.o.b. New York, gross tons	14 50@ 15 90	15 60@ 17 00

Pocahontas and New River have been quoted as from $16@$18.75 per gross ton f.o.b. cars Boston.

Anthracite—Indications are more encouraging for domestic sizes. The recent decision of the railroad wage board has removed most of the ground for the strike of freight trainmen and the latter are gradually returning to their places. The Philadelphia & Reading Ry., for instance, is making a much better showing.

It is likely that the large fleet of barges that has accumulated at Philadelphia will gradually be loaded, and, to that extent, will relieve anxieties of retail dealers along the coast, particularly to the eastward. There are still ports in Maine that have had no shipments this year.

The demand for coal at retail is quite strong. Dealers are on a hand-to-mouth basis, although on certain roads the all-rail service has been up to the average of the past three years. As yet there have been no material advances to the consumer.

Apparently the local distributors are waiting for the expected railroad-freight advance to justify a materially increased price. At the same time, independent coal has been quoted recently as high as $12.75 for stove size, f.o.b. mines.

Tidewater

NEW YORK

Domestic Anthracite Moves Slowly, with Strong Demand — Companies Make Usual Monthly Advance—Steam Coals Show Strength — Bituminous Quotations Fluctuate — Industry Watches Outcome of Conferences Here

Anthracite—There has been little if any gain in receipts here. Demand continues strong and dealers are in the market for all the coal they can obtain.

The strike that affected several mines whose coal is sent to one of the upper ports has reduced the movement of tonnage handled there, but this has been partly offset by increased shipments from Port Reading.

While no official announcement was made it is generally understood that the companies will add the usual 10c. per ton to the July prices for the domestic sizes. These prices are, of course, subject to change.

Car supply shows some improvement and shipments have been on a larger scale. Local dealers have been receiving greater shipments of the sizes most in demand but deliveries have been made in many instances direct to the consumer's bin. Stove coal is badly needed by most dealers.

Independent coal is finding a ready market. Many buyers in an effort to obtain larger tonnages and quicker shipments are in the coal fields and it is said are willing to pay from $12 to $13 for the domestic sizes.

The steam coals continue to be in good demand with the independents quoting, at the mines, from $4.85@$5.50 for buckwheat; rice, $3.25@$4 and barley, $2.25@$2.50.

Current quotations for company coals, per gross ton, at the mine and f.o.b., New York Tidewater, lower ports are as follows:

	Mine	Tidewater
Broken	$7.40@$7.55	$9.25@$9.40
Egg	7.40@ 7.55	9.25@ 9.40
Stove	7.65@ 7.90	9.50@ 9.75
Chestnut	7.70@ 7.90	9.55@ 9.75
Pea	5.95@ 6.35	7.70@ 8.10
Buckwheat	4.00@ 4.10	5.75@ 5.85
Rice	3.00@ 3.50	4.75@ 5.25
Barley	2.25@ 2.50	4.00@ 4.25
Boiler	2.50	4.25

Quotations for the domestic coals at the upper ports are generally 5c. higher on account of the difference in freight rates.

Bituminous — The market became quiet toward the end of the week and some attributed its condition to uncertainty of future prices as the result of conferences held in this city between Federal authorities, operators and consumers, at which the price situation was thoroughly discussed.

There is comparatively little coal at the local docks. Shipments from Arlington and Port Reading have been slow, while better reports were heard regarding deliveries from South Amboy.

Buyers from Canada are prominent in the coal fields but keep their offers around $10. Coal at the piers was quoted at around $15.50 last week with loaded boats quoted at $16@$17.50.

PHILADELPHIA

Retailers Are Short of Coal—Company Circulars Increased 10c. — Buckwheat and Rice Are in Strong Demand—Bituminous Trade Is Upset by Priority Orders — Prices Shade Off, but Are Still High — Rail Service Slowly Improves.

Anthracite — The amount of coal arriving in the city is far from satisfying the dealers. The average retailer is still extremely short of coal. Price, next to the supply of coal, continues to be an important topic.

Beginning with the first of the month the big companies added another 10c. to the mines' price of coal, and by this time all of the independent operators have followed suit. The companies' prices, therefore, for the month of August f.o.b. mines, per gross ton, for line trade, and f.o.b. Port Richmond for tide, are as follows:

	Line	Tide
Broken	$7 35	$9.20
Egg	7 55	9 40
Stove	7.90	9 75
Nut	7.90	9 75
Pea	6 20	8 00
Buckwheat	4 10	5.15
Rice	3 00	3 90
Boiler	2 50	3.50
Barley	2 25	3 15

The retail prices are beginning to respond in accordance with the con-

tinued monthly increases and a general average of prices are as follows: Egg, $13.40; stove and nut, $13.65; pea, $10.85@$11.10. If wheeling or carrying is necessary 50c. a ton is added to the above prices.

The big companies have not increased the buckwheat price, the figure still standing at $4.10. They continue to make current sales, however, with the reservation that while the price is $4.10 the coal will take a price in effect at time of shipment. The demand has become so strong for this size that the smaller companies have no difficulty in obtaining from $4.75 to $5 at the mines for it.

Rice coal is also becoming scarce and it is about all the companies can do to meet their orders. While barley is inclined to be quiet, it is moving more actively and, before the season is far advanced, it is believed the entire production will be taken up.

Bituminous—Much is moving and stirring in the trade at this particular moment and a feeling of expectancy pervades everything. With the publication of the order of the I. C. C. on July 26, directing that a certain proportion of coal be shipped to New England via the tide ports. Philadelphia included, much discussion has ensued. There is strong objection to the plan.

While tide shipments for export are not embargoed, yet the strict enforcement of the I. C. C. order amounts to that. Certain it is that export orders, with buyers bidding against each other, have had much to do with the present high prices. Nevertheless concerns with foreign commitments for a definite tonnage at a fixed price, certainly expect to be allowed to fill their obligations. However, it is doubtful whether this business can be handled if the order is strictly enforced.

The price tendency in the local market has had a slight downward trend with the Pennsylvania grades, most of which could be bought during the past seven or eight days from $11.50 to $13 a ton, and it would seem that the price of $15 of the past two weeks was the extreme for the present movement.

The coal from the Fairmont district is now all mine-run, and the prices at the mines recently have been as low as $11.50, but again have quickly moved to $13, to fall back almost as quickly to $12 and $12.50, around which mark the prices now hover. The car supply from all regions is fair to poor.

It is really expected that prices will fall somewhat lower in the next few days, as the belief is that if exports are curtailed to any considerable extent, as seems to be the intent of the I. C. C. order, then the throwing of this extra tonnage into the domestic market can have no other effect.

With slowly improving rail service, there are evidences of a bettering of the stock piles of the utility plants, and some of the industrial concerns are also getting better shipments, particularly those with contracts with the large producers.

BALTIMORE

Priority Orders to Northwest and to New England Cause Much Agitation Here — What Will Priority Customers Pay?—Stoppage of Exports Will Cause Distress—Anthracite Business Here Is at a Standstill.

Bituminous—Thrown entirely on a new basis of trading by the priority orders to the Northwest and to New England, and the halting of the great export loadings from this port, as soon as the present run of coal here is exhausted, fuel men of this section are feeling about for a new basis of business.

With all shipments to this section cut off from mines west of Meyersdale and Grafton; with the Baltimore & Ohio R.R. obligated to care for a considerable part of the 20,000,000 tons of soft coal to be sent to the Northwest on priority (in 100 days); and the same road and other roads entering here ordered to deliver 250,000 tons to be sent to New England monthly on priority, leaders in the trade are beseiging J. W. Howe, Tidewater Commissioner, for interpretations of many angles of the trading as seen from a local view point.

The prospect is none too bright for local distribution that must depend on mines east of Meyersdale and Grafton, with the usual supply to the territory from Somerset region, a greater part of the Fairmont, Upper Potomac and Clearfield fields eliminated.

What will Northwestern and New England customers under priority be willing to pay? At this writing there has been no break in price generally, although quotations are over a wide range.

Pool 10 coal is said to cost $13.50 a net ton f.o.b. mines in a limited quantity only. Add $1.50 to bring it gross and a $2 freight rate, and the price is $17. With handling charges added it means around $18 a gross ton for coal at this point.

Few coal men expect any real adjustment for some time. There is too little transportation for the fuel consuming needs of the country. Meantime the government stops exports, not only hitting a staggering blow to foreign connections but also hitting the Shipping Board and the American merchant marine, which had relied largely upon coal carrying abroad to make a decent showing.

About 60 ships are still tied up here, some 65 per cent or so American, that came for coal and can not get it to take abroad. Many others have already been diverted after big detention losses.

Car supply on the Baltimore & Ohio and Western Maryland had improved somewhat when the embargo on exports and priorities came along. The eastern supply on the two roads is now generally between 60 and 75 per cent. The roads have been instructed to deliver all cars, when supply is short of one hundred per cent, in pro rata fashion.

Coal men here with credits in the pool and who must now load to New England or not at all are wondering how they are to make out if New England does not pay the top prices of the market, as their credits are established on such a basis with their mine-supply sources. This is but one of the many new problems of the hour.

Anthracite—The hard-coal business here is almost at a standstill. Receipts are so light, in view of the effort of the railroads to deliver bituminous coal at needed points, that the local dealers are without supplies. The consumers are demanding coal ordered in the spring and for which they must pay constantly increasing costs.

Lake

CLEVELAND

City Will Appeal to I. C. C. and Possibly to Federal Courts to Insure Fuel Supply — Spot Coal Is Scarce and Prices Rising — Anthracite Moves In More Freely.

Bituminous—A committee has been appointed by the Chamber of Commerce to seek a hearing before the Interstate Commerce Commission in order to obtain assurance that Cleveland's fuel needs will be taken care of adequately. If such reassurance is not forthcoming redress may be sought through the medium of the Federal courts, in the form of a plea for an injunction to prevent the commission from executing the provisions of Order 10. It is stated that operation of plants may be affected and thousands will be without coal next winter if the order is carried out.

Estimates are made that 1,500,000 tons of coal are required by Cleveland, and up to July 1 dealers were receiving coal at only half the normal rate. It is important that Cleveland store coal during the summer, owing to the fact that railroad facilities are sufficient to handle only 700,000 tons between Nov. 1 and April 31.

Spot coal is unavailable in large quantities, although the price range for No. 8 mine-run slack is between $10 and $11. Large operators who have Lake contracts have cut off practically all shipments to retail dealers.

Pocahontas and Anthracite—Retailers are being placed under increasing pressure for deliveries, but with inadequate receipts are unable to meet the demand. Orders are being taken with no guarantee of price or delivery. Owing to the fact that anthracite coal is not affected by the Lake priority order, this fuel is moving to the yards of dealers more freely than Pocahontas, which is extremely scarce. Prices for both anthracite and Pocahontas maintain an upward tendency.

Lake Trade—Mines and railroads started operating under Order 10 this week but it is expected that some time will elapse before the objective of 4,000 cars daily will be brought to the Lake ports. Coal shipments up to July 26

were 5,611,192 tons compared with 12,203,560 tons for the same period one year ago and 10,688,504 tons in 1918.

Retail prices of coal per net ton delivered in Cleveland are:

Anthracite: Egg and grate, $13.50; chestnut and stove, $13.75.

Pocahontas: Shoveled lump, $11.75; mine-run, $10.50.

Domestic Bituminous—West Virginia splint, $11; No. 8, Pittsburgh, $10.50; Millfield lump, $13.50; cannel lump, $14.50.

Steam Coal—No. 6 and No. 8 slack, $10.50@$11; No. 6 and No. 8 mine-run, $10.50@$11; No. 8 3-in. lump, $10.50@$11.

MILWAUKEE

Dealers Gravely Concerned Over Winter's Fuel Supply — Effect of Priority Order Will Not Be Felt for Some Time—Prices Continue Unchanged.

The coal situation continues to be the subject of the deepest concern. Milwaukee's chances of going through the winter without experiencing a serious fuel shortage, despite the priority order in favor of the Northwest, are not promising. The effect of the priority order will not be felt for some time. The dock yards are preparing to operate night and day during the remainder of the season.

Rail receipts received a body blow when the Illinois strike was inaugurated, and there is little coal on tracks. The retail coal trade is almost paralyzed, because of the lack of supplies. Prices continue unchanged.

Receipts thus far this season by Lake foot up 365,000 tons of anthracite and 561,344 tons of soft coal, against 379,660 tons of the former and 1,697,443 tons of the latter during the same period last year.

BUFFALO

Bituminous Situation Changes but Little—Price Regulation Is Desired—Anthracite Demand Is Sharp—Shipments by Lake Continue Good—Coke Advances with Demand.

Bituminous—The situation does not change, further than that some lower-priced coal is now offered by some of the mines. Reports come in of coal at less than $7 at the mines, but such tonnage is not plentiful enough yet to be called a movement.

What the jobbers here want is price regulation. Most of them are decidedly opposed to the high prices and some refuse to handle coal that runs much above $7.

Anthracite—The local demand far exceeds the supply, yet the situation is not alarming, for the distribution is much larger than it sometimes is and the stocks in consumers' cellars are large. The difficulty is that consumers insist on a full winter's supply now. The shippers are engaged in meeting the demand for coal by Lake to the Northwest, which is a real demand and must be satisfied now. The Canadian anthracite consumers and jobbers are in a panicky condition and are here in force.

Shipments by Lake continue good, the amount for the week being 99,000 net tons, of which 35,200 tons cleared for Duluth and Superior, 29,000 tons for Chicago, 9,500 tons for Fort William, 9,000 tons for Marinette, 6,500 tons for Sheboygan, 6,200 tons for Green Bay, 2,800 tons for Marquette and 800 tons for Mackinaw.

Freight rates are 65c. to Chicago, 60c. to Marinette, 55c. to Sheboygan, Green Bay and 50c. to Duluth, Fort William and Marquette.

Coke—The demand for coke and the lack of cars contribute toward a further advance in price. Jobbers are unable to get a supply of 72-hr. for less than $20.50 at the ovens, with 48-hr. furnace at $19 and no low grades offering. The amount wanted is small.

Inland West

CINCINNATI

Ohio Railroads Give Around 80 Per Cent Car Service—Cincinnati Is Well Supplied, but Canning Factories and Threshers Lack Fuel.

Not in months have the railroads, especially in Ohio, been giving as good car service to the coal mines as at present. Many of the lines are giving 85 per cent of full car supply, and the average is 75 to 80 per cent.

Coal for all local purposes outside of Cincinnati proper is short and hard to get, and will not be easier until the Lake orders have been filled. Canning factories and threshers seem to be the worst sufferers under existing conditions.

Cincinnati is well supplied with coal. Several tows of barges arrived in Cincinnati during the past week, and additional coal is expected to arrive by the water route in the latter part.

Cincinnati dealers are not experiencing the trouble that dealers in other parts of the country are forced to cope with. In the main dealers here continue to get all the coal that is ordered. However, there is no smokeless or anthracite to be had.

ST. LOUIS

City Experiences Most Acute Coal Crisis — Mayor Appoints Fuel Committee To Handle Situation.

The suspension of practically all mines in Illinois brought St. Louis face to face with perhaps the most acute coal famine the city has ever experienced. In other years a storage supply was always on hand, but this time a few days' supply was the average.

There was no great change in market prices previous to last week, at the end, but the few mines working since then have raised prices skyhigh.

The situation was such that on July 29 Mayor Kiel appointed a committee of coal men, railroad men and city officials to take over the coal in the St. Louis switching limits and distribute it to the public utilities and essential food and steam consumers.

Some coal is being brought in for railroad use from the southeast and from western Kentucky. This, however, will be distributed by the committee.

No coke is available, but a fairly good supply of gas coal is on hand and in transit.

CHICAGO

Some Operators Grant Increase to Strikers, Operate Plants and Ship Coal to Chicago — Railroads Hold All Coal on Track in and Around the City for Own Use—Small Amounts of Eastern Coal Arrive.

Chicago is better off than the rest of the Middle West when it comes to getting coal in times of strikes. It seems that some operators in Illinois have already reached an agreement with their men and arbitrarily have granted their strikers a satisfactory increase. These people have been producing coal and what coal they have been able to get out they have been forwarding to Chicago. Coal is selling for quite stiff prices as there are people willing to pay anything for fuel providing their plants continue in operation.

The railroads are now holding, for their own use, all coal on track in and about Chicago. Whether or not the situation becomes so serious that the roads will have to confiscate coal in a more wholesale manner, depends entirely upon whether or not the strike is settled early. If the railroads are forced to confiscate the fuel now on their rails, it will mean a shutdown in all manufacturing lines.

Eastern coal continues to come into Chicago in quite small quantities. What coal is coming in is moving at reasonable prices as a number of the retail dealers have contracts on which they are getting some shipments. On open-market coal, ten dollars for smokeless lump is conservative, and the same figures are being obtained for West Virginia and Kentucky domestic coals. What little Illinois coal is being produced and sold is bringing anywhere from $8@$9 on the open market.

MIDWEST REVIEW

Outlaw Coal Strike Brings About Most Serious Situation—Factories Are Closing Down—Joint Conference of Operators and U. M. W. of America Is Called — Public Looks to Washington for Relief.

To say that the situation brought about by the outlaw coal strike in Illinois and Indiana is quite serious, is putting it mildly. Industries are already being affected. Daily reports are now coming in of factories closing down on account of no coal. A number of steps have been taken toward settling this outlaw strike on the part of the day labor at the mines. T. T. Brewster of St. Louis, chairman of the Wage Scale Committee of the Central Competitive Field, has called a meeting of Indiana operators to consider a request for a joint conference with

John L. Lewis, president of the United Mine Workers of America.

Taken all in all the coal industry is in a most unfortunate predicament. What hinders the operators is the fact that when they tried to adjust the matter last November, injunctions were issued against them and some of them are still under indictment.

COLUMBUS

Car Supply and Production Improve, but Prices Do Not Recede—Dealers' Stocks Are Short—Steam Trade Is Also in Bad Shape—Lake Situation Improves Under Priority Ruling.

An improvement in the car supply for Ohio mines, as compared with the previous week is reported and a larger production was the result. But the general public has not benefited by the increased output, as priority orders take the available tonnage to the exclusion of manufacturers and dealers. Prices are ranging as high as ever and little recession in price is expected under present conditions.

The retail trade is still in a strenuous condition, owing to short stocks in the hand of dealers. The available supply is apportioned around where it is most needed.

Retail prices are still ranging high and show considerable irregularity. Hocking lump sells from $9@$10 delivered while mine-run is almost as high. West Virginia splints are selling at $10@$11.50 for lump and about 50c on the ton less for mine-run. Pomeroy Bend and Kentucky grades range from $9.50@$10.50, with lump and mine-run about on a par. Pocahontas is quite scarce and sells for $11@$12 per ton.

The steam trade is also in bad shape, owing to lack of reserves which are causing manufacturers and other large users considerable concern. Active bidding for the small available tonnage is reported in all of the producing fields and as a result prices continue to advance. Comparatively few large users have contracts, as a large number are buying from the open market.

Prices at the mines for the principal coals used in central Ohio are:

Hocking lump	$7.50 to $9.50
Hocking mine-run	7.00 to 9.00
Hocking screenings	7.00 to 8.50
Pomeroy lump	7.75 to 9.75
Pomeroy mine-run	7.50 to 9.50
Pomeroy screenings	7.50 to 9.00
West Virginia splints lump	8.00 to 9.50
West Virginia mine-run	8.00 to 9.25
West Virginia screenings	7.75 to 9.25
Pocahontas lump	8.50 to 10.00
Pocahontas mine-run	8.00 to 10.00

DETROIT

Lake Priority May Curtail Detroit and Michigan Shipments—Poorer and Less Coal Comes to Detroit Than Usual—Anthracite Receipts Are Light—Movement of Lake Coal Increases.

Bituminous—There is a feeling among some of the Detroit jobbers and wholesalers that a curtailment of bituminous shipments into Detroit and Michigan may be a result of the efforts being made to give priority to shipments of Lake coal.

The present movement of coal to Detroit is deficient in quantity and much of it is of a quality that provokes complaint from consumers, who have been accustomed to the use of high-grade coal from West Virginia and Kentucky. But little coal from either of those states is now reaching Detroit except such stock as is being sent forward under contracts closed early in the year.

Mine-run coal from Ohio mines is being quoted at $8.50 to $9.50 per short ton at the mines. About the same price applies to nut, pea and slack, while lump is held at $9 to $9.50. West Virginia mine-run, lump and nut, pea and slack all carry about the same price, or around $9.50 to $10.50 at the mines. Though Pocahontas is practically unobtainable, mine-run of that class is quoted at $10.50.

Anthracite—Some of the retail dealers say they are receiving a somewhat better supply of anthracite than a few weeks ago. In general, however, the volume of shipments falls much short of the market's requirements. Receipts are light and deliveries irregular. Many of the retailers are still unable to begin distribution on orders booked last spring.

Lake Trade—Though a small increase in movement of Lake coal is reported for the first week in which the priority rule was effective, jobbers are informed there has been little increase in car supply at the mines, as yet.

South

LOUISVILLE

Car Supply Is Better and Demand Heavier as Result of Strikes in Other Fields—Railroads Seize Much Coal — Federal Investigations Are Under Way.

The car supply has increased materially during the week as a result of strikes in Illinois, Indiana and West Virginia, which has resulted in better movement of empties into operating fields of Kentucky. At the same time the strikes have thrown an increased demand to the Kentucky fields, and while production is larger prices continue high, and the general situation is about the same.

It is said that action will be taken against operators of Eastern Kentucky on charges of Lever Act violation, brought in the Federal court at Covington, Ky. It is charged that Eastern Kentucky coal is being produced at $1.48@$1.57 a ton, and sold at $7 to $9 a ton.

The general demand for coal is about as keen as ever, and domestic demand is still unfilled, retailers having a dull season. River shipments are holding up well this season, due to good boating stakes in the Ohio River, but prices on river coal are holding along with rail.

Eastern Kentucky prices show that mine-run is selling at $8@$9.50 for Harlan and other gas coals; and nongas or steam mine-run at $8.75@$9. West Kentucky quoted lump at $5.50 average; mine-run, $4.50@$5.25; screenings, $4.50@$5.

BIRMINGHAM

Stocks Are Low, Demand Strong and Prices Rising — Mines Prorate Output Among Customers — Strikes Affect Domestic Production — Output Gains Over Previous Week.

Coal consumers of every class are quite short on stocks at this time and those not having contracts are receiving little relief or response to their appeals for fuel, as there is little coal to offer. Competitive bidding for such as becomes available from time to time is reported to have boosted prices to figures ranging from $7.75 to $8.50 per net ton mines.

Contract customers are not faring much better, as mines which have tied up practically their anticipated normal output are pro-rating their production against the orders in hand, and deliveries, which have heretofore been held below specifications, have been further reduced in many instances by strikes which have been in effect in the commercial fields. Thus the accumulation of stocks has been impossible.

The railroads are confiscating some coal, but not as much as was being taken over some weeks ago. Domestic production has been the most seriously affected by the strikes in the Cahaba field and receipts have not been sufficient for the past several weeks to more than offset the retail sales.

Equipment is being furnished to adequately care for all mines on the Southern and Frisco lines, but no improvement has been shown in the car supply on the Louisville & Nashville, which remains around 45 per cent.

Canada

TORONTO

Anthracite Is Received in Fair Amount, but Dealers Are Much Behind in Deliveries—Bituminous Does Not Improve and Continues Scarce.

Conditions have shown but little change during the past few weeks. Anthracite is coming forward to a fair extent, but dealers are still much behind in deliveries and do not anticipate receiving larger shipments until the close of navigation cuts off supplies to the upper Lakes.

Consumers are anxious to stock up before the expected advance in prices, owing to the prospective increase in freight rates. There is no noticeable improvement in the situation as regards bituminous, which continues quite scarce, with prospects for a winter supply far from encouraging.

Prices for bituminous are fluctuating with quotations per short ton as follows:

Retail, anthracite, egg, stove, nut and grate	$14 50
Pea	14 00
Bituminous, steam	15 00@$16.00
Domestic lump (nominal)	18 00
Cannel	16 00
Wholesale f. o. b. cars at destination:	
Three-quarter lump	14 00@ 16 00

News From the Coal Fields

Northern Appalachian

FAIRMONT

Monday's Loading Is One of the Record Days of Year for Region—Many Mines Here Are Idle on Saturday—Production Now Will Mainly Go to Lakes, Railroad Fuel and Public Utilities—Demand Is Stiff and Prices Stationary.

In the week ended July 24 there was a greater degree of regularity in the car supply than had obtained the week before. Between 1,500 and 1,600 cars on the Monongah division alone were loaded and shipped on Monday, which proved to be one of the record days of the year. After Monday, the supply was hardly more than 800 cars a day.

There were nearly 100 mines on the Monongah division alone idle on the last day of the week. Conditions on other roads in northern West Virginia were similar to those on the Baltimore & Ohio. About the middle of the week operations at a number of mines on the Monongah division of the Baltimore & Ohio were suspended owing to a freight wreck which prevented distribution of cars for a time.

There was a fairly large tonnage shipped to the Lakes. However, beginning with the last week of July, it was rather anticipated that the bulk of production would be for the Lakes, railroad fuel and public utilities, since the Lake allotment on one division of the B. & O. alone was 130 cars of coal a day. The Monongahela railroad mines were expected to furnish eight cars a day.

With commercial shipments still limited in volume, there was a stiff demand in all markets for northern West Virginia coal reported, prices remaining on about the same level as observed during previous weeks.

CONNELLSVILLE

Spot Market Has Not Advanced, While Demand Exceeds Offerings — Coke Brings Only Coal Value—There Is No Contract Market—Production Is Slightly Heavier.

The spot market for Connellsville coke has not advanced in the past week and possibly it is a shade easier. Requirements are still much in excess of offerings, but prices for some time past have been such that not a few consumers simply would not pay prices asked, and it is the demand of the remainder that has supported the market, at the record prices for the whole history of the Connellsville coke industry.

The coal market is of course a supporting factor, for when a coke operator can ship coal at the market price then he receives fully as much for the coal as he would for the coal turned into coke, making allowance for the bare cost of coking.

There are occasional reports of sales of furnace coke at less than $18, but it is possible that by the time such coke is sold to a consumer the price is $18 or higher. The market in general seems to be quotable at the same level as a week ago: Furnace sells at $18@$18.50; foundry, $19@$19.50, per net ton at ovens, for spot or prompt shipment.

As to contract coke, there is simply no market at all, neither producers nor consumers having any disposition to negotiate. While furnace and foundry coke are quoted in the market at different prices it is alleged in many quarters that there is no distinction, except in price. The distinction of foundry coke being shipped in box cars was lost years ago.

The *Courier* reports production in the Connellsville and Lower Connellsville region in the week ended July 24 at 182,145 tons, an increase of 10,350 tons.

PITTSBURGH

Regions Receive Lake Coal Allotment—Market Shows No Signs of Decline—Car Supplies Perhaps Are Near Coal Miners' Limit.

For the Lake coal pool the Pittsburgh district is assigned 5,000,000 tons, to be shipped in the 100 working days beginning July 26. Ohio No. 8 field comes next with 4,000,000 tons. Even the Connellsville region is given an assignment (800,000 tons) when it is not so many years ago that this region mined scarcely any coal except for its own coking operations. It is claimed there is no dictation of price by the pool management, which exercises its authority by means of the railroads, but there is an impression that coal shipped for the Lake trade, and not coming under contracts previously made, is going to be invoiced at about $5 or $6.

While there are more or less precisely worded reports from Washington, that a secondary priority, next to the Lake priority, is to be accorded coal for New England, yet operators in the Pittsburgh district are not informed as to there being any definite allotments to the district.

The spot market does not come down, being still quotable within the general range of $10@$12 per net ton at mine, Pittsburgh district, for various grades and tonnages, and the feeling is growing among operators that some form of Government control or regulation is bound to come.

Recently there appeared to be strong chances that with increasing production, through there being better car supplies, the market would decline of its own accord; but with so much coal forced out of the situation by the Lake trade, the buying competition for the remainder will be strengthened.

Furthermore, it is quite probable that not a great deal more production can be brought out by increasing car supplies, as with much further increase in car supplies, the limit of what the miners are willing to produce would be uncovered.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

BITUMINOUS COAL.

	1920 Week	1920 Calendar Year to Date	1919 (a) Week	1919 (a) Calendar Year to Date
July 10b	9,659,000	272,019,000	10,225,000	228,324,000
Daily average	1,932,000	1,673,000	1,704,000	1,404,000
July 17b	10,930,000	282,949,000	9,889,000	238,213,000
Daily average	1,822,000	1,678,000	1,648,000	1,413,000
July 24c	10,601,000	293,550,000	9,988,000	248,201,000
Daily average	1,767,000	1,681,000	1,665,000	1,422,000

ANTHRACITE

	1920 Week	1920 Calendar Year to Date	1919 (a) Week	1919 (a) Calendar Year to Date
July 10	1,500,000	45,141,000	1,849,000	41,898,000
July 17	1,700,000	46,931,000	1,795,000	43,693,000
July 24b	1,767,000	48,698,000	1,803,000	45,496,000

BEEHIVE COKE

United States Total

Week Ended July 24 (c) 1920	Week Ended July 17 (b) 1920	Week Ended July 26 1919	1920 to Date	1919 to Date
381,000	363,000	371,000	12,012,000	10,813,000

(a) Less one day's production during New Year's week to equalize number of days covered for the two years. (b) Revised from last report. (c) Subject to revision. All figures in net tons.

NORTHERN PAN HANDLE

Car Supply Falls Behind That of Previous Week—Output Goes to Inland West Markets—Order 10 Will Now Send Much of Output to Lakes—Railroads Use Large Percentage of Tonnage.

During the week ended July 24 transportation facilities were worse than those provided during the week ended the seventeenth. There was a loss of approximately 12 per cent, the supply for the week in the field averaging only about 38 per cent. For the previous week it had been maintained at about 50 per cent.

Tidewater shipments were few and far between, the output being largely for inland West markets; railroads, however, using a large part of the output, so that production of commercial fuel was still quite limited.

Compliance with Service Order 10 of the Interstate Commerce Commission will mean that virtually the entire output of northern Pan Handle mines will have to be used in taking care of the Lake situation.

Middle Appalachian

KANAWHA

Output for the Field Is Less Than 50 Per Cent—Promised Cars Have Not Materialized—Embargo Removal Permits Increase in Eastern Shipments.

Kanawha mines suffered from a shortage of cars as July drew to a close, transportation conditions being quite bad. The average for the car supply covering the week was less than 50 per cent. Conditions were equally bad insofar as mines on the Kanawha & Michigan were concerned.

Coal men were rather pessimistic as to the ability of Kanawha mines to take care of the Lake demand and the commercial demand at the same time in view of the limited car supply. A large supply had been promised, in order to enable mines to handle their percentage of the tonnage required by the Lakes. Yet the additional cars had not materialized early in the week which came to an end on July 31.

Eastern shipments from the Kanawha field were somewhat larger owing to the heavier tonnage for tidewater, that being made possible by the removal of an embargo on July 20. The car supply was still limiting production to such an extent as to have no effect on prices.

LOGAN AND THACKER

Production Shows Marked Improvement in Logan Field and Slight Betterment in Thacker Region—Guyan Territory Will Furnish 15 Per Cent of Allotment for Lakes—High Volatile Has Excellent Market.

Rather marked improvement in the Logan high-volatile field in southern West Virginia and a slight improvement in the Thacker field was observed during the week ended July 24. The Logan field is solely dependent upon more cars for an improvement in the production situation, while the Williamson field is handicapped by a strike still in force. There was an excellent market for all the coal produced in the high-volatile regions under discussion.

Production increased from 154,000 to 190,000 (estimated) tons in the Logan field, or a gain of about 21 per cent over the previous week. Western shipments were nearly in the ratio of two to one over eastern shipments, although there was an increased movement to tidewater during the week owing to the lifting of an embargo.

Mines in the Guyan region will be called upon to furnish 15 per cent of their allotment for the Lakes each day during the time Service Order 10 is in effect and that will materially cut down the shipment of commercial fuel to other points unless there is a material increase in the car supply.

The United Mine Workers apparently had made no further headway in their efforts to tie up production in the Williamson field. On the other hand, there was a slight increase in the output, owing to more regular operation at several of the larger plants in the field; the Borderland company at Borderland, W. Va., as well as several other companies having a larger force of men at work.

Operators feel sanguine that with miners who want to work afforded ample protection, the effort of the United Mine Workers to use fear as a means of gaining recruits will not be successful.

POCAHONTAS AND TUG RIVER

Pocahontas Gets 85 and Tug River 100 Per Cent Car Supply—Output Makes Big Increase—Labor Shortages Are Now Evident—Much Pocahontas Coal Is Exported—Tug River Fuel Goes to New England and Some to Lakes.

Strides were made in increasing production in the smokeless regions along the Norfolk & Western, chiefly due to a well maintained car supply on that road. With the growth in the car supply labor shortages were coming more and more into evidence; indeed, losses from a labor shortage being in excess of those from a car shortage. Generally speaking, N. & W. mines had a car supply of about 85 per cent or better. Officials of the Norfolk & Western expected that fully 1,000,000 tons of coal would be handled to the lakes before the close of the lake season, that representing the normal tonnage delivered at lake points from the Norfolk & Western in the course of a season.

Much of the output of the Pocahontas region was consigned to eastern points, some of this tonnage being for export shipment, though shipments of that character are still below the levels reached before the Interstate Commerce Commission began to restrict foreign shipments. After July 26 it was rather anticipated that there would be a marked growth in Lake deliveries in accordance with Service Order 10.

Loading in the Tug River field for the week ended July 24 reached 86,900 net tons on a 100 per cent car supply If miners had worked to a reasonable degree, 30,000 tons more could, and should have been loaded. Continued union agitation and the strike in the Mingo County field is held responsible by operators for the failure of the miners to work better in the Tug River field.

Shipments were heavy to New England during the last two weeks of July and some of the mines in the Tug River field are shipping large tonnages to the Lakes.

VIRGINIA

Virginian Mines Increase Production and Now Labor Shortages Develop as Car Supply Improves—But Little Spot Coal Is Sold.

Mines in the Virginia field increased production, there being a gain of 7,000 tons during the third week of July, although the percentage of full-time capacity was only 73 per cent, as compared with 76 per cent for the week preceding. The potential capacity, however, had been increased in the meantime. However, a labor shortage was beginning to develop as car shortages were cut down.

Not so much coal was converted into coke as had been the case during the previous week, that being the result of the improvement in the car supply.

The production of coal for commercial shipment was still rather limited, however, owing to the large volume of coal utilized by the railroads, that involving the assignment of many cars. As much of the coal shipped was under contract, spot sales were not large in volume.

NEW RIVER AND WINDING GULF

Virginian and C. & O. Smokeless Fields Increase Production—Gulf Works Over Two-Thirds and New River Half Time—Most of Coal Shipped to Tide Is for Coastwise Delivery—Prices Do Not Change.

There was a slight increase in production in the New River and Winding Gulf fields combined for the week ended July 24, yet production was nothing like what it should have been. Tidewater was open to smokeless shipments from both the Gulf and New River districts during the week. However, little of such tonnage was being exported, much of it being for coastwise delivery, especially New England. Prices remained practically unchanged.

Winding Gulf mines supplied by the Virginian Ry. were fully 20 per cent better off than Chesapeake & Ohio mines in the same territory, from a car supply standpoint. The Virginian Ry. operated between four and five days, while the mines on the C. & O. road were able to work only about half the week. A few of the 120-ton cars ordered by the Virginian had begun to arrive in the Gulf field during the week and were pressed into service.

NORTHEAST KENTUCKY

Output Increases in the Region—Local Mines May Exceed Requirements of Order 10—Coal Is Appllied on Contracts.

Not only was there a growth in production in the northeast Kentucky field in the week ended July 24 but it was also apparent that the mines in the region mentioned would succeed in more than meeting the requirements of Service Order 10. Out of a potential capacity of 334,000 tons, the mines produced 151,665 tons, or 45 per cent of capacity.

The proportion of Lake coal as required under Service Order 10 from the northeast Kentucky region was 70 cars daily, or about 8 per cent of the allotment for the mines in the district. The average daily movement to the Lakes during last week was 73.2 cars. It was also observed that several operators were entering the tidewater market, a total of 52 cars having been shipped to tide last week.

The larger and more conservative operators in northeast Kentucky, it is stated, are not participating much in high-priced coal, the majority of the output being applied on contracts.

Southern Appalachian

BIRMINGHAM

Corona Coal Co.'s Petition in Assigned-Car Case Is Dismissed—Matter Must Be Taken Up with I. C. C. for Redress. Field-Day Meet Will Be Revived in Alabama on Aug. 21.

On Aug. 21 a field-day meet will be held in Birmingham, Ala., under the auspices of the Alabama coal operators and U. S. Bureau of Mines, W. B. Plank, engineer in charge of the local station. Numbers of teams from the mines of the district will enter the meet and contest for prizes to be offered, and to wrest the trophy cup from the Alabama Fuel & Iron Co.'s team, which won it at the last meet. These events, formerly held annually, were discontinued during the war, but will be revived beginning this year. Various committees are now arranging the details for the meet and planning to make it a successful and interesting event.

The petition of the Corona Coal Co. asking that the injunction granted the company in the state court against the Southern Ry.'s "assigned car" plan be continued, pending an appeal from the Federal Court's action in dissolving the injunction, was dismissed from Federal Court recently by Judge Henry D. Clayton, who entered a final decree denying the prayers of the plaintiff.

"Continuation of the injunction would encourage other mine operators to seek redress in the State Court," said the opinion. "This would tend to render nugatory the rules of car distribution established by the Interstate Commerce Commission. Plaintiff can apply to the Interstate Commerce Commission for redress."

The Corona Coal Company case is one of great importance in Birmingham industrial circles. The plaintiff contended that cars "assigned" by the railroad company for the use of coal transportation from mines on its lines and mines from which it has contracts for the purchase of coal, should be placed in a common lot with the other cars and distributed equally among all mines, regardless of whether owned by the railroad company, or mines from which they had contracts for the purchase of coal.

TUSCALOOSA

University of Alabama May Secure a New Experiment Station — Dorsey A. Lyon, of Bureau of Mines, Investigates Matter—Operators Much Interested.

Dr. Eugene A. Smith, state geologist of Alabama, recently conferred with Dorsey Lyon of Washington, director of experiment stations of the Bureau of Mines, regarding the claims of the University of Alabama for the establishment of the new experiment station that has been authorized by Congress. While in the South Mr. Lyon will also hear the claims of the universities of Georgia, Tennessee and North Carolina, who also wish the station.

Coal and iron operators are much interested in securing the experiment station for Tuscaloosa, because, located there, it will be quickly accessible for analysis of ores and coals.

The University of Alabama has for many years been doing what it could to locate at the university a Federal mining school, proposed to be established by Congress for each of the states.

Middle Western

KNOX AND PIKE COUNTIES

Coal Companies Start Large Mines in Vicinity of Petersburg and Bicknell, Ind.—Bicknell Is Damaged by Cave-ins.

The Pike County Coal Co. is opening another big mine just north of Petersburg and the railroad is building a switch to the place where the new shaft is to be sunk. West of the city engineers will start a survey shortly to connect the Oatsville coal fields with the railroad. A spur seven miles long will either be built from Petersburg or Glezen to the town of Oatsville, where the Pike County Coal Co. owns more than 10,000 acres of coal land, and where recent tests showed coal seams varying in thickness from 6 to 11 ft.

The American Coal Co., of Bicknell, Ind., is leasing big tracts of coal land both south and north of Petersburg, while the Richards Coal Co. owns thousands of across of coal land in Daviess County. The Globe Coal Co., which is opening a large stripping mine at Rogers, Ind., has uncovered the No. 7 seam and will begin shipping coal shortly.

Eleven houses were damaged in Bicknell recently in probably the largest cave-in of a series occuring there during July. The sinking of the ground was caused by the collapse of old coal mine entries and rooms under the city.

MICHIGAN—OHIO—INDIANA

The M-O-I Association Protests Lake and Assigned-Car Orders of I. C. C.

Secretary B. F. Nigh, of the Michigan-Ohio-Indiana Coal Association, in protest against the recent priority order for 4,000 cars for the Lake trade daily, in addition to the priority for public utilities, has sent the following telegram to the Interstate Commerce Commission:

"The Commission order giving preferential supply of 4,000 cars per day to mines loading Lake coal in addition to the assigned cars for railroad fuel, in my opinion, makes it impossible for householders in Michigan, Ohio and Indiana towns to obtain a sufficient supply of coal to protect themselves against great suffering during the winter. I believe the order violates the constitutional rights of the people in Michigan, Ohio and Indiana territory and it is vicious and without reason. I anticipate taking immediate action legally to enjoin the railroads from enforcing the Lake order and the assigned-car order.

West

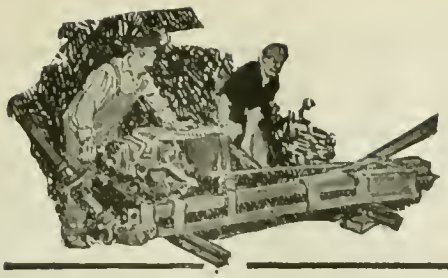
BUHL, IDAHO

Threshing Operations of the District Seriously Affected by Lack of Coal Due to Car Shortage.

A serious coal shortage confronts the threshermen of the Buhl district, Idaho. There is said to be practically no coal available for the threshing machines. The district affected embraces an area of nearly 100,000 acres, about 50 per cent of which is in grain. The Interstate Commerce Commission has been appealed to by the local chamber of commerce in an effort to rush in an emergency supply of coal before the season commences. Car supply is said to be the principal factor entering into the shortage.

Shipments of Bunker Coal from British Ports

District	June, 1919	June, 1920
Bristol Channel ports	286,893	224,113
Northwestern ports	190,361	130,943
Northeastern ports	155,585	207,474
Humber ports	120,482	149,145
Other east coast ports	106,188	125,556
Other English ports	33,825	72,486
Ports on east coast of Scotland	42,585	65,065
Ports on west coast of Scotland	56,389	98,286
Irish ports	500	253
Total	992,808	1,073,321



Mine and Company News

ILLINOIS

Duquoin—A deal has just been consummated whereby the Aladdin Coal Co., of Pinckneyville, ten miles west of here, becomes the owner of the Little Muddy mine at Tamaroa, operated by the Collier Coal Co. The mine has been operated for 20 years, but still has a large acreage untouched. The transaction included the whole mining property, the coal land and options adjoining the land. E. J. Hartenfeldt, of the Alladin Coal Co., has stated that the output of the mine would be increased over 500 tons within a short time and that a number of new switches and other improvements will be made at the plant immediately to accomodate the increased tonnage. The price involved in the sale of the mine was $65,000.

The Southern Gem Coal Co., has announced the removal of its location formerly planned for the building of a new rescreening and washing plant, from Mt. Vernon to Tamaroa. The town is on the main line of the Illinois Central and the Wabash, Chester & Western railroads, and this is thought by some to have been the reason for locating the plant at that place. According to plans the plant will cost in the neighborhood of $100,000 and will handle coal mined and shipped from all over the southern part of the state. The Southern Gem Coal Co. continues to drill east and south of town and most of the tests have proved that there is a good regular seam through the district.

KENTUCKY

Lexington—The Dudley Coal Co., recently incorporated, has acquired local coal properties with plant, and plans for extensive operations. The company expects to make a number of improvements at the plant and install equipment for a capacity of about 1,500 tons a day. W. S. Dudley and G. P. Morison head the company.

Louisville—W. E. Hicks, mine superintendent for the Louisville Gas & Electric Co.'s mine at Echols, Ky., made a record recovery following the fire which destroyed all the surface buildings on June 16, the first car of coal after the fire moving out in just ten days, and the company getting back to a normal production of 14 cars a day on July 5, using temporary equipment. Thirty feet of the shaft had to be replaced. Tipple, machine shop and all buildings were destroyed. The company will replace with permanent structures, planning to spend $100,000 in re-equipping the plant.

NORTH DAKOTA

Bismarck — The Lucky Strike Coal Co. has completed its organization in Bismarck, it is announced. The company is capitalized at $500,000 and has taken over the mines at Zap, N. D., formerly owned by Slowey and Field, It owns and has under lease 1,700 acres of coal land and will operate one of the largest mines in the State.

The officers and directors of the company are A. L. Farr, of Fargo, president; George M. Slowey, of Beulah, vice president; W. M. Cowan, of Fargo, secretary and treasurer. The company is amply financed and is making extensive developments at the mine, putting in a spur track and side track, a modern tipple, electric machines and a bathhouse for the miners.

W. M. Cowan will be in charge of the general office and J. W. Deemy of Kenmare will be manager of the company, looking after the production end of the business. The list of stockholders contains the names of many prominent men in the State.

OHIO

Kent—J. G. Woodward and J. L. Harris, both of Kent, have acquired the property of the Stellar Coal Co., at Adena, Ohio, including mine equipment, railroad facilities, etc., for a consideration of about $200,000. The new owners plan extensive operations.

Columbus—The Stalter & Essex Coal Co., has been chartered with a capital of $150,000 to operate mines in the Pomeroy Bend district. The incorporators are: Fred Essex, T. J. Frasure, C. J. Maddox, H. L. Allread and J. A. Stalter. The organization of the company has not been completed.

PENNSYLVANIA

Graceton—Announcement is made of the sale of the Graceton coal operations in Indiana County, owned by the Youngstown Steel Co., to Warren Delano and associates of New York city. Mr. Delano is one of the principal owners of the Vinton Colliery Co. of Vintondale, in the same county. The purchase price of the company acquired was not given out. The new owners took possession July 1, but will not start active operations until Sept. 1.

Hooversville — A new coal mining company, incorporated under the laws of Pennsylvania and capitalized at $500,000, with L. M. Ryan of Altoona as the manager of the mining operations, has just been formed, to be known as the Old Colony Coal Mining Co. The operations are located at Hooversville, Somerset County, where the company has extensive holdings.

Pittsburgh—The Eastern Coke Co. has been formed to take over the Tower Hill No. 1 mine of the Tower Hill Connellsville Coke Co. and operate it for the Eastern Steel Co. The entire stock of the Eastern Coke Co. is owned jointly by the Eastern Steel Co. and the Tower Hill Connellsville Coke Co., the majority of the stock of the latter company having recently passed to J. Hart Hillman, Jr., of Pittsburgh, Pa., chairman of the board of directors of the Hillman Coal & Coke Co. The Hillman company will continue to operate the plant, the whole output of which will go to the Eastern Steel Co. The Tower Hill mines are in Fayette County, Pa., near Republic, on the Monongahela R.R.

Uniontown—The H. C. Frick Coke Co. has commenced stripping coal on a tract near Masontown, between its Ronco and Leckrone plant. A huge shovel with a capacity of six cu.yd. and weighing 312 tons has been installed. It will be used to strip the surface after which a smaller shovel will load the coal upon mine cars to be hauled to Ronco for river shipment. It is the first attempt of the Frick company to try out coal stripping. The work will be done under the direction of W. J. Culleton, superintendent of the two plants.

WEST VIRGINIA

Fayetteville—Four companies in the New River field, hertofore operated under individual company ownership and independently of each other, have combined under one ownership and will hereafter be a part of the operations of the newly organized New River Consolidated Coal Co. The mines taken over are those of the Wright Coal & Coke Co., the Batoff Coal Co., the Royal Coal Co. and one other. The companies named are all operating at the mouth of Piney Creek. With a view to increased production, a number of improvements will be made under the new management at large expense.

Charleston—The Cabin Creek branch of the Chesapeake & Ohio Ry. may be extended up Coal Fork, in the sense that others will build the extension if the C. & O. can be induced to operate it. The Shonk Land Co. has a tract of about 6,000 acres on Coal Fork which it is proposed to have developed through leasing to a Cincinnati syndicate, provided it is possible to secure railroad facilities. With this in view representatives of the land company held a conference with representatives of the Chesapeake & Ohio early in July.

Recent Patents

Centrifugal Drier. Guy H. Elmore, Swarthmore, Pa., 1,342,743. June 8, 1920. Filed Aug. 8, 1918. Serial No. 248,911.

Means for Applying Electric Motors to Winding Engines. Alexander Palmros, Syracuse, N. Y., assignor to the Pneumelectric Machine Co., Syracuse, N. Y., 1,342,757. June 8, 1920. Filed July 5, 1919. Serial No. 308,743.

Personals

Leonard G. Sargent, of California, Pa., has resigned from the Engineering and Inspection Department of the Pittsburgh Coal Co., and accepted a position with the Sales Engineering Department of the Fairmont Mining Machinery Co., of Fairmont, W. Va.

G. W. Savage, secretary of the Ohio United Mine Workers, has been appointed the U. S. delegate to the International Mining Conference, to be opened in Switzerland August 2. While abroad, Mr. Savage expects to thoroughly investigate British mining methods and conditions, including the co-operative store system.

James P. Roe, on May 14, was appointed general superintendent of the Reading Iron Co., at Reading, Pa. Mr. Roe has an international reputation as an engineer and metallurgist. A Welsh boy, many years ago, he served an apprenticeship at the Consett Iron Works in the north of England. Coming to America at the age of 23 he became associated with the Pottstown Iron Co., finally becoming general superintendent of the works. Next he became the general superintendent of the Glasgow Iron Co., which later leased the plants of the Pottstown company. Mr. Roe is the inventor of the Roe mechanical puddler and he now has an opportunity to give his personal attention to the development of this process.

Robert M. Medill, formerly superintendent of a number of mines of the Peabody Coal Co., and later for the Deering interests in southern Illinois, has resigned his position as general superintendent of the Kathleen mine of the Union Colliery Co., at Dowell, Ill. Mr. Medill has not announced what his next position will be. He and his wife will enjoy a motor trip through Michigan, Wisconsin and other northern states before he decides where he will again locate. **D. T. Detweiler,** formerly chief engineer of the mine has been promoted to succeed Mr. Medill.

Homer S. Pratt, vice president of the American Coal & Supply Co., of Chicago, has been elected secretary of the Sunrise Coal Co., operating at Cambria, Ill., Jackson County. He recently purchased an interest in the company.

W. D. Lee has been appointed mine inspector of district 18 with headquarters at Iaeger, McDowell County, according to announcement made by R. M. Lambie, chief of the State Department of Mines. Mr. Lee succeeds **M. E. Quenon,** transferred to district 12 with headquarters at Thurmond, Fayette County, the latter succeeding Edward Nicholson, resigned.

The Pennsylvania State College is conducting a six weeks' summer course in practical coal mining. Among those attending this course of the college's School of Mines are a number of representative men from various mining districts, both anthracite and bituminous. **D. M. Hopkins,** the general outside foreman for the Auchincloss and Loomis collieries of the Delaware, Lackawanna & Western company of the Scranton, Pa., anthracite region, is one of the interested members of the class. Mr. Hopkins states that on account of the conditions due to the presence of explosive gas in large quantities in the section from which he comes many difficult mining problems are presented which are demanding solution. He states that he is already finding the solutions of some of these problems given in the summer course. **T. M. Stonerod,** who is employed by the Shenango Furnace Co. at its Wilpin Coal and Coke plant, a large bituminous operation near Ligonier, Pa., is said to be an enthusiastic member of the class. Mr. Stonerod is of the opinion that many hundreds of the young men of the mining regions of Pennsylvania will avail themselves in the future of the opportunities afforded by this summer course of the School of Mines.

L. Everett White has resigned his position with The Three Forks Coal Co., at Three Forks, W. Va., and has accepted a position with the Deegans-Eagle Coal Co. as chief engineer. Mr. White will look after all of the Deegans interests in the Logan field, which includes the Paragon Colliery Co., the Cub Fork Coal Co., the Orville Mining Co., the Faulkner Coal Co., and the Guyan Valley Coal Co. Mr. White is the son of J. F. White, the State mine inspector for the Guyan field.

J. F. McGee was quite recently appointed State Fuel Commissioner by Governor J. A. A. Burnquist to represent Minnesota in movements to insure the state an adequate supply of coal for the coming winter. Mr. McGee will leave for Washington at once to confer with the Interstate Commerce Commission. He was State Fuel Administrator during the war and is now a member of the State Public Safety Commission.

"Commissioner McGee will represent the state, to the extent of my authority, toward getting coal here," said Governor Burnquist.

The Pennsylvania Coal Dealers' Association recently elected **Samuel B. Crowell,** Philadelphia, president, and **Walter Z. Montgomery,** Harrisburg, vice-president The next meeting will be held in Harrisburg, Pa.

J. H. Brown, of Ashland, Ky., has resigned as assistant State Mine Inspector, effective July 1.

Association Activities

Southern West Virginia

In line with a suggestion made by the U. S. District Attorney, operators of southern West Virginia met in Charleston on Thursday, July 8, to find a way, if possible, to curb and discourage high prices of coal. Operators of the Logan, Kanawha, New River and Winding Gulf districts were represented at the meeting. The discussion covered a wide range in connection with prices on coal, legal phases of the price problem receiving special consideration.

The operators did not make any agreement as to the price of coal, as that was considered to be a violation of the anti-trust laws. But a part of those in attendance at the meeting did join in adopting a resolution recommending that the maximum price for run-of-mine coal at the tipple be $4.50 per net ton; for lump end egg coal $5 per ton and for export coal $6 per ton.

Investigation made of prices in West Virginia disclosed the fact that much of the output of mines, and especially the larger mines, was put under contract some time ago (soon after April 1) at from $3.50 to $5 a ton. Of course prevailing prices for spot coal are twice $5 a ton generally speaking, yet there is little coal to be had at that figure, so that the price represents little except in isolated cases. Reliable companies are adhering to their contracts and making deliveries under contract prices insofar as the limited car supply will allow.

Mercer County Coal Mining Institute

The Mercer County Coal Mining Institute held its monthly meeting at Matoaka, W. Va., recently. While the attendance was not satisfactory a full membership is expected at the next meeting. The membership of this institute numbers about seventy-five.

It was formed with the intention to educate and broaden out the knowledge of all workmen in and around the mines. It is said that the majority of men who have obtained certificates through the mine department to manage mines seem to think they have attained all that is required of them to safely fill this position.

Granted this, the institute states that there is still a great deal mining men are lacking in knowledge, and if through these institutes members could discuss problems that they come in contact with every day in the mines, better results would be attained. The fatal accidents in the southern end of West Virginia would be reduced greatly.

The next meeting of the institute will be held at Matoaka the first Saturday in August, at 8 p.m. Dr. Clements will read a paper on sanitation and first aid. Inspector Thomas Stockdale will give a talk on the construction of the safety lamp and its use. He will also give a list of practical questions on coal mining, tho answers to be prepared for the September meeting. A full discussion is invited.

Trade Catalogs

Light Railway Equipment. The Light Railway Equipment Co., Inc., Philadelphia, Pa. Catalogue 200. Pp. 60; 8½ x 11 in.; illustrated. Catalogue shows equipment for permanent and portable railways, including cars and locomotives.

"Shelby" Seamless Steel Tubes and Their Making. The National Tube Co., Pittsburgh, Pa. Bulletin. Pp. 69; 8½ x 11 in.; illustrated. Description of the various processes of making seamless tubes in the National works. Accounts of tests are given and facts of interest to those using tubes.

Bearings and Their Lubrication. Vacuum Oil Co., New York, N. Y. Bulletin. Pp. 31; 9 x 11¼ in.; illustrated. Various types of bearings are noted and their lubrication commented upon.

Portable Conveyors. Portable Machinery Co., Passaic, N. J. Catalogue. Pp. 24; 6¾ x 9¼ in.; illustrated. Notes money-saving features of certain machinery for storing, reclaiming, loading and unloading loose material such as coal, coke, etc.

Radiagraph. Davis-Bournonville Co., Jersey City, N. J. Bulletin. Pp. 8; 8½ x 11 in.; illustrated. Description of a tool for cutting steel plates and billets in fabricating plants, steel mills, boiler shops, etc., with the oxy-acetylene and oxyhydrogen torch.

Strong and Simple Coaling Plant Equipment Thoroughly Proven. The Roberts & Schaefer Co., Chicago, Ill. Bulletin 38. Pp. 6; 8½ x 11 in.; illustrated. A description of modern mechanical equipment for the handling of locomotive coal.

W.-S.-M. Car Dumpers. The Wellman-Seaver-Morgan Co., Cleveland, Ohio. Bulletin 49. Pp. 15; 8½ x 11 in.; illustrated. Description of coal car dumping plants at terminals and plants.

W.-S.-M. Coal and Ore Handling Machinery. The Wellman-Seaver-Morgan Co., Cleveland, Ohio. Bulletin 41. Pp. 48; 8½ x 11 in.; illustrated. Description of several types of extensive equipment for unloading open-top cars and for handling coal and ore at terminals and large plants.

Extension to L Street Station, Boston. By Charles H. Bromley. Distributed by the Cutler-Hammer Manufacturing Co., Milwaukee, Wis. Pp. 4; 8½ x 11 in.; illustrated. Relates how Boston uses the Dean control for the operation of gate valves.

Coming Meetings

American Mining Congress will hold its annual meeting at Denver, Col., Nov. 15. Secretary, J. F. Callbreath, Munsey Building, Washington, D. C.

American Institute of Mining & Metallurgical Engineers will hold its fall meeting Aug. 20 to Sept. 3. It is proposed to leave Buffalo by steamer and cruise through the Lakes, the first stop being at Houghton, Mich., after which the party will visit Duluth and the Iron Ranges of Minnesota, spending a day or two in Minneapolis on its return. Secretary, Bradley Stoughton, 29 West 38th St., New York City.

New York State Coal Merchants' Association will hold its annual meeting Sept. 9, 10 and 11 at Richfield Springs, N. Y. Treasurer, G. W. F. Woodside, Albany, N. Y.

Illinois and Wisconsin Retail Coal Dealers' Association's annual meeting Aug. 4 and 5 at Milwaukee, Wis. Secretary, I. L. Runyan, Chicago, Ill.

The Rocky Mountain Coal Mining Institute, in conjunction with the Colorado Metal Mining Association, the local chapters of the American Mining Congress and the American Institute of Mining & Metallurgical Engineers, and the International First Aid Meet will hold its annual meeting Sept. 9, 10 and 11 at Denver, Col. Secretary, F. W. Whiteside, Denver, Col.

National Safety Council will hold its 1920 congress on Sept. 27 to Oct. 1, inclusive, at Milwaukee, Wis. General Manager C. W. Price, Chicago, Ill.

Oklahoma Coal Operators' Association will hold its annual meeting Sept. 14 at McAlester, Okla. Secretary, F. F. La Grave, McAlester, Okla.

COAL AGE

The Weekly Journal of the Coal and Coke Industries

Volume 18 NEW YORK, THURSDAY, AUGUST 12, 1920 Number 7

Innocent and Guilty Alike

REVIVED and persistent rumors that the President is about to designate someone with authority to administer control over the coal industry—a fuel administrator—means but one thing, that no matter how successful the various steps to regulate distribution may be, the present lack of any control over prices presents an insurmountable obstacle to the policy of hands off by the Government. If a fuel administrator is appointed it will be to regulate prices, and the industry, struggling hard to justify its existence as private enterprise, will be condemned to some form of permanent regulation through the selfishness of the guilty few.

The Innocent Union

DID William Green, secretary of the United Mine Workers, have his fingers crossed when at Atlantic City last week he disclaimed responsibility by the miners for any shortage of coal? "The men of our organization are working everywhere they are permitted to work. Thousands of them are not working, but that is not their fault," Mr. Green is reported to have stated. While he was saying this thousands of coal miners, members of his organization, were on strike in Illinois and Indiana in direct and acknowledged violation of their solemnly-pledged contract. Furthermore, through the direct efforts of the United Mine Workers, men are even yet on strike in portions of the coal fields of West Virginia and Alabama and in the anthracite field of Pennsylvania.

Mr. Green, of course, knew of these strikes, but he nevertheless announced that labor has washed its hands of all blame for a winter coal famine in the United States. Miners, union and non-union, are for the most part working as they are given railroad cars to fill, laboring perhaps as industriously as any class of American labor in these indifferent times, but the miners' union cannot escape the blame for unlawful strikes and for stirring up of trouble in peaceful coal fields, with attendant reduction in output.

Whose Foot Does the Shoe Fit?

HIGH prices for coal—the exorbitant, outrageous prices that have characterized the spot market for the last three months—are not the result of the machinations of a single group or coterie of men in any branch of the coal industry. They are the direct and inevitable result of bidding in a tight market with the law of supply and demand set at naught by the failure of transportation. To say that the wholesaler, middleman or jobber—whatever you may term him—is the sole cause of the trouble is to fly in the face of the facts. The percentage of the total of operators of coal mines who have accepted panic prices for their product is no less than that of jobbers who have taken advantage of the situation.

Colonel Wentz is fearless and above all a man of his word, and when he states that the National Coal Association is going to "clean house" he means just what he says. Everyone, be he producer or jobber, who is taking advantage of the present situation is helping damn the coal industry and is deserving of all the condemnation that is being heaped upon him. Not all the profiteering in coal, however, is to be found in the tidewater trade and it is hard for us to believe that none but jobbers are guilty here, as charged by the National Coal Association last week.

Operation of the tidewater pools is complicated and it is difficult to obtain trustworthy data on which to base conclusions regarding who is guilty of speculating in this game and to what extent the practice is indulged. The charge that 5,000 cars are being withheld from legitimate trade by those engaged in speculation when interpreted appears to mean that possibly 300 cars of coal a day, or 7 per cent. of the total dumpings on the Atlantic seaboard, are turned over by these dealers, as it requires about fifteen days for the cars to make the round trip between the mines and the piers. It would appear that the disturbance created over these 5,000 cars, which in number are less than one per cent of the total open top cars in use, is out of proportion to their relation to the whole situation.

Business through the tidewater exchanges is largely that of the middleman, for the larger producer and shipper does not use this medium. The newspaper attacks of the National Coal Association against the shortcomings of the exchange have been characterized as a smoke screen. They do not square with the published declarations of the president of the association and are not constructive.

Canada Has an Export Problem

CANADA seems to be having the same sort of problem as regards exportation of coal as we are having in this country. According to data published by the Geological Survey, exports from Nova Scotia to the United Kingdom and Newfoundland in the first three months of the year decreased from 248,025 net tons in 1919 to 125,200 tons in 1920. In the same period exports to France and the Netherlands increased from 3,835 tons to 104,413 tons. Although the quantities appear small in comparison with exports from this country, it is evident they are significant, for only recently the Canadian Government has embargoed exports other than to Newfoundland except by permit.

Wonderful!

DR. ROYAL MEEKER goes to Europe to be statistician for the Allies. Perhaps the *Monthly Labor Review* of June is his last publication and the "Minimum-Quantity Budget" on the opening pages of that issue his last and *magnum opus* in the Bureau of Labor. Let us hope so, for there is nothing worse than

a good man misled or a wise man working on a false premise.

He starts his inquiry into the minimum-quantity budget of the workingman with a study of the workman's food needs and declares that workmen and their families require a certain number of calories per day for their sustenance. How does he know that? He is too scientific to neglect to tell how it was determined. Here is the secret: "The quantity food budget submitted here as representing the food requirements of the standard family of five was obtained by averaging the actual amounts of food used by 280 families selected from the cost-of-living survey made by the Bureau of Labor Statistics." Passing over the word "selected," though it has a suspicious sound, it is permissible to ask, Is this a calorie food budget or is it a budget based on the purchases from which the calorie value was determined? The word "calorie" is a clever word which cleverly veils the fact that we do not know how many calories a workman needs but how many the average workman buys.

Dr. Meeker either expects to fool us or is fooled himself by his calories. He is giving us the word to bite on, but assuredly it means nothing. In fact Dr. Meeker's statement in the ultimate analysis really says that the minimum quantity of food consumed by the workingman and his family should be that found to be the average purchased by the 280 families which some one, unstated, selected. Some consumed more, some less, of course, but the average should be the minimum. Some saved, some were unthrifty, yet the happy mean should be the least food budget provided.

All this is very unscientific, for if the average is to be the minimum, the minimum is ever too low, and if it is brought up to the average that figure is immediately made higher and the minimum again requires adjustment. This Meeker budget is not therefore a minimum-quantity budget, as Dr. Meeker would call it, nor a minimum budget, as Jett Lauck would term it, or even a minimum-comfort budget, as the operators would dub it, but an average-quantity budget for 280 persons. If this average continually camouflages as a minimum, wages must steadily rise. The mean of ten and twenty is fifteen. If the mean is made the minimum we have as the minimum the mean of fifteen and twenty, providing all the time that the twenty does not go up. This minimum, therefore, is at least seventeen and a half and ready for a new boost, for the average is already at least eighteen and three-quarters, which is its exact value if the upper figure is still twenty.

The same jugglery is performed by Dr. Meeker in his clothing schedule. Here is the frank confession: "The clothing budget herewith presented has as its basis the clothing budgets of approximately 850 families having three children under fifteen years of age which were included in the survey of the Bureau of Labor statistics in 1918-1919." It is therefore a selected average and not a true minimum of "health and decency" or of "comfort."

Perhaps the housing requirements in the budget are based on a less labored calculation. Dr. Meeker suggests that we take as standard "the size of the various rooms adopted by the Bureau of Industrial Housing and Transportation of the Department of Labor, which undertook the war housing of the Government other than that required by shipbuilders." Perhaps they guessed what was the needed accommodation, perhaps they averaged the demands and customs of 280 or 850 or some other number of families. It was somewhat hard to do so, for rooms vary in size, and a mere averaging of a number of rooms, small and large, will be misleading. The good doctor realizes that and says so.

The Industrial Housing Board doubtless based its decision on an average, for Dr. Meeker says "For twenty cities selected at random, and including all families scheduled regardless of size or income, those living in houses averaged 1.007 rooms per person, and those in flats and apartments 0.931 per person." A family of five therefore, including rich and poor, would on an average have 4.655 rooms to 5.0035 rooms. The Industrial Housing Bureau takes as the minimum need five rooms, which is a little above the average.

Hence the greater part of the budget is an average and not in any sense a minimum. At best such arrangements would bring the minimum, average and maximum budgets to a common level. Those skilled workers who receive more than the average will oppose this arrangement and the minimum will soon exceed the former maximum. Such economic fallacies to those who favor America first will make them rejoice that Dr. Meeker goes over the water to spin his subtle yarns to the Allies instead of to us.

Let Us Cheer Once More!

AS THE result of Presidential pressure the mine workers are back at work. The public will be asked, even imprecated, to applaud their readiness to comply with the President's admonitions. The mine workers will rely on the man of the street forgetting the fact that the union had a contract and should have lived up to it, with or without the coaxing of the Chief Executive.

The workers of the bituminous mines had their day in court with the Bituminous Coal Commission and accepted the decision of that tribunal. Yet now the award must be reopened, for it is alleged that too much stress was laid during the inquiry on the wrongs of the miner and too little emphasis laid on what the mine worker needed. It was represented that the percentages of the miner were not equal to the increases in the cost of living. As a result of this plea he got the bigger advances in the award. Now that it is settled it is time to show that at the last revision the miner's increase was larger than that of the day worker, and it will be convenient to forget, of course, that at previous revisions it was the day worker who had received the greater benefit.

We shall have eventually to adopt the British system and fix on some period in the past, taking the wages of that date as a basis, for, as it is now, when unskilled labor is scarce the day worker is in demand and gets increases of wage in excess of those given the miner, which makes the latter jealous. When the miner gets a countervailing increase the day worker is not satisfied, for his advance is not, in that particular revision, equal to that received by the miner. So he is back for more. No one can see a single day beyond the last revision. The only way to cure this endless dissatisfaction is to base earnings always on the wage paid on some specific date, and what better date can be found than the beginning of the war, Aug. 1, 1914?

However, let us cheer once more! The strike is over again. The mine workers have shown their "patriotism" by not violating the contract for as many days as they at first threatened to do.

Federated Engineers Announce Organization Meeting

Notices were sent out by the Federated American Engineering Societies Friday, Aug. 6, to 150 leading engineering organizations in the United States, asking them to appoint delegates to an organization meeting in the autumn. A joint conference committee of the four big engineering societies, designated at a meeting in Washington, June 3 and 4, of national, State and local engineering and allied technical organizations, is acting as a committee on organization.

British House of Commons Ratifies Spa Coal Agreement

When the vote for an advance of £5,000,000 to Germany in connection with the Spa coal agreement came up in the House of Commons Aug. 2 it was not seriously challenged, and was agreed to without revision.

Palmer Aid, Who Handled Coal Injunction Cases, Resigns

Judge C. B. Ames, assistant to the Attorney General since June, 1919, and in charge of the Government's case in the coal-strike injunction proceedings, has tendered his resignation to President Wilson, effective Aug. 31.

Anthracite Wage Commission Begins Washington Meetings

The anthracite coal commission appointed by President Wilson to adjust wage schedules in that industry met in Washington Aug. 3 and started at once on the preparation of its report. The report probably will be ready for submittal to President Wilson this week.

Earthquake Opens Oil Wells

Two oil wells were opened on city-owned property in Los Angeles by the earthquake of July 28, the City Engineer reported. The Board of Public Works announced that the wells would be developed for the municipality.

Poor Coal Delays Steamer Noordam

The Steamer Noordam of the Holland-America line took twelve days for her last westward journey, which is a day or two longer than usual. The trouble was with the coal. Fuel with which the bunkers are filled at European ports has poor steaming qualities.

Allies to Lend Germany 40 Gold Marks Per Ton of Coal

Representatives of the Allies in conference at Boulogne have agreed that the Reparations Commission shall handle the German coal indemnities. The Allies will lend Germany 40 gold marks for every ton of coal delivered, Germany giving promissory notes maturing May 1, 1921. The Reparations Commission is empowered to sell these notes or discount them. The first issue, totaling 60,000,000 marks, will be out in September and others will follow monthly.

Iron Market Feels Benefit of Freight-Rate Increase

In its weekly summary of the iron market as of Aug. 4 the *Iron Age* says: "The good effect of the freight-rate increase is unmistakable, and whether related to it or not, there has been more active buying in some lines in the past four days, particularly in pig iron. At the same time the industry takes a more cheerful view of the transportation outlook, and has found some actual though not great improvement."

NEWS BRIEFS

Terse Items Chronicling Events of Interest to the Industry

Virginia Coal & Coke Co. Reports Increased Net Income

Net income of the Virginia Iron, Coal & Coke Co. for the quarter ended June 30, after charges and taxes, was $790,253, according to a statement issued Aug. 2. This compares with a net income of $564,946 in the preceding quarter and $1,355,217 for the six months, equivalent to $14.93 a share on the $9,073,600 outstanding capital stock. Gross earnings for three months were $948,640 and for six months, $1,676,171.

Criminal Phase of Labor Court Law Held Unconstitutional

Constitutionality of the criminal phases in the Kansas Industrial Court law will be tested in the Supreme Court as the result of a decision Aug. 2 in the Wyandotte County District Court in which Judge R. P. McCamish held as unconstitutional the provision of the law making liable to arrest persons influencing others to quit work. This was announced by members of the Industrial Court. The case involved Jerry Scott, a switchman, arrested during the strike last April.

Railroads to Spend 700 Millions For Improvements

With their poverty-stricken condition relieved by the rate increase just awarded by the Interstate Commerce Commission, the railroads of the United States plan to spend about $700,000,000 for improvement of their properties and the purchase of additional rolling stock and equipment during 1920. According to estimates submitted to the commission by about 100 of the roads the money will be spent for essentials needed for a long time. In other words, the public will not be required to pay higher rates on passenger tickets and in freight bills for the sake of new passenger stations or elaborate but unnecessary improvements.

Suspend Long and Short Haul Clause

According to a ruling announced Aug. 5 by the Interstate Commerce Commission the railroads of the country were authorized to enforce the new freight rates and passenger fares until Nov. 1 without observing the long and short haul clause of the Interstate Commerce Act.

Panama Canal Traffic Sets New Record

Commercial traffic through the Panama Canal set a new record in the fiscal year ended June 30 last, according to an official report received in Washington. A total of 2,478 commercial craft, with an aggregate tonnage of 8,545,000, made the transit, paying more than $8,800,000 in tolls and other charges. All expenses of operation and maintenance will not exceed $6,650,000, indicating a surplus of $2,150,000. This is nearly five times the previous record surplus.

Railroads Seek Changes

The Père Marquette Ry. has asked the Interstate Commerce Commission for authority to dismantle and discontinue its branch line running between Rapid City, Mich., and Kalkaska, Mich. At the same time the Michigan Northern Railway requested authority to extend its line from Lansing, Mich., to Mount Pleasant, Mich.

Miners' Congress Declares for Socialization of Mines

Resolutions declaring for the nationalization or socialization of mines were unamiously adopted Aug. 4 by the miners' congress in session at Geneva, Switzerland. British delegates said miners of their country were ready to call a general strike to enforce nationalization.

Robert Van Arsdale Norris

Consulting Engineer and Valuation Expert, Wilkes-Barre, Pa.

THE usual reply to inquiries seeking technical information regarding the anthracite region of Pennsylvania is "see Norris," reference, of course, being made to R. V. Norris, E. M., of Wilkes-Barre. "Van" Norris, as he is generally known by those who enjoy intimate acquaintance with him, is a veritable walking encyclopedia of information regarding that interesting region, acquired through thirty-five years of hard work and study.

Born in Newark, N. J., May 2, 1864, the only son of Thomas Baldwin and Mary Latimer (Ruxton) Norris, he was graduated from the Columbia College School of Mines with the degree of E. M. in 1885. In the following year he entered the service of the Susquehanna Coal Co., advancing to chief engineer in 1900. In 1901 he resigned to go into private consulting practice. He was immediately appointed consulting engineer for that company and continued in that capacity for ten years.

When the anthracite properties of the Pennsylvania R.R. (the Susquehanna Coal Co. and the Lytle Coal Co.) were offered for sale in 1911 the task of valuing the properties was confided to Mr. Norris, who spent fifteen months in the work and accomplished one of the most difficult and extensive jobs of the kind ever attempted. From 1905 to 1907 he was consulting engineer for Coxe Brothers & Co., Inc., and from 1909 to 1918 for the coal department of the Delaware, Lackawanna & Western Railroad Co., resigning that position when drafted into the service of the Government as one of the engineers' committee of the U. S. Fuel Administration.

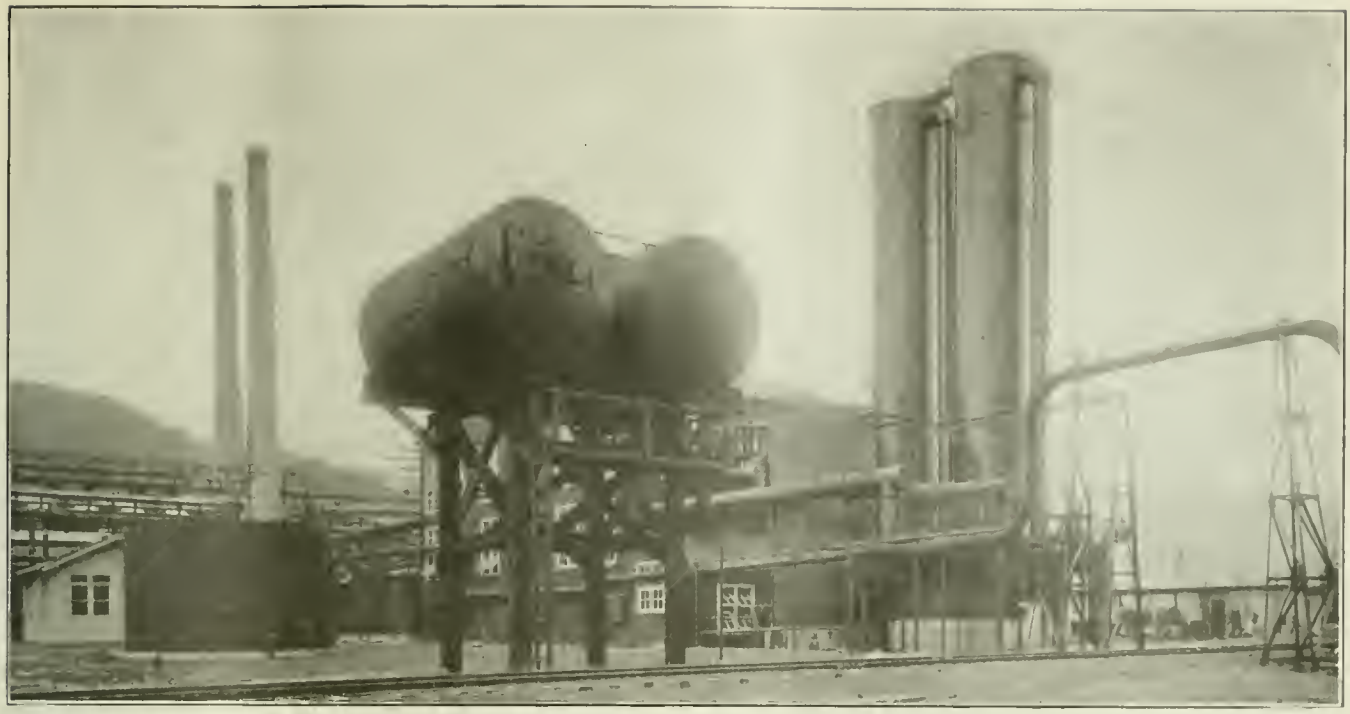
While his principal activities have been in anthracite mining he has been for thirteen years and is consulting engineer for the Sterling Salt Co. of New York and served in a similar capacity in the construction of the Wilkes-Barre & Hazleton (third rail) R.R. He holds the same position in the operation of the railroad.

It is as a valuation expert, however, that Mr. Norris probably has achieved the most distinction, as this work requires a high degree of technical skill and judgment. His selection as valuation engineer by the Pennsylvania R.R. for its anthracite properties probably was the outcome of the way he performed the task of valuing the properties of the Temple Iron Co. when its dissolution was ordered by the U. S. Supreme Court.

Mr. Norris, in addition to being a mining engineer, has also qualified as an expert in accounting and taxation. As the former he was retained, in company with Colonel R. H. Montgomery of New York, to prepare a uniform system of cost accounting for the anthracite companies, and in the latter capacity has been called into service as a member of the Taxation Committee of the American Institute of Mining & Metallurgical Engineers by the U. S. Treasury Department, as an adviser in preparing income and excess profits tax schedules for wasting industries.

While engaged in all of this professional work Mr. Norris has found time to make many valuable contributions to the literature of his chosen profession. He also has filled numerous honorary positions.

Mr. Norris is a member of many engineering societies and social clubs. As a means of recreation he prefers golf to anything else, as his membership in four clubs dedicated to that sport indicates. He is never happier than when he has made a 275-yard drive straight down the course, a long approach dead to the hole, or a putt clear across the green into the cup. They are tests of an engineer's accuracy, you know.



AMMONIA TANKS AND GAS SCRUBBERS
Gases resulting from the carbonization process are passed through the scrubbers and the light oils removed. The ammonia tanks shown are for storage purposes.

Prospect That Soon No Coal Will Be Used Without Preliminary Devolatilization*

Devolatilized Coal Has Been Used Successfully on Railroads—When Stored Is Safe from Spontaneous Combustion—Progress Is Being Made in Commercial Manufacture of This Fuel—Range of Applicability of Process Is Fully Assured

By George Esherick, Jr.
New York, N. Y.

As a fuel on railway locomotives carbocoal has given entire satisfaction in the several tests so far made. The railroads are confronted with the problem of eliminating smoke at their city terminals, and it appears that the use of carbocoal will solve this problem for them. The fuel is well adapted to locomotive use, particularly in that it gives a steady, uniform fire and responds readily to draft changes. The absence of fines permits of maintaining a high combustion rate with less draft than is required for coal when it is necessary to force steam production.

Another pronounced advantage that carbocoal possesses over bituminous coal for railway use is that it can be stored in unlimited quantity with no danger of spontaneous combustion. This also is particularly important in the West, where hard coal is not available for storage and soft coal cannot be safely stocked in large quantities.

Experimental work on the Smith process has been carried on for the last five years at Irvington, near Newark, N. J. A small plant has been built there, with several retorts of commercial size in which the coal could be tested on a plant scale, as well as in the smaller laboratory apparatus available.

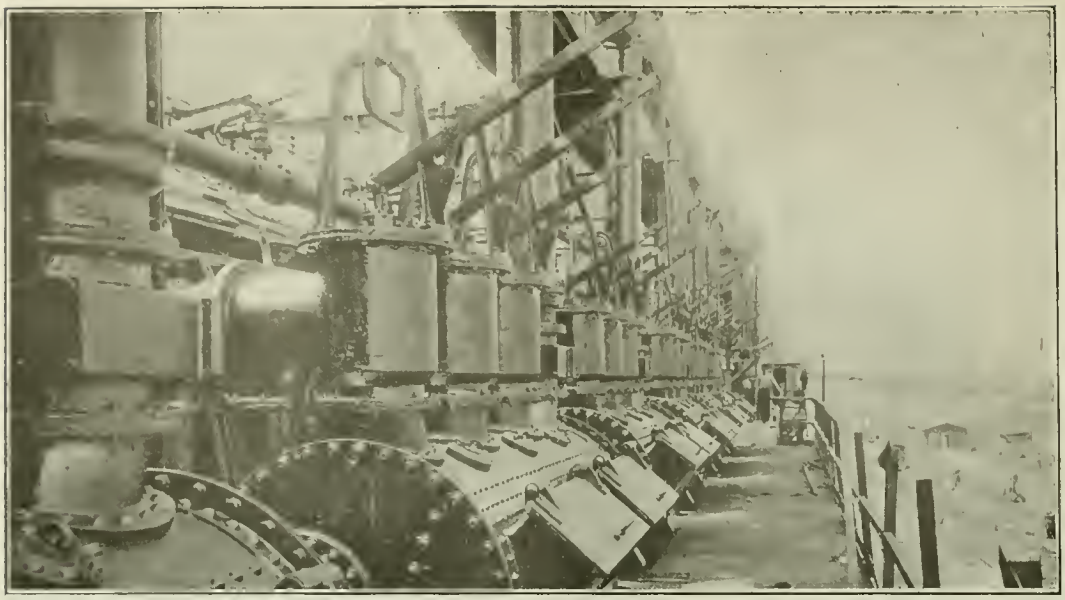
Output of Virginia Plant 500 Tons Daily

A new commercial plant with capacity for treating 500 tons of coal per day will soon be put in operation at South Clinchfield, Va. This plant is equipped with twenty-four low-temperature and ten high-temperature retorts. The primary, or low-temperature, retorts are arranged in four batteries served with crushed coal from overhead bins. The semi-carbocoal which is continuously discharged from the primary retorts falls onto inclosed conveyors, and is carried to large storage bins in the briquet plant.

Here it is ground, mixed with pitch, fluxed, and briquetted on heavy roll presses. The warm briquets travel by a long conveyor to the secondary retorts. By the time they reach the end of this journey they have hardened sufficiently to stand handling and are charged into the retorts by a steel charging car. The finished briquets are dumped from the inclined secondary retorts into quench cars. They are then quenched and delivered to the loading bins.

The plant also embraces the usual equipment for col-

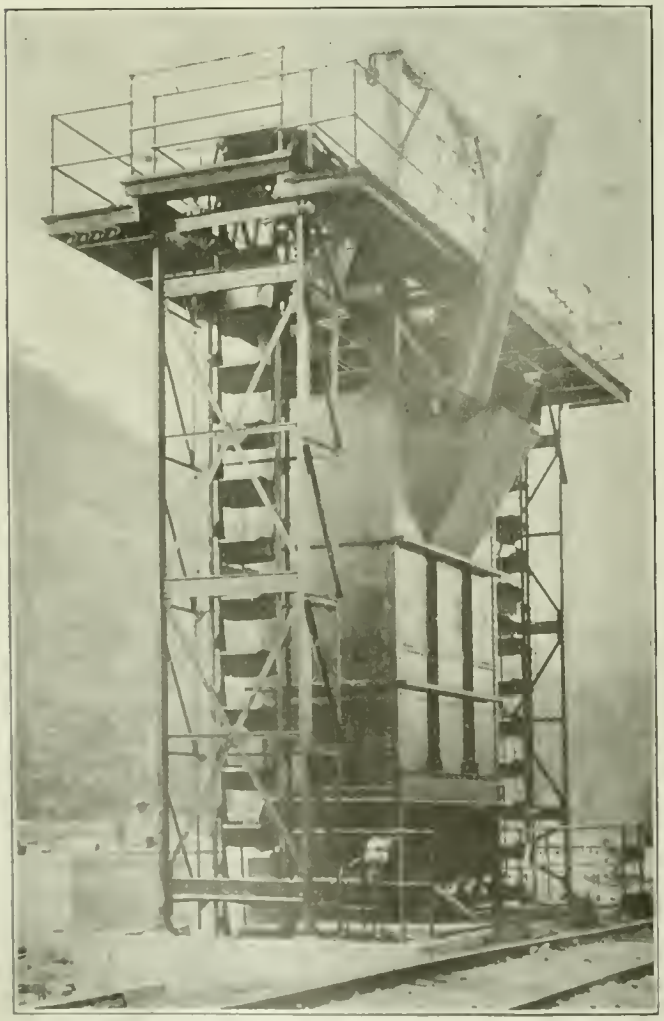
*Second half of a paper presented before the Kentucky Mining Institute, June 4, 1920, and entitled "The Low-Temperature Carbonization of Coal and the Future of Bituminous Coal." The first installment appeared on pages 275-277 of the issue of Aug. 5 and is entitled "Making the Smokiest Coal Smokeless While Saving Byproducts."



Top of Secondary Retorts

In these retorts raw briquets are distilled for six hours at a temperature of about 1,800 deg. F. The illustration shows the hydraulic and foul mains by which the distillation products are drawn off.

lecting and working up the byproducts. The equipment installed includes an ammonia plant, a light-oil plant, and a tar-distillation plant with all the necessary auxiliary tanks, and other fixtures. The coal treated will come from mines a few miles away. It will be a good grade of bituminous coal, carrying about 7 per cent of ash and 35 per cent of volatile matter.



STATION FOR QUENCHING AND LOADING BRIQUETS

Briquets after coming from the secondary retorts are dumped and quenched before shipping. Note the bucket flights by which they are elevated for loading.

The construction of the Clinchfield plant was begun in the autumn of 1918 with funds provided by the U. S. Government. This installation is therefore completely Government-owned, but its operation will be conducted for the Government by the Clinchfield Coal Products Corporation. The ultimate plan is to increase carbonizing capacity to 1,000,000 tons per year.

While engineers, not only in this country but in England, France, Germany and Japan, have for many years appreciated the value of developing a practical means for distilling coal at low temperatures and thereby removing the valuable oils, it is nevertheless worthy of note that this plant represents the first commercial installation ever built on a large scale for this specific purpose. With the present shortage of petroleum oils and the prediction by the U. S. Bureau of Mines that the output of the present known existing oil resources is limited to only two decades, the commercializing of low-temperature coal distillation is now most seasonable.

Over a Hundred Coals Have Been Tested

Low-temperature carbonization is by no means limited to high-volatile coals, but can be applied to almost any bituminous coal and even to lignite. With a coal of lower volatile content the yield of byproducts will, of course, be less, but this in a degree is compensated by a higher yield of the carbocoal itself. For example, a coal of 25 per cent volatile matter yields about 75 per cent of carbocoal and 26 gal. of tar; a coal of 35

TABLE II. YIELDS OF CARBOCOAL, TAR, GAS, AMMONIUM SULPHATE AND TAR OILS FROM KENTUCKY COALS

Source of Coal	Ash	Volatile Matter	Carbocoal, per Cent	Tar, Gal.	Gas, Cu.Ft.	$(NH_4)_2SO_4$, Lb.	Salable Tar Oils, Gal.
Black Beaver Coal Co., Ashland, Ky	2.97	38 4	65	36	8,650	24	17
Big Elkhorn Coal Co., Floyd, Ky.	3.37	40 2	67	29	7,250	20	18
Mile Branch Coal Co., Boyd Co., Ky	3.66	40 4	67	39	7,540	23	19
Elkhorn City Coal Co., Pike Co., Ky	3 80	32.5	70	34	8,110	20	20
Winston Creek Coal Co., Marrowbone, Ky	4 98	36.6	65	38	7,650	21	23
Furnace Coal Mining Co., Pike Co., Ky	2 86	39 7	66	42	7,900	23	24
Millers Creek (washed slack)	3 05	36.9	72	31	9,950	23	16

STILL FOR THE PURIFICATION OF THE TAR
In this section of the plant distillates and pitch are recovered. The pitch, or a part of it, finds use in this same plant as a binder for the briquets.

per cent volatile matter yields 70 per cent of carbocoal and 30 gal. of tar, while a coal of 45 per cent volatile matter yields only 50 per cent of carbocoal, but 50 gal. of tar. These figures are, of course, only approximate, since the nature of the individual coals will materially influence the yields.

At the Irvington plant more than one hundred coals from various sections of the United States have been tested in small-scale apparatus, while a considerable number also have been tried in the commercial-sized retorts. Satisfactory briquets have been obtained in all cases. In Table II some of the yields obtained with Kentucky coals are tabulated. For the most part these results are from the smaller-scale tests. Long experience in comparing small-scale with plant-scale results has shown that the carbocoal yields in the two cases are almost identical.

Of the natural resources of the earth, coal and iron ore are by far the most important. Without coal the iron would be of little value. While the amount of this

GENERAL VIEW OF THE BYPRODUCT PLANT
Stills, scrubbers, ammonia, gas and other tanks. Take a good look at it. It is a picture of what a coal mine will look when we, as a nation, take good care of that valuable vegetable complex known as coal.

fuel yet unmined is enormous, the supply is by no means inexhaustible. It must be remembered also that the demand for fuel in the industries is increasing rapidly.

Bituminous coal has played a major rôle in the development of industry, and it is destined to play a yet more important part, not alone as a fuel but as a raw material from which a large number of commercial products may be manufactured. Most of the bituminous coal mined is still used directly as a fuel, but there are powerful factors operating to change this state of affairs. The increasing demand for fertilizers, for motor spirit, for the many products of coal tar, is one of these factors; conservation of our greatest natural resource is another.

All of these facts considered, it is not difficult to foresee a time when no raw bituminous coal will be burned for any purpose. But before that day arrives there must be available everywhere smokeless fuels to take the place of this coal, and in the very nature of the problem these fuels must be manufactured from bituminous coal or from coal of some lower grade. The production of carbocoal is a long step toward a solution of the problem, not only because of the high qualities of the fuel itself but because the process of manufacture results in a high yield of byproducts which serve to lower the cost of producing the fuel.

Don't Attempt to Travel Too Far In Mine-Rescue Apparatus*

Wearing Oxygen Rescue Equipment, Three Men Try To Go Down a 25-Deg. Slope for 1,200 Ft. and Return—They Lose Their Lives

By George S. Rice†
Washington, D. C.

THREE men recently lost their lives in the Black Diamond Coal Mine near Seattle, Wash., while wearing oxygen breathing apparatus. The press dispatches stated that these men lost their lives while practising with the equipment. Later reports stated that the men died while attempting to make a trip 1,200 ft. down a 25-deg. slope which was filled with black damp, the purpose of the trip being to measure the amount of water that had accumulated at the bottom of the mine. The long journey was attempted despite the fact that the dials of the oxygen tanks indicated that only a 45-minute supply was available. The oxygen in the tanks was soon used up and the men lost their lives from a deficiency of respirable air.

In spite of all the education and training done by the Government to prevent accidents, men are prone occasionally to take unnecessary chances. Every piece of apparatus, no matter how perfect, has its limitations. The Government, through the agency of the Bureau of Mines, has trained many thousands of miners in the use of mine-rescue apparatus. The training has been given to all miners who requested it and the bureau has gone to the extreme of urging miners to join the rescue and first-aid classes. In spite of all the efforts of the Government, men occasionally attempt the impossible.

To go 1,200 ft. down a 25-deg. slope, make observations, rest, and then return 1,200 ft., thus traveling a total distance of at least 2,400 ft. in forty-five minutes is a quick trip when a man is not encumbered with a heavy load, but to attempt it loaded with an apparatus weighing about 40 lb. makes it a more than hazardous undertaking.

Modern apparatus when fully charged will furnish oxygen for two to two and one-half hours when used with moderate exertion or with periods of rest, but a person uses four to five times as much oxygen in climbing a steep slope with a load of 40 lb. than he would when walking at a moderate gait along a level road. The 45-minute charge indicated by the dial will not last forty-five minutes if violent exertion is necessary. The Bureau of Mines in its handbook on "Rescue and Recovery Operation in Mines after Fire and Explosions," on p. 49 makes the following statement:

"When traveling in afterdamp or other noxious gases the rescue crew should observe every known precaution to insure their safety. Each crew should be composed of at least five men, including the captain, and the members of the crew should not become separated. If any member complains of feeling ill or is observed to be staggering or breathing unnaturally, the entire crew should immediately return to fresh air. In view of the liability that a member will receive some injury or his apparatus be damaged, a crew should never advance such a distance nor travel over such falls or wrecks as would prevent it from carrying one of its members back to fresh air. With the types of breathing apparatus now in service the maximum straightaway unobstructed course should not exceed 5,000 ft. with a reserve crew at the fresh-air base."

While in the foregoing it is to be noted that the maximum distance to be traversed is 5,000 ft., this explicitly refers to a level, unobstructed road, but, as previously indicated, a trip of 2,400 ft. down a steep incline would be more than equivalent to a 5,000-ft. trip on the level, which is the maximum distance allowable for a fully charged apparatus, that is, one with at least three times the amount of oxygen which it was alleged the three men had who made the disastrous trip in the Black Diamond Mine. While all the details of the affair are not known, at least enough has been indicated to send out a caution against men making such a foolhardy attempt, and it is desirable that the full facts be known so that the public will not be prejudiced against an apparatus which has the greatest of value if it is carefully used in accordance with well-established rules.

*Reprint of article entitled "Precautions in Use of Oxygen Rescue Apparatus" in U. S. Bureau of Mines Reports of Investigations for July.

†Chief mining engineer, U. S. Bureau of Mines.

June Exports at New York

EXPORTS of coal and coke through the Port of New York during June of this year, with the exception of June of last year, show a falling off when compared with the three previous years. Shipments in gross tons, with the values for the month of June during the four years, follow:

	Anthracite		Bituminous		Coke	
	Tons	Value	Tons	Value	Tons	Value
1917	14,693	$106,173	1,939	$14,466	3,650	$49,646
1918	6,761	43,991	6,807	50,751	1,605	20,562
1919	10,482	88,292	25	250	2,614	42,814
1920	8,008	91,716	5,090	63,104	337	9,975

Particularly interesting were exports from this port of 3,000 gross tons of bituminous coal to Turkey in Europe and 1,501 tons to Germany. Egypt took 1,007 gross tons of anthracite and Newfoundland 3,633 tons.

First Viaduct Erected

This road was built some years ago. It is 430 ft. long and, in the deepest depression in the valley, 50 ft. high. It connects the original Brackenridge mine with the coal deposit in an adjoining hill.

Company by Erecting Big Mine-Car Viaduct Avoids Freight Rate and Car Shortage

Allegheny Steel Co. Subsidiary Builds a $100,000 Trestle as Part of a Mine-Car Road in Order to Enable the Steel Company To Be Independent of Expensive and Irregular Railroad Service

TO AVOID expensive railroad freights and the uncertainties of railroad transportation many expedients are being sought, the oldest and most natural being to place the consuming plant where it can get its supply of coal direct from the mine wagon. This arrangement was made long ago by the Allegheny Steel Co., which through its subsidiary the Allegheny Coal & Coke Co. operated a mine within easy reach of the steel plant.

Unfortunately the coal near the consuming point after a while was worked out and it became necessary to go further afield until the Allegheny Coal & Coke Co. was finally driven to the expedient of erecting a viaduct at a cost of $100,000 for the transfer of its mine cars. As it uses 1,000 tons of coal a day and as the coal would otherwise have to be hauled by the railroad it can easily be seen that the viaduct will pay for itself in a short time.

Such expensive structures are frequently financially advantageous where the producer of the coal can deliver his product by mine wagons direct to the consumer, for with this advantage he is superior to the hampering circumstances which he must meet when delivering his coal by railroad in close competition with other

Merely a Tramroad Trestle

A tramroad trestle 1,000 ft. long, 125 ft. high and built at a cost of $100,000 is an unusually long, high and expensive structure for the use of mine cars. It saves railroad transportation, its cost and uncertainties, and that is the answer to the question "Why?"

On the High Trestle

Sixty-pound rails are used with a 6 x 6 in. timber guard rail. The grade is 0.421 per cent against the load. The floor is laid with white oak, the sleepers being 6 x 8 in. timbers, 18 ft. long.

producers. But apart from this consideration, which is an extremely important one, there is another. No consuming interest with the present uncertainty of car supply would hesitate to make a much larger sacrifice to free itself from the railroads so as to assure steady operation.

Frequent Changes in Location and Grade

The Allegheny Coal & Coke Co. mine is located at Brackenridge, the drift opening to the mine being in the hillside to the rear of the steel mill. Thence the loaded cars pass over a trestle to the tipple, where the coal is distributed to the steel mills. Most of the output, however, is used at the boiler house.

The mine is developed in the Upper Freeport bed, which is difficult to mine by reason of many steep local pitches. When the drift opening was first driven from the outcrop on the hill above the steel mills the coal acreage owned was not large and to permit the development of the mine other acreages had to be purchased.

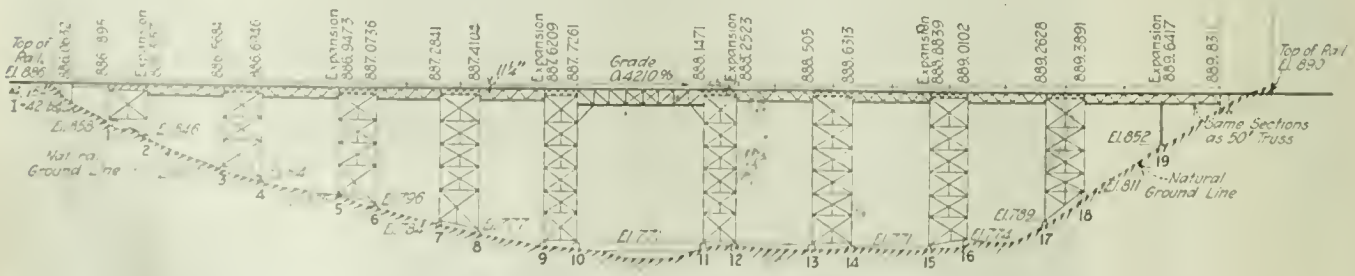
Such piecemeal development was not conductive to systematic planning. Each new acquisition made necessary some change in the main haulageway in order to bring the coal of the new area to the tipple with the maximum dispatch. As a result the haulageway often became extremely circuitous and irregular, further need for these deviations from directness being furnished by the dip of the coal, which was steep and irregular.

Steep grades unsuited to locomotive haulage made regrading necessary, and even demanded that a tunnel be excavated through solid rock. But such expenditures can be made when a consuming interest has its plant within reach of the mine wagons, and the mine continued its operations regardless of the lengthening roadway and extensive road revisions.

Some years ago all the acreage that could be purchased between the drift opening at Brackenridge and a point about a mile distant where the coal outcropped on the farther side of the hill had been practically worked out. The bed continued, however, on the opposite side of the valley, so some acreage was purchased there, and a trestle was constructed in order that the main haulageway might be continued. This trestle, which is built of steel, is 430 ft. long and 50 ft. high at its highest point. The roadway is covered with rough lumber, while the roof is tar-papered.

In this manner a roadway was assured, enabling coal to be delivered to the mills. At the same time that the trestle was built the main haulageway through the hill to Brackenridge was straightened and easy grades were laid. Rails of 60-lb. weight were used throughout. The distance from outcrop to outcrop through the second hill is about a mile. All the available acreage in the second hill was purchased and for a time the development of the mine continued in this area.

Recently the acreage in the second hill became practically worked out. No additional area was avilable except that in the opposite, or third, hill. This was distant nearly three miles from the tipple at Brackenridge, but the steel mills must have coal though hauls were long and grades disadvantageous. The grades on the main haulageway through the second hill were not of the best, and the road as a whole had to be improved considerably before it could be used as a portion of the long haul.



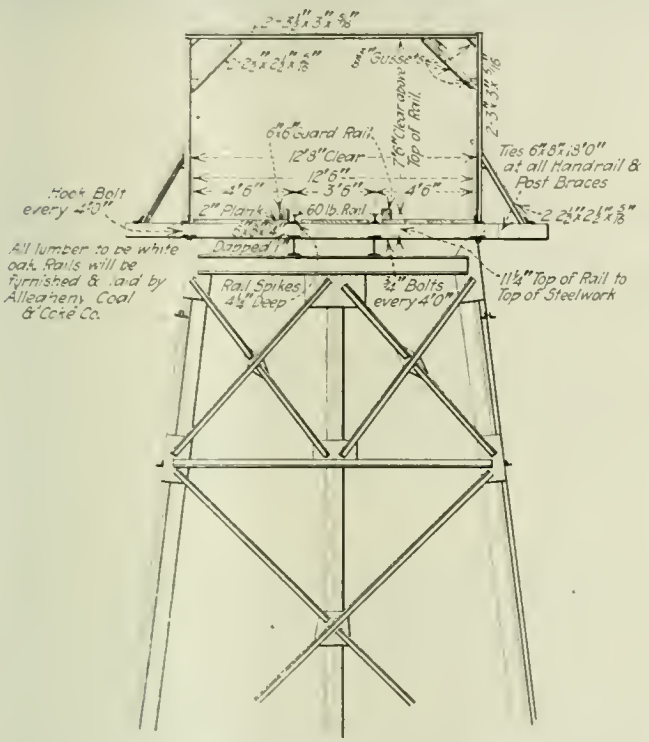
ELEVATION OF LARGER TRESTLE

There are twenty bents, mostly cross-braced and tied together in pairs and surmounted by trusses of Howe and Warren types.

Obviously, one solution to the problem of getting the coal to Brackenridge would have been to abandon all the old workings in the first and second hills and construct a small tipple in the valley between the second and third hills. In this manner the coal could have been shipped over a short spur direct to the steel plant and the mine-car haulage would have been reduced to its lowest limits. The decision to bridge the valley through a distance of nearly 1,000 ft. was reached after it had been determined that by reason of the growing scarcity of railroad cars the construction of a new tipple would not necessarily guarantee a steady supply of coal at the point of consumption.

Viaduct Is 125 Ft. High at One Point

The completed bridge, which was designed and erected by Baton & Elliot, of Pittsburgh, is the largest of its kind in the Pittsburgh district, erected at a cost



CROSS-SECTION OF THE TRESTLE ROADWAY

Only a single track is provided, though a large amount of coal has to be passed over the trestle. With telephonic train dispatching it is possible to get the utmost service from a single track.

of $100,000, it is but a small part of the main roadway soon to be extended to over three miles in length and laid throughout with 60-lb. rails. The bridge itself is of simple construction and shows the Howe and Warren types of truss to good advantage.

Twenty steel bents support the structure, which at one point where it crosses a creek in the outskirts of the town of Tarentum is over 125 ft. high. Eight-inch 11¼ lb. channels; 4 x 3 x ⅜-in. angles and 12 x ⅜-in. plates are used in the make-up of the columns. The lumber in the wooden floor surmounting the trestle is entirely of white oak.

A 6 x 6-in. timber guard rail serves as a protection in the event of a locomotive derailment. The sleepers are 6 x 8-in. timbers 18 ft. long. Over these 2-in. planking is laid, serving as a floor. There is a grade of 0.421 per cent against the loaded trips, but this is not sufficiently great to cause the locomotive any distress.

The grades on the completed roadway are for the greater part in favor of the loads. The first bridge, that spanning the valley between the first and second hills, is 47 ft. higher than the drift opening at Brackenridge. The larger bridge is 37 ft. higher than the smaller one, while the coal in the third hill lies at a higher altitude than did that removed from the second. Thus there is a general grade from the face to the tipple in favor of the loaded cars. In fact it averages about one per cent.

There are few curves on this long roadway, the course to be traversed by each trip being nearly a straight line. The completed haulageway is in the main single-tracked. The trips, however, will be dispatched by telephone from the superintendent's office, so that it will not be necessary for one trip to be held up until another has returned from the tipple.

Four 275-volt 1,000-watt lamp searchlights have been installed on both the small and large bridges. These are arranged in pairs at the ends of each structure. A night watchman is stationed in a shanty situated at one end of each bridge. During the recent strikes of steel workers and miners these bridges were guarded quite diligently lest some crank might attempt destruction.

Inasmuch as the steel mills are entirely dependent upon the coal supply handled over these bridges the practice in the future will be to guard them at all times. The electric lamps mentioned flood the structures with light and make it an easy matter to discern any night prowler. A main haulageway constructed at a cost of several hundred thousands of dollars and valued at even a greater amount by the owning company is a fit subject to merit the attention of two night watchmen.

Actual Possession Necessary for Claim of Adverse Title to Coal in Place

UNDER the laws of Kentucky title to real property cannot be claimed by adverse possession until there has been actual possession of the same under adverse claim of ownership for fifteen years continuously.

An owner of the surface of land cannot base adverse title to underlying minerals, which had been conveyed by his predecessor to a third party, on his possession of the surface and an intention to claim the minerals, his claim not being open and notorious.

Payment of taxes on the land is not such exercise of dominion over the underlying coal as to support a claim of title by adverse possession, nor is the mining of small quantities of coal for domestic purposes under a reserved right any exercise of possession over the remaining coal. *(U. S. Circuit Court of Appeals, Sixth Circuit; Pond Creek Coal Co. vs. Hatfield, 239 Federal Reporter, 622.)*

The World's Rainfall

THE total annual rainfall upon all the land of the globe amounts to 29,347 cubic miles, according to the U. S. Geological Survey, Department of the Interior, and of this quantity 6,524 cubic miles drains off through rivers to the sea. A cubic mile of river water weighs about 4,205,650,000 tons and carries in solution an average of about 420,000 tons of foreign matter. In all about 2,735,000,000 tons of solid matter is thus carried annually to the ocean.

ANOTHER SCENE IN BASLE SHOWING THE RAPIDLY MOVING RHINE, TOO SPEEDY HERE FOR PROFITABLE TRANSPORT

The speed of the river is about six miles an hour. There are no convenient harbor facilities. Thus the larger cargoes are usually transferred at Strassburg and taken to Basle by rail. The river is narrow and at times the water is low.

Shipping American Coals to Switzerland, with Sampling Methods in Use*

Methods of Sampling Here and Abroad, with Information Regarding Swiss Requirements—Description of Handling of Coal by the Northern, or German, Route to Switzerland—Why American Coals Have Difficulty in Finding a Welcome Equal to That Given to Known European Fuels

BY JOSEPH D. DAVIS†
Washington, D. C.

AT THE outbreak of the world war Europe was producing practically all the coal it needed for domestic consumption. Soon thereafter, however, a coal shortage developed not only in the countries at war but also in the smaller neutral states. Practically all the coal mined in Europe was produced by the belligerent nations and the war resulted in a reduction of output, with increased demand at home. Consequently little coal was exported. The neutral states were the first to suffer, and as the war went on the situation became acute, forcing them to the use of inferior grades of combustibles as substitutes for coal.

FIVE OR TEN-YEAR COAL SHORTAGE IN EUROPE

They could obtain little or no fuel from their belligerent neighbors and could not get it from the United States on account of the submarines and the attendant lack of shipping. The allied nations at war suffered a lack of coal because some of their coal fields were occupied by the enemy. The mining properties in northern France were for the most part destroyed by the Germans, and it will be several years before they can be rebuilt and put in condition to produce coal at the normal pre-war rate. France has, of course, gained the coal fields of Alsace-Lorraine which Germany has lost; and Germany also has lost those of Silesia.

It is as yet problematical what effect these changes will have on Europe's coal supply but it seems safe to predict that the output will be considerably curtailed for the next five or perhaps ten years. Lack of man power, of course, is a factor that must be considered, but its effect is difficult to gage.

England, for years a large exporter of coal, came to the assistance of her allies during the war and will be for years to come a large producer of fuel. She has seemingly now, however, adopted the policy of curtailing her exports and conserving her coal supply for use at home. The conditions above enumerated brought about by the war have caused not only nations of Europe who are not producers but also some of the producers themselves to look to America for future coal supply.

Whether or not the demand for American coal in Europe will continue when industry there has recovered from the effects of the war depends largely on three factors: the freight rates, familiarity on the part of European consumers with the excellent qualities of American coals, and the attitude of operators and dealers in this country toward export business.

Freight rates are now abnormally high principally because vessels carrying coal to Europe are unable to obtain return cargoes. When the flow of imports to the United States returns to normal the freight charges

*Published by permission of the director of the Bureau of Mines.

†Mr. Davis writes this article as the outcome of a trip of investigation to find out just what are the needs of the Swiss purchaser, the effect of transportation on the coal and how a sampling and analysis should be made here that would assure the purchaser that the coal received would fill the expectations of the Swiss analyst.

on coal exported can be considerably lowered. It is obvious, however, that the reduction will not be great enough to enable American coals to compete with available European fuel on a price basis alone. American coals can, however, compete with the European product on a quality basis; in fact they have a decided advantage. This is particularly true of steam coals.

Barring the English Cardiff coal, which probably will not be available in large quantities, our semi-bituminous or steam coals will have no competitors as regards quality in Europe. European consumers, however, are not generally aware of the superior qualities of our coals; they must be educated to their value, and American operators and dealers must see to it that standards of excellence for their coals are established and maintained abroad if they wish to get export business.

Swiss Nation Asks Us to Analyze Shipment

I recently had an opportunity to follow shipments of coal from the United States to Switzerland, which has been for the last year an extensive buyer in this country, and to learn first-hand of some of the fuel problems of that country. The Bureau of Mines is authorized by law to inspect and analyze coals exported from this country upon being requested by the purchaser to do so. Such a request was made by the Swiss Government.

Before the war the Swiss were importing largely from Germany. These imports included some gas coals and coals from the Ruhr district containing less volatile matter, as well as to some extent, coals from Holland, Belgium and France. Quite an appreciable quantity of steam coal was imported from England. Some briquets were used, presumably for locomotive firing. Most of these came from the Ruhr field. Little lignite, peat or wood was used. In a word the Swiss were using mostly high-grade fuel.

During the war, however, conditions changed gradually till in 1918 they were getting little high-grade coal and what they did obtain was not up to former standards of quality. Briquets of fuel refuse, peat and lignite were extensively used; in fact every material that could be employed as a substitute fuel was so utilized. Even at the close of hostilities, because of disrupted industrial conditions in the countries at war, the Swiss could not obtain a fuel supply in Europe as in pre-war times. Accordingly they looked to America for coal.

Tracing the shipment of coal from the American port to Switzerland, Fig. 1 shows coal in the yards ready to be run out onto the piers and dumped on board ship. Coal shipped to the Tidewater Exchange is roughly classified and held in readiness for shipment by water. The product of different operators mining the same grade of coal (for example, gas coal) is sent to the same pool. The advantage of this plan is that the shipper always has a quantity of a given grade of coal and can load it on demand. This is an admirable arrangement provided only the classification is so rigid that the purchaser can be assured as to the quality of coal he purchases from a given pool. At present the classification is not as rigid as might be desired. In loading the coal is dumped from the pier into the hold of the ship lying alongside. During this process it may be sampled with ease.

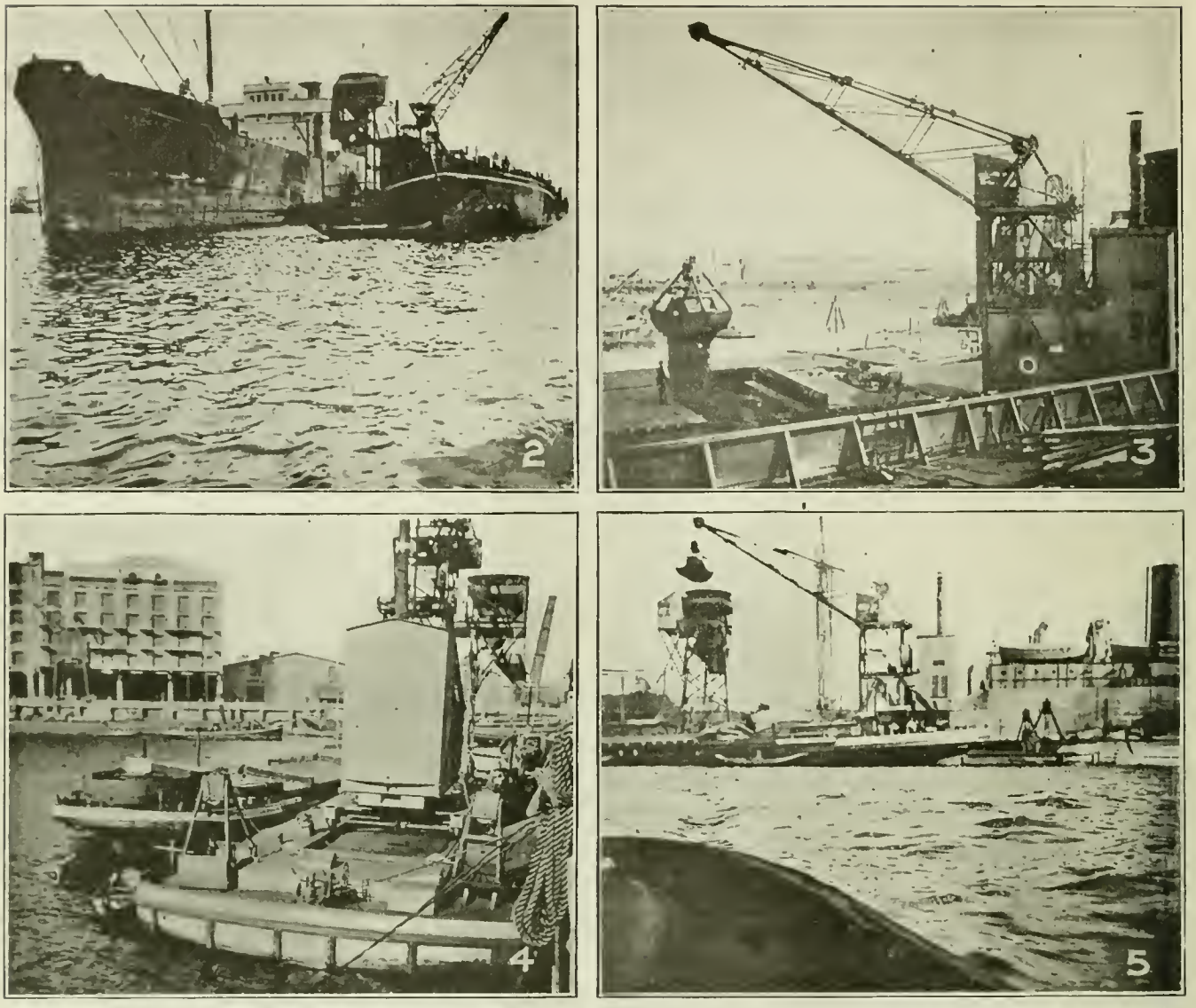
Coal Is Dumped from Railway to Pier Cars

At some terminals it is the practice first to dump the coal from the railway cars into a pier car that holds approximately the contents of two large railway cars. The pier car is provided with two sets of double bottom doors by means of which roughly half the load can be discharged at a time into a chute leading to an open hatchway of the vessel below. While the coal is being dumped, a man whose duty it is to collect the sample, stands at the side of the car and holds a large iron scoop or dipper under the stream of coal as it falls. In this manner a part of the stream (about 60 lb.) of coal is taken during the whole time it is falling. For

FIG. 1.

Fleets of Coal in Railroad Yards

Many shippers, amny boats and many grades of coal are bad problems in "Permutations and Combinations" for the railroads to solve. Pooling has done a great deal to relieve a situation that made terminal operation difficult, though much yet remains to be adjusted.



FIGS. 2, 3, 4 AND 5. OCEAN BOAT, DERRICK BARGES AND RHINE BOATS LASHED TOGETHER
Two steam-derrick barges are inserted between the ocean-going craft and the 1,000- to 2,000-ton barges that ply the Rhine propelled by some sort of internal-combustion engine. The rate of discharge will vary from 150 to 160 tons per hour.

full particulars concerning the sampling of coal and the analysis the reader is referred to various publications of the Bureau of Mines.[1]

Two shipping routes have been used in sending coal to Switzerland from the United States. One is by way of the Mediterranean to Genoa, Italy, and thence by rail through the Alps into Switzerland, and the other is by way of Rotterdam, Holland, and thence up the Rhine River to Basle. The latter route has been by far the most used and accordingly will be described here. Assuming that the shipment is from Norfolk, Va., the ocean voyage requires about fourteen days. The ship passes northeast across the Atlantic Ocean, through the English Channel and into the North Sea, thence through the Hook of Holland and up the Maas Channel into one of the many havens of Rotterdam harbor. Here it is anchored and the cargo is discharged into small boats for shipment up the Rhine River.

The method of discharging cargo at Rotterdam is as follows: Two barges on each of which is mounted a steam derrick, are securely lashed to the sides of the vessel (Figs. 2, 3, 4 and 5), while the Rhine boats are lashed to the outside of the barges. The latter are equipped with derricks and grab buckets. The coal is thus lifted out of the hold of the vessel from both sides and discharged into the open hatchways of the Rhine boats. These are river craft of 1,000- to 2,000-tons capacity and are propelled by some form of internal-combustion motor, presumably a Diesel engine. Fig. 6 shows at short range a number of such boats in one of the numerous small havens or canals of Rotterdam.

The rate of discharge will vary, I was told, from 150 to 160 tons per hour. Cargo weights are checked at Rotterdam only by gaging the coal as the compartments in the small boats are filled, and as the coal is dropped from a considerable height, estimates by this method are likely to run low. Fig. 7 shows a number of coal-carrying ships tied up in Rotterdam harbor.

An attempt was made by the shipping agent to sample coal cargoes as they were discharged at Rotterdam, but the gross sample taken was in every case wholly inadequate. Three small gripfuls of coal (Fig. 8) were taken at intervals during the unloading and mixed to form a gross sample of not over 50 lb.

[1]Pope, G. S., "Sampling Coal Deliveries and Types of Government Specifications for the Purchase of Coal," Bureau of Mines Bulletin 63, 1913, 66 pp. Stanton, F. M., and Fieldner, A. C., "Methods of Analyzing Coal and Coke," Bureau of Mines Technical Paper 8, 1913, 42 pp.

These portions were crushed and mixed; the coal was then piled in the form of a cone which was reduced in bulk by the usual method; that is, by quartering and rejecting opposite quarters. The quartering process was then repeated, and the resulting sample, about 10 lb., was sent to the laboratory for analysis.

The analytical procedure was fair, according to American standards, but because a non-representative sample was taken in the first place, results varied widely from those obtained in the U. S. Government laboratory. The results obtained gave only a rough approximation to the fuel value and sampling accordingly was discontinued.

From Rotterdam harbor the small Rhine boats pass up the Maas Channel under the Maas bridges (Fig. 9), and thence through the Waal Channel or the Lek Channel to the Rhine River. By the Rhine the smaller boats (1,000 tons) proceed directly to Basle, Switzerland, when favored by a sufficient depth of water. The larger cargoes and, when the water is low, also the smaller ones, also are transferred at Strassburg, and taken to Basle by rail. It is, of course, cheaper to ship all the way by water, but there are difficulties attendant upon this method. The Rhine channel is narrow and the current swift at Basle (Figs. 10 and 11) and adequate harbor facilities are lacking. I would estimate the current at this point to be about six miles per hour.

Most of the coal imported in Switzerland is purchased by a central organization with offices in Basle. The coal consumers are members of this organization or company and receive their allotments in small shipments by rail. Thus a cargo of 8,000 tons may be divided among as many as ten members, sometimes more. Each member samples the shipment of coal he receives and sends the sample to the Prüfungsanstalt für Brennstoff at Zurich.

In this laboratory analytical work connected with all fuel investigations of the Swiss Government is performed. It was one of the first to put forward the heating value as a basis for the practical evaluation of fuels, and Dr. Constam of that laboratory was a pioneer investigator of the connection between the softening temperature of coal ash and its clinker-forming propensities. The equipment of this laboratory is up to date and the analytical methods followed are similar to those considered standard in this country. The laboratory has been described by Heinrich Trachsler in the *Schweizerische Bauzeitung* of Aug. 24, 1907.

It is perhaps worth while to mention the method of coal sampling followed by this laboratory as compared with that followed by the U. S. Government.

The following is a translation of the instructions issued by the laboratory for sampling steam coal:

Procedure for the taking of a sample: (1) On the integrity of the sample the value of the test for the heating content of the fuel is absolutely dependent. (2) In order to obtain a representative sample a shovelful of coal should be taken from every wheelbarrow load or basketful brought from the car or bunker, and thrown into a box provided with a cover until about 150 kilos (330 lb.) have been collected. (3) From that quantity of coal a sample is prepared as follows:

The fuel is spread out on a clean, level floor and crushed to nut size, mixed and formed into a rectangular pile. It is then divided into four parts by diagonals. Opposite quarters are cast aside and both of the others are again crushed to hazelnut size.

FIG. 6. A FLEET OF RIVER BARGES AT ANCHOR. FIG. 7. COAL CARRIERS IN ROTTERDAM HARBOR. FIG. 8. THREE GRIPS LIKE THIS HELD AN INADEQUATE SAMPLE WEIGHING ABOUT 50 LB. FIG. 9. UNDER THE MAAS BRIDGES TO THE WAAL OR THE LEK CHANNEL TO THE RHINE

FIG. 10. BASLE, THE HEADQUARTERS OF THE CENTRAL ORGANIZATION WHERE THE COAL IS RECEIVED AND DISTRIBUTED

Coal in a consignment is divided up among several members of the purchasing syndicate. Every recipient makes his own sample, and sends it to the testing laboratory for coal established in the city of Zurich.

mixed and again divided. Opposite quarters are again cast aside and those remaining retained. This crushing and dividing process is continued till about 10 kilos (22 lb.) remain. This coal is placed in any available airtight container (soldered tin boxes and the like) and sent to the laboratory.

It happened that ten or more samples taken as indicated above with the resulting analyses averaged represented a cargo of 8,000 tons. While in general the crushing of samples taken to represent such a quantity of coal would be more thorough in the United States, the above method would be considered fairly reliable.

In conclusion it may be said that Europeans are disinclined to buy American coal chiefly because they are unfamiliar with its properties. For years they have been accustomed to use certain grades of European fuel and have become thoroughly familiar with their properties; much more so in fact than the average American consumer with the coal he burns. They hesitate to change and do so only of necessity arising from the fact that the old source of supply is exhausted or nonproducing.

They have to pay more for American coal than they have been accustomed to pay for the European product, and American coal is not quite so well prepared. They cannot now buy American coal on the specification basis with absolute assurance of its origin, as in the case of the fuels with which they were formerly supplied. Their viewpoint is somewhat different from that of the average American fuel user.

Europe Wants a Well-Sized, Lustrous Coal

The American is not so much concerned, for instance, with the exact sizing of the coal and the luster means little to him, whereas with the European customer these considerations have some importance. It is an unfortunate characteristic of the American selling agent that he refuses to pay attention to requirements for which he can see no reason, and does not consider it incumbent on him to please regardless of the, to him, apparent lack of reason for this or that requirement. He is content with supplying a commodity that seems to him just as good.

It is believed that this is a mistaken attitude, that we should endeavor to please foreign customers whether we expect to continue trade with them or not. By studying their viewpoint and familiarizing ourselves with their requirements we may gain knowledge which will be of service to us as applied to our own practice. Particularly is this true as regards what we may learn concerning the proper methods of conserving our fuel resources. Europe's fuel beds are not as extensive as ours and consequently Europeans are farther advanced in the application of methods for avoiding fuel waste. They know more about their coals and they check up the quality of the delivery product much closer than we.

Should Inspect Coal for Home and Abroad

Obviously we should have some system of inspection whereby the smallest domestic consumer as well as the big foreign buyer can at any time obtain reliable information concerning the origin and quality of the coal he buys. It has been said before that such an inspection system need not involve large expense. It may now be added that it is immaterial through what agency it is carried out so long as it is effective.

The question of whether it is better to reserve our fuel for use at home than to export it is another matter. So long as we do export coal we should put our best foot forward, establish the reputation of the American product, and, what is more important, learn what we may from our foreign customers as to what measures applicable to our conditions will provide for the conservation and effective distribution of our coals.

North America Third in Mountain Heights

NORTH America ranks third among the continents in the heights of mountains. Asia has Mount Everest of the Himalayas, which stands 29,002 feet above sea level, and South America has Mount Aconcagua, of the Andean system, which is 23,080 feet high. North America comes next with Mount McKinley, in Alaska, 20,300 feet according to the U. S. Geological Survey, Department of the Interior, and Africa is fourth, with Kibo Peak, 19,320 feet. Mont Blanc, Europe's highest mountain, is 15,782 feet high, which is more than a thousand feet higher than any mountain in the United States outside of Alaska.

Three Methods of Abusing Coal-Cutting Machines That Your Men Should Avoid

Putting a Jumper on One of the Shunt Coils, Making the Bits Like Miners' Picks, and Distributing the Lugs Improperly—Are Your Men Thus Mishandling Your Cutters?

By N. D. Levin
Columbus, Ohio

MANY operators of mining machines are in the habit of putting a jumper on one of the shunt coils in order to speed up the motor. This practice is one much favored in certain districts by breast machine runners. I know men who have run breast machines for many years and who admit that they have always used a jumper, and insist that it does no harm to the motor.

When a jumper is put on the terminals of a shunt coil the current takes a short path through the jumper, and the coil is cut out so that no current flows through it. In consequence no magnetism is set up by the coil that has a jumper on its terminals. On the other pole the shunt coil is setting up magnetism that pulls the armature sidewise toward the pole piece bearing the live coil. This pull is considerable—roughly speaking it is about a ton; it may be more or less, depending upon the size of the motor.

In the accompanying illustration a breast-machine motor was turned on edge, the end plates carrying the bearings were removed, the armature was laid loose in the bore with some paper underneath so as to make an air gap about the same on the top and bottom. A locomotive bumper was hung on each end of the armature shaft, and a man placed on each bumper. When a jumper was placed on the lower shunt coil, the armature instantly slammed up against the top pole piece, lifting the bumpers and the two men, to the great surprise of the latter, who wanted to bet that the armature would not move. As a matter of fact, if ten men could have been placed on the armature, is would have lifted them all.

It is evident that a motor having an armature running at from 800 to 1,200 r.p.m. with such a great unbalanced side pull is being greatly abused. This one-sided pull springs the shaft, causing the hole in the armature sleeve to become enlarged, the shaft to break, bearings to wear out, the armature to rub on the pole pieces, with consequent tearing up of core and winding. Furthermore the unbalanced field causes sparking and consequent brush and commutator trouble.

When one field coil is short-circuited by a jumper the total resistance of the shunt coils is, of course, cut down half; therefore the current through the remaining field coil is doubled. The wire in the coil is too small to carry this current safely. This causes the windings to heat and eventually burn out.

The crude test above described is here recounted in the hope that some mine electrician who is having trouble with undercutter motors will make this same experiment in the presence of the machine runners. It may possibly bring them to realize what they are doing when they put a jumper on the terminals. If this will not have the desired effect, the field coils can in some motors be turned around so that the machine runner cannot readily get at the terminals, or it may be possible to put some kind of protection over them so that any tampering with the machine by the runner may be detected.

Bits That Might Pick but Cannot Cut

Another abuse that coal-cutting machines are subjected to is that arising from poorly shaped bits. Today in most mines so-called "pick-point" bits are used. The word pick-point is unfortunate, as many blacksmiths sharpen the bits as they would a miner's pick. I have often thought that the reason they do this is that they have been told to make pick-point bits.

A mining-machine bit is a cutting tool, but the miner's pick is not. A pick enters the coal in a direction lengthwise of the tool, while a mining machine bit

TESTING THE EFFECT OF PUTTING A JUMPER ACROSS TERMINALS OF A SHUNT COIL

To prove that short-circuiting a shunt coil would cause the armature to be thrust up against its pole piece, two men tried to hold the armature down with the help of two locomotive bumpers. Their failure was convincing evidence to them of the impropriety of such a tampering with the coils. A considerably heavier weight would have been lifted in the same manner. Ten men could not have resisted the lifting force.

engages the coal at a marked angle from its length. A mining machine bit must be provided with a cutting edge; its general shape is not highly important, but one thing should always be kept in mind, namely, that the rear side of the bit must be thinner than the front side. If not, the bit will rub instead of cut.

Put the Chain Lugs in the Right Place

It is not unusual to find mining machines in which the motors are burning out and the various parts of the machine breaking because of chains being improperly assembled. The trouble ordinarily occurs in this way: When chain lugs have to be replaced because of broken set screws or some other cause, care is not taken to put in the same kind of a lug that was taken out. Instead the first lug that happens to be handy is slipped into place.

This will not do, because there are only a few lugs of each kind, and all are needed. If we consider that a shortwall machine has about forty bits altogether in its cutting chain and if there are seven positions, there are not more than five or six of each kind, and these should be distributed evenly along the chain. If not, the machine will be overloaded, causing breakage of the rope, burning out of motors and severe wear and tear on the mechanism in general.

How a Direct-Current Motor "Motes"

Armatures Revolve Because of a Difference in the Intensity of the Magnetic Flux Upon Opposite Sides of the Armature Conductors—The Characteristics of a Motor Determine the Purposes for Which It Should Be Used

By H. H. Startzman*
East Pittsburgh, Pa.

EVERYONE is familiar with the attraction that the little permanent magnet, made in the form of a horseshoe, has for small bits of iron or steel. This force of attraction is due to the fact that an area between its ends or pole tips is rendered magnetic, forming what is technically known as a "magnetic field." The lines of force of which the field is composed are regarded as having a direction extending from the north pole to the south pole of the magnet.

A loop of wire carrying a current may be substituted for the horseshoe magnet. It will exert the same attraction for iron and steel, because a current produces a magnetic field about the conductor through which it flows. The lines of magnetic force in the field about a conductor travel in a direction depending on the direction of the current flowing in it. Looking along a conductor, if the current flows away from the observer the direction of the field produced is clockwise; if the current flows toward the observer, however, the field is in the opposite direction, or counter-clockwise.

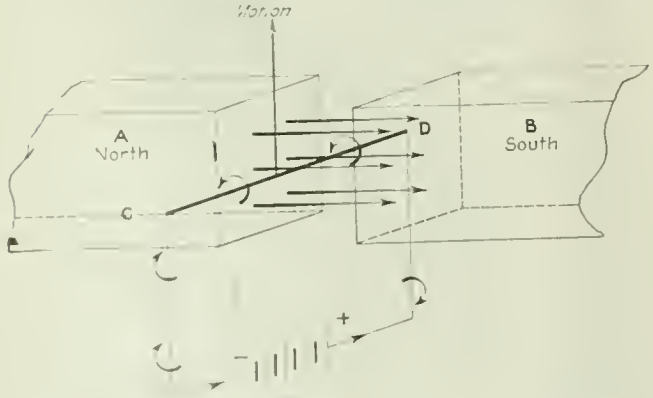


FIG. 1. CONDUCTOR MOVES TOWARD WEAKER FIELD
A and B are the poles of a magnet and the "magnetic flux" is represented by the arrows as passing from the north pole (A) to the south pole (B). If a conductor (CD) carrying a current is placed in the magnetic field it will create a magnetic field around itself in such a way that it will reinforce the magnetic flux below the wire and oppose the magnetic flux above. The magnetic field below the wire will thus be greater than the field above it, and the wire will tend to move in the direction of the weaker field, as the arrow marked "Motion" shows.

If a conductor is moved through a magnetic field, such, for instance, as that existing between the poles of a magnet, an electromotive force will be induced in it. The strength of the induced electromotive force is proportional to the rate at which the conductor travels or to the product of the speed at which the conductor is moved and the density of the magnetic field being cut. The direction of the electromotive force induced in the conductor can be determined by the application of Fleming's "three-finger right-hand rule." This states that if the thumb, the forefinger and the middle finger of the right hand be placed at right angles to one another, the thumb pointed in the direction of motion of the conductor relative to the magnetic field and the forefinger in the direction of the lines of force, then the middle finger will point in the direction of the induced electromotive force.

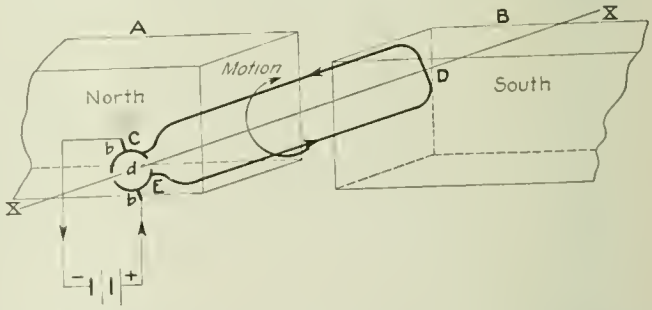


FIG. 2. WHEN THE CONDUCTOR GIVES PLACE TO A LOOP
The single conductor in Fig. 1 is replaced by a loop (CDE) with a segment commutator (d) and brushes (b.b.). The current goes in an opposite direction on opposite sides of the loop. Consequently one side strives to go up and the other side to go down, and rotation results along the axis (XX). When the loop has made a half turn what has been the top half of the loop will be at the bottom and the brushes will have reversed the current of electricity in the loop. For this reason while the current in the line outside the armature will still be in the same direction the current in the armature loops or coils will be reversed. We shall have a direct driving current therefore in the line, though the current will be reversed in the motor.

In Fig. 1 A and B are the poles of a magnet between which exists a magnetic field. Suppose now that a conductor, *CD*, carrying a current, and hence having a magnetic field about it, is placed in the magnetic

*Motor engineering department, Westinghouse Electric & Manufacturing Co.

field between the poles, *A* and B. The direction of the lines of force about the wire and between *A* and *B* are as shown in the figure. The field around the conductor produced by the current flowing through it adds to the intensity of the field already existing between the poles of the magnet below the conductor and opposes the existing field due to the magnet above the conductor. The resultant field is then denser below the conductor and weaker above it. As the lines of magnetic energy always tend to straighten out, a force is exerted on the conduction tending to move it in an upward direction, as shown.

What Causes Counter Electromotive Force

As the conductor moves upward it will cut lines of magnetic force and have induced within it an electromotive force or voltage. By applying Fleming's right-hand rule the induced electromotive force is found to be in such a direction as to oppose the electromotive force sending the current through the conductor. Now it is obvious that it is not only the resistance but also this opposing or "counter electromotive force" that limits the flow of current in a conductor being moved through a magnetic field by a current flowing within it. A motor at rest has no counter electromotive force.

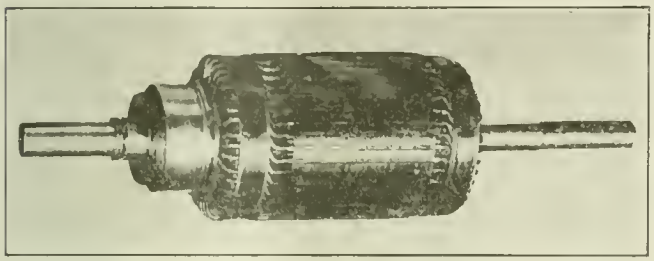


FIG. 3. SEVERAL LOOPS MAKE UP AN ARMATURE

Many of these loops or, rather, coils compactly bound together make an armature. At the point where the current will be of maximum turning effect it is delivered from the line into the armature through the brushes. Thus each coil is energized and reacted upon in turn, and the rest of the armature revolves with it.

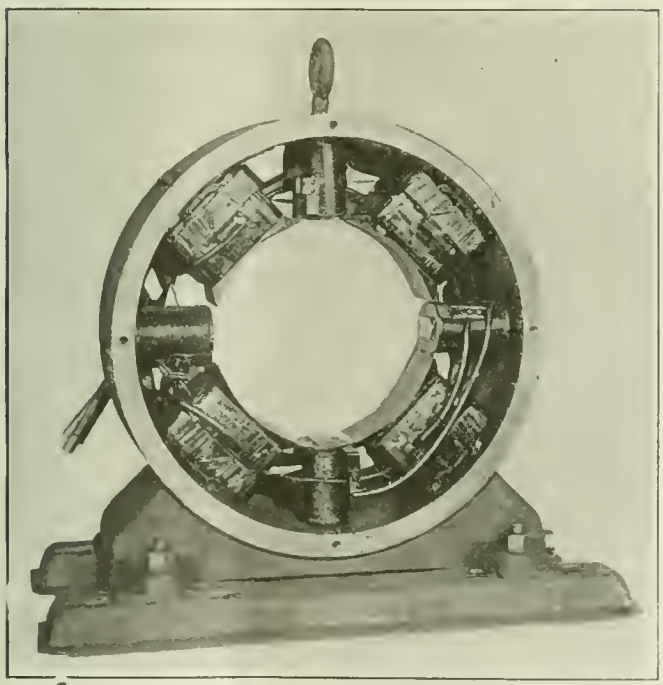


FIG. 4. ELECTRO MAGNETS IN MOTOR FRAME

Instead of just two poles and two brushes, four main poles are quite frequently used with commutating poles between them which keep the magnetic flux from varying with the changing intensity of the armature field. The use of these commutating poles with windings in series with the armature and whose magnetic field is proportional to the armature current makes it unnecessary to shift the brushes.

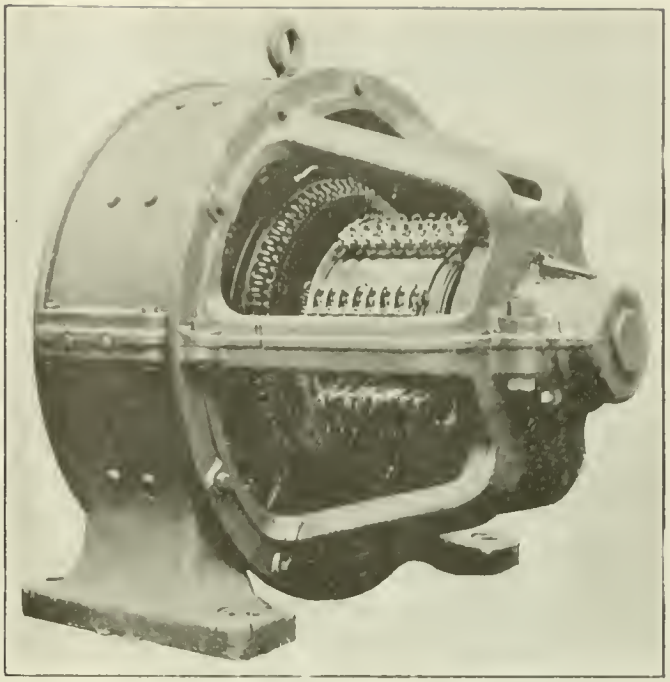


FIG. 5. COMPLETE DIRECT-CURRENT MOTOR

Note the brushes on the commutator. These take the current from the line in a constant direction and they pass it on to the coils, but since the coils are revolving the current flow within them is now in one direction, now in another, as the terminals are alternately presented to the brushes.

A schematic diagram of a simple motor is shown in Fig. 2. The single conductor of Fig. 1 is replaced by a loop, *CDE*, connected to a source of current through the segment commutator, d, and the brushes, bb. As the current is flowing in opposite directions in the two sides of the loop, one side will move up and the other down. The result is that the loop will rotate about the axis, *XX*. The function of the commutator, d, and the brushes, bb, is to keep the flow of current always in the same direction as long as the conductor is cutting lines of magnetic force or flux in the same direction and to reverse the current as soon as the conductor starts to cut flux in the opposite direction.

In this manner the force tending to rotate the coil about an axis is always kept in the same direction. The rotating element or "armature" of a commercial machine has a number of loops similar to the one shown in Fig. 2 wound in slots on the surface of a laminated steel cylinder, the ends or leads of all the loops being connected to commutator bars. Fig. 3 shows the complete armature of a commercial machine.

Brushes Are Set Where E.M.F. Is Zero

As stated above, the function of the commutator and brushes is to keep the flow of current in an armature coil always in the same direction as long as the coil is cutting flux in the same direction and to reverse the current as soon as the coil starts to cut flux in the opposite direction. This process is called "commutation." Since the direction of the flux relative to the coil reverses as the coil rotates so also must the induced electromotive force reverse its direction. This is the "neutral" point or the position on the commutator where the brushes must make contact if sparking is to be prevented.

When a current flows in the armature coils the armature becomes an electro-magnet. The magnetic field due to the current flowing around the armature distorts the main field and this in turn shifts the neutral position at which the brushes must be set if sparking is to be avoided. This shifting of the neutral point, which is proportional to the amount of current flowing around the armature, can be taken care of in either of two ways.

In motors of old design the brushes were shifted as the armature current changed in order to keep them always on neutral. Motors of newer design are equipped with electro-magnets, known as "commutating poles," whose winding is in series with the armature winding, thus always producing a flux proportional to the armature current. The flux produced by the commutating poles keeps the neutral position, and therefore the brush setting constant, regardless of the current flowing in the armature or its direction of rotation.

The electro-magnets, used as field poles, the yoke, and the commutating poles mounted between the main poles, completely assembled, are shown in Fig. 4. Fig. 5 is an illustration of a completely assembled motor of up-to-date design.

There are four types of direct-current motors, differentiated by their characteristics and the connections of the field or exciting circuits. These four types are the shunt, series, cumulative compound, and differential compound. The single field circuit of the shunt motor is connected across the line in parallel with the armature. The single field circuit of a series motor is connected across the line in series with the armature.

The cumulative compound motor is a combination of the shunt and the series motors. It has two field circuits, one in parallel with the armature and one in series with it. The current flows in the same direction in both field windings and the intensity of the resultant field is the sum of the fields due to each winding. The differential compound motor has field windings similar to those of the cumulative compound motor, but the currents flow in opposite directions. The intensity of the resultant field is then the difference between the fields produced by each winding. The differential compound motor is seldom used and nothing further concerning it will be said here.

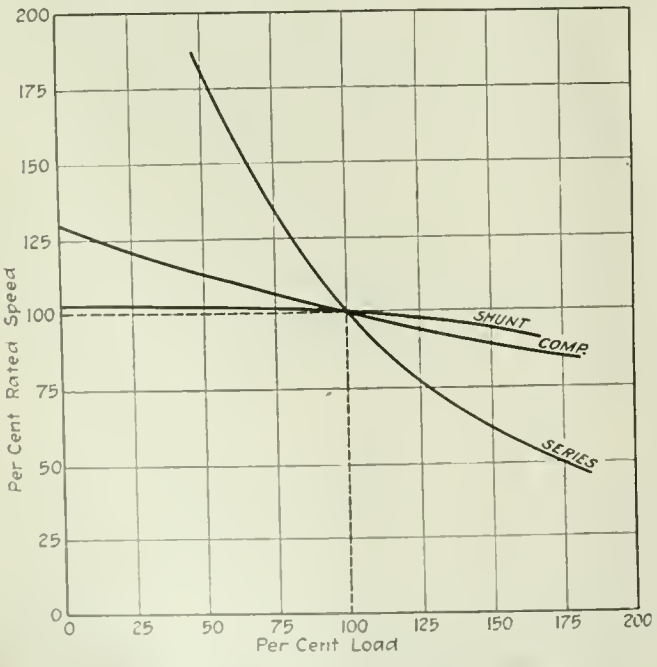


FIG. 6. SPEED-LOAD CHARACTERISTICS

Note how the series motor with a 50-per cent load has almost 200 per cent of rated speed while at 75 per cent of overload it is running at less than 50 per cent of the speed for which it was designed, whereas the shunt motor keeps steadily pounding along almost as speedily under heavy load as light load but using much current to get this result whenever the load is heavy, either from steady overloading or the need to get up speed.

In Fig. 6 is shown the speed-load characteristics of the shunt, series and compound motors. For the sake of comparison all the three machines representing their respective types were chosen so as to have the same full-load speed and rating. The shunt motor is inherently a constant-speed machine, the speed falling off only a few per cent between no-load and full-load. Service requiring practically constant speed, regardless of the frequency or magnitude of the changes in torque, such as the driving of line shafts, machine tools, grinders, drills, lathes, etc., are suitably accomplished by shunt motors.

The series motor is well adapted to heavy starting duty, because for any torque greater than the full-load value it takes a smaller current from the line than either of the other two types. The speed of the series motor decreases rapidly with an increase of load and becomes dangerously high at light loads. For this latter reason a series motor should always be geared or directly connected to the load it is to carry. In traction service the torque required to start and accelerate a car is much greater than that necessary to keep it moving. Series motors are, therefore, almost universally used in this country for railway work.

The same characteristics that make the series motor well adapted for traction service also make it suitable for crane service. The motor is able to develop a large starting torque without taking an excessive current from the line; it also operates at a slow speed when the load to be lifted is heavy and runs at a high speed when the load is light. Both traction and crane motors are geared to their loads and moreover are always under the control of the operator, thus practically eliminating the danger of their running away at light load.

The compound motor is used where it is desirable to have a large starting torque without drawing excessive current from the line, in addition to a comparatively constant speed after the running condition has been obtained. The driving of rolling mills, punch presses, express elevators, mine hoists and the like are services to which the compound motor is applied.

Consider the requirements of an express elevator. The car must be rapidly accelerated from a standstill, so that a large starting torque is required. After the car has moved through approximately 20 ft. its velocity has reached about 500 ft. per minute, and must be kept constant at this value. In other words, during the starting and accelerating period the characteristics of a series motor are desirable, yet after acceleration the characteristics of a shunt motor are needed.

In some applications where a frequent peak load far in excess of the average load must be carried for short intervals, such as in shear and punch-press drives, a flywheel is placed between the motor and the load to take the peak load off the motor. As the load comes on, the motor slows down and the flywheel gives up some of its energy. As the load decreases, the motor tends to increase its speed, giving up energy to the flywheel.

Coal and Water in the United States Compared as Sources of Power

The West Has Greater Undeveloped Reserves, but the East Has Ample Supplies — Both Kinds of Power Are Used Near Source — Liquid Fuel Not Likely To Be Important Factor

By R. S. McBride
Washington, D. C.

FUNDAMENTALLY today we have no problem greater than the problem of fuel and power supply. Energy from water power or fuel is essential to every industrial operation, and for our domestic comfort and safety these energy resources are just as important. It is of greatest concern, therefore, to determine where the sources are and what is their relation to the present demand.

We all know that bituminous coal is the basic fuel supply. It forms 80 per cent of the solid fuel used and its importance is continually increasing. It is safe to assume, therefore, that in general our problem in the future is to be a bituminous coal problem since the domestic demand will practically always absorb the bulk of the anthracite produced. The liquid fuel market will not be an appreciable factor in our industrial affairs either, for the supplies are far less than demand for uses other than industrial fuel. Similarly our natural gas resources are nearing exhaustion, and are no longer, therefore, an important factor in the energy field.

Coal is one of the lowest grade classes of freight which our transportation systems handle. Since it is impracticable to haul coal long distances the location of the source in relation to the point of utility is of greatest importance. In the accompanying diagrams, prepared by Mr. E. C. Merrill, chief engineer of the Forest Service, an effort has been made to bring out in a convenient form the relation between the source of supply and the point of use of bituminous coal, and in contrast with these to show the water-power possibilities of the country and the corresponding present demand for all classes of power.

The distribution of the coal reserves is the best evidence of what necessarily will be our resource for extended periods of the future. The data in Table I, from M. R. Campbell, of the Geological Survey, give us a reliable and valuable guide in this particular. For convenience the states have been grouped in this table by districts corresponding to the census classifications.

The reserves of coal in billions of tons and the percentage of the total which it is estimated exists are shown for each district. Assuming the present rate of consumption to continue we find a surprising range in the number of centuries of life of each coal field. Reserves in Pennsylvania are adequate only for a period of six centuries at the present rate of production, whereas in the mountain territory of the West 330 centuries would be required at the present rate of production for complete exhaustion of these resources.

Naturally these figures are only approximate at best, but they afford a significant fact in respect to the ultimate location of our energy reserves. Especially is it interesting to compare these figures with the distribution of water-power resources, the other principal future source of our energy. Fig. 1, showing the distribution of water-power resources, shows that these

FIG. 1.

Water Power Resources

The black areas represent proportional parts of the estimated total of 54,000,000 hp. The Rocky Mountain and Pacific Coast states have the largest share, with the Atlantic Coast second.

also lie principally in the West. However, we do not venture any prophecy that this means that the West is to dominate industrially in the immediate future, for a period of centuries is involved here, not a period of a few years. The present rate of production of coal in each of the States is shown in Table 2.

It is to be expected that most of the fuel would be used near the principal industrial centers. For example, we find that 11.6 per cent of all the coal produced in the country is used in Illinois; that 5.4 per cent is used in New York, and that 5 per cent is used in New England.

The contrast between the distribution of hydraulic resources and primary power installed is shown by Fig. 3. In this case we see that the demand is quite predominantly in the northeastern part of the country, whereas the mountain and Western states include the principal hydraulic resources. A somewhat similar contrast would be found if we were to compare the present current use and reserves of coal. Therefore power and coal are not, as some have claimed, supplementary throughout the country, with coal available in the East and power available in the West. The fact is quite the contrary, for the West includes the large majority of the resources of both coal and water power. Fortunately this is not a matter for immediate concern, as the reserves in the Eastern districts are ample for some centuries to come.

Coal is such a low-grade commodity that we do not transport it great distances. If we group the states in various parts of the country and add up the production of coal within these districts and the estimated consumption of coal for the same territory, we find the result shown in Table 2. Here the states have been grouped in the same manner as in the Table 1, showing the coal reserves. In almost every case we find that the total production is of about the same magnitude as the estimated consumption. In other words, taking a group of states together we can expect that within their borders they produce about enough solid fuel to supply their own needs.

Of course, there is considerable traffic in fuel across these arbitrary boundaries, but the general conclusion holds that coal does not move long distances from its source to the point of use.

TABLE I. BITUMINOUS COAL RESERVES OF THE UNITED STATES

(Data from Marius R. Campbell, U. S. Geological Survey, as reported to International Geological Congress, Toronto, 1912.)

Section of U. S.	Reserves: Billions of Tons	Reserves: Per Cent of Total	Life at Present Rate of Usa (Centuries)
New England	None	0	0
N. Y., Pa., N. J.	102.2	5	6
South Atlantic	166.3	7	15
North Atlantic	327.1	15	20
South Central	196.5	9	30
Northwestern	129.9	6	60
Southwestern	58.5	3	6
Mountain	1,178.5	52	330
West Coast	58.9	3	140
Totals	2,217.9	100	40

TABLE II. DISTRIBUTION OF PRODUCTION AND CONSUMPTION OF BITUMINOUS COAL BY DISTRICTS

(Data from Geological Survey. Consumption estimated on assumption (1) of total use equal to total production and (2) of total use, including railroads and bunker fuel in same proportion as use for other purposes besides railway and bunker.)

Sectinn of United States	Production (1918): Millions of Net Tons	Production (1918): Per Cent of Total	Estimated Consumption: Milliona of Net Tona	Estimated Consumption: Per Cent of Total
New England	0	0	28.9	5.0
N. Y., Pa., N. J.	178.5	30.9	168.9	29.1
South Atlantic	104.7	18.0	46.4	8.0
North Central	167.3	28.9	197.9	34.2
South Central	57.6	10.0	37.5	6.5
Northwestern	22.2	3.8	59.8	10.3
Southwestern	9.3	1.6	11.1	1.9
Mountain	35.4	6.1	23.7	4.1
West Coast	4.1	0.7	4.9	0.9
Totals	579.1	100.0	579.1	100.0

It is impracticable to make any general interpretation of such figures as these. They are a splendid guide in general matters, but in detail they cannot be pressed too far, especially in the case of the estimates as to resources, for no such figures can be exactly correct. It is important, however, to bear such general facts as these in mind when considering long-period development of industrial activities.

The development of water power under the legislation recently passed by the Congress may have some influence on the power market and it is not at all unlikely that in a few years the super-power project will assume definite proportions and be a factor in the northeastern section of the country. Even in this large enterprise, now only in the making, water power is not expected to play an important part.

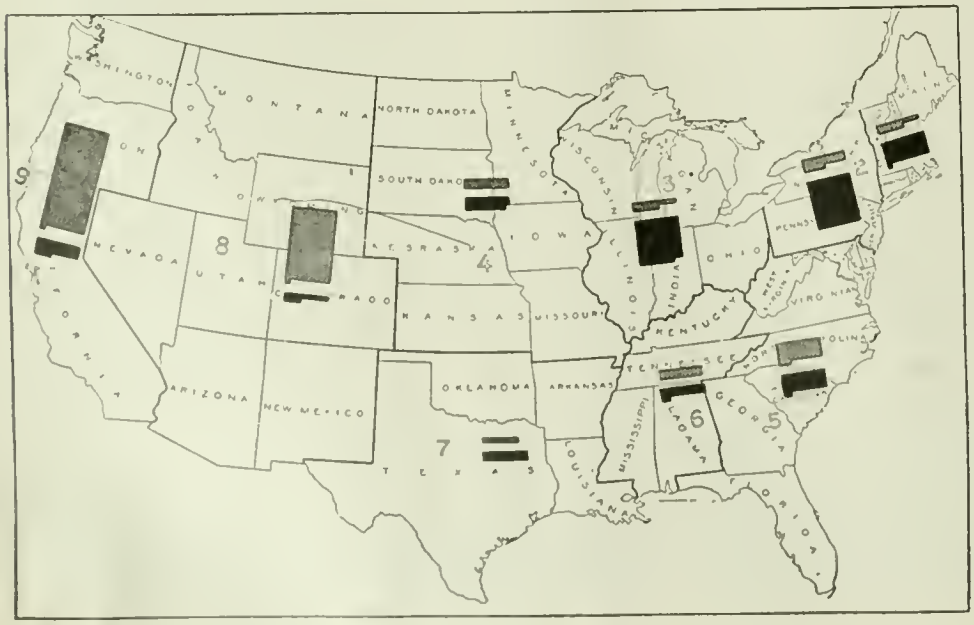


FIG. 2

Hydraulic Resources and Primary Power

The dotted areas represent proportional parts of the total hydraulic resources and the solid areas proportional parts of the developed primary power except railroad locomotives.

Costs of Coal Production During April Issued

Federal Trade Commission Report Indicates General Areas Maintained Relative Positions in Margin Return—Eastern Adjacent Region Obtained Higher Margin Than in 1918—April Output Below Average for First Quarter

TO THE spot buyer of bituminous coal the costs of producing coal are not as interesting today as market prices. Detailed statistics of costs of production and of sales realizations from representative producers of bituminous coal for April, 1920, as recently compiled and published by the Federal Trade Commission, are of value, however, in showing what is transpiring in the industry and to what extent the high prices charged for fuel coal influence the average dollars per ton realized by the coal operator. For the month of April 812 coal operators, with a total production of 8,824,154 net tons of commercial coal—that is, coal sold—reported to the Federal Trade Commission. The production of this group of voluntary reporters was about one-fourth of the total output in the United States, as estimated by the Geological Survey.

The summaries published are (1) the cost of labor, (2) the cost of supplies, and (3) the general expense (or overhead) involved in mining the coal, bringing it to the surface, preparing it for market, and placing it on railroad cars for shipment. The total of these three costs is (4) the f.o.b. mine cost shown by the commission.

These cost figures do not include selling expenses, interest on borrowed capital, or allowance for income and excess profits taxes. The difference between the sales realization and the f.o.b. mine cost per ton is the "margin." Not all of the margin is profit. In order to arrive at the amount available for income and excess profits taxes, dividends or surplus, there must be deducted certain items, such as selling expenses and interest on borrowed capital, and there must be added

TABLE I. APRIL, 1920, SALES REALIZATION AND REPORTED COSTS OF 812 OPERATORS AND THE YEAR 1918 SALES REALIZATION AND REVISED COSTS OF 2,482 OPERATORS, BY GENERAL COMPETITIVE REGIONS

	April, 1920 — Reported Costs per Ton						Year, 1918 — Revised Costs per Ton					
General Competitive Regions	No. of Operators	Sales Realization per Ton	Labor	Supplies	General Expense	Total F.O.B. Mine	Margin per Ton (1)	No. of Operators	Sales Realization per ton	Labor	Supplies	General Expense	Total F.O.B. Mine	Margin per ton (1)
Central Competitive "Interstate" (2)	260	$3.02	$1.90	$0 29	$0 35	$2 54	$0.48	765	$2.45	$1.39	$0.25	$0 26	$1 90	$0 55
Eastern Adjacent (3)	228	3.51	1.94	.29	.42	2 65	.86	966	2.81	1.45	.28	.32	2 05	.76
Western Adjacent (4)	45	2.92	2.03	.30	.31	2.64	28	138	2.75	1.75	.26	.26	2.27	.48
Southern Appalachian (5)	111	3.44	2.24	.39	.46	3.09	.35	288	2.81	1.61	.29	.36	2.26	.55
Southwestern "Interstate" (6)	99	3.68	2.67	.35	.53	3.55	.13	171	3.13	2.15	.25	.34	2.74	.39
Rocky Mountain (7)	68	3.19	2.11	.30	.41	2.82	.37	154	2.73	1.63	.26	.30	2 19	.54
United States	812	$3.26	$2.04	$0.31	$0.41	$2 76	$0.50	2,482	$2.65	$1.49	$0.26	$0 29	$2.04	$0.61

(1) "Margin" is not the same as profit.
(2) Includes all of Illinois, Indiana, Ohio, and the Southwest District of Pennsylvania.
(3) Includes all of Maryland, West Virginia, Virginia, and the Central District of Pennsylvania.
(4) Includes all of Michigan, Iowa, and District No. 1 of Kentucky.
(5) Includes all of Alabama, Tennessee, and Districts Nos. 2, 3, and 4 of Kentucky.
(6) Includes all of Missouri, Kansas, Arkansas, Oklahoma, and Texas.
(7) Includes all of Colorado, New Mexico, North Dakota, Montana, Wyoming, Utah, and Washington.

TABLE II. SALES REALIZATION AND REPORTED COST PER TON FOR 590 IDENTICAL OPERATORS, BY GENERAL COMPETITIVE REGIONS

		Year 1918				First Quarter, 1920						April, 1920					
General Competitive Regions	Number of Operators	Average Monthly Production, Tons	Sales Realization	Revised F.o.b. Mine Cost	Margin (1)	Excess of Reported Cost Over Revised Cost	Average Monthly Production, Tons	Sales Realization	Reported F.o.b. Mine Cost	Margin (1)	Increase of First Quarter 1920 Reported Cost Over 1918 Reported Cost	Increase (+) or Decrease (—) in Production Compared with Monthly Average in 1918	Production, Tons	Sales Realization	Reported F.o.b. Mine Cost	Margin (1)	Increase of April, 1920, Reported Cost Over 1918 Reported Cost	Increase (+) or Decrease (—) in Production Compared with Monthly Average in 1918
Central Competitive "Interstate"	177	3,269,634	$2.41	$1 88	$0 53	$0.03	2,942,147	$2 47	$2 13	$0.34	$0.22	12%	—10%	2,153,347	$3.02	$2.53	$0.49	$0.62	32%	—34%
Eastern Adjacent	172	2,309,222	2.68	1.93	.75	.11	2,119,563	2.81	2.32	.49	.28	14	— 8	1,912,853	3.48	2.63	.85	.59	29	—17
Western Adjacent	39	584,486	2.53	2.01	.52	.03	548,095	2.68	2.31	.37	.27	13	— 6	486,837	2.91	2.65	.26	.61	30	—17
Southern Appalachian	69	898,259	2.71	2.19	.52	.05	843,517	3.01	2.67	.34	.43	19	— 6	798,692	3.54	2.94	.60	.70	31	—11
Southwestern "Interstate"	76	540,116	3.03	2.63	.40	.07	507,776	3.41	3.11	.30	.41	15	— 6	381,406	3.63	3.44	.19	.74	27	—29
Rocky Mountain	57	1,843,070	2.60	2.12	.48	.04	1,844,342	2.97	2.47	.50	.31	14	+00	1,501,421	3.37	2.81	.56	.65	30	—19
United States	590	9,444,787	$2.58	$2 02	$0.56	$0.05	8,805,440	$2.78	$2.36	$0.42	$0.29	14%	— 7	7,234,556	$3.30	$2.71	$0.59	$0.64	31	—23

(1) "Margin" is not the same as profit.

TABLE III. SALES REALIZATION AND REPORTED F. O. B. MINE COST FOR 767 IDENTICAL OPERATORS, BY GENERAL COMPETITIVE REGIONS

General Competitive Regions	April, 1920						First Quarter, 1920						
	No. of Operators	Production (Tons)	Average Days Worked	Sales Realization	Reported F.o.b. Mine Cost	Margin	Production	Average Days Worked	Sales Realization	Reported F.o.b. Mine Cost	Margin (1)	Increase of Reported Cost in April Over that in First Quarter	Decrease of Output per Working Day in April from that in First Quarter
Central Competitive "Interstate"	239	2,629,701	15	$3 04	$2 54	$0 50	10,619,473	53	$2 36	$2 14	$0 22	$0.40	19% 12%
Eastern Adjacent	221	2,073,142	15	3 51	2 65	86	6,887,364	49	2 79	2 33	46	.32	14 2
Western Adjacent	44	503,591	16	2 90	2 65	25	1,691,862	54	2 68	2 32	.36	.33	14 ..
Southern Appalachian	103	1,047,726	17	3 44	3 03	41	3,261,695	53	3 31	2 72	.59	.31	11
Southwestern "Interstate"	94	434,489	15	3 70	3 54	.16	1,744,044	51	3 46	3 15	.31	.39	12 15
Rocky Mountain	66	1,555,447	20	3 35	2 82	53	5,775,389	67	2 97	2 47	.50	.35	14 10
United States	767	8,244,096	16	$3 30	$2 74	$0 56	29,979,827	53	$2 77	$2 38	$0.39	$0.36	15% 9%

(1) "Margin" is not the same as profit.

certain items, such as income from outside investments.

The 812 operators reporting for April, with a production of about 8,800,000 tons, had an average cost of $2.76, realized $3.26, and had a margin of 50c. per ton. For the year 1918 the records of the Federal Trade Commission show costs for 2,482 operators, with an average monthly output that year of 41,451,000 tons, of $2.04 realization of $2.65 and an average margin of 61c. These figures are summarized in Table I.

Comparison by districts of the April, 1920, figures with those for 1917 shows that each general area maintained the same relative position as regards the size of its margin. The highest margin was obtained in what is designated the Eastern adjacent region—86c. in April, 1920, against 76c. in 1918. It is worthy of note that among the six large regions into which the commission subdivides the statistics this region alone reported a larger average realization in April, 1920, than in the year 1918. In fact, almost without exception each of the subdistricts in this region, which comprises Maryland, West Virginia, Virginia and central Pennsylvania, recorded larger margins in April of this year than in the year 1918.

For instance, in West Virginia seven producers in the Pocahontas field reported an average margin of $1.11 per ton in April, compared with 82c. in 1918; eight operators in the Logan field, $1.62 in April and 92c. in 1918; eighteen operators in the New River field, 94c. in April and 72c. in 1918; and in the Fairmont district twelve operators reported an average margin of $1.12 in April, compared with 68c. reported by seventy-four operators in 1918.

In Central Pennsylvania 133 operators reported an average margin of 83c., 1c. lower than reported by 425 operators in 1918. It is significant that it was in this region that the pinch of the coal shortage this year was first felt and that here bidding for coal has reached the highest pitch. The export market influenced the price at which coal from all the districts in this region was sold in April.

Strictly comparable statistics of costs and sales realizations for 590 operators for April and the first quarter of 1920, and for 1918, are given in Table II. These 590 operators produced an average of 9,445,000 tons of coal per month in 1918, 8,805,000 tons per month the first quarater of 1920 and 7,235,000 tons in April.

As compared with the year 1918, the average sales realization of the 590 identical operators in Table II was 20c. higher in the first quarter of 1920 and 72c. higher in April, 1920. Their average reported cost, however, was 29c. higher in the first quarter and 64c. higher in April. As a result their average margin, which was 56c. per ton (on the basis of reported costs it was 51c. per ton) in 1918, fell (on the basis of reported costs) to 42c. in the first quarter of 1920, but went up to 59c. in April.

The average increased reported f.o.b. mine cost for the first quarter of 1920 was 14 per cent over that for the year 1918, and for April, 1920, was 31 per cent over 1918. This 14-per cent increase of total cost in the first quarter of 1920 is attributable chiefly to the higher wage scale put into effect in November, 1919, as a result of the Fuel Administrator's recommendation of 14-per cent increase in the wage of mining labor. The 31-per cent increase in total costs in April, 1920, is chiefly attributable to two causes: (1) The subsequent wage award of approximately 27 per cent by the U. S. Bituminous Coal Commission effective April 1, 1920 (which included the previous 14-per cent increase), and (2) the decrease of 23 per cent in the production for

TABLE IV. DISTRIBUTION OF F. O. B. MINE-COST INCREASES ACCORDING TO CHANGES IN PRODUCTION OF 590 OPERATORS IN FIRST QUARTER AND APRIL, 1920, FROM AVERAGE MONTHLY PRODUCTION FOR THE YEAR 1918

Change in Production from 1918 Average Monthly Production, per Cent	First Quarter 1920					April, 1920				
	Number of Operators	Production		Increase in Reported F.O.B. Mine Cost Over Year 1918		Number of Operators	Production		Increase in Reported F.O.B. Mine Cost Over Year 1918	
		Tons	Average Change				Tons	Average Change		
Decrease over 25	136	2,823,754	—38%	$0 36	17%	260	2,653,183	—45%	$0 82	41%
Decrease 16-25	76	5,323,755	—20	.39	20	72	961,193	—21	66	31
Decrease 6-15	85	5,655,152	—10	29	15	70	949,394	—11	48	23
Decrease 0-5	83	4,028,792	— 2	.29	13	61	919,046	— 1	.47	22
Increase 0-5										
Increase 6-15	60	3,450,918	+12	.19	9	27	637,396	+10	.49	22
Increase 16-25	41	1,587,657	+20	25	11	32	573,864	+16	.42	20
Increase over 25	109	3,546,294	+51	04	2	68	540,480	.26	.26	10
Totals	590	26,416,322	— 7	$0.29	14	590	7,234,556	—23%	$0 64	31%

April, 1920, as compared with the average monthly production of 1918. Cost of supplies and general expense increased considerably over the corresponding items for 1918, but these increases formed only a minor part of to total increase in cost.

The relative change in the situation between April, 1920, and the first quarter of 1920 is shown in Table III where figures for 767 indentical operators are given. This table also shows the decrease in output per working day in April as compared with the first quarter. The average production per day worked, for the 767 operators, was 565,658 tons in the first quarter and 515,258 tons in April, a decrease for April of 9 per cent from the average production per working day of the first three months of the year.

The increase of 36c. per ton in the average reported f.o.b. mine cost of the 767 operators, together with the increase of 53c. per ton in their average sales realization, resulted in a 17c. increase in their margin for April 1920, as compared with the period January-March, 1920, inclusive.

The average number of days worked in April was only 16; in January-March the average working time was not quite 18 days per month. The average decrease in output per working day in April as compared with the first three months was 9 per cent. The increase of 36c. per ton, or 15 per cent in total reported cost, in April was chiefly due to (1) the additional wage increase effective April 1, and (2) the decrease in production from an average of 9,993,276 tons per month in the first quarter to 8,244,096 tons in April, a decline of 17½ per cent.

In order to throw a light on the effect which a change in the production tonnage has in bringing about a change in costs, the tabulation for the 590 identical operators shown in Table II has been made and is given in Table IV. Taking their average monthly production during 1918 as a base, they have been grouped according to the relative decrease or increase in their production for the first quarter of 1920 and for April, 1920, and their total f.o.b. mine cost increases or decreases are thus shown in relation to change in production. A 14 per cent increase over the wage scale in effect throughout 1918 was made in November, 1919, and was in general effect during the first quarter shown in Table IV. The 27-per cent increase awarded by the U. S. Bituminous Coal Commission (which included the 14 per cent increase) went into effect April 1, 1920.

In the first quarter, 1920, Table IV shows that costs increased roughly proportional to the extent of changes in tonnage. The same holds true for April. In the first quarter of 1920 the increased cost attributable to the 14-per cent wage advance of November, 1919, is most nearly measured by the figures for the group of operators whose production tonnage changed least, namely 5 per cent or less (the group of "Decrease 0-5" and "Increase 0-5"). This group had an average decline of only 2 per cent in production and had an increase in total f.o.b. mine cost (labor, supplies, and general expense) of 29c. per ton, or 13 per cent on such total cost in 1918. In April the increase for the corresponding group of 61 operators is the nearest available measure of the 27-per cent wage increase. This group had an increase in total f.o.b. mine cost (labor, supplies and general expense) of 47c. per ton, or 22 per cent more than its total cost in 1918. In both cases increase in labor cost is by far the most important item, though increases in cost of supplies and in general expense also had some effect. The two groups referred to in this paragraph are believed to be representative of the industry though not co-extensive with number of producers or the total production.

Japanese Study Vegetal Source of Coal

CHOZO IWASAKI has made what he terms "A Fundamental Study of Japanese Coal," similar to that made by Dr. Reinhardt Theissen of United States coals. In Vol. 1 No. 2 of the "Technology Reports of the Tôhuku Imperial University"* an article on the above subject appears with eight full page plates and about thirty-five pages of text.

Iwasaki made several thin sections of lignites, bituminous coals, semi-anthracites and anthracites, using the X-ray on the two latter types, as the hard coal is opaque to light in slides of such minimum thickness as Iwasaki was able to develop. He describes his work in preparation of the specimens as follows: "Pieces of coal are first ground on a steel plate with fine garnet sand. When the pieces become nearly 2 m.m. thick they are hardened by melted Canada balsam and then fixed to a glass slide until they are as thin as possible.

"They are next carefully polished with the wet leaves of the scouring rush (Equisetum hyemale, L) and finally with those of the Aphanante aspera (Thumb) Planch, by the usual method of the Japanese gem-grinder. During this treatment the grinder now and then places them on a window pane and looks through them to see if they are strong enough for further polishing. In this way the thin sections of coal are prepared.

"Such thin sections are translucent when a strong solar ray or an electric light is used, except in the case of anthracite and semi-anthracite. If, however, we use the sunlight directly, the sections are sometimes damaged by the heat that accompanies the light. But the use of the tungsten lamp obviates that difficulty. When these preparations have been made, many kinds of Japanese coal transmit the red or yellow ray through their thin sections, and the internal structure may be seen quite distinctly by the observer."

Speaking of resin in coal bodies he says: "Resin is most visible when it exists in lignite as fairly large grains, and as coalification advances these grains gradually become fewer in number and of smaller size. It is supposed that the quantity of the resin grains was larger at the beginning of the advanced stage of the coal but that they were melted and disseminated throughout the fundamental matter during the development of coalification."

*7½ x 10¾, paper boards; Maruzen Co., Ltd., Tokio and Sendai, Japan.

Shipping Board Blames Priority Orders for Slump in Charter Market

THE U. S. Shipping Board is not particularly pleased with the New England and Northwest orders of the Interstate Commerce Commission. These orders are being blamed for the drop in the charter market. The service orders, it is pointed out, served notice on the world that exports of American coal were to be curtailed rather than expanded. Thus a great deal of tonnage either in the coal trade or contemplating entering it, suddenly became available for other purposes. The sudden large increase in available bottoms naturally had an influence on the charter markets.

Discussion by Readers

Edited by
James T. Beard

Three-Way Latch Switch in a Mine

WITHOUT denying the fact that it is quite unusual to find a three-way latch switch in a mine, still I can hardly agree with the remark that such a switch is "impracticable," as stated in the reply to the inquiry of a Kentucky mine superintendent, *Coal Age*, June 24, p. 1319. Kindly permit me, therefore, to submit a sketch of a three-way, latch switch that has been in use for a number of years at our mine and which I consider both useful and practicable.

The switch to which I refer is laid at a kickback dump on our tipple. We are operating here two mines

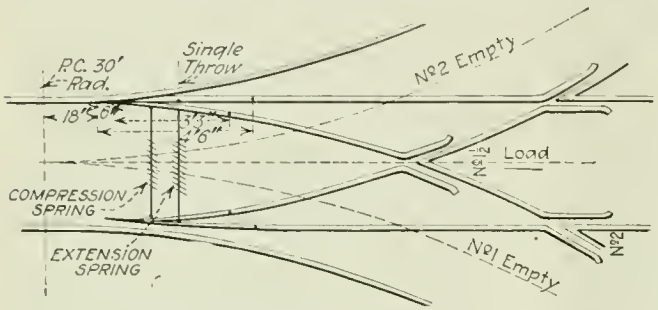


FIG. 1. A SINGLE-THROW, THREE-LATCH SWITCH

and the loaded cars from the two openings reach the dump over a single track and, after passing through the latches, return from the kickback to their respective empty tracks, on either side of the main loaded track, where the trips are made up to be hauled into their respective mines.

As will appear from a study of Fig. 1, this is a combination switch in which the four latches are connected

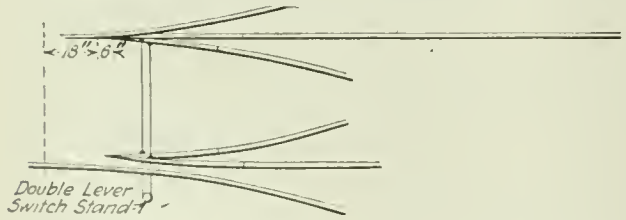


FIG. 2. THE SAME SWITCH WITHOUT THE SPRINGS

in pairs, the two inner latches being held apart by a strong compression spring, which holds them tightly against the two outer latches. The latter are connected together by a strong extension spring, which prevents more than one of these latches from being in contact with the follower rails of the switch at any one time.

It will be observed that these combined latches can be thrown to one side or to the other by the single-throw switchstand, which operates a bar attached to the two outer latches. The entire system moves to and fro as a unit and, the latches being connected by the two springs mentioned, the cars from the dump pass through them readily without disturbing the position of the switch, which is set for the desired return empty track. This arrangement has given good satisfaction from the time it was first installed on the tipple.

Fig. 2 shows how the four latches can be coupled up so as to be operated by a form of double lever. In this case, no springs are used, but each outer latch is connected by a solid bar with the opposite inner latch. The two levers should be placed just far enough apart, say 3 in., to permit both levers to be thrown simultaneously with one hand, or a single lever moved without chafing the hand. I gladly submit this arrangement to the readers of *Coal Age*, believing that it will be helpful to many who are operating under conditions requiring a three-throw switch either in the mine or on the tipple.

Pikeville, Ky. W. T. GRIFFITH.

Contract Mining, the Company, the Miner and the Union

REGARDING the contract system of mining coal, the letter of "S. W. F.," *Coal Age*, July 22, p. 176, recalls my own experiences in this line, while I was in charge of some Alabama operations several years ago.

We had a number of slope openings in an extremely faulted field, the faults running approximately with the dip of the coal so that the headings driven off a slope, as a general rule, would run into a fault too large to drive through, say at a thousand feet or more from the slope. In such a case our method was to rob back from the fault, after the rooms were driven. This required fast work in a necessarily restricted area and limited the number of men engaged on a heading to about four.

CONTRACT LABOR REDUCES COST

It was at a time when coal costs had to be figured pretty close so that, in addition to the necessity from a mining standpoint of pushing this work speedily, it was also imperative that enough coal be mined each day to keep a driver and mule busy. If one or two miners working on a heading laid off a day it is easy to understand how it affected the cost of the coal coming from that heading, to say nothing of the increased hazard of losing coal adjacent to the gob.

As a remedy for this state of affairs I started the contract system. My plan was to draw up a written contract with three or four good miners, obligating them to deliver the coal to the slope siding, at a certain price per ton. They had to hire their own driver, be responsible for loss of rails, cars, or other equipment, clean up any falls on the heading, and be responsible for the proper recovery of the coal and the safety both of themselves and their men. The contract price was arranged by adding to the mining and loading price, per ton, the expense of the driver and other day labor, per ton, based on the average performance with a full crew, on non-contract work.

A miner was subject to the forfeiture of his interest in the contract if he laid off without sufficient cause, and he was also restrained from laying off by his sense of duty to his fellow contractors. We found this plan worked very satisfactorily and extended it whereever possible. The type of men we had seemed to enjoy the distinction of being contractors and acting as their own bosses, and as time went on contracts were in demand. We got more coal at a less cost, and the miners made more money so that both sides were benefitted.

We then went further and contracted small acreages of coal to a group of three or four contractors, the company furnishing the equipment, and the contractors installing it, erecting the tipple, etc., under the general supervision of the company's superintendent. The company handled the payroll, the time being turned in by the contractors; and the contractors were paid, each month, so much per ton for all coal loaded on cars at the mine, after deducting any charges for labor and supplies paid by the company.

Practical Working of the Contract System

In a contract of this kind one of the contractors preferably held a mine foremen's certificate. In the early development stages, the contractors would of course go into debt to the company; but, as the contractors labored themselves in opening the mine, the company was protected against loss by the amount of their labor, in addition to the labor of their men, the results of this combined labor reverting to the company in case the contract was forfeited.

This letter could be much extended by going into details and giving specimen contracts; but I hesitate, not being sure that it would be of any value. Mines, the country over, are now nearly all unionized. What has the union to say as to one of its members doing something a little out of the ordinary, becoming a little boss of his own, working a little harder and earning more money? Does it sanction or permit such work? In every section we have many fine red-blooded Americans among our miners, men who are capable of handling contract work; and it would seem a shame to restrict them in their opportunities. Perhaps some of these who hold union cards will read this and, if so, I hope they will write to *Coal Age*, giving their views on the subject.

M. L. O'NEALE.

Morgantown, W. Va.

What Do Our Mine Workers Want?

MANY of us who have been longer in the mining game can hardly fail to see the lost motion, lack of pep, mingled with a disposition to find fault and similar evidences of unrest that should impress everyone with the need of sticking close to the job to which he has been long accustomed.

Turning over in his mind the situation that has developed and that now prevails quite generally in the coal-mining industry, one cannot but ask, What is the matter with our mine workers? The mystery grows with the thought that the present wage scale was never even dreamed of in former times. The theory of the trade unionist that high wages increase efficiency and create contentment among workers is shot to pieces. The sequel shows that the only just compensation is one *based on what a man does to earn his pay.*

By way of inquiring into the cause of the present unrest of labor, let us consider, for a moment, the case of a driver or other company man working in the mine. He starts at the usual hour for work. Proceeding with leisure, he rolls a cigarette, when the regulations of the mine do not prevent his so doing, and appears in no immediate hurry to take up his duties and enter on the activities of the day. Perhaps, at intervals of thirty minutes or between trips, he goes through the same performance, in spite of the fact that the men inside are waiting for cars, and his delay means both dollars-and-cents to them and loss to his employer. Such a condition is worthy of serious consideration on the part of every honest worker who is desirous of doing his share to improve the present situation in mining.

Daymen Refuse to Perform Other Than Their Accustomed Duties

During a car shortage, a month or so ago, the superintendent of a certain coal mine in this state gave his foreman orders to keep the daymen on a full shift provided they could be put to work at anything that had to be done. It happened a day or so later that they had a five-hour car supply at the mine. To complete the shift for the daymen, a driver was asked to handle rock required for track ballast. Muttering that the company was short of men, he refused to comply with the request and went home. Others followed his example with the result that the next morning the men went on strike, after learning that they were not credited with a full shift for the previous day.

As another instance of the change that has taken place in working conditions, in respect to mine labor, let me cite a mine in Alabama that, prior to the war, had an output of 500 tons per day, which one man had always handled without difficulty. Today, the output of that mine is reduced to 200 tons per day, yet, two men are now required to handle the cars on the track. Is it any wonder that the public, who have to pay more for their coal than they did before the war, protest loudly against the present attitude of labor.

Agitators Take Advantage of the Scarcity of Labor to Stir Up Trouble

In answer to the question as to the cause for these conditions, it can be stated that there are several causes tending to produce this attitude of labor. In the first place, irresponsible agitators have led the men to believe that they are rolling up enormous profits for their employers. Again, the scarcity of labor during the war period led to a laxity of discipline in the mine, because of the desire of mine officials to hold their men. This put a premium on inefficiency in every department of mine work. For example, I asked the driver referred to previously how he could expect a full shift for five hours' work. His reply was that he would want a full shift if he made but a single trip in the mine.

It goes without saying that the average mine laborer, both miner and daymen, has lost his sense of justice. This is not true of all mine workers; but we need an awakening of the good old American honesty that prevailed in the mines in the earlier days when men were anxious to give *a day's work for a day's pay.* No one would refuse the miner good pay for his work; but he should show his appreciation of the present conditions and make good by trying to help in every way possible.

Altoona, Ala. N. D.

Natural Advantages the Chief Factor in American Coal Mining

WITH the kind permission of *Coal Age*, I desire to offer a few comments on the criticism offered by George S. Rice, in his article entitled "Why do American Mine Workers Produce More Coal than British?" *Coal Age*, April 15, p. 762. The article enlarges on and criticizes one that recently appeared in a British journal and which explained several points of advantage in American mining over the conditions that prevailed in the mining of coal in Great Britain. In reading the article of Mr. Rice, it occurred to me that there were good reasons why one might differ with him in respect to the conclusion he has reached regarding the real causes of a larger production of coal, per man, in America, than in Great Britain. Allow me to mention a few of these reasons:

Exception is first taken by Mr. Rice to the claim in the British article that American mining, being yet in its early stages of development, presents less difficulties than are met in British coal mines. The statement of Mr. Rice that "Where these advantages exist they will persist regardless of the time during which mining continues," leads the "man from Missouri" to inquire as to the significance of this remark. Allowing that natural advantages *do* exist in American mining, and claiming that they will continue to *persist* is an argument that sustains the claim of the British writer; and it is hard for a practical miner to discover the superiority of reasoning displayed in this statement of our friend.

None will deny the truth of the old adage: "A New Broom Sweeps Clean." It is logical that this particular advantage obtained in the use of the "new broom" is only temporary and fails to persist as time goes on. The "man from Missouri" concludes that this must have been what Mr. Rice had in mind, for where can one look for a coal mine that has reached a stage of development that is permanent. It cannot be denied that there are some advantageous features in mining that continue; but those that are really essential to increased production and a low cost of operation must dwindle as the development of the mine proceeds, dragging down with them the minor advantages that persist throughout the life of the mine.

Great Britain vs. United States

It is clear that the illustration is alike applicable to the mines of both Great Britain and the United States. The former have reached a stage of development that lowers the production of the mine and increases the cost of operation, while coal mining in the United States is yet in its infancy and does not possess the same difficulties.

Again, the drift of the argument presented by Mr. Rice would make it appear that the chief factor in production and economy of mining, in America, has been the introduction of mechanical equipment in those mines. Now, when one considers the natural conditions prevailing in the coal fields of Great Britain—the generally thin flat seams, lying at an average depth far greater than is common in the United States—and reflects that the thinness of the coal means a greater distance of underground haul, for the same tonnage produced, and the greater depth of hoist likewise limits to that extent the daily production of the mine, he must conclude that these natural conditions are the chief controlling factors both in the cost and production of coal.

In respect to the mechanical equipment of the mine, the same natural conditions favor the cheaper mining of coal in American mines. Moreover, it would seem that coal operators, in America, are willing to incur a greater risk, in the operation of their mines, than is permitted by the Coal Mines Regulation Act in Great Britain. The Act prohibits the use of electrical haulage in the mines of England. In the view of the English mining engineer, the advantage to be gained by the use of that form of power is not worthy of consideration, in comparison with the danger incurred of the possible ignition of gas in the mine.

Mining Machines Debarred, Pick Mining General

Now, a word in regard to the methed of mining the coal. As is well known, natural conditions make the longwall method the prevailing system of mining in Great Britain; and, as Mr. Rice states, the room-and-pillar system of working common in American mines is "better adapted to the use of under-cutting machines than is longwall, particularly when the coal is at all irregular in dip and in faulty condition, as is apt to be the case in Great Britain." True it is that the natural conditions prevailing in English mines debar the general use of mining machines and pick mining is general. However, pick mining, in England, is very different from the so-called "pick mining" in America where, as Mr. Rice states, "explosives and not picks are made to do the work of mining." The English law requires that the coal must be undercut a distance of from 4 to 5 ft., and no blasting off the solid, which is so common in the United States, is permitted.

Incidentally, reference is made by Mr. Rice to the "intermediate system" of haulage in British mines. Perhaps he refers to the use of gravity planes that, owing to a dislocation in the coal beds, appear most suitable for transporting the coal. In such instances, their use has been found to be equally economical, or even superior to the adoption of any other form of underground haulage.

In closing, let me say that there is no reason why the opinion expressed by the British writer, that a difference of output of coal, per man, in America and Great Britian, is due chiefly to the causes he has mentioned, is incorrect. I quite agree with him that this difference is traceable to certain advantageous conditions that exist in the American coal areas, as compared with those that prevail in Great Britain. It does not appear to me that the difference is attributable to the more extensive introduction of mechanical equipment in American mines.

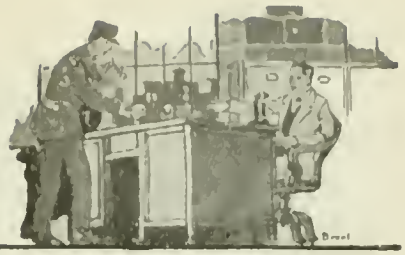
Again, the "man from Missouri" must be shown before he will believe that the science of mining in England stands second to that in America. Neither is it at all reasonable to assume that the difference lies in the skill of the individual miner. On the other hand, it must be admitted that American mining is in the early stages of development. Also, the generally greater thickness of the coal seams and their lying at a less depth below the surface, which may average perhaps one-sixth of the depth of British coal, are the controlling factors in the larger production at a minimum cost, in America, as compared with the same items in England

Prince Rupert, B. C., Canada. T. J. SHENTON.

Inquiries of General Interest

Answered by

James T. Beard



Power Consumption Is Increased When the Air Is Short-Circuited

THE ventilating fan in our mine is connected by a link-belt drive with a 150-hp. motor, operated with alternating current at a pressure of 220 volts, on a 60-cycle circuit. The fan is a 15 x 4-ft. Jeffrey and, running at a speed of 110 r.p.m. produces an air current of 250,000 cu.ft. per min., under a 3.5-in. water gage, in the fan drift.

The mine is opened by a shaft and worked on the longwall system of mining. Not long ago a slight fall occurred in the intake and broke down a brattice separating it from the return air-course. As a result, the air was short-circuited at that point, the entire current produced by the fan passing at once to the upcast shaft and out of the mine.

The fall was only what might be expected to occur at any time and would have caused no further thought or comment than what concerned the clearing up of the entry and repairing the brattice, except for the observed reading of the meter. The short-circuiting of the air, caused by the breaking down of the brattice, cut out resistance of the mine, which it would seem should have reduced the work required by the operation of the fan. Instead, however, the reading of the meter went up, showing an increase in the power consumed in driving the fan.

The question I want to ask is: Should it take more kilowatts of electrical energy to drive the fan when the air is short-circuited so as to cut out the mine resistance and lower the water gage?

Another question is: Assuming the same frictional resistance in the mine, why is it that the consumption of power varies with the change of season from winter to summer and from summer to winter? Is this difference due to the varying density of the air at different seasons of the year The difference observed amounts to several hundred kilowatt-hours a month, between summer and winter. Allow me to add that I am not alone in the belief that the full circuit of the air in the mine should call for a greater consumption of power than when the current is short-circuited.

Peru, Ill. CLIFFORD R. CLARK.

When the air current in a mine is short-circuited, as described by this correspondent, it is true that the mine resistance is cut out, which reduces the work to be performed in the mine. This, however, is only a portion of the work performed by the ventilator. A considerable portion of the power applied to the fan shaft is always absorbed in passing the air through the fan itself. When the latter is operating on the full circuit of the air, from 20 to 40 per cent of the total power is lost in the fan.

But, cutting out the mine resistance reduces the pressure in the fan drift against which the fan operates; and, as a result, a larger volume of air rushes through the fan. Then, since the power increases with the cube of the quantity of air circulated, it is easy to understand that the power lost in the fan is greatly increased. This loss is generally much greater than the power previously required to circulate the air through the mine. As a result of this increased loss of power in the fan, the latter must either run slower or consume more power in its operation, the latter being the case when the fan is electrically driven.

In answer to the second question, it can be stated that the most probable reason for the difference in the consumption of power in summer and winter is that it is due to a natural air column existing somewhere in the mine or the mine shaft or slope. According to the relative temperatures of the inside and outside air, this air column may either assist or retard the circulation in the mine. In the one case there may result a less consumption of power required to drive the fan; and, in the other case, the consumption of power may be increased.

Crushing Strength of Concrete

INTEREST in the construction of mine dams was revived by the inquiry regarding the strength of such a dam built of wooden blocks, which appeared in *Coal Age*, July 1, p. 26, and was followed by an excellent reply showing that the strength of the dam in question was not adequate to support the given head.

Since most of the work in this line has been of concrete construction, I want to ask what is the ultimate crushing strength of good concrete and what factor of safety should be allowed in the construction of a mine dam, assuming the walls of the passage are solid and capable of resisting the thrust of the arch under a given head. ENGINEER.

St. Louis, Mo.

The strength of concrete depends on the quality of the materials used, the manner and proportion in which they are mixed and the time allowed for the concrete to set before receiving its load. A good hydraulic cement must be used with clean, sharp sand and hard rock broken to a uniform size. The best results are obtained when these ingredients are thoroughly mixed in the proportion of one volume of sand three volumes of cement, and five or six volumes of broken stone. Sufficient water must be added to form a good, workable matrix. This is termed a 1:3:5 or 6 concrete. Ordinarily, not less than thirty days should be allowed for concrete to set, and a still longer time is desirable in mine work. The ultimate strength of a 1:3:6 concrete, making no allowance for reinforcement, may be taken as 1,800 lb. per sq.in. It is safe practice in the construction of dams and retaining walls of concrete to estimate on a safe crushing strength of 500 or 600 lb. per sq.in., making the factor of safety about three, which will generally give good results.

Examination Questions

Answered by

James T. Beard

Miscellaneous Questions

(Answered by Request)

Ques.—What weight of electric motor will be required to haul four cars, each having a gross weight of three tons, up a grade, assuming a coefficient of friction 0.025 and a coefficient of traction of 0.16, the tangent of grade angle being 0.03492?

Ans.—The weight of the trip hauled is $4 \times 3 = 12$ tons. Then, calling the required weight of the motor x, in tons, the coefficient of traction being 0.16, the tractive effort of the locomotive is $0.16x$. When the locomotive is hauling the trip on the upgrade its tractive effort must overcome the resistance of both the track and the grade. But, since the total moving load including the locomotive and the trip is $x + 12$ and the coefficient to the tangent of the grade angle, making the total coefficient of resistance 0.05992, say 0.06. The total resistance of the track and the grade is therefore $0.06(x + 12) = 0.06x + 0.72$.

Now, since the tractive effort of the locomotive must be equal to the total resistance which it overcomes in moving the load we have

$$0.06x = 0.06x + 0.72$$
$$(0.16 - 0.06)x = 0.72; \text{ or } 0.1x = 0.72$$
$$x = 0.72 \div 0.1 = 7.2 \textit{ tons.}$$

Ques.—How do you conduct an examination of a gaseous mine in order to learn its true condition?

Ans.—Having properly prepared a good testing lamp, enter the mine with the intake air, or start at the intake end of the section to be examined, and follow the course of the air-current, examining each place thoroughly and in order. Make a careful test for gas at the face and observe the condition of the roof and coal before making the mark to show the date of the examination, in each place visited. Where brattice is down and can be replaced quickly, this should be done. If gas is found or other danger is observed in a place, a danger signal must be placed at each entrance thereto as a warning to all persons not to enter. Proceed in this manner until every place in the mine or section to be examined has been visited. Returning to the shaft, slope bottom, or entrance to the mine, make a full report in the book kept for that purpose, dating and signing the same. This report must note the character and location of such dangers as have been found, and the fireboss should then remove the checks of men whose places have been found unsafe for work and deliver the mto the mine foreman. On leaving the mine, he must remove the danger signal, which he placed at the entrance before starting.

Ques.—In what part of the mine may gas be expected to be given off more freely than in other parts?

Ans.—The answer to this question will depend wholly on the conditions existing in the formation, respecting the inclination of the strata, the presence of fault lines, the development of the mine and the method of working the coal. In general, it can be said that gas may be expected to be given off more freely in those sections of the mine where the extraction of the coal is more rapid and a larger surface of fresh coal is exposed; or where the presence of faults renders the escape of gas from the strata easier, so that larger quantities are generated. At times, the character of the roof strata, in connection with the method of working employed, is such that much gas is given off by reason of roof falls or the undue settlement of the roof on the pillars. Aside from its generation, larger accumulations of gas, may generally be expected at the face of steep pitches and in rise workings.

Ques.—Name six good features of a safety lamp for general work.

Ans.—For general work, a lamp must (1) give a good light that is well distributed on the roof and floor. (2) The lamp must be simple in construction, easily examined and assembled, having as few parts as practicable, none of which can be omitted without detection. (3) The lamp must be light and portable, so that it can be carried about without being a burden. (4) The lamp must be strong and durable so that it will withstand rough usage without being injured. (5) The lamp must not be too sensitive to gas so as to cause it to flame readily. (6) A working lamp should be supplied with some reliable form of igniter, so that it can be relighted when accidentally extinguished.

Ques.—Which is the easier to remove from a mine, firedamp or blackdamp? Explain why.

Ans.—The ease with which either of these gaseous mixtures can be removed from places where they have accumulated will depend on the character of the mine. In a flat seam ventilated by a good current of air, there should be little difference in the ease with which either of these mixtures can be removed from its lodgment if proper means are adopted for that purpose. However, blackdamp being the heavier of the two mixtures will generally require a stronger air current to sweep it along the air passages, even in a level seam; because the air is prone to pass over the blackdamp, which lies on the floor of the passageway.

Moreover, the rapidity with which blackdamp diffuses into the air current is much less than in the case of firedamp, the rate of diffusion of these mixtures being inversely as the square roots of their densities. For this reason also, the blackdamp would be more difficult to remove than firedamp, even in a level seam.

In an inclined seam, firedamp will generally be accumulated in larger quantities in the rise workings and the faces of steep pitches, while blackdamp will accumulate in dip workings or at the face of a dip and in swamps or other low places. In either of these cases the accumulated mixture is more difficult to remove than where the seam is level or its inclination less steep. Other things being equal, however, blackdamp will generally be more difficult to remove from a mine, owing to its lower rate of diffusion and because its density is greater than that of the air current.

The Labor Situation

Edited by
R. Dawson Hall

No Change Along Morgantown & Kingwood

THERE has been little or no change in the strike situation along the line of the Morgantown & Kingwood Ry. in Monongalia and Preston counties, although some of the companies have ceased operations for the time being. In so far as the mines of the Penn-Mary Coal Co. are concerned the situation remains practically unchanged. Mines of the company will close down rather than enter into a closed-shop contract with the United Mine Workers.

Both Operator and Men Go Holiday Making

FOR over a week the Cassidy Collieries of the Granby Consolidated Mining & Smelting Co. have been closed down. Just what the trouble is cannot be said, but whatever the cause it arises from certain demands of the men, whether for increased wages or for recognition of an organization is not clear. It is denied, however, that more wages are being sought and living conditions cannot be the source of the trouble, for the Cassidy Collieries are a model in this respect. The only possible difference, therefore, would appear to be in regard to some organization among the men.

Operation of the mine stopped when the men called a holiday to formulate their demands. The management thereupon met the miners by making the desire for a holiday appear unanimous by formally closing down the property. The officials explained that the bunkers were full and that difficulty was being experienced in marketing the product.

Among those familiar with the situation this is not taken seriously, for all the other coal mines of Vancouver Island are working as near to capacity as labor conditions permit and orders for coal are far in excess of output. The Deputy Minister of Labor is investigating the trouble.

Quiet Along Tug River; Output Increasing

WITH Kentucky guardsmen stationed in Kentucky territory on one side of Tug River and with the state police of West Virginia patroling the West Virginia side of the same stream, not only were there no disturbances in the strike zone in Mingo County, W. Va. during the last week of July, such as had occurred in previous weeks but there was an increase in production during the period named, for more miners were at work. The greater protection furnished them made them, it is believed, more ready to follow their natural inclination to return to work. It is said that more coal was loaded than at any time during the strike, and that fact seems to indicate that the United Mine Workers are fighting a losing battle.

During the early part of the week already mentioned mines at Borderland, Sycamore and Wilhelmina were in operation with a fairly large quota of men at work. None of them was fired upon or molested in any way. The Freeburn (Ky.) plant of the Solvay Colliery Co., opposite Delorme, W. Va., where there had been much shooting during the previous week, also returned to normal production.

Although threats had been made that any attempt to operate certain plants would bring about a recurrence of sniping such as had been witnessed at Borderland and other points, no trouble occurred, undoubtedly because detachments of state police had been sent to operations against which threats had been made. The Sycamore and Wilhelmina mines had been idle for some time and the fact that they had been able to resume operations led many to believe that it was a forerunner of a resumption of operations on the part of other plants.

Arbitration Board Backs Texas Miner's Right to Job

THREE of the five local disputes between Texas coal miners and operators, which had been referred to an arbitration committee composed of three miners and three operators, were passed upon at a meeting of this committee in Fort Worth recently. Two of the controversies involved reinstatement of a miner who had been discharged and who had demanded reinstatement without loss of time or priority rights. One miner was reinstated and the other discharged by the joint committee.

The third dispute, however, which involved the Bridgeport Coal Co.'s demand for a penalty of $1 a day against all miners who were out April 2, 4 and 5, was considered and referred to the Texas Mining Board for adjustment.

Operator Must Not Exceed Union Scale In Kentucky-Tennessee District

NOTICE has been served upon operators in the Kentucky-Tennessee district that wages above the union contract rates must not be paid or the union will call a strike in such mines and will not allow the mine workers to return to work till the mine is unionized. The mines are working on an open-shop basis, all of them employing union men.

Apparently the real operators have brought pressure to bear on the union. The regular coal-mining companies have contracts to meet based on the conditions which ruled before the coal shortage, some contracts being a year old. They do not receive the outrageous prices that the fly-by-night operators are getting, not only for a part, but for all the coal they produce. They sell nothing but spot coal and for prices around $10 a ton. They can pay almost any wages and can draw away the men from the regular mines, depriving them also of railroad cars, for the gondolas are divided with every new claimant for railroad consideration.

Anthracite Operators Compare Living Cost With the Wages of Their Workmen

ONE of the most striking exhibits of the anthracite mine workers in testifying before the Anthracite Coal Commission was a chart showing the way in which, as they alleged, increases in wage rates tarried behind cost of living. They suggested that the area between the two graphs, that of cost of living and that of wages, represented a tragic loss to the mine workers that should not only be made up but compensated for when

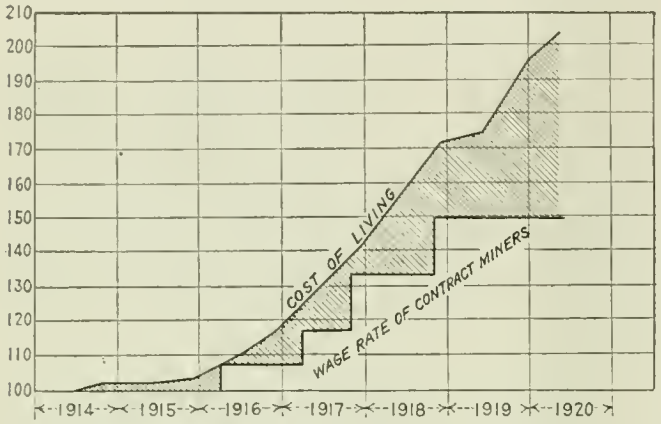


FIG. 1. CONTRASTING LIVING-COST INCREASES WITH THE RISES IN ANTHRACITE CONTRACT RATES

Both increases are given as percentages of the prices and rates respectively which obtained in 1914. The mine workers argue that the delay in conforming wage rates of contract miners to the cost of living and the inadequate degree to which the conformation was in each case made caused the contract miners the loss indicated by the shaded area.

a contract was signed. This exhibit *Coal Age* reprints here as Fig. 1.

When the operators presented their charts covering the same ground, Figs. 2 and 3, they told an entirely different story. By steady work, overtime and greater opportunity during working hours the mine worker had found his earning power increased out of all proportion to cost of living. Especially has the day worker been benefited, as he has had both steadier work and overtime He often works when the mine is idle.

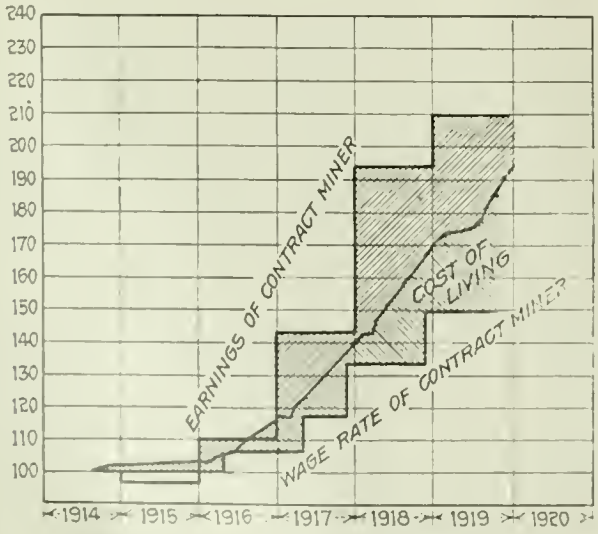


FIG. 2. OPERATORS' CHART FOR EARNINGS OF CONTRACT MINERS IN ANTHRACITE REGION

Contract miners by steadier work and a better turn of cars have made better wages since the war than they did before, even when the high cost of living is considered.

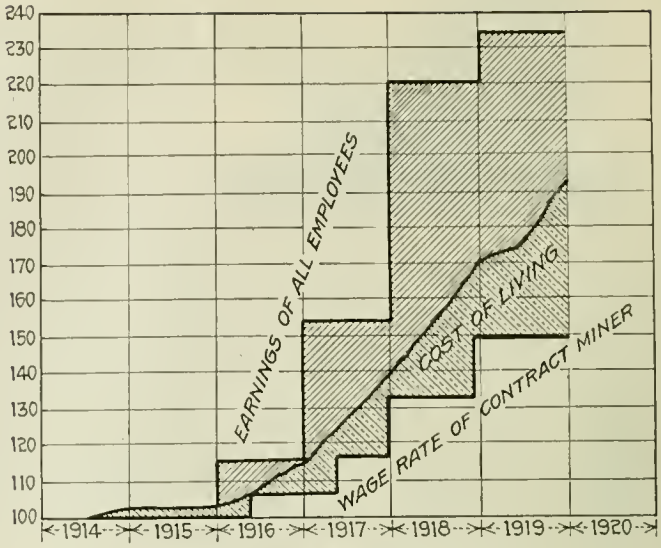


FIG. 3. ALL ANTHRACITE EMPLOYEES ARE BETTER OFF TODAY THAN BEFORE THE WAR

Regular operation, shorter regular working hours with paid overtime have so increased their earnings that the cost of living has not managed to compel them in any way to limit their expenditures. They can buy more now than in 1914.

Increases of Wages Are Granted Miners in Rocky Mountain Field of Western Canada

DETAILS of the new contract between the mine workers and operators of district 18, United Mine Workers of America (Eastern British Columbia and Southern Alberta), have been completed. A 27-per cent increase in contract tonnage rates is granted in the bituminous fields and 20 per cent on deadwork, which includes timbering and the handling of refuse. In the lignite fields a 24-per cent advance per ton is allowed and a 20-per cent increase on deadwork. All day wages are increased 27 per cent.

These new rates are retroactive to Arpil 1 and will remain in operation until March 31, 1922. The agreement is between the Western Canada Coal Operators' Association and the United Mine Workers of America. The miners also are to receive $1.17 a day cost-of-living bonus. These changes mean that a contract miner will be able to earn from $7 to $10 a day, while the wages of the adult day workers will run from $5.58 to $7 a day. The 8-hour day will be observed on the surface and eight hours from bank to bank in the mines.

A mass meeting was held recently at Fernie when the contract was considered and the question of allegiance to the U. M. W. of A. and the One Big Union was debated. In view of the fact that the agreement was negotiated between the operators and the former organization, the U. M. W. of A. appears to have had the better of the argument.

The miners afterward marched *en masse* to the offices of the Crow's Nest Pass Coal Co. and conferred with the management. What transpired has not been announced but the mines up to the time of writing have worked without interruption.

Coal Age Index

THE indexes to *Coal Age* are furnished free to all who ask for them. The index for the first half of 1920 is ready for distribution, and a copy can be had by addressing a postcard to the Subscription Department of *Coal Age*.

NEWS FROM THE CAPITOL

BY PAUL WOOTON

Attorney General Soon to Announce Fair Price for Coal

Trade Commission Data Form Basis for Conclusions—Appointment of Fuel Administrator Unlikely—Morrow Canvasses Situation

SINCE there has been no development during the last ten days which would serve as a sufficient reason for invoking war-time powers as to coal control, the recurrence of the Fuel Administrator rumor is not taken seriously in most quarters. It is expected at this writing that the Attorney General will announce in the next few days what he considers to be a fair price for coal. It has been stated at his office that he is studying the returns of operators to the Federal Trade Commission in an effort to arrive at an equitable conclusion.

In discussing the coal situation on his return from New England, J. D. A. Morrow, vice-president of the National Coal Association, among other things, said:

The Baltimore & Ohio R.R., the Chesapeake & Ohio, the Norfolk & Western, the Virginian and other large coal-loading roads are performing creditably. The Pennsylvania R.R. is still a little disappointing. Colonel D. B. Wentz, president of the National Coal Association, has taken this up with General Atterbury, of the Pennsylvania Lines. We are satisfied that the executives of the Pennsylvania Railroad are making vigorous efforts to improve the loading and shipment of coal on their lines.

Movement to the Lakes is not yet up to schedule. From the inception of the Lake order on July 26 up to Aug. 7 the total shipments were 10,745 cars behind the scheduled 4,000 to be dumped at Lake Erie ports daily. Practically all of that shortage is due to insufficient car supply on the Pennsylvania R.R. Shipments over that road to Lake ports for the week ending July 31 were 4,660 cars below scheduled requirements. The Wheeling & Lake Erie also was about a thousand cars behind. The deficiency, however, was due not so much to lack of cars as to congestion on the road. This is now being rapidly remedied and regular shipments up to requirements may be expected.

The situation as to New England is distinctly encouraging. The New England wholesale coal men have organized a committee to work in conjunction with the operators and the railroad executives, and as an outcome of their efforts coal is moving to tidewater ports fully up to the 1,250,000 tons called for under the New England priority schedule.

One of the chief sources of concern was the supply of coal for the New England railways. The fact that these railways were endeavoring to move their fuel supply all-rail made it difficult for other New England consumers to obtain their tonnage through the New England gateways. The New England railroads now have arranged for the movement of 382,000 tons of locomotive fuel by water. This fact alone insures the success of the New England program.

The sore spot remaining in the soft-coal situation is the speculation in coal. This problem is being attacked by the National Coal Association through a special committee, which has developed a preliminary plan (involving curtailment of the reconsigned-car privilege) to deal with the speculative misuse of transportation facilities in the tidewater movement. The committee is tackling the problem in a practical manner. Without question the speculative situation can be met if the railways will join in making effective the committee's plan when it is worked out.

That the President had decided finally to appoint a Fuel Administrator was rumored on Friday. The report came at a time when those opposed to such action just had begun to breathe easily after the strikes in Indiana and Illinois. It was recognized clearly that any continued strike in those states would require such sweeping changes in coal distribution as to be beyond the peace-time powers. The fact that the strike situation became a very menacing one and did not call forth drastic steps, was taken to indicate that the administration was distinctly adverse to invoking the Lever Act. The early report had it that the President had been influenced in reaching his decision by pressure brought by public utilities.

Some changes which probably would be made as a result of a resumption of price regulation with the appointment of a new administrator, as compared with prices in effect at the time the Fuel Administration was discontinued, would be the following: Increase in wages, 60c. per ton plus any addition which may be granted daymen; increased prices in materials and supplies, 25c per ton; increased overhead, 25c per ton; increased cost due to idle time, $1 per ton. In addition, there also would be a selling expense of 8 per cent on the new cost. A number of representative operators agree that approximately these additions would have to be made to the last prices.

Who Will Succeed Ames?

SINCE the resignation of Charles B. Ames, Assistant Attorney General, last week, there has been some speculation as to who will be appointed to fill this post. It is understood that the resignation, effective Aug. 31, has been accepted by the President. The appointment of a new assistant is of special interest to the coal industry because the incoming official will continue to handle the Government's coal cases. Mr. Ames was in charge of the Government's coal cases during the coal strike and injunction proceedings last November.

Railroads Will Force Use of Trucks in Intracity Coal Hauling

THE committee on car service of the American Railroad Association has sent the following circular to all carriers:

To relieve terminal congestion, eliminate switching and increase the car supply for road haul shipments, it is suggested that an embargo be placed against the use of all classes of equipment in intracity movement at each

point where such action will result in improved car handling and increased car supply for general distribution.

A permit system should be inaugurated to protect the movement of such freight as cannot be handled by truck.

The embargo should, so far as practicable, be absolute against the use of coal cars in crosstown movement.

At common points where car-service committees have been established the chairman of the committee should be named as permit agent.

No General Improvement in Car Supply Noted During July

COMMENTING on the car supply and labor situation, the Geological Survey in the last weekly report states that the strike losses reported in recent weeks continued in Alabama and the Kenova-Thacker field. Ten per cent of the capacity of Alabama was closed by strikes in the week of July 24, while in the Kenova-Thacker field more than three-fourths of the capacity was down. Strikes in Kansas and Arkansas were reported sufficient to cause a loss of 10 per cent of full time.

The closing of mines because of labor disturbances reduced the demand for cars and was the primary cause for a decrease in the percentage of time lost on account of transportation disability. Over the country as a whole the transportation loss during the week of July 24 was 29.6 per cent, as compared with 32.3 per cent during the preceding week. Examination of the reports from fields not affected by the strike, however, indicates no widespread improvement in car supply. In some districts a change for the better was, indeed, reported, but in others the losses grew even more acute than before.

Improvement in car supply was reported from the Pittsburgh district, from the Pennsylvania and Buffalo, Rochester & Pittsburgh railroads, sections of central Pennsylvania, from the Cumberland-Piedmont field, the high volatile fields of southern West Virginia, northeastern Kentucky and western Kentucky. In Indiana, Ohio, West Virginia Panhandle, and southeastern Kentucky little change occurred. Among the districts to report a less adequate car supply were Westmoreland, the New York Central district of central Pennsylvania, Somerset, Fairmont, New River, Hazard, and southwestern Virginia.

Opinion Divided on Effectiveness of Reconsignment Order

THAT the Interstate Commerce Commission's reconsignment order will not prove a panacea for speculation in coal is pointed out in many quarters. Many are of the opinion that there is only one really effective way to prevent delays in cars and that is by requiring the operator to produce evidence that the car will be unloaded immediately at its destination. Some advocate that this step be taken in addition to the reconsignment order.

The opinion is not unanimous, even among operators, that the benefits which will be derived from the reconsignment order will outweigh to any great extent the economic losses which will result. The railroads always have been hostile to the reconsignment privilege because of the belief that it results in serious delays to cars. Others hold that in the great majority of cases there is little delay occasioned by reconsignment of the cars. When the commodities shipped originate at a considerable distance from the point of consumption, many believe it to be an economic necessity to load out the commodity at once. Sale can be arranged during the time that the car is moving.

While there is no question that the reconsignment privilege has been abused, there has been a tendency in the present situation not to emphasize the advantages of the plan. Incidentally the Interstate Commerce Commission has held repeatedly that reconsignment is a right and that the privilege must be given at a reasonable rate. The opinion is expressed that it is resale rather than reconsignment of coal which causes the trouble at tidewater.

Exports of Coal in June

FOR the twelve months ended with June, 1920, FOLLOWING the precedent set by New England, the This compares with 18,152,337 tons for the twelve months ended with June, 1919. These figures are those of the Bureau of Foreign and Domestic Commerce. The bureau's figures, giving the details of June, 1920, exports, as compared with the revised figures covering the exports in June, 1919, are as follows:

COAL AND COKE (In Tons)

	June, 1919	June, 1920
Coal:		
Anthracite	474,315	511,951
Bituminous	2,179,201	3,132,253
Exported to:		
Italy	126,881	344,243
Netherlands	43,479	175,189
Sweden	55,270	173,721
Switzerland	101,604	117,751
Canada	1,430,741	1,193,767
Panama	None	10,167
Mexico	14,312	7,003
British West Indies	21,145	5,210
Cuba	84,198	107,609
Other West Indies	8,991	10,828
Argentina	54,796	120,267
Brazil	100,078	64,055
Chile	8,397	35,077
Uruguay	22,758	19,829
Other Countries	105,851	747,537
Coke	56,533	55,420

Committee of Nine Starts Program to Assure Virginia a Coal Supply

FOLLOWING the precedent set by New England, the Governor of Virginia, co-operating with the chambers of commerce of that state, has set on foot a campaign intended to influence the Interstate Commerce Commission to provide for Virginia's coal supply. The committee, which is headed by J. R. A. Hobson, of Richmond, consists of nine of the more influential men of Virginia. Before moving on Washington, through "courtesy," it was decided that the operators of its own state should have a hearing. This led to a meeting in Lynchburg July 29.

After a three-hour executive session the committee concluded that the high prices are due to speculators and warned against dealing with other than legitimate dealers. The Lake and New England orders will put no extra tax on the supply of coal for Virginia.

The coal operators who have been supplying Virginia pledged themselves to co-operate in every way to see that coal moves in regular channels. The machinery has already been set in motion to work this out. Each city will have its own fuel committee and the complaints that come in to them will be taken to the coal associations. Contracts that have not been filled will be taken to the coal associations, but no steps will be taken to take care of the needs of those who are purchasing coal for speculative purposes.

Operators and Jobbers Clash Over Reconsignment Rules

National Coal Association Attempts Modification of Tidewater Pools to Stop Speculation—Jobbers Resent Accusations of Widespread Speculation, Attributing Undue Influence to "Small Selfish Group"

RESTRICTION of the reconsignment privilege in the tidewater movement of coal is the next move of the National Coal Association, according to an announcement made last week. To this end a conference was held in New York on August 4 of a special committee (*Coal Age*, Aug. 5, page 307), which is to be followed by a conference of this committee and Colonel Wentz with Daniel Willard, chairman of the executive committee of the American Railroad Association, in New York some time during the present week. The statement of the coal association says that the move is intended to result in some means being devised to prevent jobbers from speculating in coal that they have obtained from coal operators at a nominal price, and is a "part of the effort of the soft-coal operators to eliminate every species of speculation in the handling of coal, wherever it exists."

Urge More Stringent Reconsignment Rules

While backing the Interstate Commerce Commission's reconsignment order, the bituminous-coal operators represented in the National Coal Association feel that the prohibition against the practice should go further, so as to make it apply to shipments to tidewater either for export trade or transshipment by vessel to American seaboard ports. Means to bring this about are being considered by the committee of soft-coal operators engaged in export trade appointed by Colonel D. B. Wentz, president of the National Coal Association, last week.

The activities of the National Coal Association in having more stringent reconsignment rules authorized by the Interstate Commerce Commission have brought forth a storm of protest from the jobbers, both because they are accused of being permitted through the unrestricted use of this privilege to speculate in coal and because they consider it a move to legislate them out of business. Mr. Cushing, managing director of the national association of the jobbers, has published a letter of protest addressed to E. E. Clark, chairman of the Interstate Commerce Commission, in which "a small selfish group in the National Coal Association" are accused of taking advantage of their close relation to the commission through Mr. Willard and attempting to put the jobber out of business.

To this charge the coal operators have made no reply except to quote the comment of Colonel Wentz, president of the National Coal Association, to the effect that "Mr. Cushing's letter is obviously an attempt to block action to stop the present evil of holding cars loaded with coal at tidewater for speculation."

Mr. Cushing's letter to chairman Clark is as follows:

It becomes necessary for me to direct your attention to the fact that a small, selfish group in the National Coal Association is making use of the power of your commission to punish, if not to destroy, the wholesalers without doing anything to improve the transportation situation.

You will recall that recently I was a witness before your Division No. 5. As is customary, I was put under oath. Having proper regard for the quality of an oath, I told the truth as I saw it. I said that certain agencies of the Government had, by crying famine, created a panic which had advanced the prices of coal. These high prices had given the impression that a shortage existed when as a matter of fact it did not exist at all.

Naturally, I could not recommend that the commission should try to correct the mistakes of judgment on the part of your colleagues in the Government when an unnecessary action on your part would do an injustice to other shipper who had a perfect right to use the transportation facilities of the country.

While I was on the stand this little selfish group in the National Coal Association was in the audience. Among them the remark was passed—and overheard—that: "Now that he is out in the open with that stuff we will get him."

My reason for calling this to your attention is that, with your help, but without your knowledge, they have started to do so.

For instance, immediately thereafter your commission was forced to lean heavily upon the Willard committee for advice as to "constructive" measures. The Willard committee naturally sought the co-operation of the National Coal Association. It is unfortunate for all concerned that this little selfish group was largely represented on that association's conference committee.

To support certain recommendations they made and to prepare the way for others which are in preparation, a campaign of publicity was launched in which the misleading statement was made that mine prices on coal had not exceeded $4 per ton and that the high prices were traceable to a "speculative" element which had inserted itself "between the operator and the consumer."

No Evidence Adduced to Prove Delay

To kill off this so-called "speculative element" a determined attack has been made upon the reconsigning provisions in the railroad tariffs. Before Division No. 5, in the hearing to which I have referred, the statement was frequently made that "undoubtedly the reconsigning privilege has been abused." There was, however, no evidence to support it. Nor was it shown that this so-called "abuse" delayed a single car a single day. The "abuse" referred to was the resale of coal while it was on its way to market. It was not shown, however, that this resale delayed any car. The facts are that while there have been resales of coal the car itself kept moving all the time and that the reconsignment order was ready when the car reached the reconsigning point. You were thus, and falsely, led to believe that this resale of coal, when it did occur, was delaying cars. As a matter of fact it was not and is not.

To show the utter falseness and viciousness of this attack I call your attention to several statements recently issued from the same quarter. One of them was against the Tidewater Coal Exchange. In this statement it is charged that this exchange is a nest of speculators who are holding 5,000 cars out of use for speculative purposes and that the liberal reconsigning privilege allowed by you to this group is perpetuating this so-called vicious system. In that statement this little selfish group overreached itself for two reasons, viz.:

First—No coal moving to the Tidewater Coal Exchange is reconsigned. It is shipped out of the pool, mostly by the water route.

Second—The Tidewater Coal Exchange has not for four months paid a dollar of demurrage. If there had been detentiton of cars, demurrage must have been paid. The fact that no demurrage was paid is the best proof that there was no detention of cars.

You are aware of the fact that the Tidewater Coal Exchange was created as a war measure to save transportation. During the war membership was compulsory. After the war it was continued, at the earnest solicitation of the

railroads, to save transportation. The interest of the railroads in it is indicated by the fact that they pay half of its expenses. However, this little selfish group fought the Railroad Administration when this pool was to be continued and is now trying to destroy it by pleading—contrary to the wish of the railroads—that you make rules under which it cannot operate.

The same selfish little group has taken advantage of its access to the Willard committee to draft new reconsigning rules which serve no purpose which you have in mind—to save transportation—but which serve excellently their purpose, which is to destroy the wholesaler and the smaller mines which market through them.

That you may understand this vicious propaganda in all its nakedness, I call your attention to the fact that the two distressed points of the United States are said to be the Northwest and New England. It is assumed by you and everyone else that these districts are fed respectively through the Lakes and tidewater ports. If it is true that the reconsigning privilege is responsible for the delay of cars, then the places where they should have been the most rigid should have been at the Lake and tidewater ports. However, in the new reconsigning rules as presented to you these places are exempted and the burden of the proposed regulations falls on other parts of the country not now in distress.

I wish also to call to your attention the fact that terminal committees at Detroit and Chicago have issued orders cancelling the reconsigning rules and charges and making other drastic regulations. Having been a member of one of your terminal committees, I know that none of these has any authority to issue any orders at all. They are restricted to "recommending to the commission" the issuance of any orders. This action on their part is a clear violation of your instructions. Nevertheless it amounts to a destruction of the business of the wholesalers.

Seeing how far the so-called "remedies" and "constructive measures" are from the purpose you have in mind and from any legitimate exercise of your powers under the Transportation Act of 1920, I am under necessity to inform you that your powers are being used by this little selfish group to further their own interests without meeting the real problem at all.

And, since they have seen fit to make their assaults upon the wholesalers public and since you have, unwittingly, been led to spread their propaganda through official pronouncements of the commission, I feel at liberty to make public a copy of this letter to you.

Wholesale Coal Trade Association Charges Profiteering by Coal Mines

RESPONSIBILITY for soaring prices for coal is charged to some producers who are "taking unconscionable profits" in a statement issued Saturday, Aug. 7, by Charles S. Allen, secretary of the Wholesale Coal Trade Association of New York City. Mr. Allen also is secretary of the committee that was recently selected by Attorney General Palmer to decided upon what is a fair price for bituminous coal. According to the statement of Mr. Allen, most wholesalers look upon the stories being circulated that the Tidewater Coal Exchange, operated by the wholesalers, is being used for speculative purposes as a "smoke screen" raised to divert attention from the chief cause for high prices, the unprincipled producer.

The statement is as follows:

Attempts are being made to discredit the work of the exchange by interests adversely affected by its operation. Frequently of late our association has had occasion several times to run down the "old woman's story" about the exchange being used for speculative purposes. There is absolutely no foundation for the charge.

In the first place, the exchange officers would not permit it, and, in the second place, the demand for bituminous coal is so great as to make any such performance impractical and uneconomical.

Wholesalers see in this an effort to set up a "smoke screen" to divert attention from one of the main causes for the present high prices of bituminous coal, namely, the taking unconscionable profits by some producers.

The wholesale coal trade of New York, and I think I may say the same of other large coal centers such as Baltimore, Philadelphia and Hampton Roads, heartily approves of the order issued by the Interstate Commerce Commission imposing a storage charge of $10 per day on coal held in cars more than forty-eight hours after arrival. It is noted that this order does not apply to coal sent to tidewater points for transshipment by water when consigned to a pool or pools. The reason for this exception is that the Tidewater Coal Exchange, Inc., has been able to handle shipments passing through it in an average of not less than forty-eight hours.

The Wholesale Coal Trade Association of New York prides itself upon the fact that, due to its activities last spring, the threatened abolition of the Tidewater Coal Exchange was averted at the time the railroads were returned to private ownership. Prior to that time the expenses of the exchange had been borne by the railroads. They then announced they would withdraw their support from the exchange, although it had resulted in the saving of literally hundreds of thousands of car days during its existence and put into prompt use coal-carrying equipment which it would have taken millions of dollars to have built.

These statements may seem extravagant if it is not known that prior to the operation of the Tidewater Coal Exchange there were hundreds of classes and grades of bituminous coal moving to tidewater for transportation to destination in this country. The pools established by the exchange number about thirty, of which less than half are actually active. This concentration results in the elimination of a tremendous quantity of shifting cars at terminals, in addition to effecting the prompt release of cars.

Hampton Roads Dumping at Rate of Over Thirty Million Tons

DUMPING 604,000 net tons in the week of July 31, shippers practically met the requirements of the New England order a week before it went into effect.

Order No. 11, which became effective Aug. 2, calls for 650,000 net tons per month to New England from Hampton Roads, and the preliminary figures for July show about 615,000 tons shipped. The Geological Survey notes that dumpings in the week of July 31 were 51,000 tons over the previous week and that the increase went almost entirely to exports. Of the total dumped the last week of July 136,000 tons were destined for New England, 392,000 for export cargo, 68,000 tons for ships' bunkers, and the remainder for all other users.

An average of 100,000 net tons dumped a day at Hampton Roads gives a new measure of the capacity of the piers. At this rate these piers could handle 30,000,000 net tons in the 300 working days of a normal year, and after giving New England 8,000,000 tons, local markets 1,000,000 tons, and supplying ships' bunkers with 3,000,000 tons, there would be left 18,000,000 tons for export a year from this port alone.

Lewis Commits President Wilson to Readjustment of Wages

NOW that most of the striking miners in Illinois and Indiana have returned to work it is expected momentarily that the President will request the scale committee to consider an adjustment of wages.

Particular note was taken of the fact that Mr. Lewis displayed much shrewdness by inserting in his reply to the President his interpretation of the President's message to the effect that a conference of the scale com-

mittees would be called as soon as the men went back to work. He also took care to weave that interpretation into the record when he issued his order to the men.

Chief blame for the strike is being laid to the assigned car practice. The strike had its start in localities where the practice of assigning cars left many mines with only enough cars to work a day or two a week.

New Consignment and Demurrage Rules Are Authorized

Carriers Are Permitted to Increase Charges for Car Detention to $10 Per Day—Expected to Curtail Speculation

NEW reconsignment rules and penalty charges for detention of equipment, emergency penalty charges for detention of all open-top cars and cars loaded with lumber, coal or coke were issued by the Interstate Commerce Commission on July 31, in the form of a special permission numbered 50,321. The document states that all railroads are authorized to put into effect, through amendments to their tariffs, the provisions proposed by the commission. Although the commission does not direct the carriers to take advantage of the rules proposed, it is understood that the form in which the matter is presented practically makes it a mandatory order.

It is quite generally believed that the roads will endeavor to have the new rules in effect prior to the filing of the increased freight tariffs late this month, in order that the increases allowed will be applicable to the penalty charges permitted by the Interstate Commerce Commission under this latest ruling.

Under the new rules but one reconsignment of freight in open-top cars and coal and coke in all cars will be allowed, for which there will be a charge of $2 per car if the order is received while the car is en route; a charge of $5 per car if the order is given within twenty-four hours after the car arrives, or if the reconsignment order is given more than twenty-four hours after the arrival the charge shall be $5 per car plus local freight or switching charge to new destination. There is no time limit on these provisions.

Until the close of business Jan. 1, 1921, the carriers are permitted to charge an additional $10 per car per day for demurrage when cars are held over the free time allowed. None of the rules is to apply to tidewater or Lake port delivery whether or not for reshipment by water, nor for coal consigned to Lake ports and left after the close of navigation.

It is pointed out that these new rules are to affect only inland trade and are no more drastic than rules recently put into effect by local authorities at Chicago and one or two other points. Since one reconsignment is still permitted the jobber may ship his coal blind, in order to conceal from the producer the actual consignee, at a cost of about 4c. per ton. The new rules will certainly discourage indiscriminate holding of coal in cars, and if, as at Chicago, coal is held over the twenty-four hour limit, rebilling to points beyond can be done only by paying additional local and higher freights.

It is admitted by those well informed on the subject that these new rules may in a few instances work a real hardship on consumers, but it is asserted that the practices that are made prohibitive are not generally necessary in the proper distribution of coal and that the principal effect will be to limit speculation.

Stocks of Bituminous Coal Lowest on Record

STOCKS of bituminous coal in the hands of various classes of consumers, expressed in terms of weeks' and days' supply at the going rate of consumption are contained in the weekly report of the Geological Survey for Aug. 7. Mr. Tryon had previously published estimates of total stocks of bituminous coal at various dates from Oct. 1, 1916, to date (*Coal Age*, Aug. 5, p. 306), and the data contained below give greater detail with respect to the distribution of the stocks between classes of consumers.

It was shown that total commercial stocks had ranged during the period over which the records extend from 27,000,000 tons in the fall of 1916 to a maximum of 63,000,000 tons on the day of the armistice. It was further shown that stocks on June 1, 1920, were in the neighborhood of 20,000,000 tons, the lowest figure at any time for which data are available.

Comparisons of the total amount of coal in storage at different dates, according to Mr. Tryon, do not, however, take into account variations in the rate of consumption. Not only does the weekly consumption of coal vary with the season but it also varies with the general activity of business. Furthermore, there is a steady increase in the normal consumption of coal,

Bituminous Coal Movement to Tidewater Sets New Record

TIDEWATER shipments during the week ended July 31 established what is believed to be a new record for coal handled over tidewater piers in a single week.

The total dumpings at the four North Atlantic ports and Charleston, according to reports furnished the Geological Survey by courtesy of the American Railroad Association, were 27,461 cars. This exceeded the preceding week by 1,771 cars and was 4,661 cars greater than the weekly average for June, 1920, hitherto the maximum month.

The total dumpings for the month of July were 104,826 cars—at New York, 34,918; Philadelphia, 13,420; Baltimore, 14,109; Hampton Roads, 40,791; Charleston, 1,588.

On the basis of car figures it is estimated that tidewater dumpings in July were 5,000,000 net tons, a new high record.

WEEKS' SUPPLY OF BITUMINOUS COAL IN HANDS OF CONSUMERS IN THE UNITED STATES

(Figures expressed in weeks and days at current rate of consumption at time of stock-taking)

	Oct. 1 1916	Oct. 1 1917	July 15 1918	Oct. 1 1918	Nov. 11 1918	Jan. 1 1919	Apr. 1 1919	Mch. 1 1920	June 1 1920
Byproduct coke plants	No data	No data	4-0	4-4	5-0	4-4	3-2	2-1a	1-1a
Steel plants	3-4	3-6	3-6	6-3	6-3	6-0	5-0	1-2a	1-4a
Other industrials			6-6	10-0	10-1	10-2	6-5	3-6	3-3
Artificial gas	No data	No data	10-2	12-0	12-1	10-0	8-2	4-3	3-1
Other public utilities	No data	No data	4-3	5-6	6-2	7-1	7-1	3-0	3-1
Coal dealers	No data	No data	2-0	4-0	5-2	5-4	3-4	1-6	1-3
Railroad fuel	2-6	2-4	3-3	3-6	4-1	4-6	No data	1-4a	1-3a

a-Estimated from incomplete data, subject to revision.

irrespective of weather or business conditions. All of these factors make it desirable to express the stocks of coal not only in terms of tons but also in terms of weeks' supply at the prevailing rate of consumption. An attempt to do this has been made in the preceding table, in which the number of weeks' and days' supply on hand for seven great groups of consumers of bituminous coal is shown at intervals from Oct. 1, 1916, to June 1, 1920. The table brings out strikingly the fact that stocks on the latter date were lower than on the other dates for which observations are available. This was not only true of stocks as a whole but was also true of each of the seven groups of consumers.

Revolt of the Day Workers Appears To Be at an End

One Cause of Trouble Is Union Politics—Fly-by-Night Operators Are Willing to Pay Increase Asked, Recouping Themselves on Spot Coal Prices.

DAY workers everywhere, even in Illinois, are going back to work. In Indiana only one local directly refused to obey the order and that probably was because of a misunderstanding of the situation. But, unfortunately, the men are returning with the idea that they are to have a concession and with the full assurance that striking pays. So long as that idea persists there will be no end to strikes or to wage increases and advances in the cost of living.

The Bituminous Coal Commission or whatever body decides the matter will, it is hoped, not be stampeded and caused to make a decision based on mere opportunism. The commission gave this subject due thought in making its original award and decided that day workers had fared so well during the war that they were entitled to a lower advance than was given to the miners. An arbitration board which revises its own decision at the threat of a strike is not an arbitral board in any sense of the word.

Moreover, there are signs that a concession to the day workers will not even begin to settle matters. On July 28 a meeting was held at Springfield to demand more wages for the miners. It is likely that nothing much will come of this movement till the day workers get what they want and that it will die altogether if the daymen lose their case, but the move may be expected to gain in strength if the shift men are successful in enforcing their wishes on the arbitral commission. When Farrington heard about the movement he said: "That is a move by radicals. They may hope to muss up the situation so that the shift men will not get an increase in wages." However, there is reason to believe that a weakness on the part of the wage commission anywhere along the line may prove an incentive to the malcontents, who will attempt to break it at all points.

Of course, some men are willing to pay the wages demanded. Men who run wagon mines, who work their plants only when spot coal is selling at any price demanded, are always willing to exceed the union rate. They do not expect to be in business later and they have no contracts to meet. Frank Farrington on July 27 declared that twenty-two small concerns had agreed to pay the $2 increase to day workers and he had authorized the fourteen executive board members of the Illinois district to sign up contracts providing for these "outlaw" wages. He said the new contract signers were twelve in the Danville district, one at Tamarra, two at Cutter, two at Pinckneyville, one at Sparta, one at Springfield and three in the Peoria district.

Even in central Pennsylvania the wage rates for the mining of coal have been boosted to $2 a ton. This increase was received only in the fly-by-night mines, some of which have perhaps been started really by the larger companies though ostensibly owned by individuals. Where a company has long-time contracts which absorb all its coal the only way for it to get in the spot-coal market is to start a new mine under apparently independent control.

Alleging that something like this had been done in the Bennetts Branch in Elk and Jefferson counties, the miners of the Shawmut Mines at Force and of the Cascade Coal & Coke Co. at Tyler have threatened a strike. They think they should receive $2 a ton, the amount paid at the independent coal banks.

Union politics is alleged to be back of much of the trouble. Frank Farrington is said to be backing Robert H. Harlan, of Washington, for president and Alex Howat of Kansas for vice president on a campaign of aggressiveness in which all prudence and contract-keeping would be thrown to the winds. J. L. Lewis is backing Paul Smith, of Marion, Ill., against Farrington for the presidency of the Illinois district.

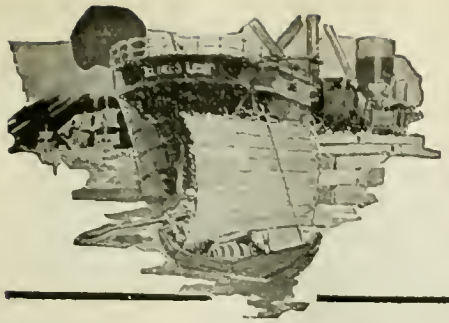
Farrington is declared on all hands not to be serious in his declarations in favor of the return to work. In relation to the President's letter he is quoted as saying, "I don't care to offer any predictions except to say that the Illinois miners are pretty well fed up on appeals and have now reached the point where they want something substantial." Freeman Thompson, president of subdistrict No. 4, openly accused Farrington of failing to send out letters demanding a return to work, while all the time declaring that he had done so.

The mine workers in the Pittsburgh district tried to obtain a conference with the operators relative to the wages of day workers, but failed. In Iowa Secretary George Heaps for the operators clearly showed that resistance to an abrogation of the wage contract was not as strong as might be wished. "The question will be put to a vote of the operators," he said. "If they wish to set aside the contract, we will arrange for negotiations with the miners."

In Michigan also the mine workers made a demand for revision, declaring the $6 rate unsatisfactory, but the operators refused to discuss the matter. They promised, however, to follow the lead of the Central Competitive district. Strange to say, better word comes from John Wilkinson, district No. 21. He says that "Every effort will be made to prevent a strike of coal miners in Oklahoma." He declares that there would be no difficulty if the car shortage were ended and steadier work made it easier for the daymen to earn a good wage.

Rail Shipments to New England Heavy

RAIL movement of bituminous coal to New England continued to be very heavy during the last week of July. According to reports furnished the Geological Survey by the American Railroad Association, 6,368 cars were forwarded to New England destinations through the five Hudson River gateways of Harlem River, Maybrook, Albany, Rotterdam and Mechanicsville. With the exception of the preceding week, this was the largest movement of the year and one of the largest on record. It was 1,489 cars, or 30 per cent, greater than that of the corresponding week of 1919.



Foreign Markets and Export News

Coal Imported by San Francisco

Coal imports into San Francisco from Jan. 1 to June 10, inclusive, as compiled by the Marine Department of the San Francisco Chamber of Commerce, were as follows:

	Tons
From British Columbia by water	6,220
From Australia	2,014
Total	8,234
From Washington by water	115
From Eastern coast by water	19,773
From Eastern States by rail	103,634
Total	123,522
Grand Total	131,756

Australian Gas Company to Install Byproduct Plant

The Melbourne & Metropolitan Gas Co., of Australia, which carbonizes 250,000 to 300,000 tons of coal per annum, is considering plans for the installation of an extensive distillation plant for the recovery of benzol and other coal-tar products which now run to waste. The company is encouraged in this action by the success of the byproducts installation of the Australian Gas Light Co. at Sydney, which recovers at present 30,000 gallons of benzine and toluene, 150,000 gallons of disinfectant oils, 30 tons of crude naphthalene, and 400,000 to 500,000 gallons of liquid fuel.

Output in Queensland Shrinks, But Value Rises

The total amount of coal mined in Queensland during the year 1919, according to trade reports by the U. S. Bureau of Foreign and Domestic Commerce, was 931,631 tons, having a value of £614,307, which is a decrease of 51,562 tons in quantity, but an increase in value of £42,002 compared with the production of 1918.

The seamen's strike caused a great diminution in the requirements for bunker coal, and this led to a heavy fall in the production.

The average cost per ton of coal at the mine's mouth for the whole state during 1919 was 13s. 2⅛d., this being 1s. 6⅛d. higher than during the preceding year.

British Coal Trade Shows Profits Only on Export Business

Editorial comment in the Liverpool *Journal of Commerce* on costs and profits in the British coal industry affords interesting comparison with conditions in this country. The editor of this paper states:

"The official statement of the costs of production, proceeds and profits of the coal mining industry for the first quarter of this year are pretty much what were generally expected in colliery commercial circles, i.e., the only areas where a profit for the period would be recorded were those from which a considerable proportion of outputs were sold for exports. South Wales heads the list with a profit of 18s. 7.67d. per ton; Northumberland, 18s. 5.21d.; Durham, 18s. 4.85d.; and Yorkshire, 10.26d. per ton. Why the last named area is so small in comparison to the others is to be explained by the fact that the proportion of output sold for export was also a small one. Of the six areas that show a loss for the period, the larger is for Cumberland and Westmoreland, of 10s. 3.57d. per ton, and the smallest for Scotland of 2.17d. per ton.

"The tonnage sold for export during the quarter was 8,365,769 tons for which an average f.o.b. price of 72s. 10d. was obtained. The average f.o.b. price for last month was 80s. 9.6d., but as from the 7th inst. the tonnage that is to be allowed to be exported is restricted to 5.25 million tons per quarter, it will readily be seen how, with a reduction of 3.1 million tons per quarter for export sale, the profits of the industry will be affected—to say nothing of the loss of revenue of something like £12,000,000 to the country.

"Certainly, during the March quarter, the average profit for the whole country was 5s. 1.97d. per ton, which, on the surface, looks very satisfactory; out of this, however, provision has to be made for depreciation, interest on debentures, and other loans, capital adjustments under the Finance Acts, and the profits to which the owners are entitled to under the Coal Mines (Emergency) Act, 1920, so that the net profit per ton will be substantially less than 5s. 1.97d.

Briquets to Be Made From Coal in Winnipeg

Published reports according to Consul General J. I. Brittain, Winnipeg, Canada, say that the Lignite Utilization Board, which has been for months experimenting with the problem of cheaper fuel for domestic use from the low-grade coal found in southeastern Manitoba and Saskatchewan, has arrived at a satisfactory manufacture of briquets that will probably produce fuel equal to the best grade of the United States anthracite coal, and which will be even more satisfactory for domestic use.

An experimental plant with a capacity of 30,000 tons a year will be erected, doubtless near the mines in Saskatchewan.

The chairman of the board further says that a careful analysis of the costs leads to the belief that briquets can be manufactured and loaded on cars at the plant at about $7.50 a ton.

Deny Higher Wages and Cheaper Coal to British Miners

After a Cabinet meeting held at London July 26 to consider the British miners' demands it was intimated to the miners' executive that their combined request for cheaper coal and higher wages could not be granted. A serious industrial crisis is thus threatened, the miners' delegates having decided to call a national conference to consider future action.

Freight Rates to Europe Continue to Soften

W. W. Battie & Co.'s coal trade freight report announces that freight rates to European ports are decidedly softer than they were a week ago, and that tonnage for shippers to these destinations can be obtained at favorable rates. Freight rates to South American ports are unchanged, but to West Indian ports they are easier.

Freight rates by steamer are as follows:

Destination	Rate	Tons Discharged Daily
Malmo	About 14 50 —	1,000
Copenhagen	About 14 50 —	1,000
Stockholm	About 15 00 —	800
Gothenburg	About 14 50 —	1,000
Antwerp Rotterdam	About 13 00 —	1,000
Hamburg	About 14 50 —	1,000
French Atlantic ex. Rouen	About 13 50 —	700
Algiers	About 15 50 —	800
West Italy	About 15 50 —	1,000
Marseilles	About 15 50 —	1,000
Piraeus	About 16 00 —	1,000
Trieste Venice	About 16 00 —	1,000
Port Said	About 16 50 —	1,000
Constantinople	About 16 50 —	500
Gibraltar	About 14 00 —	1,000
Pernambuco	12 00 13 00 —	500
Bahia	12 00 13 00 —	500
Rio	11 00 12 00 —	1,000
Santos	12 00 13 00 —	600
Buenos Aires or Montevideo or La Plata	11 50 12 50 —	1,000
Para	12 00 13 00 —	500
Rosario	About 13 00 —	750
To Nitrate Rang	About 9 00 —	750
Havana	About 6 00 —	500
Sagua or Cardenas	7 50 8 00 —	300
Cienfuegos	About 7 00 —	500
Caibarien	7 50 8 00 —	300
Guantanamo	7 00 7 50 —	500
Manzanillo	About 9 00 —	300
Bermuda	About 6 50 —	300
Bermuda p. c. and dis. free		
Kingston	7 00 8 00 —	400
Barbados	About 8 00 —	500
St. Lucia	About 8 00 —	500
Santiago	7 00 7 50 —	500
Port of Spain, Trin	About 8 00 —	500
Curacao	About 8.00 —	500
Free p. c. Curacao		
Demerara	13 00 —	400
St. Thomas	About 7 50 —	500

All above rates gross form charter

Exports of Coal from Calcutta, India, 1918-1919

Countries of Destination	1917-18 Tons	1917-18 Value	1918-19 Tons	1918-19 Value
Foreign trade:				
Ceylon	153,131	$445,772	84,001	$303,345
Straits Settlements	68,595	203,420	43,072	136,911
Sumatra	8,474	27,902	8,771	35,688
East African ports	13,776	44,447	.....	.....
Australia	6,000	22,385	.....	.....
All other countries	4,527	19,148	7,098	25,568
Totals	254,503	763,074	142,942	501,512
Coasting trade:				
Bombay	2,497	8,111	.....	.....
Burma	186,872	554,456	92,889	292,639
Madras	13,837	36,012	8,433	27,252
Bengal	600	1,947	.....	.....
All other ports, including Indian ports not British.	3,018	10,706	.....	.....
Total	206,824	611,232	101,322	319,891
Bunker coal	439,798	1,311,684	401,200	1,406,744
Grand totals	901,125	2,685,990	645,464	2,228,147

American Coal Urgently Needed in Sweden

Consul General Dominic I. Murphy, Stockholm, reports that for the past two months inquiries as to the possibility of getting American coal to Sweden have been insistent. As the supplies on hand are rapidly disappearing, American coal exporters have now the opportunity to dispose of many thousands of tons.

A prominent member of the Board of Trade informs this office that no coal is coming from Germany, and but little more can be expected. The import has fallen off tremendously from England. He remarked: "If you Americans can help Sweden to get coal now, you will have, not only the gratitude of our people, but you will be able to keep our trade as well."

Several of the most prominent Stockholm dealers have been furnished by this office with lists of American coal-mining companies and wholesale dealers, but the invariable report is that they find it quite impossible to get satisfactory replies to their cabled inquiries. So great is the anxiety regarding the coal supply that several very important concerns are about dispatching representatives to the United States to purchase.

Coal Consumption by London Gas Companies in 1919

The *Gas World* publishes tables of analyses of the accounts of a number of important gas companies in the London district, the *Colliery Guardian* states. Of these, the Gas Light and Coke Co. consumed 2,725,754 tons of coal and coal equivalent; the South Metropolitan Co., 1,173,412 tons; Brentford Gas Co., 417,683 tons; Commercial Gas Co., 309,346 tons; South Suburban Gas Co., 267,065 tons; Wandsworth Gas Co., 250,686 tons; Tottenham Gas Co., 233,681 tons; Croydon Gas Co., 153,362 tons.

Of the fifteen companies appearing in the tables, the largest production of gas per ton of coal was 13,112 cu.ft. and the lowest 10,176 cu.ft. The range of products per ton of coal was as follows: Coke and breeze available for sale, 14.8 cwt. to 8.9 cwt.; tar made, 10.9 gal. to 8.3 gal.; ammoniacal liquor, 30.8 gal. to 19.8 gal. (several companies make their returns in terms of sulphate of ammonia, ranging in these cases from 13.9 lb. to 23.2 lb.).

The cost of coal and equivalent varied from 25s. 10.62d. to 38s. 7.80d. per ton, and from 25.92d. to 42.66d. per 1,000 cu.ft. of gas sold, or, deducting revenue from residuals, from 14s. 1.39d. to 20s. 9.99d. per ton, and from 12.97d. to 24.97d. per 1,000 cu.ft. The total receipts from residuals ranged from 10.89d. to 25.98d. per 1,000 cu.ft.

Hungary Imports Coal from Czechoslovakia

Imports of coal by Hungary during December, 1919, and January and February, 1920, according to data obtained from the Department of Commerce at Budapest by William F. Upson, representative of the U. S. Department of Commerce at Vienna, amounted 5,930 metric tons. Czechoslovakia was the exporting country.

Canada Suffers Gasoline Shortage

Advertisements asking everyone to conserve gasoline are being run throughout Canada by oil companies, according to a report by Consul Felix S. S. Johnson, Kingston, Ontario. There is said to be a shortage of gasoline, and it is reported that in the last few years the demand for crude petroleum, practically all of which comes from the United States, for the manufacture of gasoline in Canada has increased more than 650 per cent. In the same period production has increased about 150 per cent. A shortage of crude oil and high prices necessarily follows. Pennsylvania crude is today costing $6.10 and Oklahoma crude $3.60 per barrel at the wells, and these prices must be paid in American funds, which adds another 15 per cent.

The oil-producing companies claim to be sparing no expense or effort to meet the growing demand for petroleum products, but notwithstanding the best efforts of these companies the demand is growing ahead of production by leaps and bounds. The only apparent solution is to use all petroleum products, especially gasoline, economically and efficiently.

Those who have carefully studied the subject say that one-half gallon of gasoline per car is wasted daily in Canada through carelessness, the overuse of cars, and needless mileage, which means 200,000 gal. wasted daily in the country, or 73,000,000 gal. per year if all motor cars were operated every day.

German Miners to Adopt Mine Socialization Program

The German Miners' Conference held at Bochum recently, states the *Colliery Guardian*, adopted a resolution calling upon the new Socialization Commission to draw up a program for the early socialization of the mines on lines which would preserve all the advantages of private working while eliminating the anti-social disadvantages attached to undertakings when worked by private capital.

With regard to the question of wages, the creation of a wage-scale agreement for all Germany was demanded. It was unanimously conceded, however, that continual fresh advances in wages would avail nothing so long as the prices of essential foodstuffs, etc., continued to increase, the only hope for the worker being a general reduction in prices.

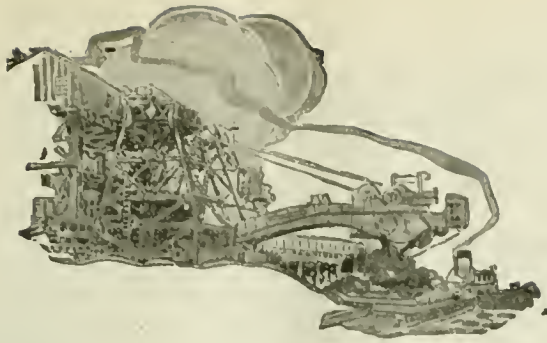
Reference was made to the danger of the miners' settlements, now in course of creation, becoming "works colonies," and legislation for the formation of building co-operative societies to counter this danger was demanded. The acts relating to the control of the coal and potash industries were described as in need of revision, special stress being laid upon the necessity of giving the workers and employees a larger share in the enforcement of the regulations in question.

Belgian Coal Prices

The official prices of Belgian coals as reported by the *Colliery Guardian* are as follows:—Large coals and cobbles, 113 fr.; large nuts, 115.50 fr.; *têtes de moineaux*, 118 fr.; *gresins*, 113 fr.; washed *grains*, 83 to 88 fr.; rough slack, 68 to 78 fr.; half-washed slack, 76 to 82 fr.; washed slack, 76 to 83 fr.; washed coking coals, 88 fr.; rough *fines*, 72 to 83 fr.; half washed *fines*, 84 to 92 fr.; small (*dépoussières*), 94 fr.; screened above 25 mm. 115.50 fr.; unscreened, 83 fr. to 110 fr.; forge coals, 98 fr. to 118 fr.; briquets, 136 fr. to 143 fr.; *boulets*, 126 fr. to 128 fr. Where used for domestic purposes the above prices are subject to a reduction of 3.50 fr. per ton.

During June 31,671 tons of German coking coal were received in addition to 19,043 tons of coke. In the first five months of this year Belgium imported 223,700 tons of coal, 54,500 tons of coke, and 138,700 tons of briquets. Exports comprised 595,500 tons of coal, 73,300 tons of coke and 68,700 tons of briquets.

On July 1 there were 17 blast furnaces in operation of the 52 in existence, with a daily capacity of 2,666 tons, as compared with 12, of 1,582 tons capacity, on January 1. All figures are in gross tons.



Production and the Market

Weekly Review

Production Recovering from Strike—Middle West Labor Situation Much Improved—Heavy Lake and New England Shipments Continue—Improvement in Car Supply in Prospect—Prices Remain Firm

THE effect of the strike of daymen in the Middle West is indicated by the figures of the Geological Survey, which show a production of 9,357,000 tons of bituminous coal for the week ending July 31. This is a slump of approximately one million tons as compared with previous week's output and 1,500,000 tons below the latest pre-strike week. Reports from the Middle West indicate an indifferent attitude on the part of the men whether or not they return to work. Late advices, however, show a steady improvement in the situation, with more mines resuming operations daily. The anthracite output increased 104,000 tons over the previous week with a production of 1,874,000 net tons. Production of beehive coke decreased 4 per cent, or about 15,000 tons for the week ending July 31.

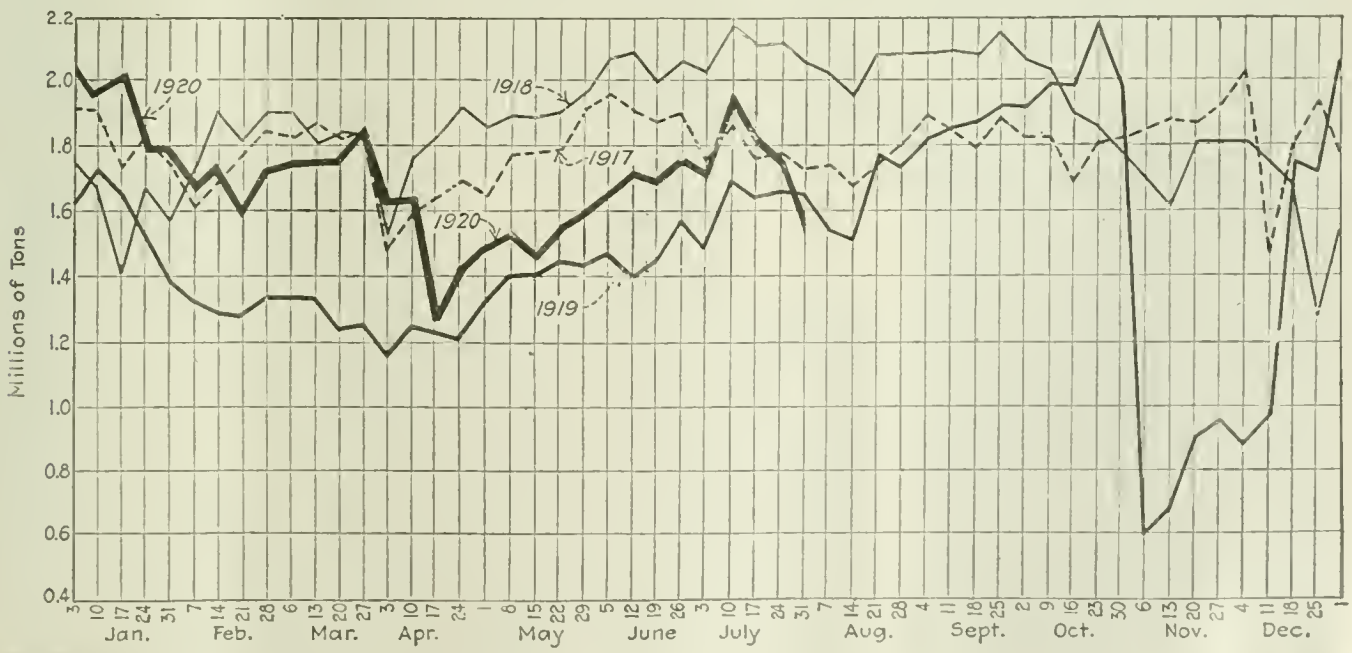
Heavy shipments have been moving to New England and the Lakes, due to the co-operation of railroads and operators in carrying out the provisions of the new service orders. Shipments to Tidewater also show a marked increase. Some apprehension is being displayed by industries and dealers in Ohio and Michigan and other nearby areas because of the small balance of tonnage left after assigned cars and priorities are supplied. Better car supply seems to be in prospect, however, as a result of a general clean-up in yards and terminals during the strike lull.

Lake shipments are slowly gaining under recent priority rulings. Preliminary figures for the week ending Aug. 7 show that approximately 780,000 tons of cargo and fuel coal were dumped, a gain of about 40,000 tons when compared with figures for the previous week. Next week's dumpings should establish a record for this season, as there is every indication of an extremely heavy movement to the Lakes.

Lake Coal Dumped Season to Aug. 7
(NET TONS)

	Cargo	Fuel	Total
1919.....	13,412,668	606,831	14,019,499
1920.....	7,058,257	514,773	7,573,030

Average Daily Production of Bituminous Coal



Weekly report of Geological Survey.

Reports From the Market Centers

New England

BOSTON

All-Rail Route Is Again Open — Spot Market Continues Strong — Assigned Cars a Factor—Transportation Handicaps Make It Difficult To Judge Effect of Latest New England Priority—Increased Receipts Are Due to Course of Trade—Anthracite Situation Is Slightly Better—Outlook Is Improved for New Haven Shipments.

Bituminous — The reopening of the Boston & Maine gateways on Aug. 6 has once again removed all restrictions to all-rail movement. An extra volume of steam grades is known to have been loaded on cars in anticipation and a record movement that may exceed 7,500 cars for the week is more than likely. More than likely also it will result in renewed embargoes in another ten days or less.

Prices sagged from $13 to $11 for fair-grade low volatiles from the Pennsylvania districts while most of this territory was embargoed, but spot coal is still in strong demand and already $12 sales have again been reported. It is clear that average stocks for most of the large plants have nearly doubled in the past 45 days, but some of this is due to diminished consumption.

A new factor in current market is the increased use of assigned cars as recently authorized. Utilities here have taken full advantage of this privilege, applying the cars partly on contract, but also on spot purchases. Prices on the latter run from $5@$6 per net ton at the mines.

Because of traffic restrictions it is still difficult to gage the effect of the most recent priority in favor of New England. The districts from which the largest tonnages were assigned are served by roads in the least favorable position to move coal in extra volume. The smokeless districts delivering through Hampton Roads, where the facilities are of the best, have been assigned so little of the increased tonnage that normal shipments over those piers are likely to be scarcely affected.

The June total for New England from Hampton Roads was only slightly over 100,000 tons more than the total quota assigned for August under the new priority. The damage to export trade thus far is slight.

Although righting itself quite gradually, the situation shows a distinct trend toward better supply, due to remunerative spot prices that have the effect of stimulating production and attracting coal from other markets.

Within a day or two the Massachusetts state government has shown a disposition to let well enough alone, for it is now understood that J. J. Storrow has withdrawn from all active interest in the current situation.

Current quotations on bituminous at wholesale range about as follows:

	Clearfields	Cambrias and Somersets
F.o.b. mines, net tons	$10.75@$11.50	$11.25@$12.50
Fo.b. Philadelphia, gross tons	13.95@ 14.80	14.50@ 16.00
F.o.b. New York, gross tons	14.25@ 15.20	14.90@ 16.50

Pocahontas and New River are quoted f.o.b. Boston or Portland at $15.25@$16.50 per gross ton for spot shipment. Pennsylvania coals of fair grade are being sold at $5.25@$6 per net ton f.o.b. mines when in "assigned cars."

Anthracite — Receipts of domestic sizes show a small gain both all-rail and by water. The New York piers are functioning better and the favorable weather has meant improved barge movement. At Philadelphia the outlook is less encouraging for the moment. Large numbers of the striking trainmen are holding out for reinstatement on their old ratings.

Since this means the more experienced hands are away from their places the piers are not able to handle anything approaching normal tonnage. The result is an accumulation of barges at Port Richmond and the loss of much valuable time.

The New Haven RR. has now made an arrangement to furnish 200 cars per day to the anthracite-originating railroads with a view to distribution by the producing companies themselves of their own output. This is a decided change in policy on the part of the railroads and is considered by the trade to forecast a much better movement by rail to that territory.

Tidewater

NEW YORK

Prepared and Steam Sizes Are in Demand — All-Rail Dealers Offer Big Prices—Steam Grades Tend To Advance — Soft-Coal Buyers Hold Off, Expecting the Market To Turn—Lake Priority Affects Eastern Shipments—Movement of Coal at Piers Improves

Anthracite—Hard-coal producers are unable to make much headway in satisfying the demand for prepared sizes. The local market is probably receiving about its usual proportion of the output in the case of company coal, but the smaller independents are favoring the line trade because it pays better.

All-rail dealers are offering from $12 @$13 for prompt shipments of nut, stove and egg but retailers in this city are not buying at these figures. Their sources of supply are well established, for the most part, and they hope to have their customers fairly well stocked up by winter. The tonnage attracted to other markets by higher prices is too small to be much of a factor in relieving the local situation, even if it were diverted this way by local bidding.

The companies made their usual 10c. monthly advance on domestic sizes Aug. 1. Most of the steam sizes are in active demand and are showing a trend toward higher prices. Buckwheat from independent operations commands from $5@$5.75; rice, $3.50@$4.25; and barley, $2@$2.75.

Current quotations for company coal, per gross ton, at the mine and f.o.b. New York Tidewater, lower ports, are as follows:

	Mine	Tidewater
Broken	$7.50@$7 65	$9.35@$9.50
Egg	7.50@ 7 65	9.35@ 9.50
Stove	7 75@ 8.00	9.60@ 9.85
Chestnut	7.80@ 8 00	9.65@ 9.85
Pea	6.05@ 6 45	7.80@ 8.20
Buckwheat	4.00@ 4 10	5.75@ 5.85
Rice	3 00@ 3 50	4.75@ 5.25
Barley	2 25@ 2 50	4.00@ 4.25
Boiler	2 50	4.25

Bituminous—Soft-coal prices, while off somewhat from the high levels recently prevailing, still range between $10 and $12 a ton. Buyers are showing more of a disposition to hold off, in the belief that the market is turning in their favor and that this tendency will become more pronounced in the course of the next few weeks.

That the decline has not been more rapid is due to the absence of any large offerings of spot coal. Car supply has shown some improvement, and this is utilized to make heavier shipments on contract.

The Lake priority order is a factor keeping down eastern shipments, especially of gas coals. For this reason Pool 34 coal has been firmer than medium-grade low volatiles which are in relatively better supply; central Pennsylvania is not affected by the Lake order.

Public utilities have applied for assigned cars in large numbers, and the general car distribution is further reduced by the use of equipment for carrying out the New England priority order. Assigned-car buyers are getting plenty of coal at from $5@$7 a ton.

New England consumers expect cheaper coal now that the Interstate Commerce Commission has come to their assistance. They are not displaying much eagerness to buy at present levels, but it is too soon to tell what they will finally get in the way of concessions.

Movement of coal over the local piers has shown a substantial improvement in the last two or three weeks and is averaging above 1,000 cars a day. Tonnage standing at the ports awaiting discharge has also increased, but it is chiefly contract coal and is not pressing on the market.

Prices at tidewater remain around $15.50@$16 f.o.b. for coal at the piers, and from $16@$17.50 alongside for loaded boats.

BALTIMORE

Soft Coal Continues To Be Sold at the High Dollar with No Relief in Sight—Embargo on Exports Adds to the Trouble — Hard-Coal Receipts Are Light with Heavy Demand.

Bituminous—Little change is noted in the soft-coal situation. Adding to the troubles of the coal trade with its recent priority, which required that coal destined for use at this port be sent west and to New England, the Pennsylvania and the Baltimore & Ohio ordered an embargo on all coal destined for export. A permit is now required before any coal can come to the piers.

There is little change in the price situation, prices f.o.b. mines ranging from $10.75@$13, with little attention being given to the grades. Sales made at the piers per gross ton continue around $18. Both local and export markets are unchanged.

There still remain in the harbor about 60 ships waiting cargoes. Only a few hundred cars are reaching Canton and the dumpings have been under 200 cars, while the pools there have less than 200 cars. During the week there were days when no cars were dumped.

The car supply on Baltimore & Ohio continues around 60 per cent. The pools at Curtis Bay have about 2,000 cars, with about 2,300 cars running to this city.

The exporting during this week was quite restricted, the loading being limited to a few vessels, with not much relief in sight during the coming week. July export figures show that 73 vessels carried coal to 12 countries to the amount of 398,437 cargo and 39,907 bunker. The vessels in port are awaiting cargoes in excess of 200,000 tons, aside from the bunker.

Anthracite—Hard-coal men are still groping about for a solution of the present situation, which forces them to pay high premiums for a little coal and to sell the same at a loss under the present schedule of prices. Receipts continue quite light and dealers with large equipment are daily pocketing a loss with no apparent relief in sight.

PHILADELPHIA

New Freight Rates Will Increase Anthracite Prices — Shipments to Local Yards Are Light — Steam Trade Is Quite Active—Bituminous Is High, but Tends To Drop—Tide Trade Is Quiet, Due to Lack of Permits.

Anthracite.—It is now announced that the new freight rates will become effective Aug. 26 and this will add from 65c. to 85c. a ton to the cost of the coal to the retail dealer. Unfortunately for the retail man he has little coal to deliver to his customers.

In addition to the freight rates, the independent shippers have added 25c. to their former mines prices, which makes their rates now $9 for egg, stove and nut, and $7 for pea coal. It is thought that the domestic sizes will not sell for less than $16 to the consumer, following the addition of these latest advances.

Thus far the month has been quite a poor one in the way of receipts of fuel. The embargo on shipments via the Reading Railway still continues, although a certain amount of coal is allowed to trickle through despite this. This causes complaint on the part of the dealers.

The steam trade is growing particularly active, with buckwheat well over the $5 mark for current deliveries. Some prices have been heard at even 75c. above this. Such sales are being made by the independents, but company shippers maintain a circular price of $4.10 and are not accepting any new trade now. Rice readily brings $3.75@$4. Barley grows in demand.

Bituminous.—While coal continues high in price, there is a downward tendency. This is shown by the fact that since the $15 price dropped two weeks ago, most sales have been at $13. Also there is an inclination to make sales again on the basis of the pool rating. Most all of the $13 sales were for Pool 9 fuel recently, with $12 and $11.25 for Pools 10 and 11, respectively.

Recently there has been some sales of Fairmont coals, irrespective of pools, at prices higher than the Pennsylvania steam grades. The New England priority orders have driven the bulk of this coal to the southern piers, with little gas coal left for the all-rail market of this district. However, there is a slight slackening even in this grade and prices recently have been close to $12.

Although the demand for coal continues strong in this market, the trade in a measure seems to be holding off.

The tide trade is particularly quiet and but little coal is coming to the piers for export. This is due to the lack of permits for this class of business and has for the time resulted in a virtual embargo against overseas shipments. It is believed that in time a big export tonnage will be built up, as this always has been claimed to be the real necessity of the bituminous trade in this country.

Lake

BUFFALO

Situation Changes But Little with Slight Decline in Price — Anthracite Stocks Reduce — Coke Is in Demand, but Tonnage Scarce with Prices Maintained.

Bituminous—The situation does not change much. Some jobbers report purchasing coal for $10.50 and others say that they are paying only $9. In fact there is most every price possible from the $3.40 contracts to $12. That the tendency now is downward is the report of shippers generally, but the actual decline is small as yet.

Adjustment of prices by outside authority is becoming harder each day. Some miners are now getting more than the union scale of wages, but this will be changed when an adequate car supply reduces coal prices so that these wages can no longer be maintained.

Anthracite—The supply has diminished materially by reason of local strikes. As a consequence the Lake shipments and city trade have suffered. The Philadelphia & Reading company, which has been rebuilding its trestle has now taken tonnage and will enter the regular Lake shipping list again.

There is much complaint from Canadian dealers and consumers about the small tonnage going into that territory.

Shipments by Lake show 94,900 tons loaded for the week, of which 38,900 tons cleared for Chicago, 31,100 tons for Milwaukee, 18,600 tons for Duluth and Superior, 3,300 tons for Manitowoc and 3,000 tons for Houghton.

Coke—The trade is slow because coke is hard to obtain, but jobbers report quite a good demand. Prices still rule at about $20 for 72-hr. Connellsville foundry and $19 for 48-hr. furnace, with some low grade, medium sulphur, at $17.75.

CLEVELAND

Serious Shortage Is Anticipated from Enforcement of Order 10 — Lakes Priority Leaves but Little Coal for Industries and Domestic Trade — Production Increases Slightly—Lake Shipments Improve, Although Far Behind Schedule.

Bituminous—Industrial and domestic users of coal in this district anticipate that shut-downs and suffering during the winter will result from continued enforcement of Order 10. The priority quota ranges from 35 to 60 per cent of the capacity rating of the individual mines. If the car supply at the mines is only sufficient to handle the percentage of rating required for the Lake, then the entire output of the mine for the day is sent to the Northwest.

Considerable coal, which was loaded prior to the issuance of Order 10, is still coming into the city, and when this coal is all received, it is feared the pinch will be felt in earnest. A committee from the Chamber of Commerce has gone to Washington where the issue will be put up to the Interstate Commerce Commission.

Some little improvement in mine operation is reported, but even under the stimulus of priority orders the car supply is preventing mines from operating at more than 65 per cent of capacity in most of Ohio districts. It is reported that not more than 20 per cent of Ohio's output is available for commercial use, the remainder going to the Lakes, public utilities and the railroads.

Pocahontas and Anthracite—Pocahontas trade conditions are growing more acute and retailers are almost at the point of refusing all orders. At present the policy of accepting orders without stipulating either price or time of delivery is being adhered to by all dealers. Anthracite continues in some-

what better supply, since it is not affected by Order 10.

Lake Trade—The objective of 4,000 cars a day for Lake shipment is still far distant, although some improvement has been made. Last week showed an increase of 100,000 tons over the previous period, which was the record for the year. Officials of the Ore & Coal Exchange, who have the movement in charge, hope to ship more than 4,000,000 tons monthly before the Lake season closes Dec. 1. Even with a 4,000,000-ton movement monthly henceforth, it will be impossible to send much more than 22,000,000 of the 30,000,000 tons said to be needed in the Northwest.

In July the movement amounted to 2,760,600 tons compared with 3,804,423 for July, 1919.

Retail prices for egg per net ton delivered in Cleveland are:

Anthracite—Egg and grate, $13.50; chestnut and stove, $13.75.

Pocahontas—Shoveled lump, $11.75 and mine-run, $10.50.

Domestic bituminous — West Virginia splint, $11; No. 8, Pittsburgh, $10.50; Millfield lump, $13.50; and cannel lump, $14.50.

Steam Coal—No. 6 and No. 8 slack, $10.50@$11; No. 6 and No. 8 mine-run, $10.50@$11; and No. 8 3-in. lump, $10.50@$11.

MILWAUKEE

Demoralization Rules in the Coal Trade — Stocks Are Exhausted — But Little Eastern Coal and No Illinois Fuel Is in Local Market.

The coal trade in Milwaukee continues in a demoralized condition. Receipts by Lake are not sufficient to cause an accumulation at the yards and anxiety as to the future increases daily. Except for a limited amount of Pocahontas, there is no Eastern soft coal in the market, and the labor complication in Illinois has checked the flow from that region. Milwaukee dealers have been afraid to buy bituminous coal in the East, because of exorbitant prices created by speculative bidding. Some plants have suspended operations and there is no question but that others will follow.

The embargo placed on coal shipments when the Illinois trouble began has been lifted and shipments can now be made from the docks if there is anything to move. The order will not result in bringing any more coal to the city.

Anthracite was advanced 10c. per ton Aug. 1. Egg is now $14.70; stove and chestnut, $14.95; pea, $14.20; buckwheat, $11.50. Pocahontas screened sells for $14.25 and mine-run at $12.25.

An average of $10 per ton is the present price for steam coal. This price also rules for bunker coal for Lake steamers.

Receipts by Lake for four months ended July 31 aggregate 372,400 tons of anthracite and 591,394 tons of soft coal against 396,700 tons of the former and 1,725,966 tons of the latter during the same period last year.

Inland West

UNIONTOWN

Service Orders 10 and 11 Cause Little Shortage — Car Supply Is Best in Months — Prices Are Unchanged — Labor Supply May Soon Be Determining Factor in Output.

Three price levels for as many destinations have resulted from the enforcement of Service Orders 10 and 11 in the Uniontown coal district. The tonnage drawn from the enforced shipments to the Northwest and New England have not been of such proportions as to disturb seriously the local market, and the tidewater peak market has been steadfastly maintained at $13.

The Great Lakes carries a nominal price of $7 while $8 to $8.50 prevails here for New England shipments. Just at present there does not apper to be much of a market for line-coal shipments.

What the exact effect of Service Order 11 will have upon the Uniontown market has not yet definitely developed but it would appear that it may be enforced with a minimum of confusion. Most operators are shipping their New England percentage at one time.

Service Order 10 giving priority to the Northwest has scarcely created a ripple in the market here. There are about 400 cars per week going to the Lakes under that order.

The car supply for this region for both coal and coke on all lines this week was the best for several months, for coke the supply being 53 per cent and coal about 60 per cent.

The labor situation is looming as this region's next major deterring factor in regard to output. Inability of a number of operators to load all of the unexpected number of cars this week brought out rather forcibly the fact that the labor supply is none too adequate.

COLUMBUS

Car Supply Declines Slightly—Prices Are Unchanged—Priority Ruling Aids Lakes, Although Tonnage Is Still Far Short of Requirements — Steam and Dealers' Situation Is Acute.

The good production record of the previous week was not fully maintained and there was a slump in the various fields. A better car supply is anticipated for next week. Little change of consequence has taken place in the market. Priorities which are now in full effect are forcing a larger tonnage to the Lakes. Public utilities are also better supplied. As a consequence, sufficient tonnage of commercial fuel is difficult to obtain.

Crooksville field led production for the past week with an output close to 70 per cent. In the eastern Ohio field the production was still rather low with about 55 per cent reported. Little relief was given commercial users depending on the field for tonnage because of the heavy shipment of railroad fuel.

Public utilities are making numerous applications to the proper authorities to secure supplies for maintaining operations. Railroads are taking from 12 to 15 per cent of the coal produced in Ohio and after utilities are supplied the remainder is moved to the Lakes. Reports from the lower Lake ports show an increase in the tonnage shipped as compared with previous weeks, although Lake tonnage is still woefully short of requirements.

Retail prices are still high with no indication of a drop at the mines. Retailers are spreading small stocks with one and two deliveries. Hocking lump retails around $9.50@$10 and West Virginia grades are about $1 higher on the average. Pocahontas is still scarce and high. Kentucky grades are coming in, and selling at about the same levels as West Virginia splints.

Prices at the mines of the principal coals used in central Ohio are:

Hocking lump	$6.00@$8.50
Hocking mine-run	5.50@ 8 25
Hocking screenings	5 00@ 8.00
Pomeroy lump	6 50@ 9 00
Pomeroy mine-run	6 25@ 8 50
Pomeroy screenings	6 00@ 8 25
West Virginia splints, lump	7.00@ 9 50
West Virginia mine-run	7.00@ 8 75
West Virginia screenings	7.00@ 8 50
Kentucky lump	7 50@ 9 00
Pocahontas lump	7.50@ 9.00

DETROIT

Coal Dealers Here Influence the Railroads To Modify an Order Preventing Reconsignment — Local Committee Is To Supervise Its Operation—Anthracite Supply Still Short.

Bituminous—After a series of conferences with the Detroit Committee on Car Service of the American Railway Association, representatives of the wholesale and retail coal trade in Detroit were successful in bringing about a modification of an order proposed by railroads serving the city to prevent the reconsignment of coal cars in Detroit. A special committee was appointed to prevent abuses of the reconsignment privilege.

In canceling the embargo against reconsignment, which was to have become effective Aug. 5, substantial aid was given in preventing a serious coal shortage as the reconsignment embargo would have made it practically impossible for wholesalers to continue in business.

The restriction to one reconsignment of a coal shipment is reasonable. It will work no great hardship on coal men and will aid in loosening congestion of cars in the railroad yards. One necessity of retaining the reconsignment privilege is due to the fact that a large number of industrial plants and small retail dealers are unable to provide storage for more than one car at a time and thus would be unable to get coal as needed were they dependent altogether on shipments direct from the mines.

The state coal commission recently appointed by Governor Sleeper is planning a general survey to determine the

coal needs of industrial and domestic consumers in Michigan.

Anthracite—Though some of the retail dealers report that a little more anthracite is entering the city, the supply is still short of requirements and affords little opportunity of filling old orders.

ST. LOUIS

Miners in Illinois Fields Slowly Resume Work—Two-Thirds of the Mines Are Working—Prices High and Coal Shortage Is Serious—Car Supply Temporarily Plentiful.

Up to and including Aug. 4 about two-thirds of the mines in the Standard and Mt. Olive fields in Illinois, were working but producing only about three-fourths of their regular tonnage on account of many of their men refusing to go back.

The railroad tonnage is extremely heavy. But little of the coal is moving into East St. Louis or St. Louis on account of outside markets offering prices of $7@$8 a ton for any and all kinds of coal, while the St. Louis market is $3.50@$5.50.

Conditions in the country west of the river are critical. Wheat is still in the field on account of no coal for threshing and many public utilities have had to shut down or go on short time, and others are threatened. Domestic trade is at a standstill. Carterville coal, when obtainable, is $8.50, Mt. Olive $6.50 and Standard $6, with no other fuels on hand and nothing coming in.

MIDWEST REVIEW

Prices Decline Slightly — Miners Are Indifferent and Return to Work Slowly — Car Supply Is Expected To Improve—Industries Need Fuel Badly, Particularly in the Northwest.

Prices on the various grades of coal produced in Illinois and Indiana have fallen off a little as compared with the prices prevailing last week. During the course of the outlaw strike of the day men, prices on any kind of coal produced in the Middle West rose as high as $9 and $10 per ton, f.o.b. mines. This week, however, it is the general opinion that coal will be available from now on in fairly satisfactory quantities and, therefore, prices have eased down to levels prevailing before the strike. It is now possible to buy spot coal at $6 @$7.50 per ton, f.o.b. mines. No differential is made in the price of prepared coal, mine-run or screenings.

Operators are expecting that the car supply for the next week or so will be much improved, as the lull in mining caused by the strike will give the various railroads serving the Middle West territory an opportunity to clean up their terminal yards and send the empties back to the coal-producing districts.

CHICAGO

Market Here Is Disturbed by Operators Who Offer Inferior Coal at Fancy Prices — Anthracite Arrives in Fair Quantities and Smokeless Increases—Splints Are Exported.

The Chicago market during the past week, has been handled pretty roughly. Some of the operators advanced their mine labor before President Wilson's message was given ordering the men back to work, but the majority of operators who did this are men in business on a small scale and usually operating in a coal seam that is not of the best. As a natural result, coal was being offered in Chicago at $9 or $10 per ton, which under normal circumstances, could not readily be sold at any price. Anthracite coal is coming into Chicago in fairly satisfactory quantities. Also, there has been a noticeable increase in shipments of smokeless coal. West Virginia splint is not reaching Chicago as the export demand for a coal that will stand rough handling is so strong that practically all splints are moving to seaboard. Eastern Kentucky coals are passing through Chicago for the Northwest. Chicago wholesalers are undertaking quite an extensive campaign against the reconsignment rules contemplated by the railroads and the Interstate Commerce Commission. On the whole, reconsignment privileges have been abused and the trade would be much better off if reconsignment were curtailed.

CINCINNATI

Coal Men Resent Conditions of Lake Priority, Coal Being Sold at Lower Rates—Coal Advances Slightly—Ohio River Wave Is About To Bring Fuel to the City Here.

A matter that is causing coal men no end of trouble, and one about which they continue to grumble, is the fact that they have to sit back and watch coal going through to the Lakes at prices that are much lower than had been paid before the Lake priority went into force. Purchasers of coal that is being shipped via the Lakes, are paying $4.50@$5.50 for the fuel.

Shipments to New England began the past week under the same conditions that prevail in the Lake shipments. There was a slight increase in the price of coal on the retail market in Cincinnati during the past week. Youghiogheny nut and slack jumped 25c., $7.75 @$8 a ton delivered. A 25c. increase also was tacked on to bituminous lump, $8.50@$9.25 a ton. Coke was 50c. and $1 higher, $13@$14 a ton.

There is no smokeless coal to be had, and but little anthracite is moving to this market. The first artificial wave of the summer season is expected to bring down quite a large amount of coal for the local trade via the Ohio River. The United States engineers in charge of the river announced that the wave would be created within a few days, in which event coal would shortly be in the harbors here.

South

LOUISVILLE

Uneasiness Is Felt as a Result of Efforts of Department of Justice To Interfere with Business — Demand Is Keen and Prices Are Firm.

Efforts of the Department of Justice to force lower prices by bringing action under the Lever Act against mines operating in eastern Kentucky has caused uneasiness, but no lowering of prices. With agents of the department seizing books and records it is felt that things are going a bit too far.

Five mines in southeastern Kentucky closed late in the week as a result of strike troubles, and others may follow. Most of the strike troubles in Indiana and Illinois seem to have evaporated, and the effect is already seen in cancellation of some orders for certain grades of coal from Kentucky fields.

Additional suits have been filed during the past few days, principally by jobbers and retailers, against operating companies for failure to comply with contracts.

The priority orders have cut down movement to public utilities, who now figure that they can get coal as they need it. This has resulted in stocking having been reduced materially.

Railroads are continuing to take a good deal of coal, with heavy tonnage moving to Lakes and Northwest, while the Southern textile trade is also buying.

Production in Kentucky is controlled by a 50 to 60 per cent car supply at the present time, and without prospects of a very decided improvement.

Spot quotations show eastern Kentucky gas mine-run at $9@9.50 a ton at mine; steam, $8.75@$9. Western Kentucky lump, $2.70@$6.50, with the bulk selling $4@$5; mine-run, $2.30@ $6; bulk selling, $3.50@$4.50; screenings, $1.95@$5.75, with the bulk sales $3@$4.

BIRMINGHAM

General Conditions Show Some Betterment—Gain in Production Is Slow but Steady—Coal Supply Affords No Relief in Spot Market — Demand Continues Strong — No Quotations Are Being Made.

There has been a general improvement in the situation affecting coal production in this district. The output is making steady gains, but there is not yet sufficient coal being mined to take care of contracts and orders previously booked and still allow a surplus for spot market, where the demand is strong. Spot coal is very scarce, offerings coming mostly from wagon mines and small openings which have been developed with the intensified demand.

Retailers of domestic coal are making little progress in stocking for the fall and winter demand. Retail prices are being advanced from 25c. to 50c. per month to absorb the increase carried in mine contracts made in the spring. Current quotations are from $8.50@$11.

Production for the week ended July 24 was reported at 327,989 tons, which represents a satisfactory increase over the previous week.

News From the Coal Fields

Northern Appalachian

NORTHERN PAN HANDLE

Many Old Customers Suffer Due to Diversion of Coal to the Lakes—Also There Is Marked Decrease in Car Supply.

Although called upon to greatly increase its Lake shipments, the northern Pan Handle was one of those regions in West Virginia which was given no additional car supply with which to meet the increased demands made upon it. The result was that in endeavoring to take care of the Lakes, northern Pan Handle mines were forced to abandon every other field and many customers.

A percentage of 35 had been determined upon as the allotment the region must furnish to the Lakes. Nearly all of the commercial coal produced in the Pan Handle of West Virginia was sent to the Lakes. Scarcely any of the product was left over for the markets to which such coal is usually shipped.

Even without having had to supply so large a tonnage to the Lakes, Pan Handle operations would have had difficulty in keeping pace with the demand and of filling contracts, for transportation conditions were much worse than they had been.

In fact during the last half of July there was a marked decrease in loading equipment furnished. It was feared under such conditions that industrial concerns might be forced to cease work because of lack of fuel.

FAIRMONT

Final Week of July Was About Best of Year as Regards Output—Bulk of Production Still Moves East, Notwithstanding Lake Demands—Inland West Shipments Increase.

Mines in northern West Virginia were able to meet to a large extent the additional demands made upon them under the operation of Service Order 10 through a rather marked improvement in the car supply. The final week of July ranked as one of the best periods of the year, from a production standpoint, there being approximately 6,800 cars of coal and coke loaded on the Monongah division of the Baltimore & Ohio during the period.

There was also a pronounced improvement in the car supply on the Monongahela Ry. and on the branch of the Western Maryland operating in the Fairmont region.

The week started with an excellent car supply, the Baltimore & Ohio having 2,000 cars for its mines. Fairly adequate supply was kept through entire week, 942 cars being on hand for Saturday. The Monongahela R.R. ended the week with a total supply of 400 cars.

The quota of Lake shipments allocated to the Fairmont region was 180 cars a day. There was a good response to Lake demands, although the bulk of production in northern West Virginia was still being moved eastward with a prospect that there would be further increases in eastern shipments after Aug. 2, owing to the necessity of taking care of New England shipments.

It was reported that the Cleveland Ore & Coal Exchange had fixed an arbitrary price on Lake shipments and that was objected to by the operators. The Monongahela Ry. served notice that 30 per cent of allotment would be required on its lines in order to meet the requirements of Service Order 10.

With more equipment available during the final week of the month, there was a perceptible increase in shipments to Inland West points. Curtis Bay shipments were holding up fairly well throughout the week.

PITTSBURGH

Car Supplies Increase, but Limit of Production Still Not Reached—Lake Shipments Are Heavy — Operators Protest Discrimination in Car Distribution.

Car supplies at Pittsburgh district coal mines have continued to increase. The limit of mining capacity, as determined by the proportion of full time the miners are willing to work, has not yet been reached, but probably will be in the near future. It is believed the district is approximately up to its allotment on Lake shipments, the order calling for 5,000,000 tons to be shipped in the 50 working days beginning July 26, or at the rate of 2,000 50-ton cars per day.

It is an open question whether the increase in Lake shipments has been equaled by the general increase in car supplies. If not, there is a decrease in coal available for other trade. The market for spot coal does not furnish suggestion that there has been a change in either direction, as it remains on substantially the same basis as for several weeks past, $10@$12 per net ton at mine, according to grade, tonnage, etc.

Up to this writing the steel mills report themselves as well supplied with coal as formerly, but there is little opportunity for the stocking that is regarded as essential at this time of year.

The Pittsburgh Coal Operators' Association has made a formal protest to the Interstate Commerce Commission, the Public Service Commission of Pennsylvania and the railroads individually, calling for an investigation of its charges, that, by reason of improper inducements given to railroad employees, team-truck loading mines are being given more cars than they are entitled to.

Several railroads promptly issued formal denials of the allegations, but official investigations will probably be made. The rejoinder of the Pennsylvania R.R. contained a statement that on Aug. 2 an order was issued that truck-loading mines be given only box and open-top, not self-clearing cars.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

BITUMINOUS COAL.

	1920 Week	1920 Calendar Year to Date	1919 (a) Week	1919 (a) Calendar Year to Date
July 17b	10,880,000	282,8[illegible]8,000	9,889,000	238,213,000
Daily average	1,813,000	1,678,000	1,648,000	1,413,000
July 24b	10,472,000	293,370,000	9,988,000	248,201,000
Daily average	1,745,000	1,680,000	1,665,000	1,422,000
July 31c	9,357,000	302,727,000	9,943,000	258,144,000
Daily average	1,559,000	1,676,000	1,657,000	1,429,000

ANTHRACITE

	1920 Week	1920 Calendar Year to Date	1919 (a) Week	1919 (a) Calendar Year to Date
July 17	1,790,000	46,931,000	1,795,000	43,693,000
July 24b	1,770,000	488,701,000	1,803,000	45,496,000
July 31c	1,874,000	50,575,000	1,812,000	47,307,000

BEEHIVE COKE

United States Total

Week Ended July 31 1920c	Week Ended July 24 1920b	Week Ended Aug. 2 1919	1920 to Date	1919a to Date
370,000	385,000	389,000	12,386,000	11,202,000

(a) Less one day's production during New Year's week to equalize number of days covered for the two years. (b) Revised from last report. (c) Subject to revision. All figures in net tons.

CONNELLSVILLE

Spot Market Is a Shade Easier—By-product Ovens Work Full Time, but Coke Is Not Put on Market—Merchant Production Is Unchanged.

The spot coke market shows a slightly easier tone in the matter of price, there having been some sales of furnace coke at less than $18, formerly the minimum. At the same time there are reports of furnace coke having brought $19 quite recently, also reports of some prospective buyers being willing to bid almost any price, without getting coke.

The price divergences indicate that operators are picking their trade, preferring to deal with more or less regular customers, rather than simply sell their coke to the highest bidder. For several weeks it has been considered not improbable that coke prices would be made the subject of a public investigation, and some operators have been desirous of keeping their sales a trifle below the maximum prices known to have been paid in the market.

Operations at the byproduct plants are practically full in most cases, but no byproduct coal in the valleys or contiguous territory is being offered in the market, all the production being required for the attendant blast furnaces.

Pig iron production in the United States was at a rate 2½ per cent less in July than in June, but the consumption of coke probably did not decrease, as with higher humidity in July the consumption per ton of pig iron would be greater.

The spot market generally is quotable at $17.75@$18.50 for furnace and at $19@$19.50 for foundry, per net ton at ovens, Connellsville region.

The *Courier* reports production in the Connellsville and Lower Connellsville region, in the week ended July 31, at 172,870 tons, a decrease of 9,275 tons, but practically all the decrease was at furnace ovens, production by merchant ovens being substantially unchanged, at about 75,000 tons.

Middle Appalachian

NEW RIVER AND THE GULF

Both Fields Have Marked Slump in Car Supply—Most of Tonnage Moves to Tide, Some for Navy Use, but Big Volume to New England—Car Supply Must Increase To Save Export and Inland Markets.

The New River and Winding Gulf fields had this in common in that they both suffered from a most marked slump in the car supply during the last week of July, the Virginian being unable to maintain its excellent supply of previous weeks. The Chesapeake & Ohio Ry., however, had even less of a supply for its mines than the Virginian.

Lake shipments from both the Winding Gulf and New River fields were light, but it was considered likely that Service Order 11 would draw heavily on both fields. The greater part of the tonnage produced in both fields was moving to tidewater, some of it being commandeered for Navy use. Prior to the date Service Order 11 became effective, a considerable volume of coal was being shipped to New England.

Mines in the Winding Gulf field were quite materially handicapped in the production of coal during the last week of July. The Virginian Ry. had been affording its mines an 80 per cent supply, but during the last week of the month, the supply was not more than 50 per cent of allotment. Mines dependent upon the Chesapeake & Ohio had about 35 per cent of mine ratings. A total of 85,000 tons a month was the proportion of coal Winding Gulf mines were expected to furnish New England points.

Export shipments from the New River district were more or less curtailed in the last days of July. Mines were unable to work more than half a week owing to the scarcity of cars, and the tonnage of Lake coal required amounted to 2½ per cent. It was expected that export as well as inland shipments must be curtailed unless there were a rather perceptible increase in the car supply.

POCAHONTAS AND TUG RIVER

Mines Get a Full Supply of Cars, but Labor Is Indifferent—Lake Shipments Increase, Also Tonnage to New England—Pocahontas Responds to Order 10 Better Than Some High Volatile Fields.

No scarcity of cars troubled mines on the Norfolk & Western as July drew to an end, but on the other hand a labor shortage did cause loss of output. Mines had practically a full supply of empties. A labor shortage always develops, however, when cars are plentiful.

The only company whose operation has been affected by the propaganda of labor agitators, in either the Pocahontas or Tug River field, is the Van Wert company, although it is understood that a drive is being made in Mercer County. Lake shipments underwent an increase during the week. Also Norfolk & Western producers, at the outset of August, began making larger shipments to New England under the terms of Service Order 11.

In advance of Service Order 11, large tonnages from the Tug River field were being sent to New England as well as to Lake points. The necessity of shipping so much coal to New England was not expected to be conducive to an increase in export shipments although an excellent car supply may overcome such a handicap.

Production in the Pocahontas region continued to move upward in the last working period of July, largely because of adequate transportation facilities. The Pocahontas region was able to take care of its allocation of tonnage for the Lakes—7 per cent—better than some of the high-volatile fields further north owing to the full car supply; although the red tape and lack of knowledge at first as to what was required created some confusion as did also the New England priority order.

KANAWHA

Lake Requirements Take One-Third of Kanawha Output—Only a Limited Tonnage Goes to Contract Customers—

To meet Lake requirements it took just about a third of the entire Kanawha output (15 per cent) and in some cases more than that proportion. There were a less number of cars in the field than during the previous week.

Mines on the Kanawha & Michigan were under orders to send 30 per cent of the allotment to the Lakes. As they were only furnished 50 per cent or less of their mine rating, it will be patent that most of the coal originating on this road was being sent to the Lakes.

With cars so scarce it was impossible to take care of the retail demand and of the industrial trade. In fact what with railroad-fuel shipments, public-utility requirements and the Lake order, only a limited tonnage was available for shipments to contract customers.

No opportunity was afforded Kanawha mines to take advantage of the larger run of cars on Monday to ship to tidewater for export, since there was an embargo in effect on that date. Hence export shipments are believed to have been materially reduced during the week.

VIRGINIA

Coal and Coke Output Increase in Virginia Fields—Demand Is Heavy with but Little Free Coal Available.

Although there was not quite as good a car supply in the Virginia fields during the last days of July as there had been during the previous week, nevertheless mines were able to forge ahead a little, gaining about 4 per cent in production, owing to the fact that during the period mentioned all labor-shortage losses were eliminated.

There was shipped a total of 146,000 tons or nearly 78 per cent of potential capacity. In the same period there was produced and converted into coke a total of 34,000 tons, that being 6,000 tons more than during the previous week.

As a result of a conference of coal men held at Lynchburg, Va. on July 29, the shortage of fuel was confined to a few isolated cases. At this meeting an appeal was made to the citizens of Virginia to practice economy in the use of fuel.

There was during the closing days of July and at the beginning of August a heavy demand for Virginia coal and but little fuel was being exported, as a result of embargoes. Virginia mines expected to be in a position to take care of domestic needs as well as of New England requirements. Little or no free coal was available as a result of the priority orders and of contract requirements.

LOGAN AND THACKER

Lakes Absorb a Large Part of Output of the Fields—Car Shortage Exists in Logan, and Strikes Limit Output in Thacker Field.

Since the Lakes required so large a part of the output, comparatively little commercial coal was available in the last week of July in the Logan and Thacker fields. In one field there was a car shortage, while in the other production was limited by a strike; in consequence it was impossible to keep up with contract requirements in either region.

Service Order 10 worked a hardship in the Guyan region because of the limited supply of empties. The proportion of loads for the Lakes from the field was only 15 per cent, but since there was not more than a 50 per cent car supply other customers were deprived of their regular supply.

Tidewater was under embargo on July 26 and consequently it was impossible to make export shipments on the only day of the week when the car supply would have permitted it. As a result of Service Order 10, there was a livelier demand than ever for export coal with prices as high as $15 a ton being offered in some instances.

While idleness in the Thacker field was still general owing to the strike, there was nevertheless an increase in production in that field during the last week of July, as compared with previous periods, owing to several mines long in idleness resuming operations.

ASHLAND

An Accident on C. & O. Reduces Output in Eastern Kentucky — Shipments to Tide Increase, Presumably for Export.

Eastern Kentucky mines fell behind their production of the previous week, in the period ended July 31, because of an accident on July 30 on the Chesapeake & Ohio, forcing a suspension of traffic. But for the accident it is estimated that there would probably have been a 10 per cent increase in production. As it was mines succeeded in producing only 149,805 tons, or 43 per cent of possible capacity.

There was a rapid increase in tidewater shipments in the eastern Kentucky field during the last week of the month, notwithstanding the necessity of taking care of Lake requirements at the same time. Tidewater shipments were fully three times as large as they were for the week ended July 24, presumably for export.

Exports having been cut off from other fields, owing to various transportation and distribution orders in effect, it had become necessary for buyers to move further westward to secure coal for such a purpose, from a field which, until about the middle of July, had been giving little attention to the export trade.

The demand for all grades and kinds of coal in the eastern Kentucky field was stiff, that being particularly true as to coal for export, though gas coal also was in strong demand. Export coal was commanding fancy prices during the past week.

FRANKFORT

State Workmen's Compensation Board Refuses Request of Liability Companies for Increase in Rate.

The request for an increase in the basis rate of compensation on insurance for coal-mine employees, submitted recently by the liability insurance companies to the State Workmen's Compensation Board, was refused by the board. The request asked that the rate be changed from $3.65 to $3.79.

The insurance companies stated that an increase was made necessary by the new law which increases the maximum for medical attention from $100 to $200 and the maximum weekly payments from $12 to $15. They also noted that the average wage, on which compensation is based, is higher, but the board holds that premiums as well as compensation are based on the pay roll.

Middle Western

INDIANAPOLIS

Indiana Coal Commission Considers Coal Prices—Schedule Is Obtained for Estimating Present Fuel Prices—Governmental Agency May Have To Stabilize Coal Industry.

Coal prices effective during the period of wartime control by the Federal Fuel Administration are under consideration by the Indiana Coal Commission, the result of legislation by the recent special session of the state Legislature, as a possible basis for prices under the forms of the new state regulatory law. Since the cessation of Federal control, miners have received several wage increases. By adding these to the old Federal prices a fairly accurate schedule may be obtained for application at this time.

The Federal prices for Indiana lump coal on cars at the mines was $2.65 a ton and for screenings, $2.15 a ton. It has been estimated that the additional wages now paid to miners and day workers would not add more than 15c. a ton, even under subnormal production conditions. If this estimate is approximately correct, it is said the present price of lump coal at the mines should not exceed $3.40 a ton.

Reports received by the Public Service Commission from a number of public utilities indicate that they can not purchase coal at the mines for twice $3.40 a ton. Several reported that they are forced to purchase at from $7 to $8 a ton, which with the freight added brings the total cost to more than $10.

E. I. Lewis, chairman of the public service commission, reiterated his belief that the commission is virtually powerless to deal effectively with the utilities and the public until the coal industry is stabilized through Governmental agency.

OHIO

Year 1919 Is Worst in History of Coal Industry in Ohio—Large Number of Employees Are Killed by Falls of Top.

The fiscal year ended June 30 was one of the worst in the coal industry in Ohio, according to a recent report made public by Jerome Watson, chief deputy and safety commissioner of mines of the state. Two causes are mentioned for this condition—car shortage and serious labor conditions, which prevailed in many mining areas.

The coal production in 1919 for the calendar was 34,000,000 tons which is considered a fair record (outside of war times), as the largest production previous to the war was in 1913 with 36,285,468 tons. Reports for the first six months of the year show a heavy falling off from those of previous years, which causes Mr. Watson to believe that the shortage will be most marked.

During the year there were 147 fatal accidents connected with coal mining, of which number 76 were killed by falling roofs. The number of accidents in proportion to tonnage produced was larger than in any previous year. Jefferson County alone had 41 fatal accidents, of which 20 resulted from the mine disaster at Amsterdam, Oct. 29, 1919.

Of the fatalities 18 were killed by mine cars, 13 by explosives, three by motors, four by electricity, two by mining machines, one by gas explosion and two on the surface by railroads.

Under present conditions operators and jobbers refuse to enter into new contract agreements. Some operators are looking into the future and are filling their contracts. Of the utilities reporting that they hold contracts, two-thirds declare that the contractors are meeting their demands. There is a growing fear that the Indiana coal regulatory act will not protect domestic consumers.

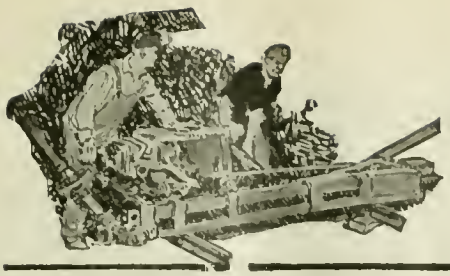
Canada

NORTHERN BRITISH COLUMBIA

Copper River Coal Field Is Attracting Attention—Two Good Coal Seams.

Extensive coal deposits situated in the Copper River district of Northern British Columbia are being inspected by engineers and representatives of Canadian financial interests with a view to their development. This field is located on Chettleburgh Creek, a tributary of the Zymoetz River, about 30 miles from the town of Smithers.

There are 75 leases on which two good seams of coal have been exposed, respectively nine and six feet thick. The latter seam has been slightly developed by short prospect tunnels. A lot of exploratory work has been done and the measures are exposed on Chettleburgh Creek for a distance of two miles.



Mine and Company News

ILLINOIS

Edwardsville—The Donk Bros. Coal & Coke Co., of St. Louis, is about completing its No. 4 mine near this place; the mine has been under construction for over a year. The plant is said to be one of the most modern and up-to-date collieries in the country and will hoist between 6,000 and 8,000 tons daily when in full operation. The steel construction work was done under the supervision of the Allen & Garcia Construction Co., of Chicago, the same company which completed the large Union Colliery Co. mine at Dowell, near Duquoin. The Donk Bros. mine will employ in the neighborhood of 900 men and cost over $1,000,000.

Marion—The Madison Coal Corporation is sinking a new shaft near Blairsville (northwest of here), in Williamson County, the work of putting in a switch form the Illinois Central to the location of the shaft having been almost completed. When the track is finished, material will be placed and sinking pushed. This mine is to be one of the most modern in this field, and the entire operation will be electrically equipped. Plans call for the erection of 25 dwellings at present for housing employees, and 75 later on.

West Frankfort—The Old Ben Coal Corporation, which owns and operates eight mines in Franklin County, is installing its own private telephone system between the different operations. This work has been hastened somewhat on account of the telephone operators and linemen having been on strike in this county for four weeks, thus cutting the company off from all communication with its different mines.

Zeigler—The Bell & Zoller Mining Co., operating two big mines in Franklin County, has inaugurated a new system of handling its compensation cases. All claims will be adjusted through the insurance company, and the person injured will receive his compensation weekly. The company believes the change will be of great assistance to the miners.

The new material shaft of mine No. 2 of this company, has reached coal. This shaft was made necessary in order to increase the coal output of this mine, as much time was lost lowering material and hoisting other than coal at the hoisting shaft. This material shaft will be independent of the main and the air shafts, as a separate power plant and tipple has been erected for it. This company has a record for steady running, and probably averages as great a number of running days as any mine in this field.

KENTUCKY

Louisville—The Kentucky Collieries Co. at Pineville was recently incorporated with a capital stock of $300,000 by T. C. Hughes, Joseph Stewart and James M. Stewart.

Seco—The South-East Coal Co. is planning for the development of about 3,000 acres of coal land in the vicinity of this place—a property recently acquired. The company proposes to install a plant with a daily output of about 2,000 tons. W. B. Goldsmith is consulting engineer for the project. The company was recently organized with A. D. W. Smith as president.

NEW YORK

New York—The Estate of W. J. Rainey announce that the business heretofore carried on under the name of W. J. Rainey has been incorporated and hereafter will be conducted as W. J. Rainey, Inc. The officers of the new corporation are: Roy A. Rainey, chairman of the board; Scott Stewart, president and treasurer; L. L. Willard, vice president in charge of operations; John McElwain, vice president in charge of sales and purchases of raw materials; H. R. Ahrens, secretary. The executive offices of the company will remain at 52 Vanderbilt Avenue, New York, N. Y.

NORTH DAKOTA

New Salem—The Consolidated Lignite Collieries of this place, has placed a contract with the Roberts & Schaefer Co. for construction of its new coal mining plant at New Salem. It is said that this plant, when completed, will be one of the finest in the State of North Dakota and will be built in connection with the new briquetting plant which is contemplated at this place.

OHIO

Nelsonville—The Ohio Consolidated Coal Co., has recently purchased four mines in the Nelsonville district which give this company a daily capacity of about 1,200 tons. The Ohio Consolidated Coal Co., has offices in the Columbus Savings & Trust Bldg., Columbus. S. E. Ranney is president and R. C. Kyle, secretary and general manager. The largest purchase was that of the Majestic Coal Co., on the Hocking Valley Ry. with two operating mines served with one tipple. This has a capacity of about 800 tons daily which will soon be increased. The company also purchased the Cambrai-Hocking Coal Co., mine with a capacity of 300 tons daily and also the mine of Bruce Bros., on the Carbon Hill branch of the H. V. Ry.

Rendville—Monsarrat Bros., operators of Columbus, are preparing to open a large mine at this place, located on the Toledo & Ohio Central Ry. The mine will have an initial capacity of 400 tons which will gradually be increased. It is being equipped with modern machinery electrically operated. It will be ready for operation in about six weeks, at which time the company will have three mines in this territory.

PENNSYLVANIA

Cramer—The Imperial Coal Corporation, at Charles, Indiana County, near here, has completed a new coal tipple, the work being done by the Heyl-Patterson Construction Co. of Pittsburgh, Pa., at a cost of $70,000. It is of steel and has rotary picking tables, with both electricity and compressed air for power. The tipple has large capacity. The Imperial Coal Co. owns 3,000 acres of coal land which has been barely touched. A new shaft is soon to be sunk on the Wakefield farm, opposite Seward in Indiana County.

Scottdale—According to present plans the big new steam shovel installed by the H. C. Frick Coke Co., to strip coal near Masontown, will start operation soon. The shovel has a capacity of six cu.yd. and weighs 312 tons. There has been a little delay in getting the machinery installed but everything is now practically ready for work. As soon as a sufficient quantity of coal is uncovered a smaller shovel to be used for the actual coal digging will be started. The coal will be loaded on small mine cars and hauled to Ronco to be shipped by river to Duquesne and other down river points. The work will be under the direction of W. J. Charleton, superintendent of the Leckrone and Ronco mines.

Masontown—The tipple, boiler house and engine house were recently destroyed by fire at the Crystal mine of the Hillman Coal & Coke Co., of Pittsburgh, Pa. A temporary tipple is being constructed and it is expected that operations will be resumed shortly.

Hazleton—A serious accident took place at the power plant of the Harwood Electric Co. near this place. While filling one of the oil switches there was a surge on the line which set the oil on fire and caused an explosion, scattering the oil all over the switch board. A damage resulted to the power house of about $200,000 from the burning oil and the water used by the firemen to extinguish the flames. The

switch board attendant was burned to death and the switchboard ruined, resulting in the closing down of the plant. For about three days all of the mines that depended upon power from this plant were not able to work. Other arrangements were made and these mines are now operating but with a reduced voltage.

Hazleton—The Campion Coal Co., operating the new washery at Silver Brook, south of here, recently began shipments. The plant has a capacity of 500 tons per day, and is said to have cost approximately $50,000. The company includes Slattery Brothers, whose coal office is in the Stephen Girard Building, Philadelphia, and P. J. Campion and Thomas F. Leahy, both of Mahanoy City, Pa.

Wilkes-Barre—The Haddock Mining Co. and its subsidiary, the Haddock Supply Co., have insured all of their employees for $500 each in one of the large life insurance companies. This blanket insurance, which was entirely unsolicited, gives each employee the benefit of the insurance company's nursing service. Among other benefits, it is provided that any insured employee of the company who, before the age of 60, becomes permanently incapacitated through disease or accident, shall six months after receipt of proof, receive payment under any one of five options until the entire $500 has been paid. The G. B. Markle Co. and the John Conlon Coal Co. are other Luzerne County anthracite operators who have insured their employees in this manner.

WASHINGTON

Spiketon—The Pierce County Coal Co. is preparing plans for a new incline skip hoist, tipple screens and a crusher in unit No. 1; shaking screens and washers in unit No. 2, and team bunkers in unit No. 3. The last-named plant is to be designed to permit of the mixing of different sizes or grades of coal as loaded. All units are to be connected by conveyors, and the plans are to be completed by about Aug. 20. G. H. Sharpe is the general manager.

WEST VIRGINIA

Glen White—The E. E. White Coal Co. has acquired additional coal property totaling about 5,000 acres in Raleigh and Wyoming counties, and is planning for extensive development; the company expects to install a new plant of about 3,000 ton capacity. E. E. White is president and manager.

Huntington—Fully a million dollars will be involved in the development of the properties of the Merrill Coal Co., on the Guyan field on Little Buffalo Creek. Construction work on the plant and development work in the mines has begun. In connection with the opening of the new mine it will be necessary to build three miles of railroad at a cost of $300,000, construction work on which has already started. The plant and mines of the company will be at Henlawson, a new town shortly to be established. The Merrill company will provide its own locomotives and also additional rolling stock.

Kingwood—The Barnard Coal Co., recently incorporated with a capital of $75,000, has begun work on its tract of 400 acres of Upper Freeport coal near here in Preston County. Machinery for mining and general operation will be installed at an early date, and it is proposed to arrange for an output of close to 600 tons per day. The incorporators are: W. O. Barnard, P. P. Reiner, and S. R. Barnard, all of Morgantown, W. Va.; O. T. Barnard of Richard, W. Va., and C. W. Craig of Kingwood, W. Va. W. O. Barnard is president and general manager, and C. W. Craig is secretary and treasurer of this new concern.

Nelsonville—A consolidation of the mines of the Northern Mining & Fuel Co., and the Southern Fuel Co., both located near Nelsonville, has been effected under a new corporation known as the Northern & Southern Coal Co., chartered with a capital of $500,000. The incorporators are: D. N. Postlewaite, J. N. Bricker, R. Martin, H. H. Orr and R. Hads. The two mines have been in operation with a combined capacity of 2,200 tons daily. Offices will be opened at Nelsonville with C. C. Sharp in charge as president and general manager.

Bluefield—Arbitrators in the claim of Mrs. Ollie H. Browning against the Big Vein Pocahontas Coal Co., for unpaid royalties, have awarded the claimant $132,000 representing royalty on 1,250,000 tons of coal. The arbitrators were George Wolfe, a well known operator of the Winding Gulf field, W. R. Graham and N. H. Manakee, mining engineers.

Mrs. Browning originally leased her coal land to a Pennsylvania man at a royalty of 15c. a ton. However the minimum royalty was fixed at $45,000 a year, it being provided that the royalty was to be paid at that rate until the royalties paid represented the coal available, whether it was mined or not. The Big Vein Company purchased the lease and about three years ago ceased making payments covering royalties on the ground that the amount paid had been sufficient to cover all the coal on the property.

Huntington—The organization of a company of large resources, for the purpose of establishing a system of river transportation for fuel between Pittsburgh and New Orleans, is beginning to assume tangible form. Large concerns in Cincinnati, Memphis, and other river cities are behind the move to establish a river coal-carrying line.

The necessity for such a line is quite urgent, it is claimed, owing to the difficulty and delay in moving coal and other freight and to the imminence of an advance in freight rates which will make fuel and steel from Ohio, Pennsylvania and West Virginia almost prohibitive in price for certain markets.

According to present plans it is proposed to complete the organization of the new company without delay and to inaugurate the water transportation system at once.

Beckley—Organized with a capitalization of $150,000, by E. C. Minter, A. K. Minter and others, the C. E. Minter Coal Co. will immediately begin the development of about 400 acres of coal land in Raleigh County, planning to be in a position to mine coal on a commercial scale by the middle of December. Headquarters of the company will be at Besoco, W. Va. The new company's holdings include both the Pocahontas and the Fire Creek seams. E. C. Minter is the president and general manager of the company and A. K. Minter has been placed in charge of construction work on the new plant. The mines of the company will be adjacent to both the Chesapeake & Ohio and the Virginian railroads. In addition to heading the new company, President Minter occupies the same position with reference to the Beckley Smokeless Coal Co., the Clyde Pocahontas Coal Co., the Stone Coal Land Co. and the Raleigh Smokeless Fuel Co. He is also vice president, general manager and treasurer of the Meadow River Smokeless Coal Co.

ALBERTA, CANADA

Blairmore—The West Canadian Collieries Co., Ltd., of Blairmore, Alberta, Canada, has placed a contract with the Roberts & Schaefer Co. at Chicago, Ill., for the reconstruction of its Bellevue and Greenhill tipples. Rotary dumps and modern machinery to better the output and preparation of its coal will be installed.

NOVA SCOTIA

Halifax—The Inverness Railway & Collieries, Ltd., has been organized, mainly through the efforts of M. E. C. Henderson, president of the H. D. MacKenzie Co., of Halifax. The company has acquired an extensive coal area and 62 miles of railway running from Point Tupper to Inverness with shipping docks at Port Hastings. The coal deposits will be actively developed by the new company. H. C. Bigelow, freight agent (at Halifax) of the Canadian National Ry., will manage the railway department of the company.

VANCOUVER ISLAND

Nanoose — The Wellington-Nanoose Collieries, Ltd., operating the Nanoose Bay mine, has been completely reorganized and the mine henceforth will be known as the Lantzville mine. Louis Williams is the chairman of the board of directors; F. H. Lantz, the managing director, and J. A. Coleman, the secretary. Over $100,000 has been spent during the past year in improvements to the surface equipment. New wharves have been built, a Link Belt screening plant installed, and a washery (capable of handling 500 tons a day) erected. Edward Floyd, an English mining engineer with experience in the coalfields of Northumberland, has been appointed superintendent.

Industrial News

Chicago, Ill.—Announcement that plans were in contemplation under which employees of the Federal Electric Co. would have a voice in the management of the company, was made by John F. Gilchrist, president, in an address delivered on June 26 at a housewarming at the concern's new plant, 87th and State Sts., Chicago. The plan offered will be in conformity with some of the new ideas of employees' representation. Mr. Gilchrist told the employees that they could purchase stock in the company at almost any terms convenient to themselves and said he was pleased to observe that approximately 40 per cent of the employees were already stockholders. More than 1000 persons were guests at the housewarming which was celebrated by dancing, baseball games, field events, vaudeville, aeroplane ascensions and a luncheon.

New York, N. Y.—The Chicago Pneumatic Tool Co. announces that bulletin 504, recently issued by the company, describing the slugger rock drill, is now available, upon request, from its New York office or branches. On Aug. 1, the Publicity Department will be located in the Chicago Pneumatic Building, 6 East 44th St., New York, where all communications should be addressed after this date. H. W. Clarke is the manager of the Publicity Department.

The Worthington Pump & Machinery Corporation, 115 Broadway, New York, announces the purchase from the Platt Iron Works, of Dayton, Ohio, of their drawings, patterns, jigs, templates, special tools, goodwill and name, on their following lines of product: (1) Oil mill machinery, suitable for the extraction of oil from all sorts of nut and seed products, comprising crushers, cookers, cake formers, presses, filters and pumps. (2) Hydraulic turbine and water wheel line, covering their entire line of hydraulic turbines and water wheels, horizontal and vertical, high and low head. (3) Feed water heaters, steel and cast iron horizontal and vertical. (4) High pressure air compressors for torpedo and other high pressure charging, cleaning and discharging.

Seattle, Wash.—The Electric Storage Battery Co., of Philadelphia, announces the appointment of George D. Luther as Soliciting Agent in Seattle with offices at 811 White Building. Mr. Luther joined the sales force of the Boston office of The Electric Storage Battery Co. in 1907. In 1910 he was made Soliciting Agent in Denver in which capacity he served until his recent appointment. The Electric Storage Battery Co. has specialized in the manufacture of storage batteries for over 32 years.

Huntington, W. Va.—The office and warehouse of the Sullivan Machinery Co., at this place, is now located at 736 Third Ave., instead of at 841 Court St. as heretofore. A large supply of spare parts and equipment for Sullivan ironclad coal cutters, hammer drills, etc., is carried in stock.

Brooklyn, N. Y.—After a most comprehensive and exhaustive series of experiments and tests, physically, chemically and under conditions of service of great severity, the Underwriters' Laboratories have officially approved "Resistal" goggles manufactured by Strauss & Buegeleisen of this place. The tests made included all those prescribed by the tentative code of the U. S. Bureau of Standards. The regular Underwriters' Laboratories inspection service is being carried on at the Strauss & Buegeleisen factory by a resident representative of the board, who inspects the progress of manufacture, the materials used and the finished "Resistal" goggles. Every goggle which passes this inspection is given the Underwriters' Label.

Chicago, Ill.—The Mikesell Brothers Co. has recently acquired by purchase the asbestos and rubber factory, located at Wabash, Indiana, formerly belonging to the Perfection Tire & Rubber Co. This is the only asbestos textile plant located west of Philadelphia and consists of 130,000 sq.ft. of floor space, and in addition 34 acres of land available for expansion purposes. The company's brattice cloth factory will be located at that point the latter part of this year, and the concern will specialize in the following material, used in and around coal mines: Brattice cloth waterproof duck; pipe covering and asbestos cements; asbestos and rubber packings; gaskets and pump valves; insulating tapes.

Lorain, Ohio—The Thew Shovel Co., an Ohio corporation, has acquired all the outstanding capital stock of the Thew Automatic Shovel Co., of Lorain, and the two companies have been consolidated. The Thew Shovel Co. has assumed all the assets and business of the Thew Automatic Shovel Co., together with the legal liabilities and obligations. The officers of the Thew Shovel Co. are: President, F. A. Smythe; vice president, H. H. Harris; vice president, A. B. Taylor; secretary, C. B. Smythe, treasurer, R. B. Miller; sales manager, H. E. Billington; general works manager, J. S. Small, and purchasing agent, H. B. Newton. The consolidation gives the Thew Shovel Co. net assets of $2,000,000, and it is planned to increase the productive capacity of the company 100 per cent during 1920. New buildings have been completed and others are under construction.

Pittsburgh, Pa.—Announcement is made of approvals recently granted by the Bureau of Mines as follows: Approval 105 covers a 210-volt direct current shortwall mining machine with a 50-h.p. explosion-proof motor and an explosion-proof cable reel for use in gaseous mines. Approval 105-A covers a 500-volt equipment of the same type. These equipments are manufactured by the Goodman Manufacturing Co., of Chicago, Ill.

Approval 1,200 covers a single-shot blasting unit which is manufactured by the Mine Safety Appliances Co., of Pittsburgh, Pa. This unit has the same type of battery as is used in the Edison approved cap lamp. In the approved design the cover or attachment can be used for only shot-firing service. Combination units designed for both illumination and shot-firing purposes are not admitted to the Bureau's approval list.

Indianapolis, Ind.—The shipment of two 2,800 h.p. Parsons steam turbines by the Midwest Engine Co., of Indianapolis, to the Asano Ship Building Co., at Yokahoma, Japan, is announced as a part of an order for a number of these turbines from the same company. The units are designed for twin-screw propellers running in port and starboard directions. A steam engine of an equivalent horsepower would weigh about 165 tons, thus indicating the great gain in cargo space by use of this turbine which weighs about 16 tons. According to the Midwest company, these units now going to Japan were built from blue prints, tested and shipped within less than the 90-day period specified by the purchaser. In addition to its steam-turbine activities, the Midwest company is in production on a gas engine designed especially for heavy-duty trucks and tractors, and is also pushing its facilities to take care of the steadily increasing demand for the Midwest utilitor—a small tractor unit.

Hazleton, Pa.—Barrett-Haentjens & Co., of this place, recently accepted an order from the Delaware, Lackawanna & Western Coal Department, of the anthracite field, for a ten-stage centrifugal pump. The capacity of this machine will be 850 gal. per min. and the lift 920 ft. It will be driven by a 300 h.p. motor. This firm of pump builders is also making a single-stage, wood-lined pump to be used for handling jig water at the Leggitts Creek Colliery. This is believed to be the first attempt ever made to wood-line a pump of the centrifugal type.

Personals

George T. Robinson, president of the Operators' Coal Co., and general manager of the Citizens' Coal Co., Johnstown, Pa., has been elected president of the Chamber of Commerce of Johnstown. Mr. Robinson formerly was general superintendent of the Mining Department of the Cambria Steel Co.

C. E. Jaycox, formerly in the Traffic Department of the Rutledge & Taylor Coal Co., Chicago, has been made traffic manager for the Lake & Export Coal Co. **W. A. Field**, formerly of the Johnstown City Coal Co., has become credit manager for the same concern.

Fred B. Spence, formerly with the Big Muddy Coal & Iron Co., of Murphysboro, Ill., has become connected with the Illinois Koalin Co., as assistant secretary and treasurer, with offices in Anna, Ill.

At the recent commencement of the University of Pittsburgh, the honorary degree of Doctor of Science was conferred upon **Professor H. H. Stoek**, head of the Department of Mining Engineering, University of Illinois.

Robert M. Medill, of Harrisburg, Ill., formerly of Springfield, Ill., has assumed his duties as Director of Mines & Minerals, of the state of Illinois, filling the vacancy caused by the death of Joseph C. Thompson, of Benton. The appointment has been announced by Governor Lowden. Mr. Medill is a son of Duncan B. Medill, a former resident of Springfield who is now superintendent of the J. K. Deering & Co. coal properties with headquarters at Clinton, Ind. The new director has been general superintendent of the O'Gara Coal Co., at Harrisburg, Ill., for a number of years.

W. D. Lee has been appointed a member of the mine-inspection force of West Virginia, succeeding inspector Edward Nicholson who has resigned to accept a position in Illinois. Mr. Lee will be a District Mine Inspector for district 18 and will have his headquarters at Iaeger, McDowell County. He succeeds Inspector Quenon who was transferred to district 12 at Thurmond.

Edward Nicholson, regarded as one of the most efficient members of the inspection force of the West Virginia Department of Mines, has resigned that position to become the general superintendent of the Franklin Coal & Coke Co., of Illinois. Mr. Nicholson was appointed a district mine inspector on April 15, 1919, being at that time superintendent of the Boone County Coal & Coke Co. He is a native of Sunderland, England.

Harry C. Owen has been selected as assistant manager of the Morgantown Coal Co. He will have entire charge of the fuel purchases of the company. Mr. Owen during the war served as assistant district representative of the U. S. Fuel Administration having his headquarters at Fairmont. When he left there it was to become the secretary of the Pittsburgh Wholesale Coal Association. About a year ago he became associated with the Bertha Coal Co.

Humphrey D. Smith, formerly of Bluefield, W. Va., and until recently general superintendent of Upland and Crozer mines at Elkhorn., McDowell County, W. Va., has accepted the position of general superintendent of the American Coal Co.'s works at Pinnacle, Piedmont and Crane Creek, Mercer County, W. Va.

R. A. Ruff, chief engineer at Crozer, will succeed Mr. Smith, and **Robert Knowlin** will succeed Mr. Ruff.

J. S. Hammond has been appointed assistant mine inspector in the Ashland, Ky., district by Governor Morrow, according to an official announcement.

George W. Bowman and **S. H. Brown**, of Palisades, Col., have purchased a controlling interest in the Garfield Coal Mining Co. from George Smith. Equipment costing $25,000 will be installed at once.

F. L. Poindexter has been appointed assistant general superintendent of the Chesapeake & Ohio Ry., having been heretofore assistant to the general superintendent. Mr. Poindexter will have under his direction, coal-car allotment, company fuel and distribution. **F. J. Ginn**, who was chairman of the C. & O. Allotment Commission has been transferred to the staff of the general superintendent as superintendent in charge of agencies.

George B. McCormack, president of the Pratt Consolidated Coal Co. and a prominent local capitalist, has tendered his resignation as president of the Alabama Coal Operators' Association, which organization he has headed for the past several years. His successor has not yet been elected.

J. C. Leighton and **Major C. T. Chenery**, members of the American Society of Civil Engineers, and **A. C. Oliphant**, associate member of the American Society of Mechanical Engineers and the American Institute of Electrical Engineers, have formed a co-partnership under the name of M. O. Leighton & Co. with offices at 709 Tenth Street, Washington, D. C., for the purpose of engaging in general engineering practice and industrial representation before the Federal departments. Mr. Leighton and Major Chenery will continue for the time being as chairman and secretary, respectively, of the National Public Works Department Association, while Mr. Leighton and Mr. Oliphant will continue service in the Washington office of Engineering Council pending the displacement of that body by the Federated American Engineering Societies.

Harry C. McDivitt, superintendent of the Atlantic Crushed Coke Co.'s big plant near New Derry, Westmoreland County, Pa., for the past eight or nine years, has resigned his position, and has been succeeded by **S. R. Kelly**, formerly with the Connellsville Coke & Fuel Co., at Ligonier.

John A. Bell, of Carnegie, Pa., has purchased the interest of Cyrus Ferguson in the Cedar Grove mine of the Verner Coal Co., located near Avella, for $600,000. The Cedar Grove mine had an output during the past year of 1,400 tons of coal a day.

Association Activities

Kentucky Retail Coal Dealers' Association

One hundred retail-coal dealers of the state formed the Kentucky Retail Coal Dealers' Association at Lexington, Ky., recently, electing the following officers: W. S. Glore, Danville, president; Shelby Kinkead, Lexington, vice president; C. P. Willoughby, Richmond, treasurer; J. Crow Taylor, Louisville, secretary. A meeting will be held August 10, at which plans for increasing the membership, especially in the western part of the state, will be taken up.

Central Pennsylvania Coal Producers' Association

Alleging a cash loss of $35,000 and the loss of many miners in the district during the month of May as a result of the car shortage at the mines served by the Pennsylvania R. R., the Pennsylvania Coal & Coke Corporation, T. H. Watkins, of New York, president, has filed a bill in equity in the Cambria County, Pa., courts against the Pennsylvania R. R. for an injunction restraining the railroad company from giving one mine more than its share of cars, the share being based on its mine rating.

Announcement of the suit was made by the Central Pennsylvania Coal Producers' Association, of which the company is a member. The action is brought under the provisions of the Esch-Cummins bill. Solicitors retained are Butler, Lamb, Foster and Pope, of Chicago, Rose and Eichenauer, of Pittsburgh, and John E. Evans and P. J. Little, of Ebensburg, Pa.

Northern West Virginia Operators' Association

According to information given out by officers of the Northern West Virginia Operators' Association, the decision by Judge J. C. Pritchard in the United States Circuit Court of Appeals at Asheville, N. C., on July 19, was not a final decision, but merely suspended the injunction granted by Judge Dayton of the lower court restraining the Baltimore & Ohio from assigning cars, pending a final decision in the case.

Announcement made by the operators' association was merely to correct a report that the assigned-car case had been lost in the Appeal Court. The suspension order had to do with the suit of the Lambert Run Coal Co. instituted to put a stop to the assignment of cars by the Baltimore & Ohio in northern West Virginia.

Wheeling Motor Coal Association

Members of the Wheeling Motor Coal Association have indicated that as a protest against the action of the council of the city of Wheeling, in fixing an impossible speed limit over the streets of Wheeling, they may cease operating their trucks for a month, that being the decision tentatively reached, it is said, at a meeting held on July 21.

It appears that the council adopted an ordinance prescribing that heavy trucks should not be allowed to run at a speed greater than five miles an hour, except where provided with pneumatic tires, and in that event they would be permitted to move at a speed of eight miles an hour. Such an ordinance was characterized as ridiculous because the trucks could not be equipped with pneumatic tires and also because the trucks could not be reduced to a speed of five miles an hour.

The motor-truck people believe that the ordinance regulating the speed of trucks was evidently passed by council in the belief that it would be easy to dispense with the service of such trucks in supplying coal to Wheeling industries. Hence there was a feeling that if no trucks were operated for four weeks it would perhaps demonstrate just how dependent industries and public utilities were on the truck movement of coal.

West Virginia Coal Association

Fraught with as much importance to the West Virginia Coal Association as anything else which claimed its attention at its annual meeting in Washington, D. C., on July 13 was the proposed withdrawal from membership in the State association of the Northern West Virginia Association, no announcement being made of the reasons which prompted the Northern West Virginia to take such a step. That such action may not be final was rather indicated when the association named a special committee to inquire into the proposed withdrawal, with a view to ascertaining and removing the cause of withdrawal.

There were discussed during the meeting the transportation situation, labor troubles in the southern part of the state and the general market situation, especially with reference to prices.

It was decided, tentatively at least, to so change the by-laws of the association that in the future, membership on the Executive Committee and the voting privilege would be limited to members, secretaries of the various associations not being given a vote.

Endorsement was given by the association to the State First-Aid meet to be held in Charleston in August. The Association appropriated the sum of $500 toward defraying the expenses of the meet. Virtually all the districts in the state were represented at the Washington meeting.

Winding Gulf Operators' Association

The mid-summer meeting of the Winding Gulf Operators' Association of West Virginia held on July 31, at White Sulphur Springs, was featured by addresses by J. D. A. Morrow, vice president of the National Coal Association; W. B. Reed, secretary of the association; President Huntington of the Virginian Ry.; President G. W. Stevens of the Chesapeake & Ohio Ry.; G. B. Wall, vice president of the C. & O., among others. Also a resolution was adopted endorsing and approving the position of the National Coal Association in upholding the rights of coal producers to export coal with the same freedom as other business men enjoy in developing foreign trade, and unequivocally opposing any embargo upon the exportation of coal from this country.

E. E. White, president of the E. E. White Coal Co., and also president of the Gulf association presided, the Secretary being George Wolfe, secretary of the same local association. More than one hundred members of the association were in attendance in addition to a number of invited guests.

J. D. A. Morrow in the course of his remarks paid high tribute to the fields of West Virginia which had succeeded in continuing production during the general strike last November and December. Mr. Morrow expressed the opinion that within a few years this country would be exporting 50,000,000 tons of coal a year. He pointed out, however, that the 12,000,000 tons of coal exported this year was only a drop in the bucket compared with total production.

President Stevens of the Chesapeake & Ohio in his address declared that he despaired of ever getting back the 7,000 cars which had been sent to foreign lines.

In the course of his address President Huntington of the Virginian declared that his road would shortly have in operation 1,000 120-ton coal cars and that equipment in general would be provided to take care of increased tonnage.

In the Winding Gulf field during April only one company succeeded in maintaining an average loading of 60 tons to a car. The Winding Gulf Operators' Association has been engaged for several months in a campaign for larger loadings per car and hence has been keeping a record of what each company has done toward increasing car loadings.

Figures show that there was only one operation which loaded as much as 59 and 58 tons a car during April; four, however, averaged 57 tons to a car, and five loading, on an average, 56 tons. When it came to loading 55 tons per car, on an average, there were 11 companies, 14 loading as much as 54 tons. There were 23 companies who managed to load 53 tons to a car, on an average, during the month.

Obituary

Russell A. Griffin, general sales manager of the National Pole Co., died recently at his home of pneumonia. Mr. Griffin was well known among telephone people. He was for many years connected with the American Telephone & Telegraph Co. and later with the Western Electric Co., before going into the pole business.

William C. Webb, mine foreman of the Belton Coal Mining Co., Drakesboro, Ky., was fatally scalded, when a valve blew out in the engine room at the works on July 14. He died while waiting for a Louisville & Nashville train to reach Owensboro.

C. B. Proctor, mine superintendent of the Bry-Mac Coal Co. at Silverville, McCreary County, Ky., was murdered recently by three men whose names the authorities have refused to make public as a search for them is being made by police. Mr. Proctor was shot three times and stabbed in a dozen places. He recovered consciousness before he died and gave the names of his assailants to the police. It is believed that they were employees of the company. After a conference with dissatisfied miners who demanded more money, Mr. Proctor went to West Jellico and was returning home when he was attacked from ambush. Mr. Proctor came to Somerset from Louisville two years ago.

J. E. Sheridan, State Inspector of Coal Mines and a pioneer mining man of New Mexico, died at his home in Santa Ana, Cal., recently after a brief illness. The cause of death was a general breakdown.

J. E. Sheridan was born in Philadelphia in 1851. As a boy of 16 he came West. In 1885 he moved to Silver City. At different times he mined in Colorado, Utah, Nevada and California. At the time of his death Mr. Sheridan held the important office of Inspector of Coal Mines for the State of New Mexico and was a member of the commission named by Governor Larrazolo to revise the tax laws of this state. Mr. Sheridan was named as Inspector of Coal Mines for New Mexico in 1900. During his incumbency of office he secured many improvements in mine management. He was responsible for the present fair and inclusive laws which govern the mining in this state.

Axel Esstrom, consulting electrical engineer for the Delaware & Hudson Co., the Hudson Coal Co., the Mechanicsville Trolley Co., at Albany, N. Y., and also closely associated with the General Electric Co., died recently at his home in Ballston Spa, near Albany, N. Y.

He was particularly well known among the electrical engineers of Scranton, Pa., and spent at least two days of every week there in his capacity as consulting engineer for the Delaware and Hudson interests.

Mr. Esstrom was about 60 years of age. He had been ill about three weeks. The direct cause of his death was peritonitis.

Colonel Robert M. Jackson, 61 years old, a coal operator, recently died at his home in Glendale, Cal.

Dr. David H. Thomas, a well-known coal operator and formerly a physician, died at his late home in Bexley, a suburb of Columbus, Ohio, recently at the age of 52 years. He was a pioneer coal operator in the Pocahontas field in West Virginia and has maintained his winter residence in Columbus for the past ten years. He was born in Wales and came to Pennsylvania with his parents, later going to Coopers, W. Va. He was secretary and treasurer of the Mill Creek Coal & Coke Co., of Coopers; secretary of the Thomas Coal Co., of Thomas, W. Va., and director of the Flat Top Fuel Co., of Bluefield, W. Va. In addition he was a director in a number of financial institutions in Columbus.

Coming Meetings

American Mining Congress will hold its annual meeting at Denver, Col., Nov. 15. Secretary, J. F. Callbreath, Munsey Building, Washington, D. C.

American Institute of Mining & Metallurgical Engineers will hold its fall meeting Aug. 20 to Sept. 3. It is proposed to leave Buffalo by steamer and cruise through the Lakes, the first stop being at Houghton, Mich., after which the party will visit Duluth and the Iron Ranges of Minnesota, spending a day or two in Minneapolis on its return. Secretary, Bradley Stoughton, 29 West 38th St., New York City.

New York State Coal Merchants' Association will hold its annual meeting Sept. 9, 10 and 11 at Richfield Springs, N. Y. Treasurer, G. W. F. Woodside, Albany, N. Y.

The Rocky Mountain Coal Mining Institute, in conjunction with the Colorado Metal Mining Association, the local chapters of the American Mining Congress and the American Institute of Mining & Metallurgical Engineers, and the International First Aid Meet will hold its annual meeting Sept. 9, 10 and 11 at Denver, Col. Secretary, F. W. Whiteside, Denver, Col.

National Safety Council will hold its 1920 congress on Sept. 27 to Oct. 1, inclusive, at Milwaukee, Wis. General Manager, C. W. Price, Chicago, Ill.

Oklahoma Coal Operators' Association will hold its annual meeting Sept. 14, at McAlester, Okla. Secretary, F. F. LaGrave, McAlester, Okla.

CURRENT PRICES—MATERIALS & SUPPLIES

IRON AND STEEL

PIG IRON—Quotations compiled by the Matthew Addy Company

	Current	One Month Ago
CINCINNATI		
No. 2 Southern	$45 60	$44 60
Northern Basic	42.80	42.80
Southern Ohio No. 2	46.80	43.80
NEW YORK, Tidewater delivery		
2X Virginia (silicon 2.25 to 2.75)	49 65	47.65
Southern No. 2 (silicon 2.25 to 2.75)	52.70	47.70
BIRMINGHAM		
No. 2 Foundry	42 00@44.00	41.00
PHILADELPHIA		
Eastern Pa., No. 2 x 2 25 2 75 sil.	46.00@48.25	45.35-46.35*
Virginia No. 2	45.90*	43.25*
Basic	44.50†	43.00†
Grey Forge	43.50*	42.50*
CHICAGO		
No. 2 Foundry Local	45.00	43.25
No. 2 Foundry Southern	48.70	46.60
PITTSBURGH, including freight charge from the Valley		
No. 2 Foundry Valley	45.65	43.65
Basic	44.40	42.90
Bessemer	44.90	43.40
MONTREAL		
Silicon 2 25 to 2.25%	43.25	43.25

* F. o. b. furnace. † Delivered.

STRUCTURAL MATERIAL—The following are the base prices, f.o.b. mill, Pittsburgh, together with the quotations per 100 lb. from warehouses at the places named:

	Mill Pittsburgh	New York Current	New York One Year Ago	St. Louis	Chicago
Beams, 3 to 15 in.	$2.45@$3.10	$4 47	$3.47	$4.04	$3.97
Channels, 3 to 15 in.	2.45@ 3.10	4.47	3.47	4.04	3 97
Angles, 3 to 6 in., ¼ in. thick.	2.45@ 3.10	4.47	3.47	4.04	3 97
Tees, 3 in. and larger	2.45@ 3.75	4.47	3.52	4 09	4 02
Plates	2.65@ 4.00	4 67	3.67	4 24	4 17

BAR IRON—Prices in cents per pound at cities named are as follows:

New York	Pittsburgh	Denver	St. Louis	Birmingham
4 57	4 25	4 95	4.50	5.25

NAILS—Prices per keg from warehouse in cities named:

	Mill Pittsburgh	St. Louis	Chicago	Denver	Birmingham	San Francisco
Wire	$3 25@4.50	$6.00	$4.15	$5 40	$5.00	$5.00
Cut		None	5.85	....	5 50	8 50

TRACK SUPPLIES—The following prices are base per 100 lb. f.o.b. Pittsburgh for carload lots, together with the warehouse prices at the places named

	Pittsburgh	Chicago	St. Louis	Denver	San Francisco	Birmingham
Standard railroad spikes ⅝-in. and larger	$4.00	3.62@4.25	$5.34	$5.50	$7.75	$6.00
Track bolts	6@6 50	4.75@6.50	7 00	6.75	8.75	6.00
Standard section angle bars	3@4 2 75	@3 75	2 00	5.05	5 50	....

COLD FINISHED STEEL—Warehouse prices are as follows:

	New York	Chicago	Cincinnati	St. Louis
Round shafting or screw stock, per 100 lb. base	$6.25	$5 80	$6 50	$5.90
Flats, squares and hexagons, per 100 lb. base	6.75	6.30	6 85	6 40

HORSE AND MULE SHOES—Warehouse prices per 100 lb. in cities named:

	Mill Pittsburgh	Chicago	St. Louis	Denver	Birmingham
Straight	$5.75	$7.00	$7.00	$8 15	$7.00
Assorted	5.85	7.15	7.15	8.40	7.25

Cincinnati—Horseshoe nails sell for $4.50 to $5 per 25-lb. box.

CAST-IRON PIPE—The following are prices per net ton for carload lots:

	New York Current	New York One Month Ago	New York One Year Ago	Chicago	St. Louis	San Francisco
4 in.	$79 30	$79.30	$55.00	$78.80	$78.00	$97.55
6 in. and over	76.30	76.30	52.00	75.80	75 00	94.55

Gas pipe and 16-ft. lengths are $1 per ton extra.

STEEL RAILS—The following quotations are per ton f.o.b. Pittsburgh and Chicago for carload or larger lots. For less than carload lots 5c. per 100 lb. is charged extra:

	Pittsburgh Current	Pittsburgh One Year Ago	Chicago Current	Chicago One Year Ago
Standard Bessemer rails	$45@60	$45.00	$45.00 @$55 00	$45.00
Standard openhearth rails	47@60	47.00	47.00 @ 57 00	47.00
Light rails, 8 to 10 lb.	50.00@55 00	2.585*	2.585*@ 3.75*	2.835*
Light rails, 12 to 14 lb.	50.00@55 00	2.54*	2.54* @ 3 75*	2.79*
Light rails, 25 to 45 lb.	50.00@55 00	2.45*	2.45* @ 3 75*	2 70*

* Per 100 lb.

OLD MATERIAL—The prices following are per gross ton paid to dealers and producers in New York. In Chicago and St. Louis the quotations are per net ton and cover delivery at the buyer's works, including freight transfer charges:

	New York	Chicago	St. Louis
No. 1 railroad wrought	$30.00	$28 00	$28 00
Stove plate	24.50	28.00	30 50
No. 1 machinery cast	39.00	36.00	37 00
Machine shop turnings	15.50	10 00	13 00
Cast borings	17.50	13 00	15 50
Railroad malleable cast	30 00	27 00	27 00
Rerolling rails	29 00		
Relaying rails	54 00	50@55	50@55

COAL BIT STEEL—Warehouse price per pound is as follows:

New York	Cincinnati	Birmingham	St. Louis	Chicago	Denver
$0 10	$0.16½	$0 18	$0.11½	$0 15	$0.18

DRILL STEEL—Warehouse price per pound:

	New York	St. Louis	Birmingham	Denver
Solid	12@14c.	13c.	15c.	
Hollow, ⅞ hex	17c.	....	....	21c

PIPE—The following discounts are to jobbers for carload lots on the Pittsburgh basing card, discounts on steel pipe, applying as from January 14, 1920, and on iron pipe from January 7, 1920:

BUTT WELD

Inches	Steel Black	Steel Galv.	Inches	Iron Black	Iron Galv.
⅛ to 3	57½@54	44 @40½	⅛ to 1½	34½@24½	18½@ 8

LAP WELD

2	50½@47	38 @34½	2	28½@20½	14½@ 6½
2½ to 6	53½@50	41 @37½	2½ to 6	30½@22½	17½@ 9½

BUTT WELD, EXTRA STRONG PLAIN ENDS

⅛ to 1½	45½@42	35@31½	⅛ to 1½	34½@24½	19½@ 9½

LAP WELD, EXTRA STRONG PLAIN ENDS

2	48½@45	37½@33½	2	29½@21½	16½@ 8
2½ to 4	51½@48	40 @36½	2½ to 4	31½@23½	19½@11½
4½ to 6	50½@47	39 @35½	4½ to 6	30½@22½	18½@10½

Stocks discounts in cities named are as follows:

	New York Black	New York Galvanized	Cleveland Black	Cleveland Galvanized	Chicago Black	Chicago Galvanized
⅛ to 3 in. steel butt welded	40%	24%	40%	31%	54@40	46½@ 0½
3½ to 3 in. steel lap welded	25%	20%	42%	27%	50@40	37½@27½

Malleable fittings, Class B and C, from New York stock sell at list + 23%. Cast iron, standard sizes, net.

WIRE ROPE—Discounts from list price on regular grades of bright and galvanized are as follows:

	New York and St. Louis
Hercules red strand, all constructions	20%
Patent flattened strand, special and cast steel	20%
Patent flattened strand, iron rope	5%
Plow steel round strand rope	30%
Special steel round strand rope	30%
Cast steel round strand rope	22½%
Iron strand and iron tiller	5%
Galvanized iron rigging and guy rope	+12½%

San Francisco: Galvanized, less 5%, bright less 25%.
Chicago, +12½ on galvanized, 30 off on bright.

SHEETS—Quotations are in cents per pound in various cities from warehouse; also the base quotations from mill:

Blue Annealed	Large Mill Lots Pittsburgh	New York Current	New York One Yr. Ago	St. Louis	Chicago
No. 10	3 55-7 00	7 12@ 8 00	4 57	8 10	7 02
No. 12	3 60-7 05	7 17@ 8 05	4 57	8 15	7 07
No. 14	3 65-7 10	7 22@ 8 10	4 67	8 20	7 12
No. 16	3 75-6 20	7 32@ 8 20	4 77	8 30	7.22
Black:					
*Nos. 18 and 20	4 20 6 20	8 30@ 9 80	5 30	8.70	7 80
*Nos. 22 and 24	4 25-6 25	8 35@ 9 85	5 35	8 75	7 85
*No. 26	4 30-6.30	8 40@ 9 90	5 40	8 80	7 90
*No. 28	4 35-6 35	8 50@10 00	5 50	8 90	8.00
Galvanized:					
No. 10	4 70-8 00	8 80@11 00	6 20	9 00	8 15
No. 12	4 80-8 10	8 90@11 00	6 25	9 10	8 20
No. 14	4 80-8 10	8 90@11 00	6 30	9 10	8 35
Nos. 18 and 20	5 10 8 40	9 15@11 40	6 60	9 40	8 65
Nos. 22 and 24	5 25 8 55	9 30@11 55	6 75	9 55	9 05
*No. 26	5 40-8 70	9 45@11 70	6 90	9 70	9 20
†No. 28	5 70 9 00	9 75@12.00	7 20	10 00	9 50

*For painted corrugated sheets add 30c. per 1,000 lb. for 5 to 28 gage; 25 c. for 19 to 24 gages; for galvanized corrugated sheets add 15c., all gages.

SHOP SUPPLIES

NUTS—From warehouse at the places named, on fair size orders, the following amount is deducted from list:

	New York Current	New York One Year Ago	Chicago Current	Chicago One Year Ago	St. Louis Current
Hot pressed square	+$6 00	$3.25	$ .50	$1.05	$2 25
Hot pressed hexagon	+ 6 00	2.70	.50	.85	2.25
Cold punched square	+ 6.00	3.25	.50	1.00	2.25
Cold punched hexagon	+ 6 00	2.70	.50	1.00	2.25

Semi-finished nuts, ⅞ and smaller, sell at the following discounts from list price

	Current	One Year Ago
New York	30%	50-10%
Chicago	50%	50%
Cleveland	50%	60-10-10%
St. Louis	45%	....

MACHINE BOLTS—Warehouse discounts in the following cities:

	New York	Cleveland	Chicago
¾ by 4 in. and smaller	+20%	20%	20%
Larger and longer up to 1 in. by 30 in.	+20%	20%	20%

WASHERS—From warehouses at the places named the following amount is deducted from list price:

For wrought-iron washers:
New York.....list Cleveland.....$2.50 Chicago.....$3.00

For cast-iron washers the base price per 100 lb. is as follows:
New York.....$7.00 Cleveland.....$4.50 Chicago.....$4 75

RIVETS—The following quotations are allowed for fair sized orders from warehouse:

	New York	Cleveland	Chicago
Steel ⅞ and smaller	List Net	40%	30%
Tinned	List Net	40%	30%

Boiler, ¾, ⅞, 1 in. diameter by 2 in. to 5 in. sell as follows per 100 lb.:
New York.. $6.00 base Chicago ..$5.62 Pittsburgh.. $4.50

Structural, same sizes:
New York ..$7.10 Chicago ..$5.72 Pittsburgh... $4 60

CONSTRUCTION MATERIALS

LINSEED OIL—These prices are per gallon:

	New York Current	New York One Year Ago	Chicago Current	Chicago One Year Ago
Raw, 5-bbl. lots	$1.48	$2.15	$1 95	$2.53
5-gal. cans	1.51*	2.28	2.15	2.73

*To this *oil* price must be added the cost of the cans (returnable), which is $2.25 for a case of six

WHITE AND RED LEAD—Base price.

	Red Current Dry	Red Current In Oil	Red 1 Year Ago Dry	Red 1 Year Ago In Oil	White Current Dry and In Oil	White 1 Year Ago Dry and In Oil
100-lb. keg	15.50	17.00	13.00	14.50	15.50	13.00
25 and 50-lb. kegs	15.75	17.25	13.25	14.75	15.75	13.25
12½-lb. keg	16.00	17.50	13.50	15.00	16.00	15.50
5-lb. cans	18.50	20.00	15.00	16.50	18.50	15.00
1-lb. cans	20.50	22.00	16.00	17.50	20.50	16.00

500 lb. lots less 10% discount. 2000 lb. lots less 10–2½% discount.

COMMON BRICK—The prices per 1000 in cargo or carload lots are as follows:

Chicago	$16.00	Cincinnati	$24 00
St. Louis, salmon	16.00	Birmingham	15 00

PREPARED ROOFINGS—Standard grade rubbered surface, complete with nails and cement, costs per square as follows at manufacturing points:

	New York 1-Ply	New York 2-Ply	New York 3-Ply	Philadelphia 1-Ply c.l.	Philadelphia 2-Ply l.c.l.	Philadelphia 3-Ply c.l.
No. 1 grade	$2 50	$3 00	$3 55	$2 40	$2 90	$3 45
No. 2 grade	2 25	2 70	3.20	2 15	2 00	3.10

Slate-surfaced roofing (red and green) in rolls of 108 sq. ft. costs $4 25 per roll in carload lots and $4.50 for smaller quantities.

Shingles, red and green slate finish, cost $7 75 per square in carloads; $8 00 in smaller quantities, in Philadelphia.

ROOFING MATERIALS—Prices per ton f.o.b. New York and Chicago:

Tar felt (14 lb. per square of 100 sq.ft.) per roll	$3 50
Tar pitch (in 400-lb. bbl.) per 100 lb.	2 00
Asphalt pitch (in barrels) per ton	54 50
Asphalt felt (light) per ton	123.00
Asphalt felt (heavy) per ton	127 00

HOLLOW TILE—Price per block in carload lots for hollow building tile:

	4x12x12	8x12x12	12x12x12
Minneapolis	$.1152	$.2016	$.3168
St. Louis	.156	.260	....
New Orleans	.23	.28	.30
Chicago	.1516	.2728	.4093
Cincinnati	.125	.2186	.3286
Birmingham	.135	.240	....

LUMBER—Price of pine per M in carload lots:

	1-In. Rough 10 In. x 16 Ft.	2-In. T. and G. 10 In. x 16 Ft.	8 x 8 In. x 20 Ft.
St. Louis	$...	$...	$41.00
Birmingham	50.00	52.00	54.00
Cincinnati	55 00	50.00	50.00

EXPLOSIVES—Price per pound of dynamite in small lots and price per 25-lb. keg for black powder:

	Low Freezing 20%	Gelatin 40%	Gelatin 60%	Gelatin 80%	Black Powder
New York	....	$0.3425	$0.3425	....	$2.30
Boston	$0.2475	.27	.30	$0.3425	2.45
Kansas City	.235	.26	.385	.3275	2.40
New Orleans	.2375 (50%)	.2275	.2475	....	....
Seattle	.18	.2175	.2475	.29	2.45
Chicago	.2175	.2525	.2975	.34	2.45
Minneapolis	.2067	.2476	.2782	....	2 80
St. Louis	.2175	.26	.285	.295	1.90
Los Angeles	.25	.30	35	.275	2 95

MISCELLANEOUS

GREASES—Prices are as follows in the following cities in cents per pound for barrel lots:

	Cincinnati	St. Louis	Birmingham
Cup	8 5	8¼@ 9¼	8.5
Fiber or sponge	9	8¼@ 9½	8.5
Transmission	10	12 @14	8.5
Axle	5	5½ @ 6½	5.5
Gear	6 5	6½ @ 6½	8.5
Car journal	12 0	8½ @ 9½	4.5

BABBITT METAL—Warehouse prices in cents per pound:

	New York Current	New York One Year Ago	Cleveland Current	Cleveland One Year Ago	Chicago Current	Chicago One Year Ago
Best grade	90.00	90.00	61.00	79.00	60.00	75.00
Commercial	50.00	50.50	21 00	18.50	15.00	15.00

HOSE—Following are prices of various classes of hose:

	Fire 50-Ft. Lengths
Underwriters' 2½-in.	85c. per ft.
Common, 2½-in.	30%

	Air First Grade	Air Second Grade	Air Third Grade
¾-in. per ft.	$0.60	$0.40	$0.30

Steam—Discounts from list
First grade.... 20% Second grade..... 30% Third grade..... 45%

LEATHER BELTING—Present discounts from list in fair quantities (½ doz. rolls):

Light Grade	Medium Grade	Heavy Grade
30%	30%	20%

RAWHIDE LACING—For cut, best grade, 25%, 2nd grade, 30%. For laces in sides, best, 79c. per sq. ft.; 2nd, 75c. Semi-tanned: cut, 20%; sides, 83c. per sq. ft.

PACKING—Prices per pound:

Rubber and duck for low-pressure steam	$1.00
Asbestos for high-pressure steam	1.70
Duck and rubber for piston packing	1.00
Flax, regular	1.20
Flax, waterproofed	1.70
Compressed asbestos sheet	.90
Wire insertion asbestos sheet	1.50
Rubber sheet	50
Rubber sheet, wire insertion	.70
Rubber sheet, duck insertion	.50
Rubber sheet, cloth insertion	.30
Asbestos packing, twisted or braided, and graphited, for valve stems and stuffing boxes	1.30
Asbestos wick, ½- and 1-lb. balls	.85

MANILA ROPE—For rope smaller than ⅝-in. the price is ½ to 2c. extra; while for quantities amounting to less than 600 ft. there is an extra charge of 1c. The number of feet per pound for the various sizes is as follows: ⅜-in., 8 ft.; ½-in., 6; ⅝-in., 4½; 1 in., 3½; 1¼-in., 2 ft. 10 in.; 1½-in., 2 ft. 4 in. Following is price per pound for ⅜-in. and larger, in 1200-ft. coils:

Boston	$0.30½	Birmingham	$0.324
New York	.29	Denver	.30
St. Louis	.27½	Kansas City	.30½
Chicago	.29½	New Orleans	.28½
Minneapolis	.29½	Seattle	.28
San Francisco	.27	Los Angeles	.31

PIPE AND BOILER COVERING—Below are discounts and part of standard lists:

PIPE COVERING Pipe Size	Standard List Per Lin.Ft.	BLOCKS AND SHEETS Thickness	Price per Sq.Ft.
1-in.	$0.27	½-in.	$0 27
2-in.	.36	1 -in.	.30
3-in.	.45	1½-in.	.45
4-in.	.60	2 -in.	.60
6-in.	.80	2½-in.	.75
8-in.	1.10	3 -in.	.90
10-in.	1.30	3½-in.	1.05

85% magnesia high pressure: List

For low-pressure heating and return lines: 4-ply.... 40% off; 3-ply.... 42% off; 2-ply.... 44% off

WIRING SUPPLIES—New York prices for tape and solder are as follows:

Friction tape, ⅜-lb. rolls	55c. per lb.
Rubber tape, ½-lb. rolls	60c. per lb.
Wire solder, 50-lb. spools	42c. per lb.
Soldering paste, 2-oz. cans	$1.20 per doz.

COPPER WIRE—Prices per 1000 ft. for rubber-covered wire in following cities:

	Denver Single Braid	Denver Double Braid	Denver Duplex	Birmingham Single Braid	Birmingham Double Braid	Birmingham Duplex	St. Louis Single Braid	St. Louis Double Braid	St. Louis Duplex
14	$15 64		$38 45	$12 23		$38 64	$14.00	$19 75	$38.00
10	24 50			27.60		65.57	23.25	26.25	59.50
8	33.48	$56 81		38 64		87.33	32 60	36.00	80.20
6	....	77 17		69 12	....	....	55.85	57.75	....
4	....	108 10	....	....	$107.42	....	80 45	82.75	....
2	....	142 00	....	....	138.46	....	120 90	123.65	....
1	....	167 70	....	....	178.52	....	156.95	160.45	....
0	....	198 20	....	....	217.09	....	195.50	195.50	....
00		234 60	....	....	263 57		....	....	....
000		279 60	....	....	320 44		....	....	....
0000	....	....	....	....	389.17		....	....	....

FREIGHT RATES—On finished steel products in the Pittsburgh district including plates, structural shapes, merchant steel, bars, pipe fittings, plain and galvanized wire nails, rivets, spikes, flat sheets (except planished), chains, etc., the following freight rates per 1000 lb. are effective:

Boston	$0 30	New Orleans	$0 385
Buffalo	0 17	New York	0 27
Chicago	0 27	Philadelphia	0.245
Cincinnati	0 23	St. Louis	0 24
Cleveland	0 17	St. Paul	0.495
Kansas City	0 59	Pacific Coast (all rail)	1.25*

Note—Add 3% transportation tax. *Minimum carload, 80,000 lb.

COAL AGE

The Weekly Journal of the Coal and Coke Industries

Volume 18 NEW YORK, THURSDAY, AUGUST 19, 1920 Number 8

Lever Act Not Dead

ACTING under authority of a proclamation of the President issued in 1918 under the Lever Act, the Secretary of Agriculture has fixed rates for commission men handling co-operative shipments of live stock, the practices of the commission men having been found to be unfair. This action is of more than usual interest to coal men at this time, as it indicates that the administration does not hesitate to invoke the powers of the Lever Act even at this late day, after so many holes have been poked in its constitutionality.

Coal in Disguise

PROPONENTS of the theory that exports of coal should be stopped or at least greatly curtailed are overlooking a very large leak through which coal is escaping to foreign lands. To make a ton of finished steel requires fully four tons of coal, not including the coal used in transporting the raw materials to the furnaces and mills and carrying the finished products to the seaboard. Exports of finished steel from the United States in the first five months of this year averaged 374,890 gross tons—equivalent to 1,700,000 net tons of coal per month—an increase over the same period of last year of 7.5 per cent and over the pre-war rate of 1913 of 65 per cent. If the present rate of steel export is maintained the *Iron Age* estimates that the total for the year will be 4,600,000 gross tons. This will represent 20,000,000 net tons of coal exported in disguise. That twenty million tons would be quite a help in our coal piles by the time snow flies.

About 13,200,000 net tons of soft coal were exported as such from the United States in the first six months of this year, and total exports for the year, if the last six months are at the rate of the second quarter, will be about 29,000,000 net tons. This will be 9,000,000 tons, or 45 per cent, over the total in the pre-war year of 1913. This is to be compared with the increase in exports of steel in the same period of an equivalent of 7,500,000 tons of bituminous coal. From 13 to 14 per cent of the total American output of finished steel is exported; 7 per cent of the bituminous output was exported in June, a record month for exports and a low month for production.

The steel industry is now operating at from 77 to 80 per cent of capacity, whereas the bituminous-coal industry is running less than 60 per cent of full time, and, figured on the best records of output, is producing only 70 odd per cent of what has been produced in the recent past. The discrepancy is not pleasing to the coal industry.

Through other channels coal is escaping from the country under another name, and although the largest exit is in the form of steel products the other must represent a considerable tonnage in the aggregate. We are confident that the coal industry is willing to participate in a curtailment of exports of their product in like degree with the producers of any other commodity that consumes coal in its making and that requires transportation in the process of getting it from the country. Any other program for increasing the supply of coal for home consumption by decreasing exports is as unfair to the home coal industry as it is to the foreign consumer.

Fair-Weather Operators

HIGH prices have brought the return of the "snowbird" mine—the small operation that will last only as long as prices are abnormal. The operators of these small properties have no sales obligations but hold their tonnage to play the daily market, taking only the top price. This condition has spread throughout the country and, as in 1917, miners are offering their services to the highest bidder—this small operator whose mine has been developed with the intensified demand. These temporary producers pay almost any wage and draw labor away from the real operator and of course are responsible for labor disaffection and shutdowns which follow.

Empty cars are diverted from legitimate operators to the fair-weather miner, who is easily able to load more than his fair quota because he has captured the cream of the local labor. The real operator, with his permanent investment, cannot afford to pay wages that would be ruinous when conditions return to normal and he must adhere to his wage scale. It is impossible to pay the same wages as does the temporary operator and at the same time fulfill contract obligations at prices based on the legitimate wage scales for that district. Thus there is a constantly increasing tonnage being sold at top prices—coal from the fair-weather mine, shot from the solid and usually inferior to the machine-mined coal of the responsible operator. The wagon mine is included in the same class, and this does not tend to raise the standard of coal, which in increasing proportions is bringing premium prices.

Of a Certain Blandness in the Consumer

"FOR ways that are dark and tricks that are vain" may we be commended to certain consumers. There are tellers of truth among the coal-consuming public. We will allow no one to condemn them all in the broad inclusive way in which they condemn the coal producers, but there are goodly numbers of them who go around offering all manner of prices, and then complain when they find some persons venal enough to accept them. There are consumers who are getting about 50 per cent of their contracted coal at contract price, yet are denouncing the operator for not delivering 100 per cent, fully aware that he is receiving only

a 30-per cent car supply. There are consumers blaming operators for not being prompt in deliveries, though they know full well the railroads are to blame and that their contracts do not call for delivery of coal by auto truck, flying machine or any other method than by railroad, and by that means only when the railroad furnishes the cars.

There are buyers for consuming concerns who are offering all kinds of inducements to wagon-mine operators, despite the fact that they know these same operators use cars so ineffectually that their intrusion into the industry intensifies the shortage of railroad equipment. They get poor coal from the wagon mines and then turn around and abuse the regular operators who are delivering clean coal.

Meantime they are bland. They insinuate all kinds of evil practices on the part of the old-time operators, conspiracy being the least. They know that there are good and bad in the industry, but they blame them all. They realize that the operators cannot fix a price for fear of imprisonment, and that so far the Department of Justice has not set one because it is afraid someone may say it is too high, and if it is too low it will close down the mines. But they condemn all and sundry and offer no encouragement to those whose faithfulness to contract and the public interest is involving them in difficulty, unfairly low profits and even in some cases actual loss.

Bleeding Kansas

AS A MINING state Kansas ever seems to have its own peculiar grievances. What causes Kansas to "bleed" frequently does not trouble the rest of the mining fraternity at all. Kansas is a state where new issues are born. The right to "employment in turn" and the right to "equal division of working time between mines of the same company" appear to have originated there and to have found little duplication elsewhere.

The five-day week, however, about which Kansas alone struck, is not a demand peculiar to the coal-mine workers of Kansas. Other mining communities, all mining communities in fact, have presented it, but at least it may be said that interest in the shorter week seems dead everywhere but in that state, where at present it is presented as the leading issue. The wage controversy—the $2 a day increase for daymen, time and a half for overtime and double time for Sundays and holidays—is strictly subordinated.

One would think that just now the right to be idle on Saturdays is not one to be struggled for at the loss of other valuable working time. Many who are now permitted by the car supply to work only one, two or three days a week are ready to go any length to have Saturday added to the meager days of toil.

Kansas miners, however, never greatly desirous of work despite the irregularity with which the mines run, are an exception, for the wounds of Kansas are not like those of her neighbor states. The strike in Kansas was just as much a defiance against the ruling of the Bituminous Coal Commission and the contracts that followed as was the strike in Indiana and Illinois, but it was not, as has been said, so much for more pay as it was for Saturday off and for the abolition of the covenanted fine imposed on the men for all days when work is furnished and the men refuse to respond.

On July 28 the Southwestern Interstate Coal Operators' Association declared that sixteen mines were idle and 2,400 men had quit work. According to Alex Howat, president of the district, men were leaving for Wyoming, where there was an insistent demand for mine workers. In fact there is little question that there are many Kansas men who are eargerly seeking some other state than Kansas—a state where strikes are not perpetual and a living can be made. If Howat continues his activity he will be the sole representative of the union in Kansas. His fellow union men will have departed.

Much misrepresentation has been exhibited about the matter of fines. One paper editorially declares that a long-forgotten provision had been dug up by the operators, whereas it has been so perpetually a matter of controversy and such a favored theme and practice of the late Fuel Administrator that it has always had plenty of advertising. Howat remarked "We are standing behind the men in their refusal to submit to this disgraceful steal out of their hard-earned wages. We resent the practice and will assist the men in moving from the district."

Governor Henry J. Allen ordered the Industrial Relations Court of Kansas to investigate the strike of the mine workers and July 31 it opened its inquiry. The result of the investigation was carried before the Crawford County District Court on Wednesday, Aug. 4., and a motion was made for a permanent injunction against Alex Howat and other district officials.

On Aug. 4 John L. Lewis, president of the United Mine Workers, wearying of Howat's resistance to the authority of the President of the United States and the president of the union, sent telegrams to thirty-three local unions at as many mines ordering their 3,488 striking members to get back on the job immediately, but the order was long in being obeyed. The mine workers of Kansas pay little attention to the National Government, to the international union officials or to the courts, general and special, of the State of Kansas. Lewis' telegram to Howat ran:

"A continuation of the mad course you are pursuing in Kansas will bring further condemnation to your organization and stamp you as a man devoid of principle and destitute of honor. The miners of Kansas, through the incessant and continuous strikes which you have directly ordered or sanctioned, are gradually being reduced to a state of poverty and woe which is tragic and indefensible. This office is in receipt of appeals from many members of the organization in Kansas pleading for the intervention of the international union to save them from your ruinous government. For this reason I can no longer ignore your stultifying actions.

"The childish wails of defiance which will doubtless emanate from you upon receipt of this message will not in any manner affect the situation. The miners of Kansas shall not be permitted to be sacrificed to the whims and caprices of a demagogue."

Part of the idiosyncrasy of the Kansas mine worker has been the outcome of the leadership of Howat, a reflex of his socialistic tendencies. It remains to be seen if he is going to continue to dominate the union in Kansas. At the Jackson Walker mine in Frontenac work commenced Aug. 7 and on Aug. 13 the idle miners of Kansas all returned to work. A committee of the international executive board of the union has been investigating union affairs in Kansas, especially the leadership of Howat. It arrived in the field on Aug. 7. Hereafter, perhaps, t he men in Kansas who want work will not have to leave that state to get it. But if that desideratum is to be attained they must first shake from their shoulders their Old Man of the Sea.—Alex Howat.

N. Y. Central May Acquire Feeder Lines

Negotiations are being carried on by the New York Central Railroad to acquire the Chicago River & Indiana Railroad and the Chicago Junction Railway. The amount reported as involved in the deal is between $4,000,000 and $5,000,000. The two properties mentioned are feeder lines from two of the best traffic producing areas in Chicago. In the event that the consolidation is agreed upon the whole proposal must be submitted to the Interstate Commerce Commission, which must approve it before final consummation.

"Soo" Canal Coal Traffic Gains

According to the monthly report by the United States District Engineer's Office of freight traffic through the Soo Canals during July, 1,294,162 tons of soft coal and 300,150 tons of hard coal passed through westbound. Compared with June this is an increase of 327,780 tons of soft coal and 29,135 tons of hard coal.

Rationing of Gasoline Abandoned, Petroleum Output Higher

Rationing of gasoline in territory east of the Rocky Mountains will not be necessary, according to R. L. Welch, secretary and general counsel of the American Petroleum Institute. There are local shortages at present, and these will continue, but not for long. Government figures, tion of petroleum for June exceeded he says, indicate that the produc- consumption, something that has not happened since Aug. 1, 1919. This he considers proof that advancing market prices have stimulated production.

Calder Urges That Shipping Board Move Coal

In announcing the resumption of hearings on the coal stringency U. S. Senator Calder, chairman of the Senate Committee on Reconstruction and Production, also made public a letter sent to Chairman Benson of the U. S. Shipping Board, urging that vessels purchased with the public's money be employed in transporting coal and other commodities at low rates.

B. & O. to Spend $20,000,000

The Baltimore & Ohio Railroad Co. has decided to expend $20,000,000 for new equipment, it was announced by George M. Shriver, senior vice-president. The company has arranged to expend more than $10,000,000 for the overhauling of every car that is worth repairing and about $10,000,000 for new locomotives and freight cars. These are to be purchased through a loan negotiated with the National Railways Service Corporation.

Pig Iron Advances with Raise in Freight Rates

In its weekly summary of the iron market as of Aug. 11 the *Iron Age* says: "A first effect of the freight-rate advance and of the promise of liberal railroad buying has been a sharp advance in the pig iron market. At the same time a conservative element among pig iron producers deprecates higher prices. The railroad situation is improved, but more through better operation than in larger supply of cars for loading. At Chicago, with the resumption of coal shipments from Illinois and Indiana mines, four more blast furnaces are active, so that 18 are now running out of 29 in that district. Mill operations of the leading producer are better, being 70 per cent of normal."

NEWS BRIEFS

Terse Items Chronicling Events of Interest to the Industry

Steel Orders Increase

Unfilled orders of the United States Steel Corporation for the month ending July 31 were 11,118,468 tons. This is an increase of 139,651 tons over the previous month, when the figures were 10,978,817. On May 31, 1920, unfilled orders aggregated 10,940,466 tons; on April 30, 1920, 10,359,747 tons, and on July 31, 1919, 5,578,661 tons.

Seattle Mine Workers Indorse Third Party

Resolutions indorsing the National Farmer-Labor Party were adopted by the convention of district No. 19, United Mine Workers of America, it was reported in Seattle Aug. 7. Another resolution granted to Robert H. Harlin, of Seattle, president of the district, a three months' leave of absence to go to Chicago to take charge of the labor end of the third party's national campaign.

New York Industrial Activity Decreases Slightly

There was only a slight decrease in manufacturing activities in New York State during July, according to a report issued by the New York State Industrial Commission, despite the general belief that mills are closing and shops shutting down. The net decrease in the number of factory workers employed between June and July is given as only one-half of 1 per cent. There were very few closings on account of depression. The number of new strikes, involving few workers, was insignificant.

Illinois Utilities Board Rejects New Rail Rates

The Illinois Public Utilities Commission in two decisions has upheld the precedence of state laws in governing railway freight and passenger rates within the state. The commission ruled that two cents a mile shall be the legal passenger rate after Sept. 1, denying an application for 3.6 cents a mile. Application for a 40-per cent freight rate increase was denied and a temporary increase of 33⅓ per cent granted, contingent on improved service. Further hearings will be held on this section on Oct. 10.

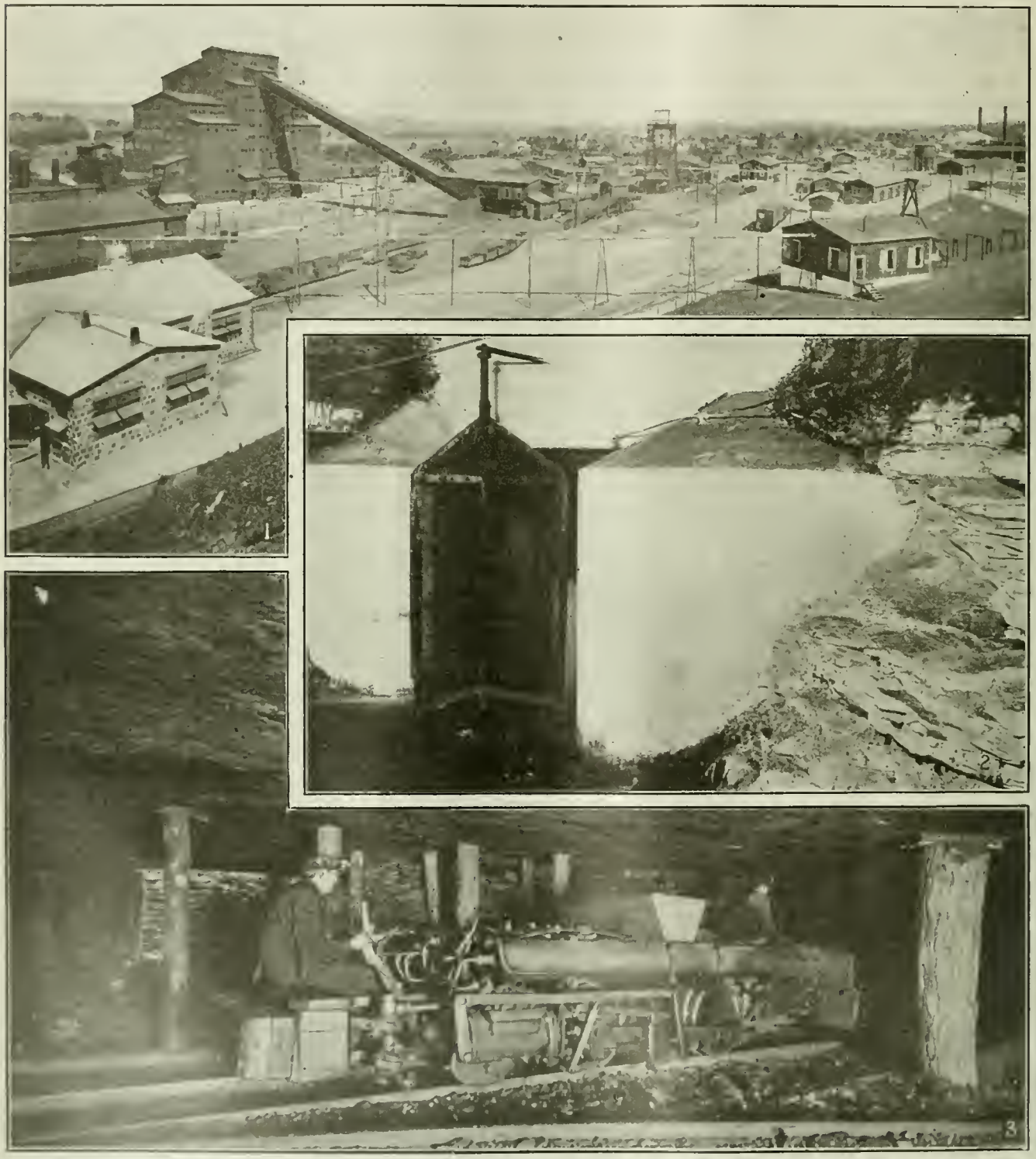
Woman and Two Men Held as Coal Profiteers

Miss Nell Jenkins, president of the Clinch River Coal Co., and Guy Darst and Jake Bewley, of the Darst-Bewley Coal Co., were bound over to the federal grand jury at Knoxville, Tenn., Aug. 10, on charges of profiteering in coal, after preliminary hearings before U. S. Commissioner Powers. They are included among fifteen coal mine operators and dealers against whom Federal authorities instituted proceedings last week.

Forecasts Trade Contest

The rising tide of imports into the United States, according to the Guaranty Trust Co.'s semi-monthly foreign trade review, just out, pre- ages an unprecedented struggle for world markets, for which this country must prepare thoroughly and without delay, if it expects to hold its pre-eminent position in foreign trade. "Of our $13,000,000,000 foreign trade for the fiscal year just ended, more than $5,000,000,000 represented imports, an increase of more than $2,000,000,000 over 1919, and our excess of exports over imports for the year ended June 30 was approximately 30 per cent less than that for the preceding fiscal year," continues the review.

Through the Coal Fields With a Camera



Noteworthy Scenes in the Land of Anthracite

(1) Baltimore Colliery, of the Hudson Coal Co., Parsons, Pa. This view shows the breaker, tracks, shaft headframe, boiler house, and other buildings that go to make up the surface plant. (2) Entrance to a manway of a mine of the Kingston Coal Co. leading to the Checker vein. The turnstile effectively prevents mules from entering this passage. (3) A high-pressure compressed-air locomotive of the Hudson Coal Co. These machines are charged periodically with air at about 1,000 lb. pressure per square inch. This enters the cylinders through a reducing valve at about 250 lb. pressure. These locomotives are used largely where excessive gas accumulations may possibly be met with.

By Charts of Stripping Progress and Cost Operating Losses May Be Forestalled

Most Contractors Strip Coal by Rule-of-Thumb Methods—"Picturizing the Data and the Results Makes It Possible to Study Causes and Effects and Remedy Leaks and Losses Before They Become Serious

By Thomas F. Kennedy
Scranton, Pa.

GENERALLY speaking, every engineering project is conceived by the engineer, architect or other person in the form of a picture thrown upon the invisible screen of his imagination. In order to study his vision more intelligently for the benefit of himself and others he depicts his subsidiary ideas in the form of drawings and for efficient execution assembles them in a general plan.

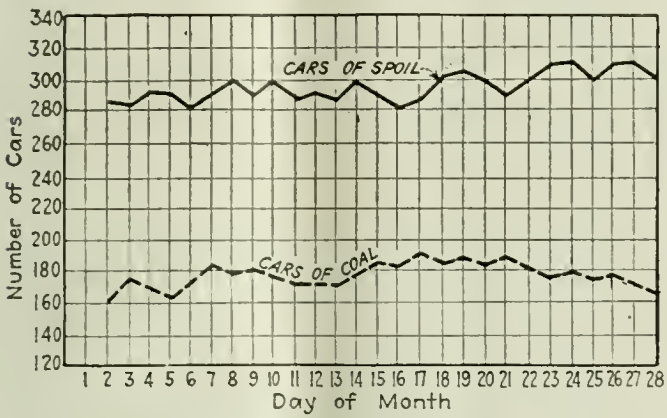


FIG. 1. CHART SHOWING DAILY LOADINGS OF SPOIL AND COAL CARS

For example, the railroad engineer collects his data and presents his project in the general form of a plan and profile of the proposed road for more thorough study by himself and possibly the contractors. The mechanical engineer details his pistons, cylinders, gear teeth and all the various parts of his engine or other device, and assembles all the components into a plan and elevation so that he and his mechanics can either make a more complete investigation into the merits or demerits of the machine or increase in some manner its mechanical efficiency.

The same is true in all other branches of engineering. It is by the assembling of the various depicted ideas and by the more detailed and complete study that follows that not only are the good but also the weak points brought to the surface. With such aids the whole plan can be so changed as to promote efficiency in operation.

Stripping Needs Its Paper Plan and Record

In coal strippings all kinds of data pertaining to various classes of labor, tons of coal and gallons of water used, cars of spoil and of coal removed, etc., are daily recorded, in some cases on separate sheets of paper or forms, and sent to the engineer's office. Here this material usually finds a place of repose in some drawer or filing cabinet. After following out such a system for several months an important question in connection with some phase of the stripping problem arises and the so-called engineer in charge is called upon to furnish information. Then a search begins for the much-desired data. After much trouble and an exhaustive hunt occupying possibly several days, about 50 per cent of the necessary information is "dug up," and the other 50 per cent is furnished in the form of a bad guess.

The information found is made up of a heterogeneous mass of papers containing jumbled figures in such a form that it usually looks like a Chinese puzzle. It is, therefore, with difficulty that the problem can be studied, and then only in an inefficient manner. Thus, in general,

THE BLACK DIAMOND COAL CO. STRIPPING DEPT.
EXCAVATION
MONTHLY REPORT CONTRACTOR M. H. Hirth
NAME

NUMBER CUBIC YARDS REMOVED

MONTH	UNCLASSIFIED EARTH, ROCK, CULM, ETC.	CLASSIFIED EARTH	CLASSIFIED ROCK	CLASSIFIED CULM	TOTAL No. CU. YDS. REMOVED PER MONTH	REMARKS
	5000 10,000	5000 10,000	5000 10,000	5000 10,000		
January					11,000	
February					13,600	
March					15,800	
April					14,200	
May					14,500	
June						
July						
August						
September						
October						
November						
December						

1920

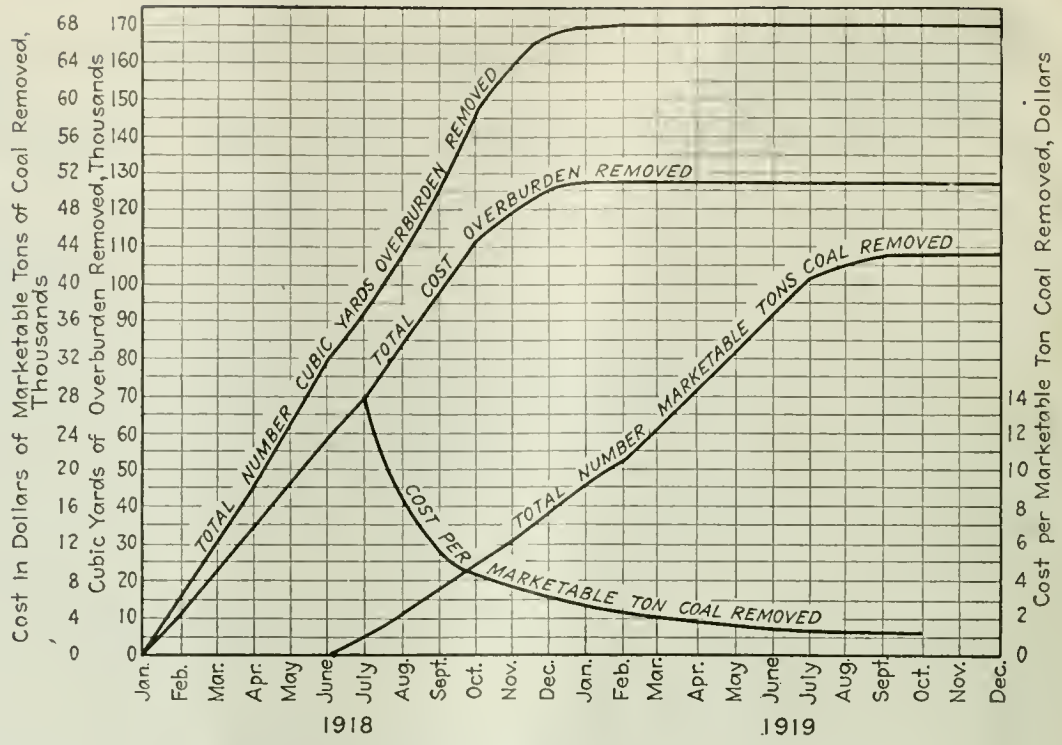
FIG. 2
Classification Chart

Shows by months amount of various classes of spoil removed from strip pit.

FIG. 3

Accumulative Chart

Shows the amount of overburden removed from February, 1918, to February, 1919, when the work of stripping proper was completed. The accumulative curve both of spoil removal and cost ceases to rise, of course, after further stripping ceases.



the lack of systematized and complete data produces poor results for the whole stripping operation. In order to study the problem more intelligently and to promote efficiency in operating methods, the engineer should "picturize" (if this expression is permissible) his data in the form of curves, charts, etc., in such a manner that the information is concentrated and the important outstanding features are vividly presented.

The individual stripping data may be likened to the details of the mechanical engineer's drawing, while the various charts and curves are analogous to the assembled drawing proper. In other words, the collected data on any stripping, in general, mean nothing to the engineer or contractor unless they are assembled into such a form that the various causes for good or poor engineering or contracting can be ascertained. Only by such a presentation of data can the engineer ascertain what are sound and efficient methods such as he is justified in recommending for adoption.

To this end I offer some suggestions in the form of charts and curves. By their means problems can be studied more effectively than by merely looking over a mass of "chow-chow" data. The diagram constituting Fig. 1 consists of two separate curves—one shows the number of cars of spoil and the other the coal removed daily, space being provided for the recording of infor-

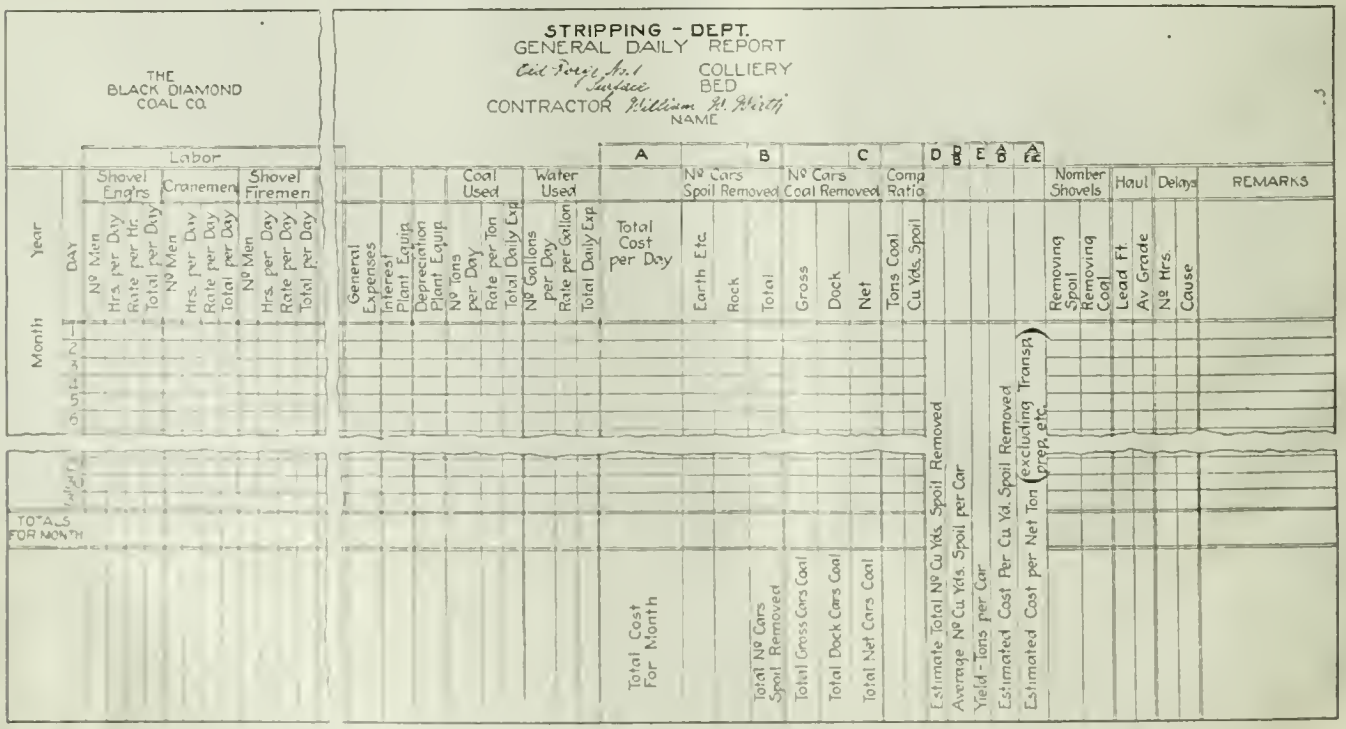


FIG. 4. GENERAL DAILY STRIPPING REPORT SHOWING WAGES, PERSONS EMPLOYED, COAL AND WATER USED, SPOIL AND COAL REMOVED, COST PER TON AND OTHER ITEMS

The Black Diamond Coal COMPANY
ACCOUNT
BILL No.
To William H. Black, Contractor Dr.
Scranton Pa.
Estimate #2 For Feb Month 1919 Year
Date of Contract Dec. 1-1917 Location Forge to Engine Not Stripping
Application Job No. Previous Estimate Period Jan 1919

Description	Unit Quantity	Unit Rate	Feb Estimate	Value	Total Estimate	Value
Removing Overburden Unclassified	Cu. Yd	$0.50	8,000	$4,000	16,000	$8,000

To be Paid by

Total Value	$8,000.00
Amt. Retained (5%)	400.00
Balance	7,600.00
Former Payments	3,800.00
Balance	3,800.00
Extra (as per statement attached)	
Total	3,800.00
Charges (as per statement attached)	250.00
Amt. Due for Estimate	4050.00

CORRECT William Thompson, Stripping Engr. APPROVED S. H. Granger, Chief Engineer

FIG. 5. SUGGESTED FORM OF CONTRACTOR'S BILL

mation concerning the causes and the number of hours of delay. The days of the month are plotted as abscissæ, while the number of cars are shown as ordinates; the number of hours' delay and causes therefor appear at the top of the diagram.

The overburden removed in the stripping of areas is in many instances classified so that monthly records of the excavation can be shown graphically, as in Fig. 2. The excavation may or may not be classified as shown here. In this case, however, arbitrary figures are assumed for each subdivision, and the total number of cubic yards removed monthly is recorded only of the classified material.

The most important considerations entering into a stripping proposition—those which interest the engineer most deeply during development—are the number of cubic yards of overburden excavated, the cost of its removal, the number of marketable tons of coal extracted and finally the cost per marketable ton.

Monthly Accumulative Charts for Stripping

In order to show how easily an engineer might keep in touch with the progress of a stripping operation under his charge, a typical problem from beginning to end is illustrated in Fig. 3. This is known as a monthly accumulative chart, and shows, for instance, the total amount of overburden removed to date by monthly intervals between February, 1918, when the operation of stripping was commenced, and February, 1919, when the last of the overburden was taken off. The overburden-cost curve is plotted and shows the total cost from the beginning to the end of the operation. Curves representing the number of marketable tons of coal mined, and the price per ton so marketed also are shown.

The price of unclassified overburden is assumed to be 30c. per cubic yard. After six months of operation the chart shows that 2,000 tons of marketable coal have been removed and 92,500 cu.yd. of overburden excavated at a cost of $27,750. The cost of the first marketable ton of coal, charged to the cost of removing overburden only, is equal to the total money paid for the total excavation up to the time when the first ton is removed. But, considering the cost of overburden removed up to and including July as $27,750 and 2,000 marketable tons mined in the same month, the cost per marketable ton is found to be $13.875.

In the succeeding months, owing to the increasing amount of coal mined, the cost per ton declines until the last ton of coal is removed in October, 1919. The last cubic yard of overburden was removed in February, 1919, when a total of 170,000 cu.yd. was excavated; the total cost at 30c. per cu.yd. would thus be $51,000 as shown by the overburden cost curve; the total number of marketable tons mined was 43,000, which shows that the cost per ton due to overburden removal alone was $1.186.

The described charts and curves present to the engineer a vivid picture of any trend or deviation in trend that his problems may take. These can not only be recorded and studied easily and efficiently but they reduce his labor to a minimum when it comes to referring to the stripping in general.

In conducting a stripping operation the average contractor nowadays depends upon his experience and good judgment. He usually is tied up to several jobs, with the result that he appears on the scene of each only once or twice a week to investigate how things are going. He gives the job the "once over" and talks with his superintendent or foreman, who was formerly a good shovel runner or bookkeeper. The usual result is that the contractor, owing to an unpresentable form or record of data concerning the daily cost of his plant and operation, in many instances is totally at sea and trusts to his good judgment and good luck that he will come out ahead at the end of the month. Contractors on large operations especially should employ an experienced engineer who can analyze and study daily the various items of expense that make up the cost per cubic yard. It is unnecessary to state that the expense of employing an engineer will be returned many fold to the contractor.

For the foregoing reasons, from both the contractor's and engineer's points of view, it is necessary that some system for intelligently and methodically co-ordinating the different factors, costs, etc., of a stripping proposition should be instituted. In Fig. 4 a general daily stripping report (abbreviated) is offered. This shows the different factors, among which labor is probably the most important. This is mainly composed of wages paid to superintendent, foreman, shovel engineers and firemen, cranemen, pitmen, dumpmen, laborers, dinkey engineers and firemen, brakemen, drillers, blacksmiths, helpers, watchmen, machinists, timekeepers and teams.

Totals Interest Contractor and Engineer

From a study of the report the factors of most importance to the contractor and engineer are the columns designating total cost for month, total number of cars of spoil removed, estimated total number of cubic yards removed and estimated cost per cubic yard of spoil removed. The last item fixes the profit—or loss—of the contractor and should be reduced to a minimum.

With this form of report the higher items of expense can be singled out at a glance and given careful study. Consequently some plan for reducing them can be recommended. If the contract is for removing coal, the column marked "total net cars of coal" also is of significance, while that headed "estimated cost per net ton," arising from the cost of stripping overburden only, directly concerns the company's engineer. In addition to the foregoing charts and curves a form for the contractor's bill is shown in Fig. 5.

In conclusion it might be said that each stripping has its own characteristics and that special curves are valuable in the study of the problems encountered. The few suggestions offered, however, can be applied to almost any stripping.

Does Fusain* Cause Mine and Bin Fires, Spoil Coke and Aid Explosions?†

Too Early Is It to Answer All These Questions, but It Is Clear That Fusain Readily Becomes a Fine Powder, Burns at a Low Temperature, Is Not Readily Extinguished—Its Ill-Effect on Coke Is Unquestioned

By F. S. Sinnatt, H. Stern and F. Bayley
Manchester, England

During the examination of the characteristics of the chief seams in the Lancashire coal field it became necessary to investigate the fusain (mother of coal, mineral charcoal, suddy parting, carbonized wood) associated with the various coals. The chief object of the work was to determine the composition of the fusain and the amount present in the dust produced during the working of the coal at the colliery. The investigation is being continued with the special object of determining (1) the amount of fusain present in different coal, (2) the properties of the fusain with especial reference to the temperature at which it will ignite, (3) the influence of the fusain upon the general properties of the coal or coal dust in which it occurs.

The literature of the subject is fairly full on the paleobotanical side, and Tideswell and Wheeler in their recent paper (*Journal of Chemical Science*, June, 1919) indicate the relationship which may exist between a particular specimen of fusain and the coal in which it occurs.

Less Volatile Matter Than Inclosing Coal

J. J. Stevenson, in the Proceedings of the American Philosophical Society, 1911, 1-116, after describing the various ways in which fusain might be formed, states that it usually contains less volatile matter than the inclosing coal and that the percentage of volatile matter varies between 6.4 and 30.7 per cent, but that in certain specimens a very high percentage of volatile matter was found, namely, 48.1 per cent in coals underlying the Homewood sandstone. A specimen containing 11.3 per cent of volatile matter was associated with the coal containing 26.5 per cent but in another case the average of a number of analyses showed that fusain could contain 20.9 per cent and the surrounding coal only 17 per cent.

With reference to the percentage of volatile matter found by this experimenter it will be shown that fusain frequently contains coal intimately mixed with it, and this may be the reason for the percentages of volatile matter found. It may be remarked that no specimen of fusain obtained from Lancashire coals has been found to contain a greater percentage of volatile matter than the coal with which it is associated.

Apt to Have More Ash Than Has True Coal

In Tideswell and Wheeler's paper coal from the Hampstead colliery was investigated; fusain occurred containing 22 per cent of volatile matter, while the surrounding coal varied between 38.6 and 40.8 per cent; the ash present in the fusain is stated to be 10 per cent and that in the surrounding coal to be from 1.2 to 3.6 per cent.

The approximate analysis given by Wheeler for fusain is: Moisture, 3.9 per cent; ash, 10 per cent; volatile matter on ash-free dry coal, 22.6 per cent.

The ultimate analysis given is: Carbon, 84.7 per cent; hydrogen, 3.9 per cent; nitrogen, 1.05 per cent; sulphur, 0.65 per cent; oxygen, 9.7 per cent.

Stopes and Wheeler ("Constitution of Coal," p. 23) state that it would seem "that the composition of the ash of fusain is fairly uniform, judging from the following analyses, Green et alia (1878)":—

TABLE I. ANALYSIS OF ASH OF FUSAIN

	Better Bed, Per Cent	Haigh Moor, Per Cent		Better Bed, Per Cent	Haigh Moor, Per Cent
Silica	38.7	36.1	Magnesia	2.8	0.7
Alumina	33.9	28.7	Sulphuric acid	7.7	7.6
Ferric oxide	6.9	18.3	Alkalies, etc.	0.3	4.1
Lime	9.8	4.5			

The ash from a number of specimens of fusain obtained from Lancashire coals has been examined, and the two quoted in Table II indicate that the composition of the ash of fusain may vary over wide limits.

TABLE II. ANALYSIS OF ASH OF FUSAIN

	Ravine Mine, Per Cent	Mountain Mine, Per Cent		Ravine Mine, Per Cent	Mountain Mine, Per Cent
Silica	8.37	37.78	Sulphur trioxide	18.18	8.22
Ferric oxide	45.72	4.94	Alkalies and loss	3.70	4.05
Aluminum oxide	9.21	33.06	Color	Light brown	Practically white
Calcium oxide	12.64	9.81			
Magnesium oxide	2.18	2.14			

Appears in Plates or as Incohesive Dust

Fusain occurs widely in Lancashire coals, but the amount present varies much. There appear to be at least two distinct forms of fusain; the first is a hard compact variety occurring rather rarely, which cannot be pulverized by pressure of the fingers; the second type is the common substance, and is dealt with in these notes. It appears to be present in Lancashire coals in two forms: as plates, bands, or in large lumps (one specimen found in the Peacock Mine weighed 3¾ lb.); and, secondly, as a powder distributed over the surface of the coal.

In certain seams the fusain forms a network throughout the mass of coal, the planes not being more than ¼ in. apart. As fusain possesses little cohesive power coal fractures most easily along the planes in which it occurs, and in view of this the surfaces of coal are covered with a layer of fusain. This of course does not

*The name "Fusain" for mother of coal is apparently derived from the name of an especially fine charcoal used for drawing and made from the spindle tree, a sandlewort from Australia.—Editor.

†Reprint of a booklet entitled "Coal Dust and Fusain," published as Bulletin No. 5 by the Lancashire and Cheshire Coal Research Association, College of Technology, Manchester, England.

apply when the whole of the coal is being pulverized or a considerable grinding action is taking place, but mainly where it is being broken by fracture.

The layers of fusain (which generally contain less moisture than the associated coal or lose moisture more rapidly) quickly change to a flocculent powder when the surfaces on which they are deposited are exposed to the air, and the dust produced from the coal naturally tends to contain a higher proportion of this substance than of the coal itself. It will be shown later that this phenomenon appears to have a distinct bearing upon the composition of the dust from coal, and especially upon that of the dust occurring in the mine, the screen rooms, etc.

Fusain is a jet-black powder, which retains its black color when finely pulverized; for example, so as to pass through a sieve of 1 200 mesh, whereas bituminous coals ground to a similar degree of fineness frequently yield dust the color of dark mahogany.

Fusain causes a black and dirty smudge on the skin which has an appearance similar to that produced by charcoal. It is removed from the skin with difficulty, as it seems to have a greater affinity for perspiration than coal dust, probably owing to its highly porous nature. An emulsifying agent (soap) is necessary to remove it, and it has been found that the skin is cleansed more thoroughly when fusain is present than when soap alone is used.

Fusain has a needle-like structure, while particles of bituminous coals of the same degree of fineness are, as a rule, more rounded. Fusain may therefore be distinguished from coal dust by means of the microscope. When a mixture of coal and fusain is sieved the particles of fusain passing through a particular size of mesh tend to be larger than the particles of coal, owing to the comparatively greater length of the units of fusain compared with their breadth.

Low-Temperature Odorless Combustion

Fusain ignites with considerable ease at a low temperature, and continues to smolder at a dull-red heat. Many examples have been met with of this material continuing to smolder without the production of flame or the evolution of compounds having an odor. It thus differs fundamentally from coal under similar circumstances. The fact that little odor is produced adds to the dangers associated with the combustion of fusain, as practically no indication is afforded of the substance being on fire.

The following experiments indicate the manner in which fusain burns. A briquet measuring 4 x 4 x 9 in. was made by mixing fusain with water; it was dried at a temperature of about 105 deg. C. and allowed to stand for one week. The briquet was then placed on a stone slab and the tip of one corner heated to redness by means of an ordinary match. The briquet was allowed to remain undisturbed, and in about an hour the whole of it was consumed without the production of smoke or flame; there was no evidence of combustion except a faint pleasant aromatic odor resembling that of pitch-pine.

The mass smolders internally, for when the surface is removed a glowing dull red zone is exposed. The residual substance in certain experiments was a finely powdered coke*—in fact, it appeared as if the volatile matter only had been consumed; in others the residual substance was the ash. A briquet of similar dimensions containing 50 per cent of fusain and 50 per cent coal acted in the same manner, and again practically no odor or smoke was produced.

This experiment was repeated in a number of ways; small heaps were made and the same method of ignition employed, with results which were similar to those described, but in many instances nothing remained except the ash of the material. Dusts from the following sources were examined: a dust collector, a screen room, the froth from a coal washer, all of which contained fusain, similar results being obtained. Fusain appears to play the part of a touchwood or tinder, assisting the combustion of the finely-powdered coal. One case may be cited of the dust from a dust collector becoming ignited by the heat from an electric globe which was placed near to it.

Slow Fire Nevertheless Cracks a Plate

Reference may be made to an experiment carried out for J. B. Atkinson, inspector of mines, Newcastle-on-Tyne (Institute of Mining Engineers, 1909, *39*, 742), on wind-borne dust, in which it was found that if the dust is placed in a cone and heat applied to the top of it the dust would eventually—if the experiment were successful—become red hot throughout, and the heat would permeate the whole mass. The combustion spread throughout the mass, and the plate on which it stood was cracked by the heat developed. Mr. Atkinson stated that "whether that was due to the occluded oxygen or not he did not know; that was a matter for chemists."

Mr. Atkinson also remarked that "Dr. Bedson's experiment had shown that the fine dust at the face or the fine dust from freshly-ground coal was more readily inflammable than the dust on the haulage roads, the latter dust being, notwithstanding, the more dangerous because in the first place it was very fine; secondly, it was in situations where it readily formed a cloud (that was on the upper surfaces of the road); and, thirdly, it was accompanied by a swift current of air."

He further stated that "a good deal of coal dust came from the screens on the surface; it was brought down the shaft, and the coarser particles settled like the sands from a river, first the finer particles or mud being carried farther in and settled on the timber." It is unfortunate that the chemical composition of the dust mentioned in the above experiment was not given. The action is similar to that recorded in our experiments.

Carbonizes Without Caking or Shrinking

When fusain is carbonized no external evidence of the formation of coke is visible, as the latter has an appearance identical with that of the original substance. This might be expected, as the amount of volatile matter evolved is small and is practically free from tarry matter. The coke from fusain is quite deficient in caking power and its volume is about the same as that of the original substance.

The coke is jet black in color, and thus may be distinguished from ordinary coke, which is generally gray in color. It follows that the presence of fusain in coal dust may have a considerable influence upon the caking index or the agglutinating power of the natural dust from coal, and also upon the agglutinating power of the slurry or fine material from coal washers; in fact it acts as finely pulverized inert material. A. Grounds and one of the authors of the monograph have shown that

*Author seems to use "coke" in sense of carbonized, or devolatilized coal, regarding coherence as not an essential attribute of coke.—Editor.

the degree of fineness of the inert material with which coal is mixed has the greatest influence upon the caking properties of the coal. (J. S. C. I., 39, 83.).

The fusain was roughly separated by breaking lumps of coal and removing the dust found on the fragments with a spatula when it was present in the form of sheets, or by brushing it lightly from the surface of the coal. The product was air-dried and then powdered by pressing it gently between the fingers, and the resulting material sieved through a sieve of 1/30 mesh. The portion which passed through was again gently pressed between the fingers. It was again sieved, and the portion which passed through a 1/60 mesh was assumed to be fusain. In order to ascertain the composition of a characteristic piece of "fusain" a special specimen which measured 4 x 2 x ½ in. thick, found in the Ravine Mine, was broken in the manner described above. It was then air-dried, an average sample taken from it, and sieved quantitatively, with the results shown in Table III.

TABLE III. RESULTS OF SIEVING "FUSAIN" FOUND IN RAVINE MINE

	Per Cent
Remaining on a 1/30 sieve	25 4
Between 1/30 and 1/60 sieve	33.6
Between 1/60 and 1/90 sieve	35.3
Passing through a 1/90 sieve	5.7

The color of the above fractions showed a distinct variation, the finer portions being a more intense black than the coarser portions. Upon analysis the fractions gave the results shown in Table IV.

TABLE IV. APPROXIMATE ANALYSIS OF "FUSAIN" FRACTIONS OF RAVINE MINE COAL

Percentsge	Coal Remaining on a 1/30 Mesh Sieve	Fusain through 1/30 to 1/60 Mesh Sieve	Fusain through 1/60 to 1/90 Mesh Sieve	Fusain through a 1/90 Mesh Sieve
Moisture	1 50	0.90	0.55	0 70
Ash	17 50	10 00	5 89	6 70
Volatile matter [1]	24.20	16.24	11.97	11 73
Vol. org. matter	22 70	15.34	11.42	11 03
Coke	75 80	83.76	88.03	88.27
Fixed carbon	58.30	73 76	82.14	81.57
Sulphur	5 96	3.54	2.34	2 82
Iron in ash	31.6	30 3	33.2	35 0
Color of ash	Maroon	Maroon	Brown	Light maroon

Note—Material when carbonized was in all cases dull gray and incoherent, but with material remaining in a 1/30 mesh sieve, which might probably best be called coal and not fusain, a compact, flat button was obtained.

1 Volatile matter is the sum of the volatile organic matter and moisture—*Editor*

It is evident that the portion remaining on the 1/30 sieve—25 per cent—differed from the remainder of the material; in physical appearance it resembled an ordinary specimen of hard bright coal. No ordinary fusain could be detected in it by microscopic examination, and it could not be crushed by simple pressure of the fingers.

None of the Analyses Are Normal to Seam

It will be seen that its composition differs considerably from that of the coal (Ravine) with which the piece of fusain was associated (see next column). It seems reasonable to suggest that coal associated with pieces of fusain may be somewhat different in composition from that of the coal of the seam itself.

One reason for the examination of this piece of fusain was the notably high percentage of sulphur it contained, and it may be remarked that the coal-like portion contained a considerably higher percentage of sulphur than the fusain portion. The conclusion we

TABLE V. ANALYSES OF CERTAIN COALS AND OF THE FUSAINS THEREIN

Bacon Mine—Upper King Coal

	Percentages Fusain	Coal
Moisture	1 23	2.16
Ash	10 86	3.72
Volatile matter	19.90	40 19
Volatile organic matter	18.67	38.03
Coke	80.10	59.81
Fixed carbon	69 24	66 09
Calorific value B.t.u., per lb	13,423	14,050
Carbon	77.30	76.96
Hydrogen	3.82	5.01
Nitrogen	0.79	1.62
Sulphur	1.62	1.98
Ash	11.00	3.80
Oxygen (by difference)	5.47	10 63
Carbon on moisture- and ash-free basis	86.7	80.0

The coal was bright and glossy, and contained some partings of ankerite. [Ankerite is a calcite composed of carbonate of lime, carbonate of magnesia, protoxide of iron carbonate and protoxide of manganese carbonate—*Editor*]. The fusain was bright, bulky and jet black in color.

Mountain Mine

	Percentages Fusain	Coal
Moisture	0.45	2.73
Ash	7.14	3.52
Volatile matter	9.52	26.46
Volatile organic matter	8 87	23.73
Coke	90 68	73.54
Fixed carbon	83.54	70.62
Calorific value B.t.u., per lb	13,968	15,040
Carbon	.....	81.94
Hydrogen	.....	5 28
Nitrogen	.....	1.16
Sulphur	.....	1.61
Ash	.....	3.62
Oxygen (by difference)	.....	6.39
Carbon on moisture- and ash-free basis	.....	85 0

The coal was exceedingly fragile, and some pyrites partings were present. The coke from the coal was bulky, porous and fragile.

Hell Hole Mine, Newtown—East End of Field

	Percentages Fusain	Coal
Moisture	0 70	1.94
Ash	6.71	2.67
Volatile matter	15.97	35.00
Volatile organic matter	15 27	33 06
Coke	84.03	65.00
Fixed carbon	77.32	62.33
Calorific value B.t.u., per lb	14,015	14,589
Carbon	83.26	82.25
Hydrogen	3 27	5.34
Nitrogen	0.84	1.62
Sulphur	3 36	1.02
Ash	6.76	2.73
Oxygen (by difference)	2.51	7.05
Carbon on moisture- and ash-free basis	89 3	84 5

The coal was black, shiny and hard, and contained a fair quantity of fusain. No ankeritic partings were present.

Arley Mine

	Percentages Fusain	Coal
Moisture	1.40	1.92
Ash	4.72	3.23
Volatile matter	13.21	35.34
Volatile organic matter	11.81	33.42
Coke	86.79	64 66
Fixed carbon	82.07	61.43
Calorific value B.t.u. per lb	14,700	14,740
Carbon	84 63	82 32
Hydrogen	3.24	5 51
Nitrogen	0.76	1.54
Sulphur	2.11	1 45
Ash	4.79	3.29
Oxygen (by difference)	4.47	5.89
Carbon on moisture- and ash-free basis	88.9	85.1

Clean, black, strong coal.

Ravine Mine

	Percentages Fusain	Coal
Moisture	1.50	2.42
Ash	11.22	4.05
Volatile matter	15.80	36.56
Volatile organic matter	14.30	34.14
Coke	84 20	63.44
Fixed carbon	72.98	59.39
Calorific value B.t.u., per lb	12,880	14,360
Carbon	76.85	78.42
Hydrogen	3.47	5.24
Nitrogen	0.73	1.50
Sulphur	2.85	2.28
Ash	11.41	4.15
Oxygen (by difference)	4.69	8.41
Carbon on moisture- and ash-free basis	86 8	81.8

Fairly strong black coal with ankerite partings and some thin pyritic bands. Gives a dense coke on coking.

wish to draw from the above values is that fusain may be pulverized with great ease, and that a high proportion of the resulting powder consists of material which will pass through a sieve of 1/60 mesh; further, material which will pass through such a sieve appears to be fusain in practically a pure form. This is shown clearly from the analyses, as the part between 1/60 and 1/90 mesh has practically the same composition as material which passes through a 1/90 sieve. Fusain from different sources appears to differ in the size of its particles.

Table V has been prepared to show the composition of a number of samples of fusain compared with the coal with which it is associated. The fusain was collected by breaking lumps of coal and brushing the material from the surfaces thus exposed. Proximate analyses were carried out on the air-dried material, and ultimate analyses on the material dried at 105 deg. C. for one hour.

Composition of the Dusts from Mines

As we have been unable to find any reference to the percentage of fusain in mine dusts it appeared to be of interest to determine the amount present. A number of samples of dust were obtained from two separate pits of the Arley Mine, the first sample being collected from the floor of the mine, within about ten yards from the working face. Every care was taken to obtain a representative sample of dust, and for the purposes of this test a place which had not been stone-dusted was chosen. It has been found that the volatile organic matter in artificial mixtures of fusain and coal varies with the proportion of the constituent present within the limits of experimental error.

The percentages of fusain present in the dusts were calculated from the following:—

Fusain: Volatile organic matter on ash- and moisture-free basis = 12 per cent.

Coal: Volatile organic matter on ash- and moisture-free basis = 35 per cent.

It has been found that the volatile organic matter of mixtures of fusain and coal agree with that obtained by calculating the values upon the percentage of each constituent, assuming its volatile organic matter to be as stated. Where it is proposed to carry out similar work it is necessary to analyze the pure fusain and pure coal of any particular seam, when it becomes possible to carry out the above calculation.

TABLE VI. ANALYSIS OF SAMPLES OF MINE DUST

First Pit, Arley Mine

	Percentages — First Sample	Second Sample
Moisture	1.0	1.2
Ash	20.4	24.4
Volatile matter	21.7	21.4
Volatile organic matter	20.7[1]	20.2
Coke	78.3	78.6
Fixed carbon	57.9	54.2
Fusain present	38	34

Second Pit, Arley Mine

	Percentages — Sample No. 1	Sample No. 2	Sample No. 3	Sample No. 4
Moisture	1.3	0.9	1.4	1.4
Ash	28.7	10.1	23.2	19.2
Volatile matter	21.8	22.5	25.0	25.4
Volatile organic matter	20.5	21.6	23.6	24.0
Coke	78.2	77.5	75.0	74.6
Fixed carbon	49.5	67.4	51.8	55.4
Fusain present	25	47	16	21

[1] Volatile organic matter on a moisture- and ash-free basis becomes from calculation 26.33; for the moisture and ash add to 21.44, leaving 78.6 as the divisor and 20.7 as dividend, 26.33 being the quotient—*Editor.*

TABLE VII. PROXIMATE ANALYSES OF DUST MADE IN PREPARING ARLEY COAL

	Per Cent
Moisture	1.2
Ash	9.1
Volatile matter	22.6
Volatile organic matter	21.4
Coke	77.4
Fixed carbon	68.3
Fusain	49

Quantitative Sieving Test

	Per Cent
Above 1/30 mesh sieve	0
1/30 to 1/60 mesh sieve	1.5
1/60 to 1/90 mesh sieve	3.0
Through 1/90 mesh sieve	95.5

Analysis

Mesh of Sieve, 1/30 to 1/90	Per Cent	Mesh of Sieve, Through 1/90.	Per Cent
Moisture	2.1	Moisture	1.2
Ash	7.0	Ash	9.6
Volatile matter	31.3	Volatile matter	21.4
Volatile organic matter	29.2	Volatile organic matter	20.2
Coke	68.7	Coke	78.6
Fixed carbon	61.7	Fixed carbon	69.0
Fusain	13	Fusain	54

In the case of the samples from the second pit a special board was placed on the floor near to the working face and the dust which accumulated upon it used for the analysis. It will be observed that all the samples of dust contained a low percentage of volatile organic matter, and when this value was calculated upon an ash- and water-free basis it was still considerably below the amount present in the coal. The reason for this lies in the fact that the dust contains a proportion of fusain, which reduces the volatile matter of the dust. The amount of fusain present has been calculated upon the assumption that it contained 12 per cent of volatile organic matter. These values were obtained under the conditions of the test for volatile matter which we adopted throughout the whole of this work.

Dust from Collector of Picking Table

Dust formed when coal was being hand picked on a belt conveyor or at a time when the coal was being broken by simple fracture and had been separated from the air by means of a dust collector was also tested. The dust was sieved quantitatively, and an average sample then analyzed. The two main fractions from the sieving test where also analyzed, the proximate analyses being given in Table VII.

Dust from Slurry Separators of a Washery

The coal being prepared when this sample was collected had been extracted in the Arley mine. It will be observed that the dust is in an extremely fine state of division, and contained approximately 50 per cent of fusain. The colliery proprietors recognize that this dust is liable to take fire and to smolder.

In one particular slurry tank the fine dust from the washery and the dust from a dust collector are collected

TABLE VIII. ANALYSES OF SLURRY OR DANT TAKEN FROM TANK AT NO. 1 WASHERY

Slurry	Moisture	Ash	Volatile Organic Matter	Percentage of Fusain
0 in. = 6 in.	1.90	6.0	21.3	52
6 in. = 12 in.	2.0	10.9	26.1	22
12 in. = 18 in.	7.7	10.6	24.0	24
18 in. = 24 in.	6.8	10.6	25.4	19
24 in. = 30 in.	3.4	9.6	27.5	15
30 in. = 36 in.	5.3	11.2	26.4	15
36 in. = 42 in.	7.1	13.4	24.0	21
42 in. = 48 in.	8.3	13.3	21.9	31

together as slurry and the material is allowed to settle throughout a period of one week; during this period about 100 tons of slurry accumulates. A typical tank containing 100 tons of it was taken and a section carefully cut from top to bottom, each successive 6 in. in depth being collected in a separate vessel. The analyses of the material in the slurry tank are given in Table VIII, the fusain being calculated as mentioned earlier.

The above analyses show conclusively that most of the material collected in the slurry tank contains a relatively high percentage of fusain. It is well known that such material is difficult to dry, and this may be due to the presence of the fusain. When it is realized that fusain yields a non-coherent coke it will be seen that this fine material has a deleterious effect upon coke.

It has been shown by A. Grounds and by one of us that very finely divided inert material possesses the property of reducing the caking power of coal, and it follows that as fusain possesses no caking power the coke produced from coal containing any quantity will be less coherent than that obtained from pure coal. It may be pointed out that the top 6 in. of material collected in the above slurry tank yielded coke which was absolutely deficient in caking power, although the coal with which it was associated has an agglutinating value that could only be destroyed by an addition of fourteen parts of sand.

Every section of the above tank yielded coke which was less coherent than the pure coal. It is the practice where the coal is being used for coke making to mix the fine slurry with the coal previous to carbonization. Our tests indicate that the effect of the fine material is probably much more pronounced than is usually recognized and that precautions should be taken to insure efficient distribution of the fine material throughout the whole mass of the coal. If distinct layers of slurry are allowed to form the coke produced will possess distinct lines of weakness, and consequently be more fragile.

From the experiments it is clear that in studying the properties of coal dusts a sharp distinction must be drawn between dusts produced by the natural fracture of the coal and those formed by ordinary pulverization.

It would appear that when a fire has been started in fusain or in mixtures of fusain and coal dust the zone of combustion rapidly traverses the mass, and consequently the presence of fusian in the dust in the goaf and in mines generally may have a marked influence upon the tendency any particular seam has to produce gob fires and for the zone of combustion to spread.

Layout for Dual Shafts of Large Tonnage

By Robert Z. Virgin*
Pittsburgh, Pa.

THE most important detail of any shaft mine, after the shafts are sunk, is the general system of entries and tracks below the surface, known as the shaft layout. This design must provide for many requirements, some of which are of vital importance to the efficiency of operation and determinative of the possibilities of the plant as a profit maker.

Hereunder are a few considerations that need careful attention: Support for the shaft, usually known as the shaft pillar; ample space for standing loads and empties, together with efficient machinery and grades for handling both; ample air space in these entries when filled with cars, ample number of air entries so as to reduce velocity, enlarged sectional area from the shaft to the main splits, and exclusion of all doors.

The accompanying illustration shows these details carefully worked out. During normal operation the coal will be hoisted up the shaft marked M.S. (main shaft) with empties returning as shown. In case it becomes necessary to have more storage room for empties, in order to keep a constant flow of output, such space can be obtained by extending the kick-back entry as shown by the dotted lines. When this is done a double track in this entry will provide space for from seventy-five to one hundred mine cars, depending, of course, upon the length of the car in use at the mine.

If an emergency arises which incapacitates the main shaft either temporarily or for an extended period the output can be maintained constant by hoisting in the second shaft marked A.S. (airshaft). This shaft also has plenty of available space for more empty car storage if required.

The three-entry system is shown extending east and west, and the five-entry system north and south. This latter system is a requirement of the mine laws in Pennsylvania where main entries extend for 5,000 ft.

A manway is provided from the shafts extending throughout the entire length of the main entries north and south, and although not shown, overcasts or bridges are built from the right-side entries over the haulage entries, making it possible to keep the traveling way free from grade crossings.

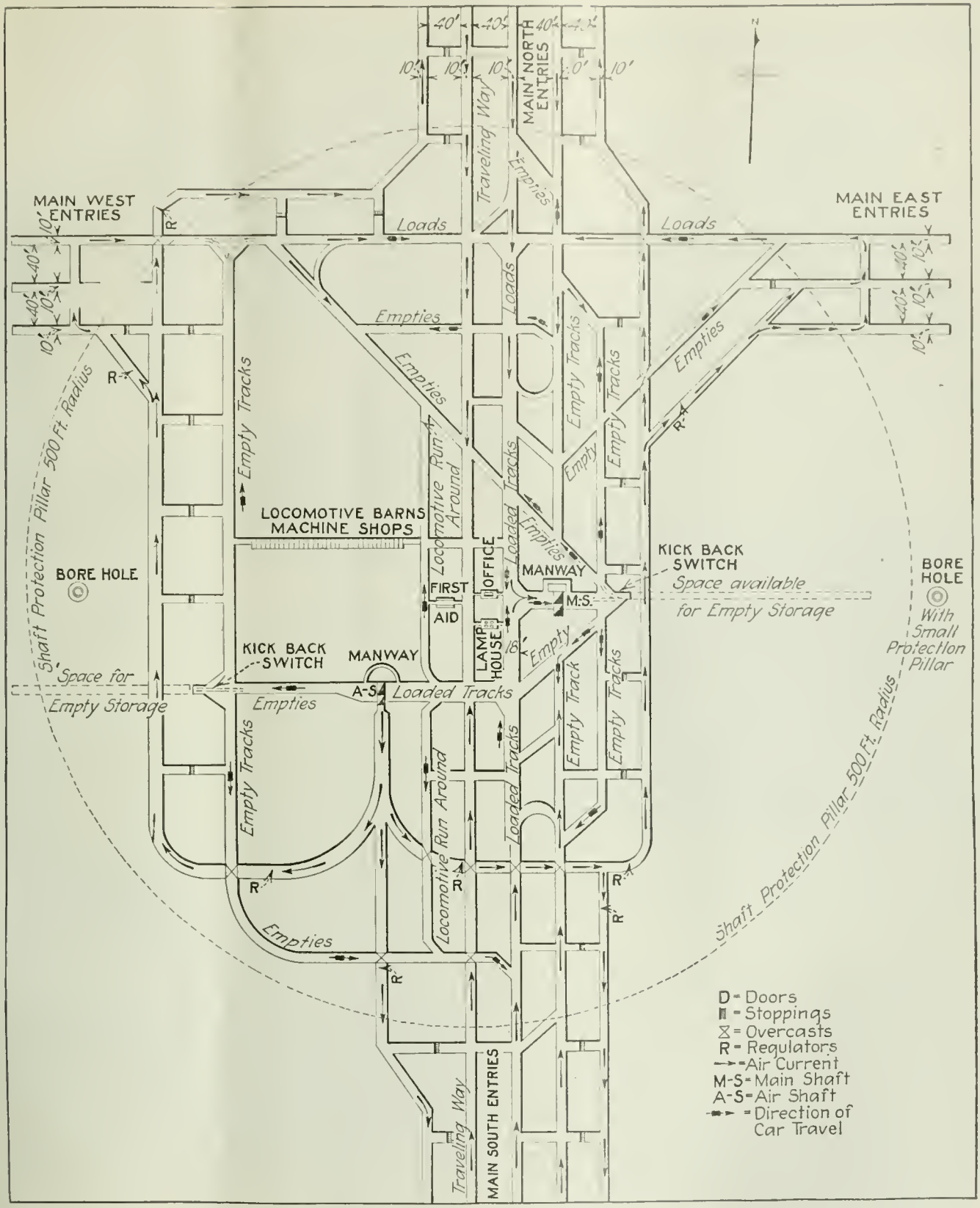
The main-shaft protection pillar is 1,000 ft. in diameter, which provides well for future requirements. It also furnishes ample space and protection for machine shop, hospital, lamp house, stables or motor barns, office for foreman and other possible demands that may be made upon the pillar.

The shaft protection pillar is calculated at a foot in radius for each foot in depth of shaft. This, after due consideration to the weights of the different strata overlying the coal measure, which is figured as being about 6 ft. thick, seems to give a generous pillar support for present conditions and to provide for future possibilities.

On the north and south mains the two outside pillars are punctured by cut-throughs for air at legal distances, while the two inside pillars are pierced by cross-cuts at twice this distance. This of course saves the time and expense necessary to drive such cross-cuts, and still provides for operation within the legal requirements.

The three center mains north and south are not bratticed at all. This makes an easier path for the air currents, and allows them to go in and out of these cross-cuts as the necessity arises. The location of the trips of loads and empties in the haulageways is able to influence greatly the amount of air traveling in any

*Assistant professor of coal mining, Carnegie Institue of Technology.



LANDING OF TWIN SHAFTS, BOTH OF WHICH ARE TO DELIVER COAL

The main shaft is approached by a short roadway at right angles to the main side tracks, so that coal can come from both north and south. Some of the empties on the north side return by a road which passes under the north-side track for loaded cars. North and south are five entries and east and west three entries.

of the headings. If this were not done the trains would act like loose pistons in a cylinder.

A curved cross-cut is provided on each side of the mine to permit of turning locomotives or cars without taking them to the surface. This is sometimes necessary as a result of wrecks and derailments. End bumpers on locomotives are occasionally broken. They may be patched, of course, with a substantial plate, but nevertheless it will often be preferable for several reasons to work the unpatched end next to the train. This curved cross-cut provides the means by which this suggested turn-around may be conveniently made.

Drilling Borehole Through 136 Ft. of Coal Against Head of Water

To Tap Two Barrier Pillars a Core Drill Was Used Making 3⅜ in. Hole—Pressure of Water Was Kept Under Complete Control

By D. C. Ashmead
Wilkes-Barre, Pa.

At the Hazleton mines of the Lehigh Valley Coal Co. three distinct water basins exist. In this mine boreholes were driven from the Hazleton basin into the Diamond basin and from the Diamond into the Stockton basin, through the several barrier pillars that separate the original mines. These boreholes were so driven that water from the Stockton basin could be drained into the Diamond basin thence be drawn into the Hazleton basin, where the pumps for all three are located.

Had no such arrangements been made it would have been necessary to allow the water to rise in each of the two upper basins till it overflowed and passed through the working portion of the mine into the basin below. This would have impeded work and consequently the various basins were connected by a series of boreholes so arranged that the flow of water through them could be regulated.

The method employed in driving these boreholes and in the regulation of the water passing through them is extremely interesting. The accompanying illustration shows the procedure followed in driving the holes. A 6-in. borehole was driven into the barrier pillar for a distance of 6 ft. A piece of acid-resisting pipe was then inserted and grouted in place. To the end of this pipe, extending into the gangway, was attached a 4-in. valve and on its end was placed a guide pipe. This latter was suspended from the roof by means of a turnbuckle hanger which permitted the pipe to be brought into exact alignment with the borehole. The valve itself was supported by a concrete footing.

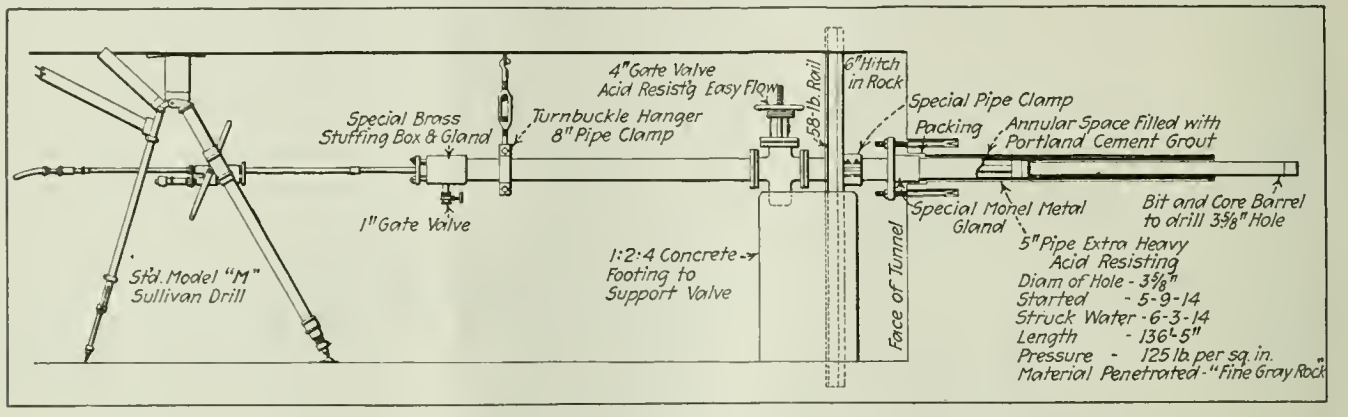
In order to hold the pipe in place against the pressure of the water a 58-lb. rail was set in concrete in a vertical position. This extended into a hitch cut into the roof. A pipe clamp encircled the pipe and rested against the rail.

At the end of the short piece of pipe suspended from the roof was placed a stuffing box through which a core drill could operate. This drill was designed to make a hole 3⅜ in. in diameter. As soon as these arrangements were made the drilling was commenced, the core being removed by taking out the end of the stuffing box. The extensions of the rod could be made on the inside of the box, but it was necessary to remove it when cores were to be taken out.

Drove Boreholes Five Feet in a Day

When the borehole had penetrated the barrier pillar and the water had been tapped the drill extension pipe was removed in the usual manner, and the bit and core barrel were drawn back into the guide pipe. The valve was then closed to cut off the flow of water. The guide pipe was next removed and in its place was put another valve. This latter valve is employed to regulate the flow of water, while the first is normally kept open at all times and used only in case of emergency.

By boring a series of holes through the barrier pillars dividing the two mines, any amount of water can be let through by opening or closing the valves. The borehole illustrated in the accompanying figures was driven a distance of 136½ ft. and was completed in twenty-seven days. The pressure of water was 125 lb. per square inch, the material penetrated being a fine gray rock. In this work a Sullivan core drill was used, the method of mounting this machine being as shown in the accompanying illustration. All of the permanent pipes and valves are of acid-resisting material.



EQUIPMENT TO TAP A HEAVY FLOW OF WATER UNDER HIGH PRESSURE

Brake Device Would Make Riding on Front End of Car Unnecessary

THE brake rig shown in the accompanying illustration has been invented and patented by John A. Hebb and William J. McDade, of Orient, Pa. As may be seen in the illustration, the mechanism consists of bell-crank levers at both ends of the car, joined by two chains to a lever connecting to a rocker shaft upon either side of the car. The bell-crank lever may termi-

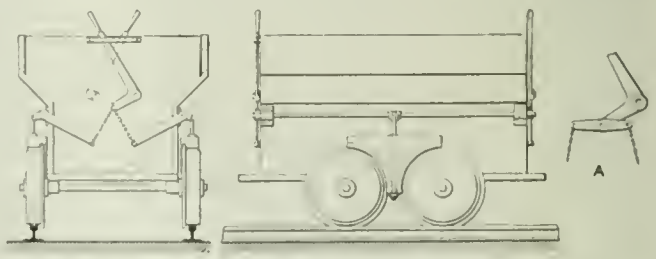


FIG. 1. BRAKE LEVERS PLACED AT END OF CAR
Brake can be set from either end of the car, making it unnecessary to ride the front end with the attendant dangers of that practice

nate in an equalizer consisting of a lever pivoted in the center while the operating chains attach to either end. This arrangement, of course, equalizes the pressure upon the brake blocks upon either side of the car. In either case, however, pulling the bell-crank lever to one side applies the brakes to the car, while releasing it will permit the braking pressure to be relieved.

It is not feasible to place the operating lever upon the end of the car if the car is to have a lifting end gate. In order to overcome this difficulty the inventors have perfected a design wherein the operating levers are placed at the side of the car near either end as shown in Fig. 2. This design accomplishes practically the same result as the one shown in Fig. 1 but places the lever at the side of the car instead of upon the end.

The type of brake block shown in both accompanying figures is a shape common to many mining regions. On the other hand this variety of brake device is not employed upon all mine cars. The lever mechanism, however, can be applied with equal ease to either this type of block or those operating upon the toggle-joint principle.

It was recognized by the inventors of this device that the habit or practice of brakemen and trip riders of riding upon the formard bumper of the car was a prolific source of accidents. It is believed by some that 80 per cent of the accidents occurring to men employed in this

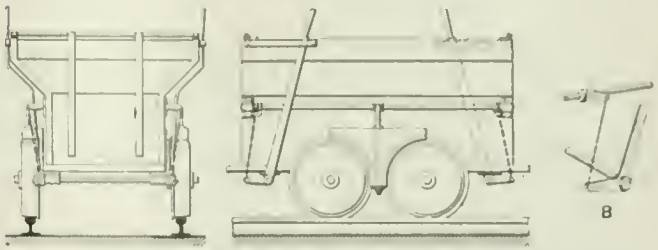


FIG. 2. BRAKE DEVICE WITH LEVER AT SIDE
Where there is a lifting end gate the brake levers are set on the side of the car so as to leave the gate free to be opened when being dumped or loaded.

position result directly or indirectly from this practice. Either of the types of braking devices here shown makes it unnecessary for the brakemen to climb upon or ride upon the front bumper of any car, as the brakes may be applied with equal facility from either end.

Two Pins Keep Car Door Shut, One Being Freed While Trip Stands

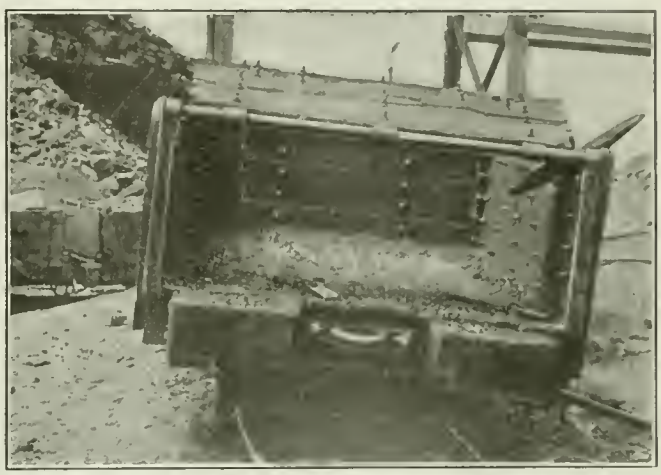
A Successful Attempt to Keep the End Gates from Dragging the Rest of the Mine Car Into the Repair Shop

SIMPLICITY, especially if accomplished with greater effectiveness and decreased cost, is as highly desirable in mining as in other industries. Probably no part of a mine car gives more trouble and costs more for upkeep than does the door. Defective doors often spill coal along the track or come entirely open, discharging a portion of the contents of the car. Much good coal is thus wasted and a considerable expense is

MINE CAR DOOR WITH TWO FASTENINGS
On the left is a chain-pin which fits into a hole in a small strap which is held in place by a chain attached to the car floor. This is loosened when the car reaches the dumping track. On the other side is a lever, having a pin that similarly fits into a hole in another strap, which is held in place by a chain like that on the other side. This lever is struck when the dump is reached, releasing the door.

incurred in clearing up the mine roads. Furthermore in many cases cars are sent to the shop solely for the repair or renewal of the door.

The Jermyn Coal Co., operating near Scranton, Pa., although probably no more afflicted by this evil than



DOOR THROWN BACK AND HELD BY SPRAG
On the floor of the car can be seen the two 15-inch chains to the ends of which the short pieces of strap iron are attached. Each strap is pierced with a half-inch hole through which a pin is thrust after the door has been closed and the strap slipped through a slot in the door.

other coal producers, decided if possible to remedy it. The accompanying illustrations, however, do not show the cars of the Jermyn company that introduced the changes but those of an affiliated concern, the Suffolk Coal Co., at North Avoca, Pa., which adopted it.

The door is hung from the top, as is the common practice, by means of a bearing bar and three straps, the improvement in construction consisting merely of the device for keeping the door closed. As may be noted in the accompanying illustrations, two rectangular plates $\frac{1}{4}$ x 6 x 8$\frac{1}{2}$ in. are bolted to the lower portion of the door. Each plate is provided with a slot 2$\frac{1}{2}$ in. long and $\frac{1}{2}$ in. wide. Of course the plank behind each of the plates is similarly slotted.

To one of the plates is bolted a lever, one end of which carries a pin. Fastened to the floor of the car are two chains each 15 in. long and terminating in a piece of $\frac{3}{4}$ x 2$\frac{1}{4}$-in. strap iron with a $\frac{1}{2}$-in. hole in its free end. A third chain, attached on the outside of the door by a bolt through one of the straps, carries a pin at its end.

In operation the door is dropped into place, the iron

attached to the floor chains are passed through the slots in the plank and the outside plates; and the pins, one on the chain and one on the lever, are slipped into the holes of the chain straps. The car is then ready for loading.

When a loaded trip arrives at the dump and the cars are uncoupled the chain pin is withdrawn, leaving the door held in position by the lever pin only. When the car has arrived in place upon the dump and is about to be discharged the free end of the lever is given a light blow, removing its pin from the fastener and freeing the door.

One advantage of this type of door fastening is that it does not become loose so that the door can swing open in transit. In fact the door cannot open except when both pins are withdrawn. The parts that receive most rapid wear the the pins, and these can be renewed quickly and cheaply, it being unnecessary to send the car to the shop to have this done.

Cutter Chain with Reversible Bits That Keep Tight and Wear Pointed

Bits Are Not Only Reversible but Double-Pointed and Can Be Turned End for End—Malleable Iron Wedge Saves Set Screws

GREAT progress has been made during the last fifteen years in increasing the efficiency of coal-cutting machines, but little or no improvement has been made upon the active element itself—that is, the cutting chain. Realizing that the capacity of a mining machine depends largely upon the chain, Link-Belt engineers during the last seven years have made an exhaustive study of chain cutting of coal, developing a chain with certain features that have already fully proved their value.

The features that must be considered if a successful coal-cutting chain is to be constructed are:

(1) The angle at which the bit engages the coal. The bit must have sufficient cutting clearance to eliminate excessive friction caused by a dull cutting edge dragging the coal. The bit should cut and not scrape.

(2) The construction of the chain so that it will hold the bit in the desired position.

(3) The proportioning and manufacture of the chain so that it will withstand the hard usage imposed when encountering sulphur, jack rock, clay band or rock.

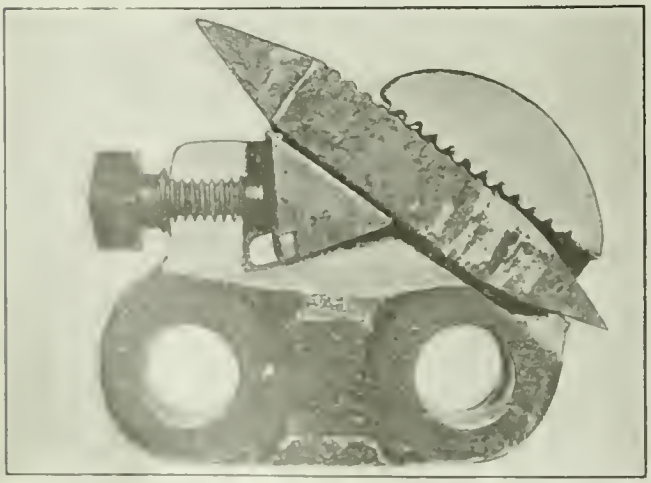
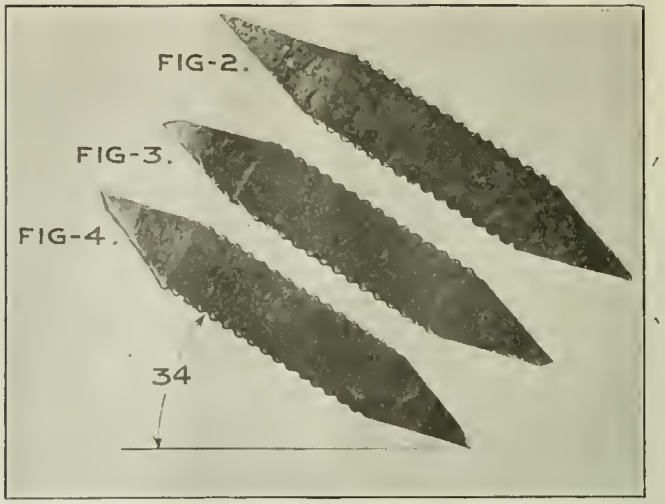


FIG. 1. ASSEMBLED LUG, IN CROSS-SECTION
Set screw presses against a wedge instead of against the bit and so is in less strain than under ordinary conditions. The wedges are so placed that they cannot drop out.



FIGS. 2, 3 AND 4. BITS IN WORKING POSITION
Fig. 2 is a bit newly forged; Fig. 3 is a bit that has mined a large quantity of coal and Fig. 4 the same bit turned over sidewise and ready for further cutting.

Bit Sharpens Itself in Cutting Coal

The principal advantage claimed for the Link-Belt chain is the self-sharpening bit. The angle at which this bit engages the coal is such that while the top side is wearing from its contact with the body of the coal the bottom side of the point is being sharpened. A sharp cutting edge always is available by merely turning the bit over sidewise. This sidewise reversal can be repeated until the point of the bit becomes quite blunt; and as the bits are double ended they can be turned endwise when one end becomes dull.

Fig. 1 shows the assembled lug in partial section. The edges of the bit are corrugated and fit into corresponding corrugations in the lug, thus eliminating all possibility of slip. A special and effective method of clamping the bit is obtained by inserting a malleable iron wedge between it and the set screw. This wedge relieves this screw of the vibrating action of the bit, thus eliminating its tendency to work loose, to the annoyance of the cutter.

Furthermore, the point of the set screw is not injured, as it is in cases where it engages the hard steel bit. The set screw has a snug fit in the lug, and thus a comparatively light pull upon the screw is sufficient to hold the wedge and bit in place. The set screw is not twisted off, as sometimes happens when it directly engages a smooth bit and has to be screwed so tight that it is bound to be injured. Though accessible for repairs, the wedges cannot drop out of the lug even if a bit is dislodged. There is ample room between the end of the wedge and the casting to release the bit, and the bug dust finds a ready exit through the escapement hole provided for this purpose in the lug.

Clamp Holds Bits So They Are Not Lost

The advantages gained by this method of clamping the bit are: (1) Ability to hold the bit in its desired position. (2) Reduction of the loss of bits occasioned by set screws working loose. (3) A prolonged life of the set screw. (4) An increased efficiency of the machine men.

Figs. 2, 3 and 4 show the bits in their working positions. The bit shown in Fig. 2 is in its forged or sharp-

ened condition, ready to be placed in the lug. Fig. 3 shows the same bit after it has cut approximately three times the amount of coal cut by the ordinary or curved type of bit. Note that the point has been worn to a shape similar to that which would be obtained by holding the bit against an emery wheel. If the bit thus worn is turned over sidewise, as shown in Fig. 4, a sharpened edge with renewed cutting clearance is presented.

The correct cutting angle always is assured, as the position of the bit in the luglink is fixed. Furthermore, as the bit is straight, less skill is demanded of the blacksmith in sharpening it and less time is required to do the work. The ability of the bit to sharpen itself is contingent entirely upon the angle at which it engages the coal. The chemical ayalysis of the steel is the same as that of all other bit material and will respond to the usual tempering practice.

The lugs are made of a special steel casting. The chemical analysis and heat treatment have been developed by a careful investigation of results obtained in actual service. The lugs are hot-pressed to size (not machined), so as to improve the physical condition of the metal before heat treatment. The wearing surfaces are case-hardened.

The strap links are drop-forged from a medium-carbon steel. All engaging surfaces are accurately machined to fit the guides. The chain has seven positions, the assembly or lacing of the chain being governed by the nature of the coal to be cut. Chains can be supplied for all existing machines, and used without altering the cutter arm or sprockets. The claims made for this chain are:—Greater production, less power required and a prolongation of life for both bits and chain.

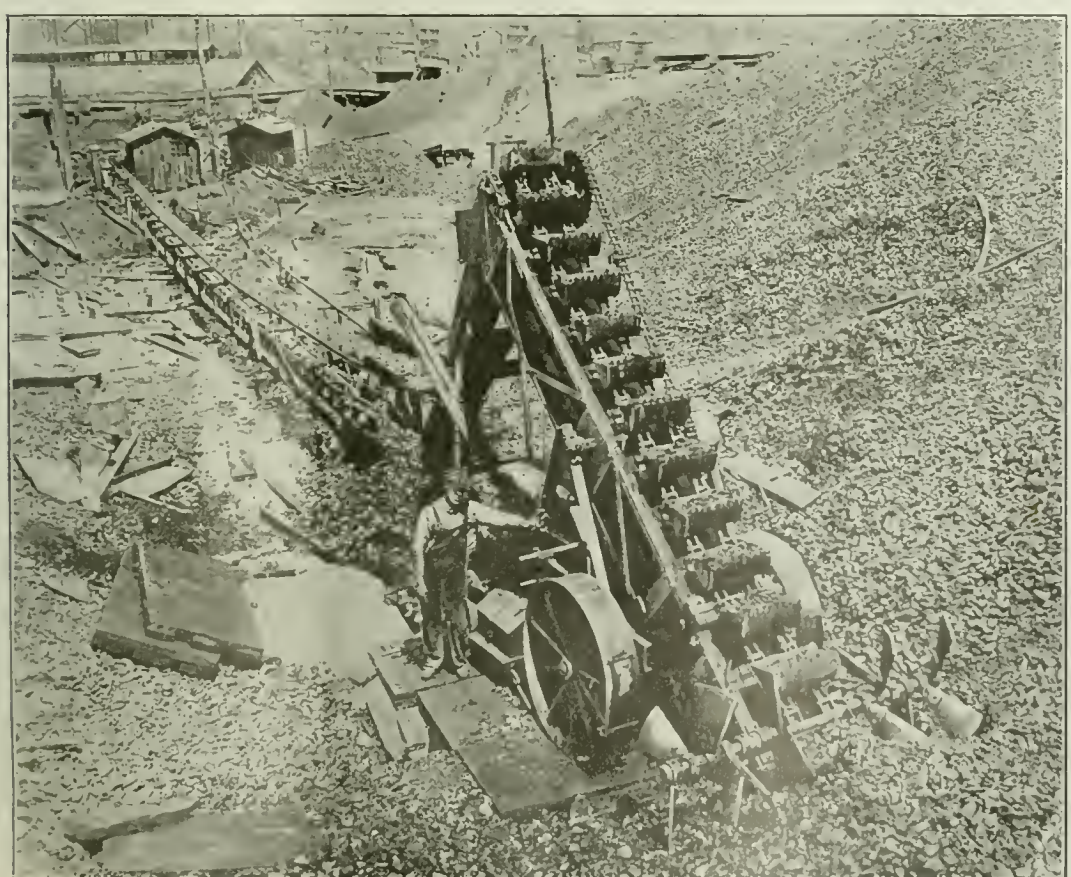
Wagon Loader Used for Attacking A Hill of Anthracite Culm

Coal Is Crowded to the Conveyor by Several Propeller Blades Which Aid in Cutting a Path Through the Coal Pile

THAT numerous class of material movers commonly designated wagon loaders have not received the attention from mine operators that they deserve, their uses for the stocking and loading of coke, coal and of culm being almost endless. In these days there is no advantage in doing work by hand. A man whose wage is $5 a day receives 62c. an hour. At best he shovels two tons in that length of time, for 16 tons a day is fair work for a day's shoveling. The moving of coal, therefore, costs 31c. a ton, which is a large cost when a machine will load the same amount for 1½c. including both power and labor.

Moreover it is hard to get men to shovel in the hot sun or in a drizzle of rain, whereas with a machine the work will go merrily along, rain or shine, and men will not be hard to keep on the job. The trouble with the more laboricus jobs is that one has to hunt long to find someone to do them, and before that someone is found, two or three men may be lost in trying to convince them that they should perform it. The wagon loader is a great "labor-easer."

The Haiss wagon loader, manufactured by George Haiss Manufacturing Co., 141st St. and Rider Ave., New York City, and illustrated in Fig. 1, is a self-feeding, self-propelling and self-crowding machine. It is shown at work at the Von Storch Collieries near Scranton, Pa. It was started originally at a point in



Wagon Loader

Where wagons have to be loaded with material of fine or medium size the wagon loader has long been in operation. Its use around coal merchandising and coal-storage yards has been common but it has not found as yet the place it merits around the mines. Here it is shown feeding a breaker conveyor line with culm, the propeller blades breaking up the pile and feeding culm to the buckets

the background near the two small huts. All the open ground now seen in the picture was buried under a hill of culm when the wagon loader began its reclamation work. After the self-feeding and loading machine had dug out a straight path for a considerable distance, and began forming a deep valley, it became necesary to extend the flight conveyor the full length of the excavated "path."

Then, instead of delivering culm at the extreme end of the flight conveyor, the "path-digging" wagon loader was steered around and "crowded" into the culm in a direction at right angles to the line of the conveyor. Material may be delivered to this type of flight conveyor anywhere along its entire length. Gradually, by working upon either side of the flight conveyor, the valley or cut began to broaden out under the rapid and continuous action of the loaders. By the use of this loader a ton of material can be dug in one minute with a half cent's worth of power and with only one man for the operation of the machine.

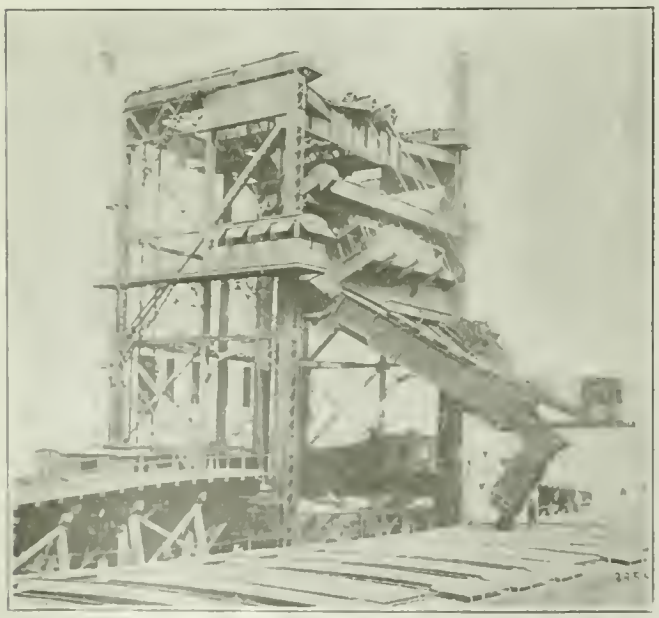
The "path-digging" wagon loader is equipped with patented revolving propeller blades which are pitched at a proper angle to the center line of the long propeller shaft. The blades on one side of the wagon loader have an equal and opposite pitch to those on the other, and because of this arrangement material coming within reach of the self-feeding blades will be pushed toward the center, where every bucket must dig up its full load. A similar loader is at work at the Leggitt's Creek Colliery in the same city.

Bulk-Cargo Handling on the Atlantic Coast

One Installation Will Transfer 30 to 45 Cars Per Hour from Car to Hold—Another Will Unload Nearly 800 Tons Per Hour from the Hold of a Ship, Loading It Into Cars—The First Plant Lifts the Car, Inverts It and Delivers the Coal by Chutes to the Point Desired

By H. N. Turnbull
Cleveland, Ohio

In THE last four years shippers have shown increasing interest in finding cheaper and more rapid means for handling heavy and bulky materials. Some twenty years ago the manufacturers of loading and unloading apparatus started to meet needs of this type and succeeded in getting a limited number of installations completed as early as 1902. As the handling of coal and iron ore furnished the most immediate problems for which a solution was demanded they were the first commodities for which the new types of transferring machinery were installed.



TYPE OF CAR DUMP MARYLAND R.R. IS ERECTING

Note the upturned gondola opposite the little house with awnings several feet above the trestled car approach. The gondola has been lifted several feet and turned over. The photographer has caught it in the instant of discharging into the immense chutes below it and thence into the narrow snout-like passageway over the hatch. The installation actually shown is the property of the Pennsylvania R.R. and is located at Sandusky, Ohio. At a coke dock of the Youngstown Steel & Tube Co. cars are lifted 62 ft. before discharging.

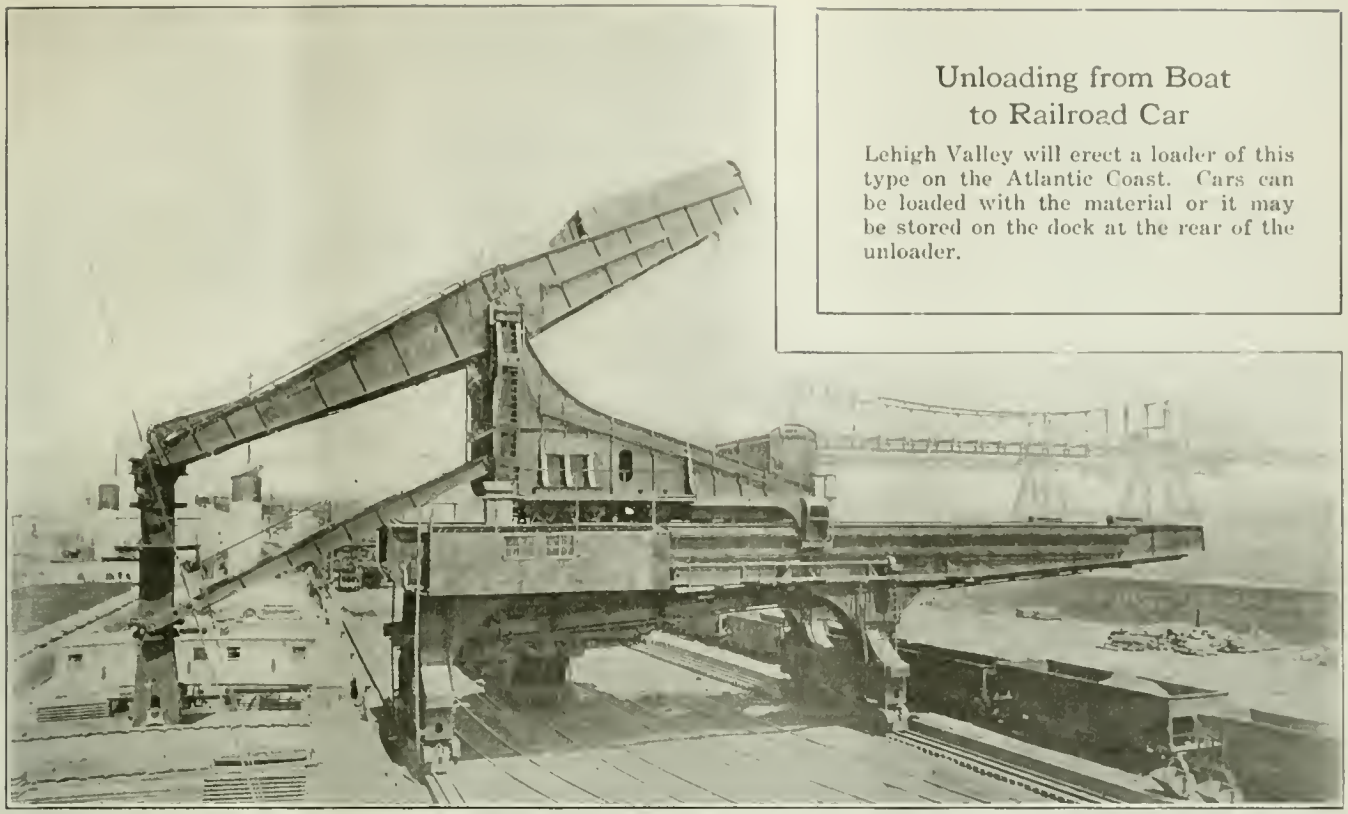
Necessity for such development centered around the Great Lakes, and there the pioneer installations were erected. The short season during which ships could sail from the Minnesota, Wisconsin and Michigan ore fields to the blast furnaces of the Lower Lake and to the ports tributary to the Pittsburgh district required that a twelve months' supply of ore be moved in about seven months. The coal requirement of the states bordering on the iron-ore region was largely taken from the lower Lake on the return trip of the ore boats.

In order to load and unload these vessels with the minimum of equipment and with the lowest possible operating expense per ton it was plainly necessary to provide machinery for cheap and rapid discharge of cargo from ship to dock or railroad and vice versa, the length of time the ship was tied up in the Lake ports being a vital factor in the costs of operation. The result has been that the plants handling bulk cargo have been brought to a high state of development and have been planned so that large quantities of material can be handled with few units and minimum pier space.

At Close of Century 500-Ton Duty Attained

In the late nineties the Wellman-Seaver-Morgan Co. introduced its ore unloader. Each machine was capable of handling upward of five hundred tons of ore per hour. At about the same time car dumpers were developed that would overturn standard railway cars and discharge their contents. The latter have been improved until at present they will handle thirty dumps per hour or more, some installations handling as much as 3,000 tons per hour net, two cars being discharged simultaneously.

Conditions resulting largely from the European war developed an interest in these matters along the coast line as keen as that exhibited on the Great Lakes. Prior to our participation in the hostilities a few installations had been made on the Atlantic seaboard especially for the purpose of loading cargo and bunker coal. Rising labor costs and the necessity for a rapid "turn around"



Unloading from Boat to Railroad Car

Lehigh Valley will erect a loader of this type on the Atlantic Coast. Cars can be loaded with the material or it may be stored on the dock at the rear of the unloader.

on the comparatively few vessels available brought the issue of improved dock facilities prominently forward. The chief considerations involved were those of time, tonnage capacity over a given water front, and cost per ton. All the above items in the problem are satisfactorily taken care of by equipment of the type previously mentioned. What was still more vital, the equipment met the problem arising from the fact that the normal volume of labor was unobtainable at any price.

To Lift and Invert 100-Ton Cars

Two installations now about to be erected on the Atlantic Coast have interesting features. One will be installed for the Western Maryland Railroad Co. at Port Covington, Baltimore, Md. It will have a Wellman car dumper to handle 100-ton cars and will be the first electrically-operated lifting dumper for seaboard coal handling ever erected. The lifting mechanism is designed to raise the railroad car high enough before overturning to cause the coal to run down the apron and chute into the ship's hold, as illustrated. Dumping directly to the ship eliminates breakage and waste arising from rehandling. The entire cargo is trimmed without the use of hand labor.

The machine consists essentially of a rectangular framework supporting a rotating cradle in which the loaded railroad car is held while discharging. A counterweight device, entirely automatic in action, clamps the car to the cradle, which is inverted by the revolving mechanism, carrying the car with it. The top of the cradle forms a chute for directing the material as it flows outward.

This installation will have a nominal capacity of thirty to forty-five cars per hour. It will handle cargo and bunker coal, principally for export. The coal will be delivered to the dumper by the Western Maryland R.R. and will come from the West Virginia, Virginia and Pennsylvania fields. One million tons will be handled annually, with a probable increase to twice that capacity later.

Fifteen-Ton Bucket Every Fifty Seconds

Another installation is designed for ore handling but it carries suggestions for the transference of coal in bulk. It will be owned by the Lehigh Valley Railroad Co. and will have an automatic ore unloader carrying a 15-ton clamshell bucket on the unloader leg and is designed to make a complete cycle or round trip in fifty seconds. This machine is electrically operated throughout.

Automatic unloaders of this type have proved through many years of service to be among the most successful devices for removing ore cargoes from such steamers as are fitted with suitable hatches. Although of immense proportions, the design has been simplified and the control perfected to such a point that the machine is the last word in delicacy of manipulation and operation.

The unloader consists of a main framework mounted on trucks which travel along the runway rails located on the dock. The main framework extends back beyond the rear runway over a temporary storage pile, where the ore can be discharged if desired. From this point it is picked up by the ore bridge and carried to the stock pile. Between the front and rear runways space is provided for railroad tracks where ore-carrying cars are placed under the machines and loaded with ore for transportation to the furnace plants.

The girders of the main framework form a support for runway rails, on which a trolley travels. This trolley supports a walking beam, from the outer end of which a stiff bucket leg depends. At the lower end of this leg is the bucket, which is operated by machinery located on the walking beam. All horizontal movements of the bucket are accomplished by means of moving the trolley

backward and forward on the girders. Its vertical movements are effected by the operation of the walking beam. The forward portion of the beam being out of balance, the bucket descends by gravity as soon as the brakes on the hoisting mechanism are released.

Two Men Operate the Unloader Unaided

Only two men are required for the operation of one of these machines. One, whose station is in the leg directly over the bucket shells, controls all the motions of raising and lowering the bucket, of traversing the trolley back and forth, and moving the machine along the dock from one hatch to another. The second operator is stationed in a cab on the larry and from this point controls the movement of the larry, the operation of its gates, and the weighing of the ore.

Some idea of the capacities attained in unloading by this method may be derived from a record which was made in Ashtabula by eight machines of this type, each having 15-ton buckets. These unloaded seven boats with an aggregate capacity of 70,000 tons in twenty-two hours actual time. At other points four machines working in boats having capacities up to 13,000 tons have unloaded these cargoes in about three hours and twenty-five minutes.

In addition to the vertical movement, which is given to the bucket leg by means of the walking beam, it also has a motion of rotation around its vertical axis. This is introduced in order to enable the machine to reach along the keel of the boat and clean up ore between hatches. The distance from point to point of bucket shells when open is approximately 21 ft. About 97 per cent of the ore is removed from the boat without hand labor.

Records of fifty machines in operation indicate that this device will handle ore at 2½ to 4½c. per ton, including all fixed charges, and as much as 783 tons of ore per hour per machine ha sbeen removed between the time the boat was tied up and cast off. The Lehigh ore unloader will be installed at the Claremont Terminals, New York Harbor, to handle Chilean and Cuban ore. A price on pig iron lower than that based on Minnesota ore is predicted because of the economies that the installation will effect.

Bureau of Mines May Classify Coal at Sewalls Point Pool

GOVERNMENT inspection of coal at the Sewalls Point pool may be undertaken as a result of negotiations now in progress between the operators and the Bureau of Mines. Many are of the opinion that coal classification on a scientific basis must be undertaken and that it is a producers' problem. It is pointed out that when iron ore sold for less than coal is selling for at the present time, no sales were made without analysis. It is believed at the Bureau of Mines that the time is passing when coal can be sold on a different basis from other minerals.

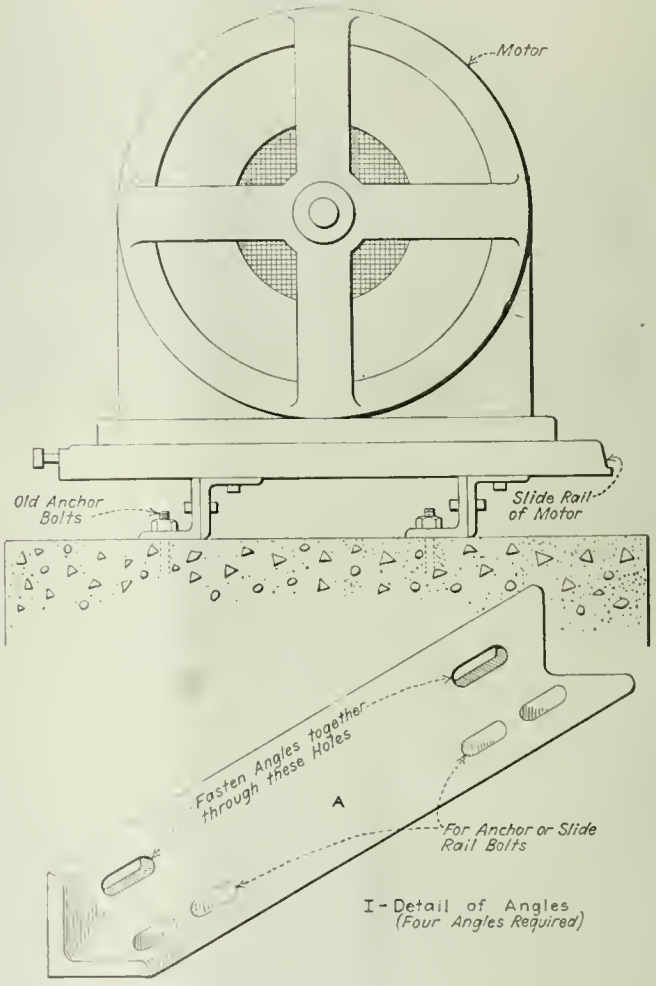
Smokeless Fields Are Filling Contracts

REPORTS from the smokeless fields indicate that car supply is good and that the New England order is working out to the satisfaction of all concerned. At the present rate of production, no difficulties are being experienced in supplying coal called for by the contracts of consumers other than those of New England.

Preparing a Motor Base to Suit Needs of Machines of Various Sizes*

By M. M. Gable
St. Louis, Mo.

OCCASIONALLY, in mounting small motors on concrete foundations, it is desirable to arrange the foundations so that they will accommodate the base-plates of machines of different sizes and do it without the necessity of changing the location of the anchor bolts. The accompanying illustration shows how this arrangement has been accomplished successfully in an industrial plant.



BASE FOR MOTORS OF VARIOUS SIZES

By using angle irons between motor base and motor small motors of various sizes can be supported on concrete bases without making provision that the anchor bolts be located over the holes in the base plate of the motor that may temporarily occupy that particular place.

For each motor four identical angles, each arranged as shown at *A*, are prepared. Two of the angles are bolted to the top of the foundation by means of ordinary anchor bolts. Then to support the motor another pair of angles is bolted to the first pair.

Considerable leeway in motor position is provided by virtue of the slotted holes in the angles. Almost any reasonable adjustment can be obtained. Furthermore, the four-angle combination permits of the ready alignment of the motor with the line shaft or machine pulley which it is to drive.

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Turkish Vessel in Saloniki Harbor

Openings Offered in Coal Trade By Greece

By Edwin B. George
Carnegie, Pa.

Curtailment of Fuel Supplies from Great Britain Has Made Attic Consumers Willing to Negotiate with Any Collier in Sight—American Commercial Methods Likely To Be a Drawback

GREECE, like every other country dependent upon British supply, has for some time been hovering on the verge of a serious coal shortage. Strikes, shortage of bottoms, industrial unrest—the old familiar symptoms of halting production—have made the Greek coal consumer unusually agitated and ready to negotiate with the first relief collier that can heave to in his harbors. Fearing to depend upon the slender chance of an influx of Miiki coals from Japan, he looks to American coal dealers more or less expectantly. But he knows that demands upon American mines are great, that America can afford to pick and choose her customers. And while Greece owns an immediate, regular demand, there are drawbacks to Levant coal shipments which must sensibly influence any decision reached.

In any general discussion on the Greek commercial outlook allowance must be made for the disordered state of her finances; government restrictions laid on business; her recent acquisition of acreage which will require considerable time to become a homogeneous business body, and the post-war ascendance of politics over business. These facts are common knowledge and are merely painted in as a background to interfering tendencies.

The port of Piræus is situated at one of the most favorable points on the marine highway leading from Gibraltar to Black Sea ports. It is frequented more than any other port in the eastern basin of the Mediterranean. It is the terminus of the Peloponnesus R.R. serving the Morea; for purposes of transportation and consumption it is almost contiguous with Athens, capital of Greater Greece. Athens, in turn, is the terminus of the main line running to Larissa and Saloniki; and through Saloniki of the continental lines branching east and north to Constantinople and Vienna (via Nish) respectively. In both Athens and Piræus there are local manufactures of beer, tile, macaroni and cigarettes. Also in both cities there are fairly extensive electric tramways in active operation. For gas and home use combined a rough estimate would place coal consumption at about 100,000 tons.

There are no neighboring depots. Coal may, however, be obtained at Constantinople, Smyrna and Port Said, which are distant 400, 250 and 700 miles respectively. Moreover, all are equally embarrassed by upheavals in the British coal situation.

Smyrna is a busy, thriving port of call for a large number of steamers, and since its liberation from the Turk is considered a city with a future. But it can comfortably exhaust itself caring for the needs of its own hinterland (New Greece) and the steamers that are beginning to crowd its harbor. There are no native stocks of value in the entire Levant save for some primitively handled mines in the Pontus district on the Black Sea. These mines, according to report, are thick enough in vein to warrant thoughtful study, and

will be considered later in connection with another phase of this report. For immediate purposes, however, they are useless.

The net result to which these influences severally contribute is a comparatively stable annual importation somewhere around 800,000 tons. It must be remembered that the political complex, whose description forms the preface of this report, is temporarily having a depressing effect upon business. This depression distributes itself along the various consuming nuclei, and though not very damaging is enough to make demand fluctuate. Under cover of this reservation the annual consumption may be analyzed as follows:

Use	Net Tons
Ship bunkers	300,000
Railroads	100,000
Factories	150,000
Electricity	50,000
Home use	50,000
Gas	40,000
Miscellaneous	100,000
Total	790,000

An extremely conservative reserve against such a turnover we may place at 50,000 tons. Yet, to illustrate the narrowness of working margin to which British export allocation has reduced them, a generous estimate of stocks on hand in March, 1920, would scarcely exceed 3,000 tons, and that widely scattered. Occasionally some agent or other receives a shipment of 600 or 800 tons, but there is no sign of the heavy flow the situation requires. The permanent bins and yards will accommodate 100,000 tons, but they are almost empty. Yet a single steamer in the American trade bunkering at Piræus is apt to request 1,000 tons, or a precious 33 per cent of stock in hand. Of course she won't get that amount; but the dilemma of keeping ship propellers and the wheels of home industry turning is not amenable to solution through any ordinary process of limiting requisitions. Either British production must climb to the point of permitting full foreign sales or American mines must engage the market.

The grades that do filter through the hands of the British Coal Controller consist largely of Second Welsh, North Country and Durham coals. About 60 per cent is large coal, 40 per cent small or run of mine. Agents' purchasing prices at the time of my visit ranged about £9 c.i.f. Piræus. At this time Admiralty Large and Monmouthshire Large were selling at 100s. f.o.b. on the Tyne, the balance of £4 being for freight.

That an urgent demand exists for American coals the situation here sketched will demonstrate, but a demand of equal or greater urgency exists in a hundred other ports. In the final analysis the expediency of large and continuous shipments rocks over onto the issue of terms.

The American habit of requiring deposit of an irrevocable letter of credit before shipment, cash against documents in New York, may or may not consummate business relations with the Greek agents that will last. Under the pressure of circumstances it might be accepted on sufferance by the latter; but as tension is released they are very apt to slip back with it into the old channels of trade. It must be acknowledged, however, that Greek commercial methods are not calculated to invite unnecessary credit confidence. At any rate, the following proposal has been submitted to me by a number of prominent Greek trading agents, and can be reviewed on its own merits:

Commercial Methods of Greek Agents

Upon each shipment of coal costs and one-third of the freight will be paid in advance, cash collectible upon presentation of shipping documents. The balance will be settled upon arrival of steamer in Piræus, the cargo itself being security for payment. Under such a contract, according to the persuasions of the Greeks, the ship cannot lose, for in the event of default at the port of arrival she is possessed of a stable cargo whose value even under forced sale would far exceed the amount of deficit.

Concretely, a steamer is dispatched from Norfolk to Greece laden with 6,000 tons of Pocahontas coal, contracted for at $6 per ton. The freight rate proves to

THE PORT OF PIRÆUS, ALMOST CONTIGUOUS TO ATHENS

This is one of the most favorably located ports between Gibraltar and the Black Sea, and is more frequented than any other in the eastern Mediterranean

be $30 per ton, one-third of which is $10. The amount for which the shipping documents are good in advance at the New York bank, then, is $6 plus $10, or $16, on the ton; this is equivalent to $96,000 on the shipment. Now there is still due the shipper two-thirds of the freight, or $20 on the ton. This balance, $120,000, is to be paid to the credit of the shipper in, let us say, the Bank of Athens upon arrival of the steamer in Piræus. The master has been instructed not to deliver the coal until deposit has been guaranteed and certified by the receiving bank. But, barring an unforeseen drop in the market, there will be no risk on this score. Even with the present high rate of exchange the $20 per ton in abeyance would not arise to a greater value than 180 drachmæ. But at present writing the supply of coals cannot meet the demand at 325 to 335 drachmæ. As long as the stringency obtains there can be no forfeiture. In the imaginary event of a drop and "stand-from-under" policy the shipper is protected by a margin of 145 drachmæ before he is reduced to the line of no profit.

Does Not Recommend Terms Offered

Of course such practices are frequent in foreign trade transactions. The illustration is cited merely as a gage to the strength of this particular market. Nor do I wish it to be construed as a recommendation of terms offered. For the time being they probably are safe enough. But I have enjoyed quite an intimacy in both business and political circles in Greece, and frankly place little faith in any pact they make which is not abundantly secured. Full cash against documents in New York is rather exacting and, as pointed out, may embarrass later relations. F.O.B. price plus at least half-frieghts is nothing more than fair. The Greek dealers claim that all English business is consummated on the cost-plus-one-third schedule.

I should add under this cover that certain of the entanglements by which the Greek government hamstrings its business men are in a sense justification of his cost-plus-one-third-freight proposal. In the first place, to provide credit in New York 25 per cent must be deposited forthwith. A commission charge of 1½ per cent is made by the bank for use of its credit toward this end. Saddled upon this the Government requires a deposit of 10 per cent as guarantee for direct delivery into Greece for home consumption. Prior to the American coal strike two shiploads had been contracted for by Greek parties. The resumption of export licenses during the strike automatically cancelled the contract. Yet, owing to the heavy obligations into which the Greeks had thus been compelled to enter at the very commencement of the deal, the 1½ per cent credit commission and interest on their advances for time employed was forfeit, while the 10 per cent Government deposit is always jeopardized in such cases through official caprices. In the case of the 6,000-ton shipment used as an example cancellation of contract due to shortage or other cause would inflict a direct minimum loss of $3,000 on the consignee and the risk of $10,000 more.

Any exporter who transports coal to a Greek port via a chartered ship or engages space from its operators to the same effect must be very sure to protect himself by inclusion of a strong demurrage clause in the agreement of sale. Methods of discharging are primitive and slow, the coal being transferred to ship or stack or bin by means of hand-baskets and "coolie" troops, the prevalent style from Gibraltar to the Orient. The demurrage clause should guarantee a dispatch of 400 tons every weather working day; Sundays are of course excluded. The weather will usually be found fair. Four hundred tons is only an average dispatch for this port, though under pressure, and for a consideration of £100 per day, I have known the daily rate to be raised to 1,000 tons. Greek agents express themselves as content with a demurrage agreement on the basis of the contract offered by the U. S. Shipping Board.

The Greek market can be reached through both public and private channels. As the government owns the railroads, trams and public utilities, and during the war commandeered a large part of the shipping, it is the heaviest purchaser of all. A portion of its buying it conducts through established private dealers, but it also maintains an agent in New York, Elie Travlos, 21 East 40th St., New York City.

The Main Issue in Building Up Trade

It can readily be seen that the main issue in building up such a trade rests not upon the cost of the coal but upon the cost of shipping it. Judging only by proportions it would appear that where the American is selling coal his customer is buying cargo space and filling it with coal as a casual form of cargo. So the moment the exporter charters a ship on behalf of his customer he *ipso facto* gives birth to an entirely unrelated set of problems. Time and again since the war have richly laden ships plowed their way to the Levant, discharged their cargo, and come back empty or half down to their marks, perhaps, with expensive and slowly loaded ballast—in either case a cumulative loss to their owners or charterers. Therefore every ship that is sent to Piræus with coal is haunted by the maritime spectre of the Levant—no return cargo!

To lack return cargo means that the original freights must cover the expenses of the round trip plus a profit margin, which in turn means a further boost to the c.i.f. price of coal, which means harder competition in the newly adjusted markets. If no freight at all is procurable it means the purchase of ballast at a high cost and miserable loading rate, which further piles up the debit of the shipper. The port of Piræus has available hides and cognac (now manifested for transshipment to Canada); from Smyrna can be obtained dried raisins, figs, cereals, opium, valonia, licorice, olive oil, tobacco, emery, skins and fruits; from Saloniki, skins, tobacco, manganese, opium, chrome ore; Cavella is of course famous for its tobacco; Constanza, Bourgas and Varna ship normally ore and hides; from Alexandria come rice, sugar, cotton, cigarettes, beans, wool and hides.

The list is imposing enough, but every port without a single exception save the original Piræus requires a lengthy and unprofitable diversion of the steamer from its homeward route. Post-war conditions have demoralized the entire area to the practical elimination of an exportable surplus. To group these few and scattered shipments into a respectable cargo is a bewildering problem in mathematics. It is too much like picking up mercury, and shipping profits are not won along such lines. After careful study I have come to believe that there is one avenue of relief open, and that one peculiarly adaptable to the needs of the American. I refer to the purchase of Greek iron ore in place of ballast.

Discussion by Readers

Edited by
James T. Beard

Many Disadvantages in the Contract System

THERE are certain advantages to be derived by mining coal on the contract system, it is true, as pointed out in the letter of "S. W. F.," *Coal Age*, July 22, p. 176; but, aside from these advantages, there are many disadvantages in the practical working out of that system of mining. It is often the best method to adopt, however, in driving narrow work and often gives good results with a certain class of labor, provided the contractor is not given too many places requiring his attention.

The benefits to be derived, in discussion, depends on the candid consideration of the faults as well as the merits of a proposition. In regard to contract mining applied to any portion or section of a mine, it cannot be denied that the foreman of the mine is almost sure to be robbed of his best men, whom he has trained for the purpose of building up his working organization.

Such a result is almost unavoidable because of the generally shorter hours and higher wages offered by the contractor. Moreover, much discontent is frequently aroused among the miners employed by the company owing to differences that arise by reason of the contract labor, which is not subject to the same discipline as the other men working in the mine.

During the period of the war the superintendent of a large mine contracted a considerable portion of his work, in the hope that it would draw into the mine labor from the farms at a time when the crops had all been harvested. The result was that the mine foreman in charge could hardly train men as fast as the contractor would take them from him, and the discipline in the mine was completely broken down.

Loss of Coal in Contract Work

Again, in respect to safety and economy in the extraction of the coal, unless the contractor is held accountable in this regard his desire to mine a large quantity of cheap coal will cause him to rob the pillars, in the first working, to such an extent as to invite a squeeze and cause a large loss of coal that cannot be recovered. Here too, unless the mine foreman is particularly observant and agressive, he is apt to become a mere figurehead in the operation of the mine, and may be helpless to avoid the loss of coal and other troubles under the terms of the contract. Thus it happens that the foreman will often be at cross-purposes with the contractor.

In one instance that I recall where a section of a mine was contracted the heading struck a slight squeeze, which increased the expense of working, and the contractor at once started to rob back the pillars, leaving a large block of coal 500 x 1,500 ft. and varying from 4 to 6 ft. in height. His control of that section of the mine which had been turned over to him to work cut the company off from reaching this block of coal and it was lost for all time.

Another feature that is a disadvantage often met in contract work is the low entries and small airways that are frequently permitted by the contractor. This increases the expense of ventilation, haulage and maintenance of roads, and presents serious difficulty in the future working of the mine.

In the letting of contracts dissatisfaction often arises from giving the best section of the mine to friends or relatives, whereby ill feeling is engendered. Again, there are contractors who make a practice of remaining on top and driving to town, leaving an underboss in charge of the work below ground.

Notwithstanding these disadvantages, however, the contract system properly safeguarded and controlled is the cheapest way to mine coal, and often the only way to successfully work a large body of unskilled mine labor. A large class of miners now employed in our mines requires the leadership and direct supervision that a good contractor is able to give, and the result is a larger output and cheaper coal. JOHN W. JONES.

Altoona, Ala.

Unsafe Conditions Often Permitted in Early Mining Practice

THE question of the correct interpretation of that section of the mining law of Pennsylvania quoted in the inquiry, *Coal Age*, July 15, p. 136, is one that should cause no difference of opinion among practical mining men.

The argument mentioned in this inquiry was as to whether the five rooms turned off the return road of a pair of headings could be worked with open lights and still comply with the law forbidding the use of open lights on the return air from any section of a mine where gas was being generated. In the case in question gas was generated at the faces of the two headings and the five rooms were turned off the return airway.

Where the Law Is Indefinite a Foreman Should Act on the Safe Side

Now, the last clause of the section, which makes the law not applicable to cases "wherein explosive gas is generated only at the face of active entries," is, to say the least, vague and indefinite. But, regardless of this final clause, I am confident that it would not be complying with the law to work these room with open lights. I am equally certain that no mine inspector or operator would countenance using open lights in these rooms when locked safety lamps are required at the faces of the headings.

The case is similar to that often discussed regarding the practice of using both open lights and locked safety lamps in the same mine, which the majority of mining men agree is a dangerous practice. It would seem to me that the final clause of this section has slipped in by oversight, and is a relic of the old law that should be eliminated in the interest of safe mining.

Formerly conditions were often permitted to exist in mines which would now be called unsafe. For example, I recall working in a couple of mines, in the Pittsburgh district, several years ago where it was customary to use both open lights and locked safety lamps, not only in the same mine but on the same pair of entries.

In that particular instance a portion of the rooms on a certain pair of entries were drawing back the pillars, while other rooms inby on the same entries were advancing. A "deadline" was always maintained between the rooms working pillars and those that were advancing. No open lights were permitted to be carried beyond this deadline. The moment the last breakthrough was driven at the face of a room and the work of drawing back the pillars was started the miner was given a locked safety lamp, while the man working the next adjoining room was permitted to use an open light, regardless of the danger.

Most of the daymen and drivers carried both safety lamps and open lights, which they used as the regulations of the mine required. There was a heavy penalty for carrying an open light inside of the deadline, and I never saw or heard of anyone violating the law or any of the rules of that mine while I was working there. It goes without saying that such a condition of affairs would not be permitted today. The same air that swept through the gob section where the safety lamps were used passed on into the rooms which were being worked with open lights. All will agree that the practice was extremely dangerous.

The arrangement of the rooms shown in the sketch accompanying this inquiry (p. 136) is probably only a tentative one, as it is clear that the difficulty could have been obviated readily by carrying the air up through the rooms, making the main road the intake and the back air-course the return. Such an arrangement would have made permissible the use of open lights in the five rooms, while locked safety lamps were required at the face of each heading. My verdict is that under the present arrangement the five rooms could not be worked with open lights and comply with the law. W. H. NOONE.

Thomas, W. Va.

Use of Open Lights on Return Air from Places Generating Gas

ACCORDING to the way I read and understand the section of the Bituminous Mining Law of Pennsylvania (Art. 10, Sec. 3), referred to by "Fireboss," *Coal Age*, July 15, p. 136, who asks for a correct interpretation of its meaning, the section appears to strictly forbid the use of open lights on the return side of any working place or places generating firedamp in such quantities as to require the use of locked safety lamps.

Under no condition would I permit open lights to be used on the return air coming from such places. The fact that locked safety lamps are required to be used where the gas is generating shows that those places are making considerable gas. Of course this gas diffuses into the air current; but, nevertheless, in places working on the return side, if they are at all dusty, there is every chance that an explosive condition of the air will be created by the mingling of the gas and dust. The presence of an open light in such an atmosphere would be almost certain to cause a serious explosion.

It is my belief that the intention of the law is to prevent this condition and avoid disaster. The last sentence of the section, making it not to apply "to any mine wherein explosive gas is generated only at the face of active entries," I believe has reference to such entries as have no rooms turned on the return side or back entry.

For example, where butt headings are turned off the main road on a pair of cross-entries there are generally no rooms turned off the return air-courses. But even with this understanding the last sentence of this section of the law appears to be unnecessary, since the use of open lights on the return air from places generating gas should not be tolerated under any conditions.

Oak Hill, W. Va. WILLIAM DICKINSON, SR.

Legislation Restricting the Use of Open Lights in Mines

THE object of legislation is and should be the protection of life and property. Owing to the varying conditions in coal mining and the need of economizing in every respect in the methods employed in the extraction of the coal, it is often difficult to enact laws that are suitable to the several mining districts of a large state such as Pennsylvania.

A deep interest has been aroused by the question brought forward in the inquiry of a fireboss in the Pittsburgh district, *Coal Age*, July 15, p. 136, asking for an expression of opinion regarding the correct interpretation of Sec. 3, Art. 10 of the bituminous mine law, which reads as follows:

> The use of open lights is strictly prohibited in the return air current of any portion of the mine that is ventilated by the same continuous air current that ventilates any other portion of said mine in which locked safety lamps are used. The provisions of this section shall not apply to any mine wherein explosive gas is generated only at the face of active entries.

In reading this section of the law the attention is naturally arrested by the last sentence, which would seem to annul the provision made in the preceding portion of the section. In this connection I desire to point to a similar reference, which occurs in Sec. 2, Art. 28 of the same law and reads as follows:

> The provision of this act as to mines or portions of a mine generating explosive gas in quantities sufficient to be detected by an approved safety lamp shall not apply to any mine wherein explosive gas is being generated only in live entries.

As stated previously, the framing of a mine law that is alike suitable to the operation of mines under varying conditions with a view to safety and economy is no easy task. It is a matter of not only getting the lawmakers to agree but involves throwing no unnecessary burden on operations not affected by the causes that underlie and make desirable the proposed law.

CONTROVERSY REGARDING THE INFLAMMABILITY OF COAL DUST OF NORTHWEST PENNSYLVANIA

Many will recall the controversy that took place only a few years ago regarding the question of the inflammability of the coal dust in the mines of northwest Pennsylvania. If one wanted to have his hair combed, all he had to do was to suggest to an operator in that district that the dust in his mine was as inflammable as that in another district of the state.

A like difference of opinion exists between the operators of mines located in sections where the gas generated comes only from the coal and bleeds out quickly at the faces of live entries but is not found in the rooms and the gob areas, as compared with mines where the gas comes from the enfolding strata and continues to be generated in all rooms and gob sections of the mine and is an element of danger.

It is easy to see that a law restricting the use of open lights in mines of the latter class would impose an unnecessary burden on mines of the class first named. This explains, in a measure, the insertion of the reference to "active" and "live entries," in the two paragraphs of the law quoted above.

Gas Bleeds Off in the Entries and Is Not Found in the Rooms

Through Jefferson, Clearfield and Indiana counties, in Pennsylvania, it is common to find gas at the face of most of the active entries; but this gas bleeds off quickly as the entries are advanced, and gives no further trouble in driving rooms or in gob sections of the mine. I have seen gas coming from the augur holes at the head of entries, and have been obliged to carry canvas forward from the last breakthrough, in order to keep the face of the entry clear of gas and safe for work.

In those mines we employed firebosses whose sole duties were to see that the brattice in every live entry was kept up in good condition and that sufficient air was traveling to keep the places clear of gas. This was done every day, Sundays and holidays alike, and open lights were used throughout the mine. It is true that some explosions have occurred in the mines mentioned as lying in the northwest section of Pennsylvania. These, however, resulted from the failure of someone to properly care for the gas generated at the face of an active or live entry.

Let me say, in closing, that it is my opinion that open lights could be safely used in the rooms on the return air, in the case mentioned in the inquiry to which I have referred, provided this mine is operated under the conditions that I have named, where the gas comes only from the coal and gives no serious trouble in the driving of the rooms. This is assuming that gas has never been found anywhere except at the faces of the active entries.

Pikeville, Ky. G. E. Daugherty.

Skill vs. Mechanical Equipment in the Mining of Coal

MUCH interest attaches to the question that appears in *Coal Age*, July 1, p. 24, asking "Why should Miners Oppose the Introduction of Mechanical Equipment?" It cannot be denied, that ever since the last contract between the operators and miners came into effect, there has existed an attitude of protest on the part of the miner, which has finally resulted in the present strike and thrown all the mines in the state idle.

In seeking for the actual reason of this condition, one is led to conclude that the comparatively small proportion of mechanically trained men employed in the mines are underpaid. It is my belief that what has aroused this seeming opposition to mechanical equipment has been the circulation of reports that pick and shovel miners are making $200 or more in two-weeks time.

While it is possible for a physically strong and skillful miner to make this record for a few weeks or perhaps months, while working under favorable conditions of good air, where the coal mines readily and there is little dirt and refuse to handle, I have never heard of such a record being kept up for any length of time.

In the field where I am working at present, the mining conditions are rather above the average and we have had several of these super pick-and-shovel miners, who have made such records as I have mentioned. They have only kept this up, however, for a short time. The man would either become physically exhausted or be crippled as a result of disregarding his own safety. In the past four or five months, three men lost their lives in one mine; and others have been crippled by reason of not taking the proper precautions for safety.

Writing on this subject, in the letter to which I have referred, R. T. McKeen asks, "Does the present differential of machine-mined coal justify the capital required to install the necessary machinery?" The question that is of even greater importance, in my mind, is: Why have any differential at all? Why not place machinery in the hands of mechanically trained men and pay them a substantial salary or day wage that will put their skill on a par and make their labor equally remunerative as that of the pick-and-shovel miner?

To the most casual observer, however, it is clear that so long as some stiff-necked carpet walker thinks that 75c per hour is a sufficient wage for skilled labor in the mines, *he* is responsible for the present condition of affairs. It is these inequalities in the wage scale and the proper evaluation of skilled labor that are the real underlying causes of the present difficulties.

Mining Laws Side-Stepped, Others Indefinite

On no account can I agree with the writer in *Coal Age*, July 22, p. 176, who advocates the contract system of mining coal. It is my belief that the large majority of our practical miners will agree that the contract system of mining and piecework have put a premium on sheer brutal strength, and discounted all efforts to insure safety and a strict compliance with the mining laws, which have been side-stepped in nine cases out of ten where this system has been employed. It goes without saying that accidents must result from a disregard of mine laws and mine regulations.

This reminds me of the inquiry of a Pennsylvania fireboss that appeared in *Coal Age*, July 15, p. 136, asking for the correct interpretation of Sec. 3, Art. 10, of the bituminous law of that state. For my part, I fail to see how a man holding the responsible position of fireboss could question for a moment the necessity of using locked safety lamps on the return current coming from a place where gas is generated to an extent that requires the use of safety lamps in those places.

Suppose, for a moment, there is any interruption of the ventilation, or a hidden pocket of gas is struck, and men are working with open lights on the return of that current. Does anyone doubt that another "mysterious" accident would be recorded? In my opinion, any such ruthless offender of the mining law should be prosecuted and receive no benefit through the Compensation Act. The same applies to all miners who take chances at times when they have an extra supply of cars, and disregard safety in their desire to load a big run of coal.

I have one hope for relief from these difficulties, in this country that has fought for democracy; and that is that there will result the downthrow of autocratic power that attempts to control the practical mining of coal while yet unfamiliar with its working conditions and requirements. Let us hope that, in this portion of God's earth blessed with a constitution that guarantees the equal rights of man and the pursuit of happiness, unselfish leaders will arise who will execute the meaning of our constitution to the minute, and that true democracy shall be established in the land.

Staunton, Ill. Henry Bock.

Inquiries of General Interest

Answered by

James T. Beard

Seeks Most Advantageous Methods of Mining Low Coal

HAVING recently taken charge of a mine opened in a seam that will average from 32 to 35 in. in thickness, and being desirious of making good I am taking the liberty of asking *Coal Age* and its readers for any information they can give that would be of assistance to me in the development of this mine and working the coal.

Although I have worked in mines for the past twenty-three years and have served as mine foreman for five years, my experience in the working of low coal is limited, and I do not want to make the mistake of employing methods that are better adapted to the working of seams of greater thickness but would not prove economical in low coal.

The mine is well equipped but has never made the showing it should, probably because the methods employed have not been adapted to the purpose. As shown

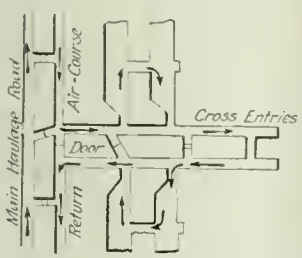


FIG. 1. SHOWING ORIGINAL PLAN AND VENTILATION

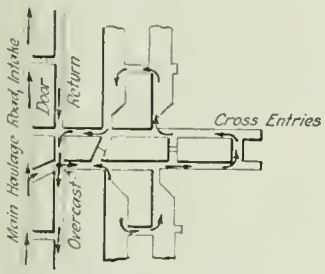


FIG 2. SHOWING PROPOSED PLAN AND CIRCULATION

in the accompanying sketch (Fig. 1), the mine is opened on the double entry, room-and-pillar system, with rooms turned off on both sides of the cross-entries on 60-ft. centers, and having a double roadway.

As shown by the arrows in the sketch the main haulage road is made the intake for the mine, which is ventilated by one continuous current, there being no split at the present stage of the development. The fan is operated on the exhaust principle. I shall greatly appreciate any criticism of this plan and any information in regard to the working of the coal. In order to gain height on the roads I am lifting bottom. L. E. R.

————, Ky.

As this correspondent has assumed, there are many points of difference between the working of low coal and seams of greater thickness. While it is hardly possible to give an intelligent answer regarding the details of working the seam in question without an accurate knowledge of the conditions relating to the character of the coal and the adjacent strata, the depth of cover, inclination of the seam, form of opening and the extent of property, it is possible to offer a few suggestions that will in a general way assist in the economical and safe extraction of the coal.

In the first place the chief condition favoring the economical mining of a thin seam of coal is the employment of the longwall method of extraction. The advantage of this method consists in the more complete extraction of the coal at a less cost for maintenance of roadways, ventilation of the mine and timber supply; and greater safety for the men working at the face is insured, provided they understand longwall work.

Complete extraction and economy of operation are important factors in the working of low coal. However, the success of longwall work depends so largely on the conditions existing in the strata and the knowledge and skill of the men employed in mining the coal that it is not always feasible to consider its adoption.

Suggestions of Possible Improvements

In reference to the room-and-pillar system shown in Fig. 1, a few slight changes could be made that would improve the arrangement by affording a more direct line for hauling the coal from the cross-entries to the main haulage road. Such a plan is shown in Fig. 2.

It is further suggested that ,as the development of the cross-entries progresses sufficiently to warrant the expense of building an overcast, this should be done, because it will give better ventilation at the working face and reduce the cost of ventilation. Also, another pair of cross-entries should be driven to the left of the main heading provided the property and coal extends in that direction.

In providing for a large development, especially if the mine is generating any gas, it would be well to drive the main headings three or even four abreast in order to furnish separate return air-courses and ample facilities for the haulage of the coal, on both sides of the mine.

When to Lift Bottom or Brush the Roof

The question of lifting bottom or brushing the roof, in order to attain the required headroom on the haulage roads can only be decided after a careful study for the purpose of gaining a thorough knowledge of the nature of both the roof and the bottom of the seam. Where the coal is underlaid with a considerable thickness of fireclay, especially if the mine is making much water and the seam lies at a considerable depth below the surface, it may prove a great advantage to take down two or three feet of the roof slate. Of course, if the coal is overlaid with a hard rock this will be impracticable and bottom must be lifted to secure the required headroom.

In order to avoid unnecessary deadwork in the rooms the mine cars should be made low and broad so that they can be taken to the face of the rooms without having to life bottom or brush the roof in the rooms. Other suggestions could be made that would be helpful if one had a more accurate knowledge regarding the conditions to be met. Probably many *Coal Age* readers will be glad to give us the benefit of their own experience in the working of low coal.

Examination Questions

Answered by

James T. Beard

Foremen's and Asst. Foremen's Examinations
Centralia, Pa., May 6, 7, 1920

(Selected Questions)

Ques.—When the fireboss reports, in the record book, certain dangers that he has discovered during his examination, what is then your duty as mine foreman?

Ans.—The Anthracite Mine Law of Pennsylvania requires the mine foreman or his assistant to remove all dangers found to exist in the mine. It is the duty of the mine foreman to examine closely the report made by the fireboss and entered in the book kept for that purpose, and attend to the prompt removal of whatever dangers are noted therein. He must see that the men who work in such places are prevented from proceeding into the mine until the said dangers have been removed and the places reported safe for work.

Ques.—Explain the proper method of thawing dynamite cartridges.

Ans.—Dynamite cartridges, when frozen, must be thawed by the indirect application of heat. That is to say, a frozen cartridge must not be exposed directly to a lamp flame or other intense source of heat. It must not be brought in contact with a heated steam pipe or other hot surface. The safest method of thawing frozen dynamite is to pack the cartridges in fresh manure, or otherwise subject it to a gentle heat until it is thawed.

Dynamite cartridges can be safely thawed by laying them on shelves sprinkled with sawdust, in a small room or chamber where a moderate temperature is maintained by steam pipes. A temperature of 75 or 80 deg. is sufficient for this purpose. A good method of thawing dynamite on a small scale is to place the cartridges in a small kettle that is partially immersed in another kettle containing hot water. Whatever method is employed every precaution must be exercised to insure safety.

Ques.—State fully how, when and where should a mine foreman measure the air. When and how should he make reports of air measurements to the mine inspector,

Ans.—The anthracite mine law requires the mine foreman or his assistant to measure, once each week, the air passing at the inlet and outlet airways; also, at or near the face of each gangway and at the nearest cross-heading to the face of the inside and outside chamber or breast where men are employed, and to enter such measurements in the colliery report book.

The law requires that a report of these air measurements be sent to the inspector before the twelfth day of each month, for the preceding month, together with a statement of the number of persons employed in each district. These reports must be made on blanks prepared for that purpose.

Ques.—How would you release an injured person from contact with the conductor of an electric current when the current is still acting on him?

Ans.—If a switch is near at hand shut off the current at once; or cut the wire between the powerhouse and the victim, using a sharp axe if available, but taking the precaution to handle the axe with a wrapping of dry paper or a dry garment. No axe being available at the moment, it may be possible to short-circuit a portion of the current by dropping a bar or drill across the wire on the power side of the victim. In any case, no delay must be permitted; but an immediate effort made to drag or push the person from the wire, using the precaution to avoid standing in a wet place or taking a hold of wet clothing on the person. The attempt must be quickly made if the person is to be rescued from his perilous position. If possible, stand on dry clothing or dry paper and avoid any contact with the rail or other iron when performing the act.

Ques.—How many cu.yd. of rock were removed from a shaft 10 ft. 6 in. by 8 ft. 9 in., in section, and 241.25 ft. deep? What did this work cost at 15c. per ft.?

Ans.—The sectional area of this shaft is $10.5 \times 8.75 = 91.875$ sq.ft. There being 27 cu.ft. in a cu.yd. the quantity of rock excavated for a depth of 241.25 ft. is $(91.875 \times 241.25) \div 27 = 821$ cu.yd., nearly.

The price named (15c. per ft.) can hardly be taken as meaning per ft. of depth. The question should probably read, 15c. per cu.ft., which would be $27 \times 0.15 = \$4.05$ per cu.yd. The cost of the work, at this rate, would be $821 \times 4.05 = \$3,325.05$.

Ques.—Is it safe to pass a current of intake air through the abandoned portion of a mine and then conduct it to the face of the working; if not, why?

Ans.—Emphatically, no! An air current used to ventilate an abandoned portion of a mine should be conducted at once into the main return airway leading to the upcast shaft or the discharge opening. The reason is that abandoned workings almost invariably generate considerable quantities of poisonous or noxious gases that are injurious to health. The blackdamp commonly found in such abandoned places is not only injurious to health, but would dim the lamps of the men working at the face and lower the efficiency of their efforts.

Ques.—How much air, per man, does the Pennsylvania law require; and what is the highest velocity of the current permitted by the same law, in gaseous mines, and why?

Ans.—The anthracite law of Pennsylvania requires the circulation of 200 cu.ft. of air, per minute, per man, "and as much more as the circumstances may require." The law further specifies that "in no case in mines generating explosive gases shall the velocity exceed 450 lineal feet per minute, in any opening through which the air currents pass, if gauze safety lamps are used, except in the main inlet or outlet airways." The purpose of this provision of the law is to avoid the risk of the flame of the safety lamp being blown through the gauze and igniting the gas outside the lamp, which might cause a serious explosion.

The Labor Situation

Edited by
R. Dawson Hall

Spadra Mine Strike Comes to an End

MORE than 1,100 coal miners were still on strike in the Fort Smith district at the end of July, the Spadra group having failed to go to work. On Aug. 2, however, the Spadra strike came to an end after three weeks of idleness.

Broad Top Miners' Strike Still Continues

AUGUST opened with the Broad Top strike of central Pennsylvania, which started July 9, still in full swing. The men are determined to secure the dime bonus which was given them during the war and which they feel the Bituminous Wage Commission intended to continue to them. No signs of weakening are visible.

Kentucky Strike for Eight Dollars a Day

SOUTHLAND Shaft No. 2 is located near Henderson, western Kentucky, which is not far from Evansville, Ind. It is not strange therefore that at this mine some of the ideas current in Indiana and Illinois are prevalent. On Aug. 1 the day workers went on strike cutting the output 500 tons daily. They demanded a dollar an hour. The company gave them till Aug. 5 to return or be replaced by other men.

Boy Must Work at Only One Job at a Time

CHARGES that the union is in the business of creating jobs and destroying efficiency are well substantiated by the strike at the Glen Lyon mine of the Susquehanna Collieries Co., July 29, when 500 men went on strike because the company had called on a boy to look after a sand runner and a boiler 500 ft. apart. After a day's idleness the company and mine workers came to an understanding. The boy was to watch the sand runner and another attendant was to take care of the boiler. With this the strike ended and the men went back to work July 30.

Maryland Has Many Small Strikes

SMALL strikes in the Georges Creek field of Maryland are straws pointing to a general unrest in that region. On July 27 William Downtown, a motorman, charged with burning out his locomotive by failing to lubricate it, was discharged for neglect by Superintendent W. H. R. Thomas. A strike followed at Union No. 2 and the Frostburg Big Vein mines operated by Annan and Jeffries, near Frostburg.

About three hundred men are involved, the strike being called by President William Watkins of the Allegany local. When Francis Drum, the district president, suggested that the matter be left to the umpire, Dr. Hollender, of Baltimore, the men refused, saying that three or four weeks would be lost and the discharged man would lose his time meanwhile.

The strike at Shallmar of the employees of the Wolf Den Coal Co. has been settled, the coal company agreeing to pay the mine workers the full amount of the board's award, namely 27c. The men first began to leave this mine in April, when the company refused to pay any more than 14.7c. instead of the 27c. expected. The men remained out until June, when it was agreed that an arbitration board should be appointed, the mine workers to name two members, the company two, and one member to be selected by the four. The men named their representatives, but the coal company did not. Another strike followed and the men remained out until July 28, when the company agreed to pay the full 27c. awarded. Dr. Hollender, the umpire, has awarded the miners of the Emmons Coal Co., at Bayard, the full 27c. claimed by them. They had struck, but pending a settlement by the umpire they agreed to go to work.

Finds That Only the Payment of Sheriff's Deputies by Operators Is Indefensible

AS THE outcome of an investigation into mining conditions in the Guyan coal field, which arose out of the threatened invasion of that field by mine workers from the Cabin Creek district, acting Adjutant General Thomas G. Davis reported on July 26 to Govenor John T. Cornwell that living conditions in the Guyan field compare favorably with those in other fields, that men are not kept at the mines by force or intimidation, that it is not true that a large majority of the men who desire to join the union are prevented from doing so. He found, on the other hand, that the coal operators of the Logan field are opposed to the unionization of their mines and will use any legal means in their power to prevent it, and that while the Guyan operators do not employ guards, they pay through the coal operators' association each month a sum of money which is used by the sheriff to pay certain of his deputies. This practice is condemned in the report on the ground that no civil officer should receive money or remuneration of any sort from any sources other than the state or county which employs him. The investigator finds that investigation does not sustain the wholesale indictment of conditions in the Logan field, which indictment was based on the way these guards were said to have maltreated mine workers and others.

Kanawha Drivers Would Follow Illinois

DURING the Illinois strike trouble developed at the Putney mine of the Campbell's Creek Coal Co. because of the wages paid to drivers, seven men of this classification at the mine mentioned going on strike when their demand for an increase in wages from the scale rate of $5.45 a day to $7 a day was refused. The strike of the drivers lasted only until the return to work of the Illinois mine workers.

The trouble at Putney caused a feeling of uneasiness at the headquarters of district 17, especially in view of the trouble which had developed in Illinois. However, no similar trouble was reported at any other point in district 17. The Putney drivers, it appears, were not satisfied with the flat increase of $1 a day granted by the coal commission. It was stated during the week that President Keeney of district 17 was urging the striking drivers to return to work, adding that if they had any wage grievances they should take them up through the officers of the organization.

Keeney said to the Putney workers : "I am satisfied that the Kanawha coal operators are willing to meet any condition as it may be met by the operators of the Central Competitive states, therefore nothing but harm can come by men taking individual action in shutting down the mines. Any change in contract prices must be brought about by mutual arrangement through joint conferences."

Strike in Alabama Indorsed by Officers of International Union

BRINGING with him the promise of both the moral and financial support of the International Executive Board of the United Mine Workers of America, W. L. Harrison, the international organizer of the union in district No. 20 (Alabama), has just returned from Indianapolis, Ind., the international headquarters. On Aug. 5 the committee on organization of the board, including W. D. Van Horn, of Indiana; A. R. Watkin, of Ohio, and John W. Zimmerman, of Illinois, met in the Birmingham district to size up matters and decide either for settlement or an extension of the strike.

Mr. Harrison's word was most encouraging to the somewhat wearied strikers. He assured them that the higher-ups in Indianapolis were pleased with what had been done in Alabama, indorsed the actions of the local officials and proposed to center all their efforts on work in Alabama and West Virginia, the two weak spots in the chain of unionism.

Perhaps all is not as bright as the reports would seem and the settlement, or surrender, may not be so remote as from the roseate accounts of W L. Harrison might appear. The persons now in the field have the power to end the strike on such terms as may be obtained and it is not impossible that they will decide to do so. However, on Sunday, Aug. 1, J. R. Kennamer, the president of the district, held several meetings, Franklin, Jones, Harris, Prentiss, Hargrove and Ellis being among the spokesmen.

Meantime Frank S. White, Jr., attorney for the union, is busy investigating suits for possession of the mine houses. The companies are busily endeavoring to evict those who will not work, and in most instances the cases are being carried to the circuit court. Altogether nearly a thousand cases probably will be filed during this present week. Mr. White was at Coleanor on Saturday, July 31, defending a number of attachment suits instituted by the company. Monday saw him at Piper.

However, resumption might well be more brisk than it is. At Kimberly the mine resumed work with eleven men. On Friday, July 30, there were fourteen only, so slight had been the accretion. Carbon Hill, which closed down Thursday, July 29, on account of the shooting of Deputy Barrett and Oliver McDade, a non-union miner, has again resumed operation. Will Hicks, the striking miner who began the shooting, died from his wounds.

Coleanor, in the Cahaba field, has only twelve men at work; the Disney Coal Co. and the Big Warrior Coal Co., at Cordova, have each a daily output of thirty tons to their credit. The Marvel mines have an increasing output. Dogwood has thirty men at work. In fact there is improvement everywhere, the output having increased 525 tons daily since the attempt to restart the mines was made. Men at mines that are not striking are redoubling their efforts to put out coal, and more railroad cars are being furnished. J. L. Clemo, secretary-treasurer of the union and its purchasing agent, declares that some of the men who are on strike have not as yet asked for supplies of food.

Views of Opposing Parties on Mine Guards And Detectives in West Virginia

THAT there are not now and have not been mine guards in Mingo County in the sense charged by the United Mine Workers, is the statement of Harry Olmstead, chairman of the Coal Operators' Association of the Williamson field, in the following statement also outlining other conditions in the field:

"The United Mine Workers want to organize this field, and then move on to the larger and more important fields of McDowell, Wyoming and Mercer counties and to round up what mines have not been already organized in Raleigh County. These are the last important unorganized bituminous coal fields in the country, and with these organized the union will control the bituminous production of the United States.

"They will then be in position to enforce the demands formulated at the Cleveland convention last year, which they could not enforce in the general coal strike last year because our mines in this part of the state were operating and our men stuck to their posts. We saved the country from suffering then because this field was not organized.

"The Kanawha scale which the union demands is less than the scale we are now paying and I don't know that the question of treatment or working conditions has entered into the controversy. It is just a question of the United Mine Workers unionizing the mines, with all that such a course carries. We object to that, because for a matter of twenty years we have enjoyed peace and quiet here in this field, and I may say that because of this we have made the success of this field possible.

Men from Union Mines Left as Union Came

"All differences have been settled by operators and miners, and settled satisfactorily. I know of some men who have come in here from union fields, but they left just as soon as the union organizers came in last spring. I don't believe there is any basic union sentiment in the field, because the men have always made good money.

"The mines are among the best in the state. We have no gas and consequently no explosions and the living conditions in the valley are good. The Baldwin-Felts detectives, about whom one hears so much, are not employed to guard property and in no sense are they mine guards. In fact there is not a mine guard in Mingo County. Those men are employed by the companies as any corporation which does not have its own intelligence department employs such men."

The charge with reference to mine guards had been made by C. F. Keeney, president of district 17, in the following statement:

"There are approximately 55,000 organized miners in West Virginia and 35,000 who have not yet been organized. These unorganized men are mostly in the counties of Mingo, McDowell, Logan, Raleigh, Mercer and Wayne, all in the southern part of the state. The campaign to organize these miners is well under way and we expect to have it completed before the snow flies.

"The men and the operators could get together and settle this thing if it were not for the mine guards. They are depriving the men of their constitutional rights and that brings about trouble. Why I understand the sheriff of Pike County has deputized some three hundred men and the coal companies are paying them, while detectives are on the border between Mingo and McDowell counties with rifles and machine guns.

"What would happen if an attempt were made to operate the mines here with non-union men? I wouldn't like to say. But in their present temper these men are not to be fooled with. Right now this situation is a powder mill. The men have no complaint when the law is enforced by the proper authorities. But they will oppose to the last the use of private armies enlisted by the coal companies."

Fight Against Subcontracting Still On

NO PROGRESS has been made in ending the strike of the men of the Pennsylvania Coal Co. against the subcontracting system in force in the mines of that corporation. About seven thousand men are idle in violation of the contract. It is an impressive exhibit to the Anthracite Coal Commission and must serve to convince that body that a contract does not have any binding force and that the union while abundantly able to call a strike is not so clearly able to end one.

The union is trying to have the subcontracting system ended by the Anthracite Wage Commission, but the Pennsylvania Coal Co.'s men cannot wait for arbitration; besides they argue that a strike sometimes convinces commissions that if something cannot be proved to be just it may be clearly indicated as being so highly opportune that it must be made a part of the award.

The clergy around Wilkes-Barre thought that the company would grant a cessation of subcontracting until such time as the commission rendered its decision. They wrote the following agreement for the company to sign, but General Manager W. P. Jennings on July 26 refused to put his name to it:

"We, the officers of the Pennsylvania Coal Co. for the sake of peace and to avoid trouble, do hereby agree to abolish the contract system provided the men return to work at once, with no discrimination being shown against any man, and that on their part the men show no discrimination against any official or employee of the Pennsylvania Coal Co. and that our future actions in the contract system will be governed by the decision of the Anthracite Commission or the Anthracite Conciliation Board."

Not only the clergy but the press and even the Department of Justice have been trying to settle the controversy, the third party entering into the matter because the cessation of production is believed to be in violation of the Lever Act. Assistant U. S. Attorney John M. McCourt, A. R. Ramsdell, chief of the bureau in the district, and several other agents have had conferences with Alex. Campbell and Rinaldo Capalino, two leaders of the striking men. Their aim is said to be get the men to work until the commission adjudicates the matter.

The *Scranton Times* has pointed out that while 8,000 only, as they figure it out, out of 152,000 men are on strike, and while it is unlikely that the action of such a proportion will cause the commission to refuse to make its award retroactive, yet the strike is likely to affect the commission unfavorably when it comes to make its important decisions. Dr. W. O. Thompson, chairman of the Anthracite Commission, on July 29 reiterated his statement that if the mine workers do not return to work they may lose the retroactive provision and get a wage readjustment which will date only from the promulgation of the commission's decision.

The union apparently is honestly against the strike. At a mass meeting which District President John T. Dempsey attended at Dunmore on July 22, two locals, Nos. 879 and 1,670, declared against the action of the Pennsylvania men. However, the union stands firmly by its disapproval of the contract system. At a meeting attended by the strikers, representatives of the company, the clergy and representatives of the Department of Justice, Joseph Yannis exhibited a stack of papers which he declared were sworn affidavits from young men of Pittston alleging that their names had been placed on the payrolls of the company by contractors and that they drew pay for work never performed. Yannis added that the young men got $2 to $4 for presenting themselves at the pay office while the contractors received the balance of the money. It is said that months prior to the strike these affidavits had been collected and that City Detective Samuel Lucchino had done much toward that end prior to being shot down just outside his home.

Miners' Strike in Great Britain Forecast

BELIEVING the British Government will not accede to the demands of the coal miners for another increase in wages and for a reduction in the price of coal to householders, the Liverpool *Journal of Commerce* predicts a strike, possibly within a month. The statement as published under date of July 23 is as follows:

The miners' leaders have officially put forward their demands for a wage advance of 2s. per day for adults, and for a reduction of 14s. 2d. per ton in the price of household coal. The president of the Board of Trade and the Controller of Coal Mines are to meet the executive committee of the Miners' Federation on Monday next, and will give the Government's reply to these demands.

So far as the wage advance is concerned, the government cannot very well agree to give it, as only a few weeks ago they refused one for the engineers. The Government may, however, agree to make a reduction in prices of household and domestic coal, although in many well-informed quarters in colliery commercial circles it is thought the Government will make a definite refusal to both the demand for a further wage advance and reduction in the price of coal. It is said that the miners' executive committee also expects a refusal to their demands. This would bring us to a final issue and result in a ballot of the workers being taken on the question. The result of this ballot will no doubt give the necessary majority in favor of a strike.

It is expected the miners' executive committee will hold another meeting before taking the ballot, but it is understood arrangements can be made very quickly, and the result will be known within a month. The recently increased cost of living, together with the higher rents that will operate shortly, plus extra rates and higher railway fares, are factors that will help the miners' executive committee to secure a large majority in favor of a strike, and as things are at the moment such an event looks as though it were inevitable.

Canadian Situation Affected by Decline in Lake Shipments

Imports of Bituminous During First Half of 1920 Fall Behind Those for Three Preceding Years—Anthracite Receipts Normal

CANADA'S annual consumption of coal has varied in recent years between 24,000,000 net tons (1915) and 35,750,000 tons (1918). As the domestic production has reached the 15,000,000-ton mark only once, Canada is forced to rely upon imports for more than half of her supply. Virtually all of the coal imported comes from the United States, and the great bulk of it is Pennsylvania anthracite or bituminous coal from the Northern and Middle Appalachian regions. The eastern and western extremities of the Dominion are self-supporting in the matter of fuel supply and even export a million and a half tons to the United States, but the central provinces are almost wholly dependent on vessel shipments from American Lake ports and on rail imports via Buffalo and Detroit, or by car ferry across the lower Lakes.

It will be seen from the following table, which summarizes imports of coal into Canada from the United States, that although shipments of anthracite have been going forward this season at the usual rate, the movement of bituminous coal has fallen far behind the four years preceding. The total receipts of bituminous coal during the first half of the year 1920 were 4,595,000 net tons. This was a decrease of 1,798,000 and 3,144,000 tons when compared with 1919 and 1918, respectively, and 1,108,000 tons below the year 1919.

IMPORTS OF ANTHRACITE AND BITUMINOUS COAL INTO CANADA DURING THE FIRST SIX MONTHS OF 1920, WITH COMPARATIVE FIGURES FOR 1914–1919 (a)
(Net Tons)

Year	Anthracite	Bituminous
1914	2,041,000	4,870,000
1915	1,914,000	3,309,000
1916	2,097,000	5,848,000
1917	2,232,000	6,393,000
1918	2,180,000	7,739,000
1919	2,022,000	5,703,000
1920	2,168,000	4,595,000

(a) For several reasons the statistics of imports from the United States kept by the Canadian Government and the American statistics of exports to Canada do not agree exactly, the amounts recorded by the Canadian Government usually being a little smaller. The Canadian figures are here used, as they represent the rate at which coal is being received for consumption in Canada.

The Canadian movement, like that to the American Northwest, has suffered from the decline in Lake shipments which has marked the present year, although the proportion of the total Lake tonnage which has moved to Canadian destinations is greater than in either 1918 or 1919.

MONTHLY IMPORTS OF BITUMINOUS COAL INTO CANADA
(Net Tons)

Month	1917	1918	1919	1920
January	1,032,000	1,134,000	1,458,000	530,000
February	761,000	1,460,000	1,065,000	570,000
March	1,115,000	1,175,000	923,000	993,000
April	1,331,000	986,000	563,000	711,000
May	893,000	1,542,000	960,000	695,000
June	1,261,000	1,442,000	734,000	1,096,000
Totals	6,393,000	7,739,000	5,703,000	4,595,000

The only Canadian field so situated as to participate in the heavy movement for export to Europe which has developed in recent months is Nova Scotia. The record for the first quarter of 1920 shows a marked increase in exports to France and the Netherlands at the expense of decreased movement to the United Kingdom and to Newfoundland.

EXPORTS OF COAL FROM NOVA SCOTIA DURING THE FIRST THREE MONTHS OF 1919 AND 1920
(Net Tons)

Destination	1919 First Quarter	1920 First Quarter
Newfoundland	132,467	48,412
United Kingdom	115,558	76,788
France	3,835	31,356
Netherlands		73,057

The production of Nova Scotia during the same period was 1,553,834 tons in 1920 as against 1,448,588 in 1919, an increase of 105,246 tons.

On July 23 a measure of export control was announced by the Canadian Government, effective Aug. 1, which prohibits the exportation of coal from the Atlantic, St. Lawrence River and Lake ports of Canada to destinations other than the United States and Newfoundland, except under permit.

Canada is watching for results from the Interstate Commerce Commission's embargo orders. The Dominion has experienced an acute shortage over the entire coal season and unless definite action is taken a coal famine in Canada this winter is predicted. Canadian officials in Washington believe that Order No. 11 will tend to help bring the supplies up to their quota. The importation figures just issued by the Dominion Bureau of Statistics run through June and indicate that Canada is receiving less than 60 per cent of her quota.

IMPORTS OF ANTHRACITE AND BITUMINOUS COAL INTO CANADA JANUARY TO JUNE, 1920

Months	Anthracite (Gross Tons)	Bituminous (Net Tons)
January	320,911	529,782
February	263,305	570,266
March	393,051	992,593
April	234,889	711,221
May	302,071	695,040
June	421,479	1,095,509
Totals	1,935,706	4,594,411

The figures for bituminous coal in this table are later and more detailed than those for the same period in the second table in this article.

Requirements for the coal year ending March 31 next have been estimated by Canadian officials at 15,000,000 tons, in addition to that already received. These requirements are prorated as follows: July, 2,000,000 tons; August, September and October, 2,300,000 tons each; November and December, 1,300,000 each; January, 1,000,000 tons; February and March, 800,000 tons each. Under existing conditions this would give a total of about 7,000,000 tons to be sent to Canada by the Lake route and about 8,000,000 tons by rail. In calculating this budget for the year Canadian officials have used as a base actual shipments for the years of 1919 and 1920 and made allowance for depletion of stocks incident to the strike last November and the fact that these stocks have not been replenished on account of adverse transportation conditions.

Canadian consumers have a strong feeling that since American producers invaded and captured their coal market it is now squarely up to them to supply legitimate needs, especially where coal has been contracted for. They are not, however, overlooking their own resources, and a very determined effort, with strong Government and press support, is now in process to have Canada supply, in so far as possible, her own coal requirements.

Coal Stocks Reported in the Hands of Retailers

Canvass of the Geological Survey Embraces Returns from 1,367 Dealers Throughout the Country—Average Slump of Three Days in Supply Shown Between Feb. 29 and June 1

IN THE canvass of stocks of coal held by representative consumers recently conducted by the Geological Survey with the assistance of funds provided by the Bituminous Coal Commission reports were received from 1,367 retail dealers well distributed over the country. Their replies are given in the following tables.

Stocks of bituminous coal held by these dealers on Feb. 29, 1920, were sufficient to last on the average one week and six days, at the rate of delivery to consumers which prevailed during the three months, March, April, and May. At the end of the period stocks had declined to an average of one week and three days' supply.

Retailers' stocks of anthracite in the twenty-three states where Pennsylvania anthracite is used in significant amounts are shown in Tables II and III. The 975 dealers reporting from these states had in storage on Feb. 29, 1920, 881,856 short tons of anthracite. Three months later, on June 1, they had 513,482 tons, a decrease of 267,374 tons, or 30 per cent. Precisely what part of the total retail business in anthracite is represented by these dealers is not known; that the proportion is large enough to be generally representative is indicated by the fact that they handled about 30 per cent of the total retail business in bituminous coal.

At the rate deliveries of anthracite were made during the months of March, April, and May, 1920, the stocks at the beginning of the period averaged two weeks and four days' supply, and at the end of the period one week and five days.

In the second of the following tables comparison is

TABLE I. STOCKS OF BITUMINOUS IN THE HANDS OF REPRESENTATIVE DEALERS, FEB. 29 AND MAY 31, 1920, IN NET TONS

State	Number of Dealers Reporting	Weekly Deliveries March to May, 1920 (a)	Tons on Hand Feb. 29	Tons on Hand May 31	Weeks' Supply on Hand (b) Feb. 29	Weeks' Supply on Hand (b) May 31
Maine	12	3,025	10,781	6,575	3-4	2-1
New Hampshire	14	1,096	1,237	2,968	1-1	0-5
Vermont	8	836	702	647	0-6	0-5
Massachusetts	61	39,083	22,949	48,294	1-6	1-2
Connecticut	27	6,598	15,215	7,224	2-2	1-1
Rhode Island	13	20,022	22,749	22,035	1-1	1-1
New York	43	19,605	16,200	12,144	0-6	0-4
New Jersey	26	1,504	5,291	1,905	3-4	1-2
Pennsylvania	59	11,101	20,951	5,578	1-6	0-3
Maryland	19	4,975	3,739	3,578	0-5	0-5
Delaware	8	1,991	1,026	560	4-2	2-7
Dist. of Columbia	10	2,860	3,403	2,242	1-1	0-5
West Virginia	19	927	4,061	1,050	4-3	1-1
Ohio	76	39,314	53,795	56,866	1-3	1-3
Indiaoa	148	22,850	50,270	29,432	2-1	1-2
Illinois	92	58,695	115,445	53,908	2-0	0-6
Michigan	85	21,759	45,999	20,322	2-1	1-0
Wisconsin	52	14,722	61,601	36,845	4-1	2-4
Minnesota	11	13,208	40,904	25,611	3-1	1-6
Iowa	121	16,392	32,382	21,452	1-6	1-2
North Dakota	9	935	3,116	978	3-2	1-0
South Dakota	10	1,182	1,807	892	1-4	0-5
Nebraska	9	3,245	15,544	12,524	4-1	3-2
Virginia	22	6,497	2,460	11,089	1-1	1-6
North Carolina	12	5,032	5,598	7,035	1-1	1-3
South Carolina	21	3,048	2,542	5,501	0 6	1-6
Georgia	27	6,389	8,812	15,165	1-3	2-3
Florida	3	506	643	659	1-2	1-2
Kentucky	60	15,247	22,548	20,628	1-3	1-2
Tennessee	41	12,080	22,023	33,396	1-6	2-5
Alabama	39	3,189	12,241	16,812	4-0	5-2
Mississippi	20	1,959	1,224	6,276	0-6	3-1
Missouri	53	31,090	30,401	20,020	1-0	0-5
Kansas	7	982	7,230	1,433	7-5	1-3
Oklahoma	7	496	929	1,513	2-0	3-0
Arkansas	8	905	534	577	0-4	0-4
Louisiaoa	7	6,169	12,455	6,170	2-0	1-0
Texas	10	2,331	2,423	4,263	1-0	2-0
Colorado	10	4,214	11,498	9,178	2-5	2-1
New Mexico	9	1,107	1,866	2,381	1-5	2-1
Arizona	7	521	691	998	1-2	1-6
Utah	9	5,358	6,413	10,290	1-1	1-6
Nevada	9	238	412	421	1-5	1-5
Wyoming	8	844	265	168	0-2	0-1
Montana	8	1,639	4,522	3,440	2-6	2-1
Idaho	7	709	2,685	2,120	3-6	3-0
Washington	8	1,895	7,982	9,320	4-1	4-6
Oregon	8	1,527	5,586	5,074	3-5	3-2
California	10	1,243	3,825	3,165	3-0	2-4
Grand totals	1,367	421,745	783,625	571,177	1-6	1-3

(a) Includes shrinkage and yard losses.
(b) Calculated at average rate of delivery during March, April and May, 1920.

TABLE II. STOCKS OF ANTHRACITE IN THE HANDS OF REPRESENTATIVE DEALERS, FEB. 29 AND MAY 31, 1920, IN NET TONS

State	Number of Dealers Reporting	Weekly Deliveries March to May 1920 (a)	Tons on Hand Feb. 29	Tons on Hand May 31	Weeks' Supply on Hand (b) Feb. 29	Weeks' Supply on Hand (b) May 31
Maine	12	1,896	7,235	10,267	3-6	5-3
New Hampshire	14	2,623	2,269	9,476	2-5	3-4
Vermont	8	1,808	2,933	7,467	1-4	4-1
Massachusetts	61	48,697	202,591	140,769	4-1	2-6
Connecticut	27	10,808	59,066	18,541	5-3	1-5
Rhode Island	13	7,934	36,090	21,374	4 4	2-5
New York	43	139,148	288,211	192,610	2-1	1-3
New Jersey	26	15,181	31,336	18,111	2-0	1-1
Pennsylvania	59	12,120	52,021	63,884	3-0	3-5
Maryland	19	4,420	12,283	7,027	2-6	1-4
Delaware	8	1,831	3,525	2,362	1-6	1-2
West Virginia	19	20	75	55	1-0	0-6
Ohio	76	3,278	11,465	8,535	3-3	2-4
Indiana	148	2,077	10,644	4,225	5-1	2-0
Illinois	92	70,518	35,053	12,630	3-2	1-5
Michigan	85	9,882	33,745	19,408	3-3	2-0
Wisconsin	52	8,059	44,445	33,825	5-4	4-1
Minnesota	11	2,796	30,280	18,043	10-6	6-3
Iowa	121	944	3,991	1,899	4-2	2-0
North Dakota	9	221	1,386	194	6-2	0-6
South Dakota	10	173	982	1,095	5-5	6-2
Nebraska	9	395	2,449	900	6-1	2-2
Missouri	53	1,432	4,281	10,785	•3-0	7-4
Totals	925	351,366	881,866	613,482	2-4	1-5

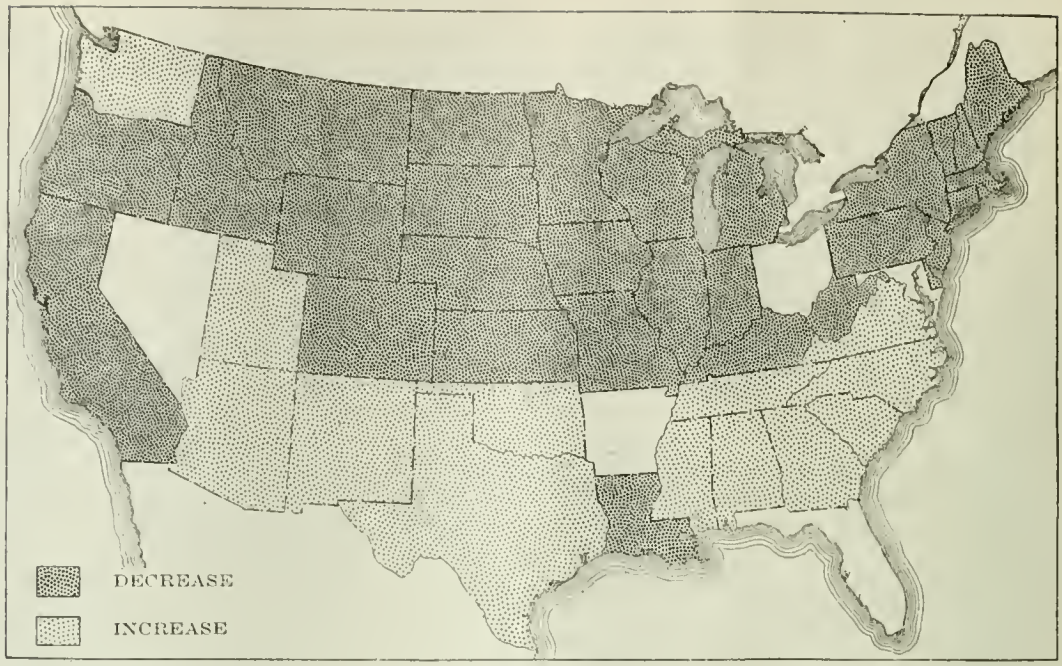
(a) Includes shrinkage aod yard losses. (b) Calculated at rate of deliveries during March, April, and May, 1920. Figures represent weeks and days.

TABLE III. WEEKS' SUPPLY OF ANTHRACITE IN HANDS OF RETAIL DEALERS AT CURRENT RATE OF DELIVERY
(Figures represent weeks and days)

State	1919 Jan. 1	1919 Apr. 1	1920 Mar. 1	1920 June 1	Increase or Decrease March 1, 1920 Over April 1, 1919	Increase or Decrease June 1, 1920 Over March, 1920
Maine	4-1	4-3	3-6	5-3	— 0-4	+ 1-4
New Hampshire	5-0	7-0	2-5	3-4	— 4-2	+ 0-6
Vermont	9-4	2-5	1-4	4-1	— 6-1	+ 2-4
Massachusetts	6-4	7-2	4-1	2-6	— 3-1	— 1-2
Connecticut	10-2	8-0	5-3	1-5	— 2-4	— 3-5
Rhode Island	12-0	12-4	4-4	2-5	— 8-0	— 1-6
New York	3-3	2-0	2-1	1-3	+ 0-1	+ 0-5
New Jersey	3-4	2-6	2-0	1-1	— 0-6	± 0-6
Peoosylvania	2-0	5-4	3-0	3-5	— 2-4	+ 0-5
Maryland	3-1	3-0	2-6	1-4	— 0-1	— 1-2
Delaware	3 5	2-4	1-6	1 2	— 0-5	— 0-4
West Virginia	3-1	1-1	1-0	0-6	— 0-1	— 0-1
Ohio	6-4	8-3	3-3	2-4	— 5-0	— 0-6
Iodiana	10-4	8-5	5-1	2-0	— 3-4	— 3-1
Illinois	4-4	8-1	3-2	1-5	— 4-6	— 1-4
Michigan	8-6	8-2	3-3	2-0	— 4-6	— 1-3
Wisconsin	8-3	3-2	5-4	4-1	+ 2-2	— 1-3
Minnesota	7-5	4-6	10-6	6-3	+ 6-0	— 4-3
Iowa	8-4	8-6	4-2	2-0	— 4-4	— 2-2
North Dakota	6-4	5-0	6-2	0-6	+ 1-2	— 5-3
South Dakota	2 0	4-0	5-5	6-2	+ 1 5	+ 0-4
Nebraska	24-4	13-5	6-1	2-2	— 7 4	— 3-6
Missouri	3-6	4-6	3-0	7-4	— 1-6	+ 4-4
Totals	5-1	4 2	•2-4	1-5	— 1-5	— 0-6

Dealers' Stocks of Soft Coal

From March 1 to June 1 stocks of soft coal in the hands of retail dealers decreased generally in the North and increased in the South. A white area indicates no change.



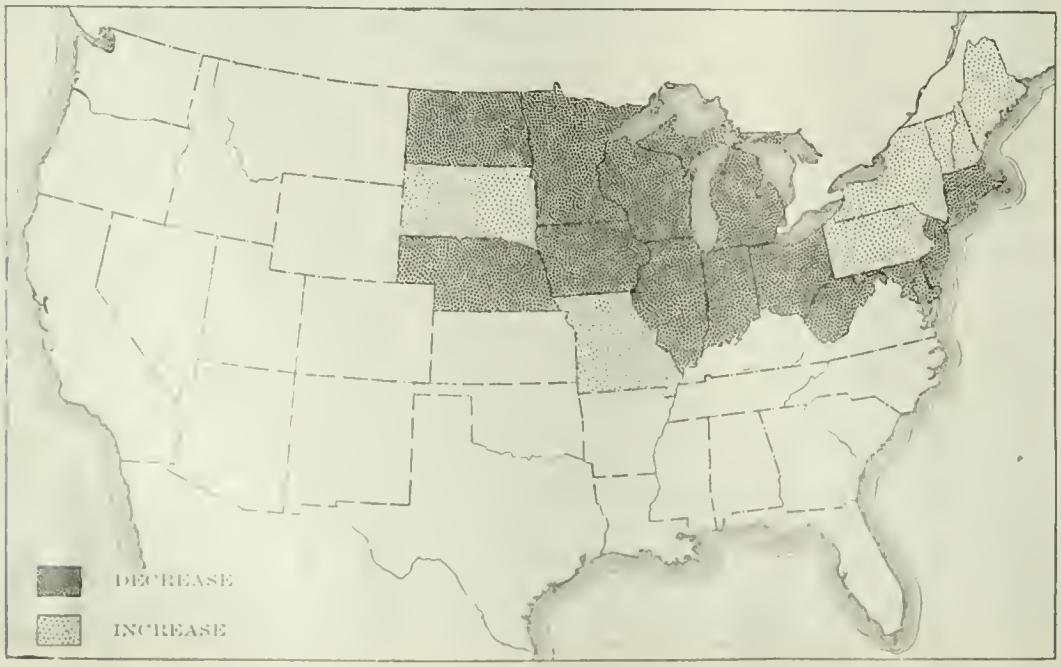
made between these stocks and those held by retailers in the first quarter of 1919. Partly because of the mild winter of 1918-1919, stocks on hand as of Jan. 1 and April 1, 1919, were generally larger when expressed in weeks' and days' supply than were those on March 1, and June 1, 1920. On March 1, 1920, for example, the supply was uniformly smaller than on April 1, 1919, except in the States of New York, Wisconsin, Minnesota and the Dakotas. From March 1, 1920, to June 1, 1920, stocks decreased in all States except Maine, New Hampshire, Vermont, Pennsylvania, South Dakota and Missouri.

The weeks' supply has been calculated by dividing the stocks on hand by the average weekly delivery to customers, including also shrinkage and yard losses. The rate of delivery used in calculating the supply on Jan. 1 and April 1, 1919, was the average per week during January, February and March, 1919. In calculating the supply on March 1 and June 1, 1920, the average per week during March, April and May, 1920, was used.

Allport as Arbiter Is Highly Praised

ACCEPTANCE of the award of the U. S. Bituminous Coal Commission as of March 10, 1920, in all the fields generally described as organized, with the single exception of the State of Washington, is reported by Herbert N. Shenton, recent secretary of the Bituminous Coal Commission. The last contracts or agreements filed were those between districts Nos. 14, 21 and 25 of the United Mine Workers of America and the Southwest Interstate Coal Operators' Association.

As reported in the issue of *Coal Age of* Aug. 5, page 311, agreement has been reached in the State of Washington and a new scale is expected there early this month. The representatives of the operators and of the miners on the special commission that has just completed a study of the wage situation in that state has written to Secretary Wilson commending his choice of representative for the public, James H. Allport. It is particularly significant that here is one commission that



Dealers' Stocks of Hard Coal

In the area where hard coal is most generally used, the East and Northeast, stocks increased this spring in Pennsylvania and New York, but decreased along the Seaboard and in the Central West.

made a unanimous report on a wage question. The letter of the representatives of the miners and operators contains the following paragraphs:

The undersigned, representitives respectively of the mine workers and coal operators on the coal commission for the State of Washington, take this opportunity of advising you that largely through the efforts of the fifth member, James H. Allport, selected by you at the President's direction, the commission has today completed its hearings and tomorrow presents a unanimous report and recommendation to the joint conference of miners and operators.

We wish to sincerely thank you for having selected Mr. Allport, as both sides are completely satisfied with the intelligent and entirely impartial manner in which he has conducted the investigations and hearings, and we feel that his findings, upon which our unanimous report is based, meet the difficult situation in this district with the least possible injustice or loss to the two interests involved.

Colonel Wentz Predicts the End of Speculation in Coal

Senator Calder Told of Movement Instituted by Coal Men—Mr. Willard Opposes Restriction of Exports —Priority Unnecessary Next Year

TESTIFYING before the Senate Committee on Reconstruction and Production at the Engineering Societies Building in New York on Thursday, Aug. 12, Colonel D. B. Wentz, president of the National Coal Association, told Senator Calder, the chairman, that a strong movement is now afoot among coal men to halt speculation in tidewater coal for export. Prices have been affected by this speculation, he said, but he ventured the opinion that the same condition exists in the markets for cement, steel and other products of a like nature.

Discussing the shortage of bituminous coal in the Eastern States, Colonel Wentz said he thought it was caused by poor distribution rather than a lack of production. He conceded that there was a present shortage of about 20,000,000 tons but predicted that this shortage would be made up within the current year at the present rate of improvement in the transportation situation and with the increased output. Along with the increased supply, Colonel Wentz declared, will come an end to excessive coal prices and other evils.

Curtailing coal exports will not solve present difficulties, he said, although at various tidewater points like New York there has cropped up a group of "speculative adventurers" who have acquired large stocks of bituminous coal which they hold for purely speculative purposes.

"We are not in sympathy with this sort of gambling in coal," he said, "and I may say that coal operators, legitimate exporters and transportation men are now at work on plans, which I am not at liberty to disclose, which we believe will within thirty days halt this speculative evil in coal export, with its attendant influence in maintaining exorbitant prices for domestic coal at tidewater points."

Senator Calder declared that he approved of this action and urged that the coal men make all haste in putting their efforts into effect.

Colonel Wentz followed Daniel Willard, president of the Baltimore & Ohio R.R., on the witness stand. Mr. Willard took up the entire morning session of the hearing with a discussion of the various phases of the coal question as well as some of the factors that enter into the question of the housing shortage with which Senator Calder is particularly concerned at this time. For the most part Mr. Willard's testimony followed closely the evidence he gave before the Interstate Commerce Commission at a recent hearing.

He told of a recent visit to Admiral Benson, head of the Shipping Board, in an effort to procure a lower all-water rate for coal shipments to New England, but said that he had been unsuccessful. Admiral Benson informed him, Mr. Willard testified, that nothing could be done at the present time.

Senator Calder here interrupted the witness to say that he also had communicated with Admiral Benson for the same purpose. Many of the Shipping Board boats, the Senator said, are lying idle with crews on board in Hampton Roads and other harbors along the Atlantic seaboard and he emphasized the importance of moving coal even if it had to be done at a loss to the Government.

Just before the armistice, continued Mr. Willard, there was a greater supply of coal in this country than he could recall at any previous time. Later these stocks were diminished and no reserve maintained because most consumers expected a drop in price. This depletion of reserves and the strike of last autumn cut the visible supply between 45,000,000 and 50,000,000 tons.

Mr. Willard was asked by Senator Calder if he was inclined to favor the restriction of coal exports, and the former answered that he was not.

"What I am considering is whether we are going to gain much standing among the nations if we sell coal which costs $4 a ton for anywhere from $30 to $60 a ton," said Senator Calder. "Will our foreign friends not say to us 'Yes, you give us the coal but you take our skins for it'?"

"It does not seem to me that anything helpful would come from restricting outgoing coal," answered Mr. Willard, and he then pointed out that exports now amount to 2,000,000 tons a month against aggregate shipments of one-quarter that amount in the same period under normal conditions. In his opinion priority orders will not be necessary next year although he saw no likelihood of rescinding before that time the priority order already granted by the Interstate Commerce Commission.

Mr. Willard concluded three hours of testimony with an optimistic statement about the railroad prospect, saying:

"The workmen seem to be generally satisfied with the wage increases and from all directions I hear that men are working better. Officers of the roads themselves have got new life. Most of the roads have been potentially 'busted' for two years. It isn't human for a man to get up on his tiptoes and do the best that is in him when after he is done he has got nothing to show for it.

"Today the roads are potentially, as a whole, solvent, and I have never seen the railroad managers in this country making greater efforts than they are making today to render service and meet new standards. There is going to be a steady increase, beginning right away, in the amount of business done. You are already beginning to get the benefit of the rate increase, and the rate increase has not yet gone into effect."

Railroads Are Sustained in Assigned-Car Suit

On Appeal from District Court at Philippi, W. Va., Circuit Court Decides Against Lamberts Run Coal Co.—Holds Interstate Commerce Commission Has Power in Emergency to Set Aside Car Rules

CONCLUDING that the making and promulgation of rule 8, as amended on April 16, 1920, was clearly within the power of the Interstate Commerce Commission, the U. S. Circuit Court for the Fourth Circuit handed down a decision on Aug. 11, 1920, dissolving the injunction obtained by the Lamberts Run Coal Co. in the district court at Philippi, W. Va., against the Baltimore & Ohio R.R., the object of which was to prevent the railroad from resorting to assigned cars in obtaining fuel coal. In other words, in this particular suit the court has held that the commission has the right and power to permit the use of assigned cars. It is expected that the National Coal Association will appeal to the U. S. Supreme Court.

Circuit Judge Woods in his written opinion states:

In the order or notice to carriers and shippers promulgating the amended rule the commission states that in its opinion an emergency existed by reason of the continued shortage of coal cars, the cessation of Government control, and the importance of meeting railroad-fuel requirements without the necessity of carriers resorting to confiscation of commercial coal. As authority for this order the commission relies on Section 1 of the Interstate Commerce Act as amended by paragraph 15 of Section 402 of Transportation Act of Feb. 28, 1920.

The authority given to the commission by subdivision 15 in cases of emergency "to suspend the operation of any or all rules, regulations or practices then authorized with respect to car service," does not extend to the suspension of a positive and definite enactment of the statute covering this subject. Rules, regulations and practices mean the rules, regulations and practices adopted by the commission or by the railroads in conformity to the act or not forbidden by it, in contradistinction to the definite enactments of the statute. This appears from subdivisions 11 and 14 of the same section and other portions of the statute. If therefore the order of the commission had no other basis than the authority conferred to suspend rules, regulations and practices, it would be without support.

The Congress has not, however, conferred on coal mines equality among themselves—the right of each mine in time of coal shortage to be furnished cars in proportion of mine ratings without regard to the public welfare and safety. Coal is a public necessity. From many causes, crises and emergencies may arise in mine operation, transportation and unexpected needs of the public which cannot be anticipated and justly provided for by inelastic legislative enactment. It would be strange indeed, if the Congress had guarded the private interests of the mines by an inflexible enactment of equality, lodging nowhere the power to relieve the public against unforeseen conditions which would make rigid proportionate distribution of cars disastrous to the country or to some portion of it. This would be to confer benefits on individuals at the sacrifice of the public safety and welfare.

We think the Congress has clearly conferred on the commission the power to grant relief in such conditions by providing that "whenever the commission is of opinion that shortage of equipment, congestion of traffic or other emergency requiring immediate action exists in any section of the country the commission shall have and is hereby given authority (d) to give directions for preference or priority in transportation, embargoes or movement of traffic under transit at such time and for such periods as it may determine, and to modify, change, suspend or annul them."

The true construction required by the spirit and the letter of the statute is this: Subdivision 12 provides for equality among coal mines in proportion to ratings in time of the usual long existing car shortage. But recognizing the necessity of a degree of flexibility, the Congress conferred upon the commission power in case of a car shortage which in their opinion was so much beyond the usual as to constitute an emergency, to supplant or modify equality among the mines according to ratings with preferences and priority to such an extent as will in its opinion meet the emergency.

All the specific provisions of the statute for equality among designated classes is thus modified by the general provision for their suspension by the commission when they find an emergency requiring it.

Our conclusion is that the making and promulgation of rule 8 as amended was clearly within the power of the commission.

The commission having based their order on their opinion that an emergency such as was contemplated by the statute existed, it is not within the power of the Court to annul their order on the ground that the administrative power conferred on the commission was unwisely or improvidently exercised.

The plaintiff's right to equality in the distribution of coal cars was conferred by the statute. The Congress in conferring the right could place upon it any limitations or conditions it saw fit, including the limitation that the right might be suspended by the Interstate Commerce Commission in its discretion without a hearing. The plaintiff claiming the benefits of the statute cannot assert the unconstitutionality of its limitations.

Bituminous Coal Loaded Into Vessels at Lake Ports as Dumped by Docks for Season to End of July

(In Net Tons)

Ports	Railroads	1920 Cargo	1920 Fuel	1920 Total	1919 Cargo	1919 Fuel	1919 Total	1918 Cargo	1918 Fuel	1918 Total
	Hocking Valley	982,138	17,619	999,757	2,405,550	71,532	2,477,082	1,939,874	59,644	1,999,518
Toledo	Toledo & Ohio Central	475,130	25,843	500,973	730,336	21,761	752,097	903,419	25,311	928,730
	Baltimore & Ohio	298,523	11,733	310,256	1,347,207	30,452	1,377,659	992,560	15,945	1,008,505
Sandusky	Pennsylvania	400,166	4,802	404,968	731,157	20,742	751,899	965,116	23,800	988,916
Huron	Wheeling & Lake Erie	806,672	50,894	857,566	942,322	30,797	973,119	932,071	35,784	967,855
Lorain	Baltimore & Ohio	1,125,146	99,181	1,224,327	1,711,704	88,591	1,800,295	1,224,763	36,183	1,260,946
Cleveland	Pennsylvania	170,644	57,028	227,672	1,276,761	134,220	1,410,981	1,096,771	146,617	1,243,388
	Erie	19,903	1,955	21,858	97,188	3,114	100,302	298,530	9,337	307,867
Fairport	Baltimore & Ohio				16,692	12,954	29,646	54,823	21,832	76,655
Ashtabula	New York Central	392,526	108,069	500,595	1,038,634	78,680	1,117,314	779,164	98,772	877,936
	Pennsylvania	405,559	40,375	445,934	1,044,607	46,356	1,090,963	624,092	41,241	665,333
Conneaut	Buffalo & Lake Erie	1,104,633	17,936	1,122,569	712,094	3,492	715,586	1,021,224	17,111	1,038,335
Erie	Pennsylvania—West	40,219	2,579	42,798	429,929	20,772	450,701	303,540	17,419	320,959
	Pennsylvania—East	32,479	37,157	69,636	133,104	7,275	140,379	170,048	3,910	173,958
Totals		6,253,738	475,171	6,728,909	12,617,285	570,738	13,188,023	11,305,955	552,906	11,858,901

News from the Capital

By Paul Wooton

No Settlement As Yet of Anthracite Wage

THE Anthracite Coal Commission, which contemplated being able to submit its report to the President by the end of last week, now states that this will be impossible and that the report probably will not be submitted until the end of this week.

Railroads Show Greatly Improved Service In Movement of Coal to Lakes

NOT in many weeks has the coal loading territory from Illinois eastward been so well cared for in the matter of car supply as was the case in the ten days ending Aug. 13, in the opinion of A. G. Gutheim, of the Car Service Commission of the American Railroad Association. As a consequence the whole transportation performance has shown decided improvement. There have been better dumpings at Lake Erie as a result of the splendid loading record on a number of roads over which Lake shipments move.

The Pennsylvania R.R. for the first time met its Lake obligations during the week ended Aug. 14. It even did something toward offsetting its deficit. That the Pennsylvania is making a sincere effort, Mr. Gutheim points out, is shown by the fact that it has embargoed other business so as to hasten the movement of coal and is cutting down on the return loading of coal cars in order to expedite their movement.

New Rail Rates to Add 80c on Tidewater Coal from Smokeless Field

UNDER the new railroad rates all tidewater coal from the smokeless field is to be advanced 80c., it is undertood. This will mean that the rate has been advanced 100 per cent since March, 1917. On April 1, 1917, it was increased from $1.40 to $1.50. Under the Railroad Administration's general advance on June 25, 1918, the rate was increased to $2. Under Ex Parte 74, to be made effective Aug. 26, the rate presumably will be $2.80.

The Southern Ry. has announced that rates will be increased as follows at important centers in the South:

Danville, Va.—Coal Creek and Appalachia, old rate, $3.10; new rate, $3.87½.

Greensboro, Durham and Raleigh, N. C.—Coal Creek, Appalachia and Dante, old rate $3; new rate, $3.75.

Winston-Salem, N. C.—Coal Creek, Appalachia, old rate, $2.90; new rate, $3.62½.

Charleston, S. C.—Coal Creek, Appalachia and Dante, old rate $2.50, new rate, $3.12½.

Columbia, S. C.—Birmingham, Jefferson County, Coal Creek, Appalachia and Dante, old rate, $2.75; new rate, $3.44.

Atlanta—Birmingham and Jefferson County, old rate, $1.70; new rate, $2.12½. Walker County, old rate, $1.80; new rate, $2.25. Coal Creek, old rate, $1.85; new rate, $2.31½. Appalachia and Dante, old rate, $2.20; new rate, $2.75. Mackin, Birmingham and Jefferson County, old rate, $2.20; new rate, $2.75. Walker County, old rate, $2.30; new rate, $2.87½. Coal Creek, old rate, $2.35; new rate, $2.94.

Augusta, Ga.—Birmingham and Jefferson County, old rate, $2.55; new rate, $3.19. Walker County, old rate, $2.65; new rate, $3.31½. Coal Creek, Appalachia and Dante, old rate, $2.70; new rate, $3.37½.

Savannah and Brunswick, Ga.—Birmingham and Jefferson County, old rate, $2.45; new rate, $3.06¼. Walker County, old rate, $2.55; new rate, $3.19. Coal Creek, Appalachia and Dante, old rate, $2.60; new rate, $3.25. Birmingham, Ala., old rate, 65c.; new rate, 81¼c. Jefferson County, old rate, 70c.; new rate, 87½c., Walker County, old rate, 80c.; new rate, $1.

Mobile, Ala.—Birmingham, Jefferson County, Blocton and Walker County, old rate, $1.60; new rate, $2.

Chattanooga, Tenn.—Coal Creek, old rate, $1.15; new rate, $1.44. Birmingham and Jefferson County, old rate, $1.55; new rate, $1.94. Appalachia and Dante, old rate, $1.60; new rate, $2.

Knoxville, Tenn.—Coal Creek, old rate, $1.10; new rate, $1.37½. Appalachia and Dante, old rate, $1.60; new rate, $2.

Memphis—Jefferson and Walker Counties, old rate, $1.75; new rate, $2.19. Birmingham, old rate, $1.85; new rate, $2.31½. Coal Creek, old rate, $2.20; new rate, $2.75.

Meridian, Miss.—Birmingham, Jefferson and Walker Counties, old rate, $1.80; new rate, $2.25.

New Orleans—Birmingham, Jefferson County, old rate, $2; new rate, $2.50.

Jacksonville, Fla.—Birmingham and Jefferson County, old rate, $2.50; new rate, $3.12½. Walker County, old rate, $2.60; new rate, $3.25. Coal Creek, old rate, $2.70; new rate, $3.37½. Appalachia and Dante, old rate, $2.95; new rate, $3.69.

Rail Shipments of Coal to New England Continue Heavy

THE rail movement of bituminous coal to New England increased again during the week ended Aug. 7. Reports furnished the Geological Survey by the American Railroad Association place the number of cars forwarded to New England destination through the five Hudson River gateways of the Harlem River, Maybrook, Albany, Rotterdam and Mechanicsville at 6,732. With the single exception of the week of July 24, when 7,033 cars were forwarded, this was the largest of the present year. It was 2,089 cars, or 45 per cent, greater than the corresponding week of 1919.

Joint Scale Committee of Central States Deliberates Wage

Operators Refuse Mine Workers' Demand of $2 Increase for Daymen and Ten Cents Per Ton for Pick and Machine Miners

COAL operators and miners of the joint scale committee of the Central Competitive Field, comprising the miners of western Pennsylvania, Ohio, Indiana and Illinois, in session at Cleveland, were deadlocked late Monday night, Aug. 16, on the demands of the daymen of the United Mine Workers of America for a reopening of the scale.

The operators refused the demand of the miners of $2 a day for day and month workers in or around the bituminous mines and for 10c. a ton increase for all tonnage men, both pick and machine, the increases to be retroactive to Aug. 1; for the abolition of the automatic penalty clause fining miners $1 a day for illegal strikes and for settlement of differentials within and between districts by the districts affected.

The operators, however, offered to compromise by granting the day and month men an increase equivalent to the increase granted the pick miners by the President's coal commission last spring. Vice-president Miller of the Illinois Coal Operators' Association said this increase would amount to between 35 and 72c. per day, depending upon what district was taken as a basing point. He said it is probable that the Hocking district of Ohio would be taken as the basing point, which would mean an increase of about 50c. a day.

The operators refused to discuss the question of fines for illegal striking.

The miners voted solidly against the acceptance of this compromise offer, and a joint subcommittee composed of eight members of each side was appointed to discuss a settlement.

A Cleveland agent of the Federal Department of Justice was watching the conference.

The miners' representatives on the committee are Robrt R. Gibbons and William Hargest, western Pennsylvania; John Moore and Lee Hall, Ohio; Edward Stewart and William Mitch, Indiana; Frank Farrington and Harry Fishwick, Illinois, and John L. Lewis, president of the United Mine Workers, ex-officio. The operators are represented by John Donaldson and William Henderson, Western Pennsylvania; C. E. Maurer and G. C. Weitzel, Ohio; M. L. Gould and P. H. Penna, Indiana; E. C. Searles and H. C. Perry, Illinois.

When the strike in the Central Competitive Field came to an end, the President on Aug. 10 wrote a letter to Thomas J. Brewster, chairman of the Joint Scale Committee of the Central Competitive Region, requesting that committee to meet in Cleveland on Friday last, Aug. 13, "for the purpose of considering any inequalities that may have occurred in the award of the Bituminous Coal Commission and the joint agreement growing out of the same."

The meeting opened as requested, but after organizing adjourned till 10 o'clock on the following day, as many of the mine workers' representatives had not arrived. Michael Gallagher, a Cleveland operator, was elected chairman, and William Green, secretary-treasurer of the United Mine Workers, was named secretary. A caucus was held by the mine workers, but with no decision reached till Saturday, Aug. 14, when the committee reassembled and the mine workers demanded a wage increase of $2 a day for daymen and 10c. per ton advance on both pick and machine mining, both to date from Aug. 1.

It is realized that whatever is secured in the Central Competitive Field, which covers only western Pennsylvania, Ohio, Indiana and Illinois, will be the basis on which all other settlements will be made, if any. Consequently the representatives of central Pennsylvania, Iowa, Washington, Kentucky, Oklahoma and Kansas are all present ready to voice the yearnings for a new scale from the men in their several districts.

Frank Farrington loudly announced "I don't know what the rest will get but I do know that the Illinois men will get $8 a day." Suggestions that the operators and mine workers were putting their heads in the noose of the law, being, many of them, under indictment for having met before to discuss a wage scale, was met, it is said, by the statement of operators' officials that this difficulty "had been taken care of." There was a suggestion that Judge A. B. Anderson would regard this meeting to modify the Bituminous Coal Commission's arbitrament as in contempt of court, though the prior meeting to form a contract in compliance with the arbitrament was allowed to pass without action, assurances that this would be the case having been thought to have been obtained in that case also.

Exact Limits of Area Covered by Strike

THE U. S. Geological Survey thus records the paralysis of operations in the Eastern Interior field caused by the strike of the daymen; the recital is based on the week ending July 31:

"For the first time since the coal strike in November, 1919, labor became the dominant factor limiting production. Adjacent districts benefited by the strike, as they received the cars that it released. No general improvement in car supply, however, occurred at points distant from the strike area.

"Labor shortage and strikes combined caused a loss of 31.8 per cent of full time, as against 13.7 per cent during the preceding week and 6.4 per cent in the last week prior to the strike. The loss attributed to transportation was but 19.6 per cent. The influence of the disturbance is clearly seen in the percentage of full-time capacity realized in actual output, which declined from 58.2 in the week of July 17, first to 57.7, and later, in the week of July 31, to 45.9 per cent.

"The strike centered in Illinois and Indiana. Practically all the mines in southern Illinois were closed down, except for about 10 per cent of the capacity in the Belleville district. In central Illinois less than 3 per cent of the ordinary output was attained. The shutdown was less complete in the northern half of the state, but even there more than three-quarters of the capacity reporting in the Fulton-Peoria district was down, and in the northern Illinois field the proportion down was nearly as great.

"Across the neighboring State of Indiana the strike spread like a great wave. On Monday, July 26, fifteen mines in the State were down. By Saturday practically every mine closed. The tonnage lost because of the strike averaged 75 per cent of capacity.

"Nor were Illinois and Indiana the only districts to

suffer. The wave crossed the Mississippi; in Iowa 13.6 per cent and in Kansas 23.9 per cent of full time was lost because of the strike. In the Eastern fields the labor situation changed but little. The deadlock in the Kenova-Thacker district continued to keep idle 75 per cent of the capacity of the field. In Alabama, as before, 10 per cent of the capacity was down. Labor losses in central Pennsylvania amounted to 3.4 per cent in section A, 12.6 per cent in section B, and 10 per cent in section C."

Indiana Coal Commission Begins Work

JESSE E. ESCHBACH, chairman of the Indiana Coal and Food Commission, has mailed to all mine operators and coal wholesalers and retailers in the state a copy of the Coal Commission Act passed by the recent special session of the State Legislature, together with a notice that the law is now in effect and application blanks for licenses and blanks on which information concerning the amount of coal mined and sold and the prices at which it is sold have been made out. He also announced that John O'Neal, a field examiner of the State Board of Accounts, has been transferred to the Coal Commission as an accountant. Mr. O'Neal came to Indianapolis from Washington, Ind.

Open-Top Priority for Coal Extended 30 Days; No Assigned Cars for Storage

EFFORTS on the part of public utilities to have their assigned car privilege extended so as to include coal for storage were unsuccessful. Their principal drive was made, however, to secure the extension of Order No. 9. This extension was granted in Service Order No. 12, the full text of which follows:

It is ordered that Service Order No. 7, entered June 19, 1920, as amended by Service Order No. 9, entered July 13, 1920, and that Service Order No. 9 as amended by order entered July 29, 1920, be, and they are hereby, continued in force and effect for a period of ninety consecutive days beginning with June 21, 1920.

And it is further ordered that copies of this order be served upon the carriers upon whom service has been made of Service Orders Nos. 7 and 9, and that notice of this order be given to the general public by depositing a copy hereof in the office of the secretary of the commission at Washington, D. C.

Attempt to Murder Willis Branch Miners

IN THEIR desperate effort to close down the Willis Branch and other independent mines in the New River fields, United Mine Workers about 2 a.m. of Aug. 8 exploded a heavy charge of dynamite beside the engine house of the Willis Branch Coal Co. at Willis Branch and followed that by heavy firing from high-powered rifles. The firing came from the Raleigh side in the direction of Cirtsville, from between Cirtsville and Weirwood and also from the vicinity of Weirwood, and volleys were fired first from one direction and then from another, about 500 shots in all being noted by residents. A large number of the company houses were hit, some of them several times. Many of the people in the Willis Branch community were badly frightened. At one point from which the firing came 83 empty shells were picked up after daylight on the morning of Aug. 8. Two members of the state police were on the property at the time of the shooting. The charge is made that a deliberate attempt is being made to murder the miners at work at Willis Branch.

Tidewater Coal in August

STATISTICS supplied the Geological Survey by the Tidewater Bituminous Coal Statistical Bureau show that during the first week of August the movement to New England reached 256,000 net tons, while exports were 490,000 net tons. This was at a monthly rate of 1,100,000 tons to New England and 2,060,000 tons for export. In June, the latest month for which complete figures are available, the New England movement was 772,000 tons and the exports 2,175,000 tons. The first week of operation of Service Order No. 11 thus saw a slight reduction in exports and a decided increase in the tonnage to New England. The latter, however, was still somewhat short of the goal of 1,250,000 net tons per month fixed by the order. By ports, the week's performance was as follows:

TIDEWATER BITUMINOUS COAL SHIPMENTS FOR FIRST WEEK OF AUGUST, 1920, BY PORTS

Destination	(In Net Tons) New York	Philadelphia	Baltimore	Hampton Roads	Totals Dumped
Coastwise to New England	96,000	9,000	26,000	125,000	256,000
Exports		43,000	160,000	287,000	490,000
Bunker	72,000	18,000	27,000	80,000	197,000
Inside capes		45,000	26,000	9,000	80,000
Other tonnage	168,000			10,000	178,000
Totals	336,000	115,000	239,000	511,000	1,201,000

The foregoing figures, however, represent coal dumped at the ports rather than coal loaded at the mines for transshipment to New England via tide. Light on the movement from the mines is thrown by the statement furnished by the American Railroad Association in summarizing the situation that at the end of the first week's operation under the order shipments were 1,588 cars behind schedule, and as the total initial allotment for New England was 923 cars per day the movement may be said to have been about 1.7 days in arrears on Aug. 7.

Text of the New Reconsignment and Demurrage Order

SPECIAL Permission No. 50,321, embodying new reconsignment rules and penalty charges for detention of railroad equipment, emergency penalty charges for detention of all open-top cars and cars loaded with lumber, coal and coke, which was issued by the Interstate Commerce Commission July 31, is as follows:

Reconsigning Rules and Penalty Charges

Ordered that all carriers and their lawfully appointed agents are hereby authorized to publish and file consecutively numbered supplements to or reissues of their tariffs, such supplements to or reissues of tariffs to establish reconsigning rules applicable on all freight in open-top cars and coal and coke in all cars, and penalty charges for detention to all open-top cars and cars loaded with lumber, coal, or coke, as hereinafter set forth, and to be made effective upon not less than five days' notice to the commission and the general public by posting and filing in the manner required by law, and to supersede and cancel rules and charges in conflict therewith.

Rules for Open-Top Cars and Coal and Coke

Will not apply on coal originally consigned to Lake or Tidewater ports for transshipment to vessels and reconsigned to other ports or to other consignees at same port, nor to coal consigned to Lake ports for transshipment to vessels and left over after the close of navigation.

Only one reconsignment will be permitted, namely:

1. If reconsignment order is received in time to permit instructions to be given to yard employees prior to arrival of shipment at billed destination or if such billed destination is served by a terminal yard then prior to arrival at the terminal yard a charge of $2 per car will be made for this service.

2. If reconsignment order is received in time to permit instructions to be given to yard employees within twenty-four hours after arrival of car at destination or if destination is served by a terminal yard then within twenty-four hours after arrival at such terminal yard a charge of $5 per car will be made for this service.

3. When not reconsigned as above any order for reconsignment, diversion or reshipment will subject the freight traffic to the sum of local rates to and from points of reconsignment plus $5 per car.

Rules Nos. 1 and 3 apply to reconsignments at all points in the United States; and in addition thereto rule 2 will apply to reconsignments at points within the territory east of the Illinois-Indina state line (not including Gary and points within the Chicago switching district) and on and north of the Ohio River, also points on the lines of the Chesapeake & Ohio, Norfolk & Western and Virginian railroads east of Cincinnati.

EMERGENCY PENALTY CHARGE FOR CAR DETENTION

Will not apply on cars held at ports for transshipment by vessel.

To prevent undue detention of equipment under present emergency the following additional penalities for detention of equipment will apply:

1. On cars loaded with lumber held for reconsignment a storage charge of $10 per car will be assessed for each day or fraction of a day that car is held after forty-eight hours after the hour at which free time begins to run under the demurrage rules.[1]

2. On all open-top cars and on all cars loaded with coal or coke not released within the free time as prescribed in the National Car Demurrage Rules, J. E. Fairbanks, I. C. C. No. 8, supplements thereto or reissues thereof, a storage charge of $10 per car per day or fraction of a day will be made until car is released.

3. The charges provided above will be in addition to any existing demurrage and track storage charges and are subject to the provisions of the National Demurrage Rules with respect to notifiction, computing time and allowances provided for in Rule 8 thereof.

Expires with close of business Jan. 1, 1921.

This authority does not waive any of the requirements of the commission's published rules relative to the construction and filing of tariff publications nor any of the provisions of the Act to Regulate Commerce, as amended, except as to the notice to be given.

This permission is limited strictly to its terms and does not include later supplements to or reissues of the tariffs issued or amended thereunder. It is void unless the tariffs or supplements issued thereunder are filed with the commission within thirty days from the date hereof, or within such shorter time as may be designated herein. Such tariffs and supplements must bear the notation "Issued on five days' notice, under Special Permission of the Interstate Commerce Commission No. 50,321, of July 31, 1920."

[1]Applies on lumber, shingles, poles, piling, mine timber, box barrel or crate material and other forest products on which the lumber rates apply.

Demand Transportation to Working Places

ABOUT three hundred men employed at mine No. 210 of the George M. Jones Co. near Athens, Ohio, operated under the name of the Ohio Collieries Co., went on a strike recently because the drivers refused to haul the men to their working places. The drivers demanded overtime for the work, which was refused by the company. Efforts are being made to settle the matter.

Forbids Wagon Mines to Use Open-Top Cars

IN PITTSBURGH coal circles the presumption is that the railroads will carry out the order issued by the Public Service Commission of Pennsylvania after the hearing Aug. 9, that only box cars be furnished for wagon or truck loading of coal. It is known positively that since the order was issued some open-top cars have been furnished, but only a few instances are known, and it is thought possible that the furnishing of these cars was in fulfillment of old promises, in which case a repetition would be improbable.

Utah Produces Nearly Two Million Tons In Five Months

COAL production in Utah for the first five months of the current year aggregated 1,927,000 tons, according to figures just received by C. A. Allen, of the Bureau of Mines. The figures are based on the number of cars of coal loaded by the coal-carrying roads and are ascertained weekly.

Officials to Confer on Effect of Service Orders on Shipping Charters

THE effect of the Interstate Commerce Commission's service orders on ship charters is to be the subject of a conference in the near future between Interstate Commerce and Shipping Board officials.

It is understood that the Shipping Board has requested a priority order for its coal requirements.

Big Spot Prices Cause Kentucky Strike

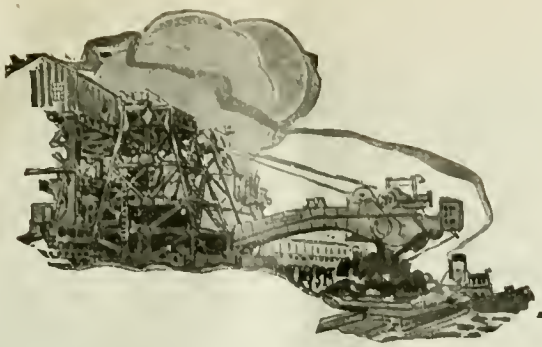
FIVE coal mines on Straight Creek, Bell County, Kentucky, closed down Aug. 5 because the men believe they should be getting a larger part of the big prices being paid for spot coal. About three thousand men were laid idle. The mines affected are those of the Federal Coal Co., the Roth Coal Co., the Waggoner Coal Co., the Four Jacks Coal Co. and the Liberty Coal Co. A conference of operators regarding the situa tion was held Aug. 6.

Pennsylvania Service Commission Orders Cars to Carry Building Materials

THE Public Service Commission of the State of Pennsylvania has issued an order requiring railroads in that state to furnish 1,400 open-top, hopper-bottom cars weekly for carrying road and building materials. It is believed that the action on the part of Pennsylvania will be duplicated in numerous states and unless it can be shown to be in conflict with the Interstate Commerce Commission's orders will have decided bearing on coal transportation.

New Freight Rates to Add 90c. a Ton To Washington's Coal Bill

PUBLIC Utilities in Washington, in asking for an increase in rates, estimate that the new freight rates will add 90c. per ton to the cost of their coal. Their requirements are 215,000 tons annually.



Production and the Market

Weekly Review

Production Gains with Better Car Supply — New England Shipments Approach Scheduled Amounts — Prices Decline Slightly—Continued Increase in Production Is Foreshadowed—Lake Dumpings Over Million Tons

IMPROVEMENT in the coal situation was marked and general throughout the country last week. Car supplies were more adequate, with production correspondingly heavy. The order terminating the Indiana and Illinois daymen's strike did not effect a general resumption of work until the latter part of the week ended Aug. 7. Production of bituminous coal for that week, however, is estimated by the Geological Survey to be 10,334,000 net tons, an increase of almost one million tons over the output of the previous week, although 546,000 tons less than that of the week before the strike. Loadings on Monday and Tuesday (Aug. 9-10) indicated a rapidly increasing rate of production.

Anthracite production for the first week in August was 1,757,000 net tons, a decrease of 103,000 tons from the preceding week. Beehive coke production, estimated at 409,000 net tons, was the highest in weeks.

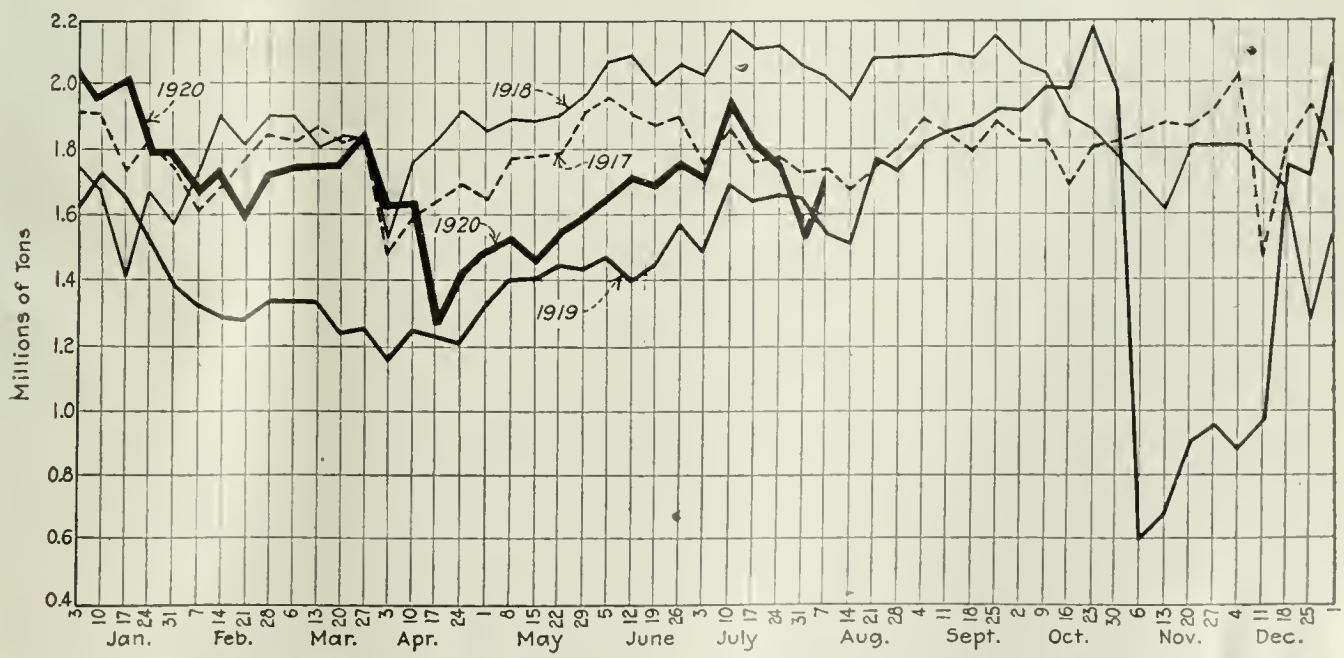
There appears to be a growing tendency on the part of buyers throughout the country to withdraw from the active market and await developments; prices are slightly off because of this. Better production increased tonnage available for industries after filling priority quotas, allaying to some extent the fears of consumers.

All-rail shipments to New England increased beyond expectation, while priority requirements via tidewater have been amply met. During the first week of August New England tidewater movement reached 256,000 net tons, while exports were 490,000 net tons. Shipments to Lakes have nearly reached the scheduled rate of 4,000 cars daily. Preliminary figures of Lake dumpings for the week ending Aug. 14 show 1,039,000 tons cargo and fuel coal, an increase of 200,000 tons over the previous week. This was easily the largest Lake tonnage handled in any week this season.

Lake Coal Dumped Season to Aug. 14
(Net Tons)

	Cargo	Fuel	Total
1919.....	13,889,110	624,765	14,513,875
1920.....	8,069,933	542,627	8,612,560

Average Daily Production of Bituminous Coal*



*From weekly report of Geological Survey.

Reports From the Market Centers

New England

BOSTON

Prices Are Distinctly Easier—Demand Slackens—All-Rail Movement Large—Assigned Cars Shorten Supply in Certain Districts—Anthracite Receipts Improve—Demand Continues Insistent.

Bituminous—The market shows a decidedly easier tone. Consumption has been relatively light and stocks have increased to such extent that consumers are now disposed to await developments. A large share of the all-rail coal coming to this territory is on contract and as these deliveries improve there is bound to be less interest in the spot market.

Buyers are also affected by the publicity given to arrangements for increased shipments by water. A few days after the priority went into effect there was some duplication of selling effort on the part of several shippers and the buyers who must be depended upon to absorb any largely increased volume got an unfavorable impression. Operators in West Virginia offered a considerable tonnage of high-volatile coal at prices from $6@$7 per net ton at the mines and were much surprised to find New England buyers not only in doubt but actually turning down the coal.

It is hard for the trade outside this market to understand why industries continue buying spot coal all-rail at a delivered cost well above that of high volatiles from West Virginia, but it should be remembered that the latter were never well received in New England except by the railroads and that there is great aversion to possible demurrage charges at Hampton Roads.

Service Order 11 has already been the means of a considerable extra movement to Baltimore as well as to Norfolk and Newport News, but so little of this tonnage is from low-volatile districts that it is doubtful whether buyers here will respond to the extent that producers were led to expect. It has been shown this week that the percentage via Philadelphia and New York are being overshipped in normal course and that no action need have been taken on the roads serving those piers. This leaves practically all the relief for New England to come from gas coal districts, an objective for which New England would not have fought quite so strenuously had it been realized this would be the outcome. In fact, the railroads themselves seem content for the moment to observe the effect of their strenuous efforts to increase shipments of supply coal all-rail.

Movement by the rail route is increasing. Embargoes are certain to be intermittent while the Hudson River gateways are being fed to capacity, but a sustained movement of 1000 cars daily will go a long way toward correcting the New England situation.

On the N.Y.C. and connecting lines car supply has been favorable enough to make assigned cars less of an inducement to operators than is the case on the Pennsylvania. In several districts served by the latter general car supply has been much affected and assigned cars are blamed for the shortage.

The trade is watching with much interest daily developments as to the various priorities. Those in touch with Shipping Board circles see the result not only in ocean freight rates but in higher prices for bunker fuel. It is considered only a question of time when the gate will again be opened for export.

Current quotations on bituminous at wholesale range about as follows:

	Clearfields	Cambrias and Somersets
F.o.b. mines, net tons	$10.25@$11 25	$10 75@$12 25
F.o.b. Philadelphia, gross tons	13.40@ 14 65	14.00@ 15.50
F.o.b. New York, gross tons	13.75@ 15.00	14.40@ 16.00

Anthracite—From New York there has been much better movement of domestic sizes. Improvement at Philadelphia is slight, but the outlook is better. The impression is that shipments will be restored to normal volume within a few weeks.

Retail demand continues most insistent. While there is much anxiety in some communities, particularly along the New Haven road, the opinion is now that somehow there will be anthracite enough to go around. The unevenness of prices at first hand makes it very difficult for retailers to fix a satisfactory schedule for the consumer.

Tidewater

PHILADELPHIA

Embargo Against the City Being Modified — Prices Remain Firm — Steam Sizes Are in Excellent Position — Bituminous Is Quiet, Due to Price Agitation—Utility Plants Are Cared For.

Anthracite—With fall only a few weeks off the dealers are probably more anxious at this time than they have been for the past two years. The June rail strike completely upset their calculations. Up to the time of the strike most of them were well ahead of their deliveries.

There is not a dealer here who does not have orders on file that he felt reasonably certain of filling long ago.

The Reading Ry. continues an embargo in the main, but this week notices were sent out that the embargo had been modified to the extent that some of the outlying sections of the city can now receive shipments.

It will be some time before the local dealers can hope to receive shipments in sufficient volume to keep their equipment moving to capacity. The consumer demand grows stronger each week.

There have been no changes recently in the independent prices of coal, and the average figure for egg, stove and nut is $9 at mines. All independent shippers report that they are daily in receipt of offers from distant markets to buy all of the large family coal at a price of $12 at the mines.

At the mines conditions are more satisfactory, almost to the point that prevailed prior to the rail strike. It is not believed that any colliery is now losing time for the lack of cars, although all of them could use a greater number of men.

With the exception of barley, the steam trade is all that could be desired. The companies are behind their orders on buckwheat, and in some instances on rice. With their price at $4.10 the big shippers have many inquiries, most of which are declined. Independent sales of buckwheat are inclined to run higher than last week and close to $6 is about the average price now. For rice $4 is easily obtained.

Bituminous—In a way the spot market is quiet, for the reason that coal is not actually being offered by the sellers and the consumer is holding off, feeling that prices will eventually shade down considerably. Tonnages of good coal have changed hands at $13 a ton for Pennsylvania steam grades, yet pretty fair coal has been offered as low as $10.50. The gas coals seem still to command a figure on the same basis as the steam grades and at times a trifle higher, as the demand for this coal is exceedingly strong. An increasing numbers of houses are adopting the plan of offering to buy coal for the consumer on a commission basis.

The principal objection to the preferential orders is that it places the territories thus favored in the position of expecting to buy at their own prices. In the case of concerns who have contracts the order has no real objections, but other purchasers often offer quite low prices.

The plan of taking care of the vital industries here is working out quite well, for the reason that the supply of coal for the big utilities has become such that the purchase of spot coal by such plants has been almost entirely eliminated, and they are also able now to stock some fuel.

In the general industrial line there is a slowness to go after increased shipments, as with many of them on short working time they are consuming a small tonnage and they are able to ac-

cumulate a winter stock from the shipments from their regular sources.

In order to help the car supply, the railroads are asking permission to restrict the delivery of cars to the wagon mines. In this effort they are backed up by the operators who feel that the wagon mines with practically 100 per cent car supply tie up equipment which could be made much better use of in the regular trade.

Due to an embargo at Port Richmond piers, the loading of coal has been much interfered with, particularly bunkering, and there is an inclination on the part of shippers to object to the embargo as not being entirely justified by conditions.

NEW YORK

Anthracite Demand Is Stronger—Dealers Declare Stocks Will Be Adequate This Winter—Local Strikes Limit Production—Prices Are Slightly Lower.

Anthracite—Demand for steam sizes had a noticeable strengthening during the past week. Many soft coal consumers are now taking the small sizes of anthracite, not being able to secure sufficient bituminous tonnage to keep their plants running.

At line points barley demand is particularly strong. Domestic sizes continue in strong demand. Dealers are contenting themselves mostly with company shipments to avoid paying the high premiums asked for independent coal. At line points dealers continue to pay $13 and more for supplies. With a normal winter season it is expected that this city will be able to maintain an adequate supply.

Bituminous—A recession in price is looked for by some of the leading factors in the wholseale trade, due principally to the hesitancy of buyers to place orders at the present prices. One embargo after another has a tendency to restrict distribution and some are of the opinion that there will soon be an easing off. Not that the fixing of priority order tends to a more normal supply of coal, but when any particular section is favored with a certain proportion of the output of a given district, the buyer instead of taking advantage of the opportunity offered to stock up while coal is available, often holds off in expectation of better prices developing by allowing the unsold coal to pile up.

Although Order 11 is now in force nearly two weeks, practically no tonnage destined for the pool has arrived at Tidewater and there have been no sales made which would indicate the probable range. It is expected that the figure will be about $8 at the mines.

Prices range from $15.25 on Pool 18 to $17 on Pools 9 and 71. Coal can be secured at tide if consumers will pay the ruling price. There is considerable Pool 18 coal at Tidewater which has not been moved.

At mines prices range from $10 on Pool $18 to about $12.50 on Pool 10; $13 for Pools 9 and 71. Gas coals are selling around $13 to $13.75.

The strike at the Pennsylvania Coal Co.'s mines continues and the unrest among the employees has spread to other of the company's collieries, with the result that output has been considerably curtailed. This with the tie-up of the Reading's tugs has caused dealers some apprehension.

Current quotations for company coal are unchanged since last week.

BALTIMORE

Coal Men, Shipping Interests and Business Men Are Stirred Over Soft-Coal Situation — Conferences Are Called — Hard-Coal Outlook Is Far from Bright.

Bituminous—A series of conditions growing out of the various Government priority orders, railroad embargoes and orders, and the general tangle in the movement of service Order 11 coal for New England, have stirred coal men, shipping men and business men here deeply. The trade organizations are now involved and a series of conferences are planned for this week in an effort to straighten out the tangle.

A demand may be made for reversal of the order of railroads against bunkering ships at the coal piers in a move backed by the U. S. Shipping Board to secure a quicker turn-around of vessels here, the port having been officially stamped as the slowest on the Atlantic seaboard in this respect.

Another demand is likely to be made by merchants on the Interstate Commerce Commission for reversal of the New England priority. This order is considered to be a discrimination against business generally on the eastern seaboard (except in the Northeast), as New England, acting under the Government priority movement, is holding out for coal in the spot market for not more than $5 a net ton at the mines. On the other hand Baltimore and other industrial centers east are paying as high as $10@$14 a net ton f.o.b. mines for the same coal in the open market, because its supply is restricted to a certain zone and it is not protected by a priority order.

Business men are deeply stirred by the fact that as high as $17@$18 a gross ton have been paid at the piers here for the same coal which New England purchasing agents, now in this section, declare they are instructed to pay no more than $5 for on a net mine basis.

Meanwhile, despite railroad embargoes and priority orders, considerable coal is still going over the piers into ships in the export trade. Furthermore the Shipping Board is insisting that vessels be allowed to bunker at piers instead of in midstream at additional cost and loss of time in turn-around, and it suddenly orders all its ships out of the export coal trade, because of the drop in ocean freights that followed severe congestion of vessels at loading points.

The export figures for July, despite the many shipping delays, were healthy, as 73 vessels took away a total of 398,437 tons, with 39,907 tons additional taken for bunker use.

Anthracite—The hard-coal situation here is anything but encouraging. Some coal is now coming in, but it is all on the July orders, and no August coal has shown up at this writing. The prospect of $15, or even near $16 coal after freight and wage increases this fall, is disquieting to both the trade and those consumers as yet not supplied.

Lake

CLEVELAND

Stimulation of Order 10 Reflected in Increasing Lake Shipments—Fear of Coal Shortage Still Exists—Spot Coal Grows More Scarce — Prices Are Increasing.

Bituminous—With increasing priority shipments to the Northwest supplies of available coal for commercial uses in this district appear to be dwindling correspondingly. Developments of the last few days, however, have encouraged a more confident feeling among operators. Car placement in the No. 8 district averaged 78 per cent daily for the first four days of this week. Last week the average was 54 per cent, two weeks ago it was 55 per cent and three weeks ago it was 61 per cent.

The improvement is described by operators as being significant, but of too short duration to be dependable. It is pointed out that during the period following the settlement of the coal strike late last year and the middle of June the average weekly placement of cars at mines in the No. 8 district was only 54 per cent. The improvement this week is believed to reflect increased efficiency of railroad employees and better movement of cars into the coal trade under the influence of priority orders.

The Chamber of Commerce is still attempting to have the Interstate Commerce Commission modify Order 10. No response has been received from the commission as yet. Industrial users are still restless regarding the outlook but efforts to acquire substantial stocks even by bidding $10 a ton or more for mine-run slack are meeting with little success because of the lack of coal.

Pocahontas and Anthracite—Receipts of Pocahontas are reported by dealers to be showing no improvement and the retail trade is much disturbed over the outlook. No appreciable change has taken place in the anthracite market, receipts of which continue at somewhat better rate than other grades of coal.

Lake Trade—For the first time this season the objective of 4,000 cars daily at Lake ports was reached and exceeded when on Monday of this week 4,700 cars were handled. Reports of the Ore & Coal Exchange show that steady and substantial improvement is being made in shipments.

The shipments this week are running at the average rate of 3,333 cars daily, or a total for the week of 20,000 cars.

Last week shipments totaled 19,500 an average of 3,250 daily, while the week before the total movement was 18,500, an average daily rate of 3,080. For the last three weeks the average of daily shipments has been 3,222, or 14 per cent under the 4,000 cars fixed by the Interstate Commerce Commission. Indications are that by next week the coveted level may be maintained.

Retail prices of coal per net ton delivered in Cleveland are:

Anthracite—Egg and grate, $13.50; chestnut and stove, $13.75.

Pocahontas—Shoveled lump, $11.75; mine-run $10.50.

Domestic Bituminous—West Virginia splint, $11; No. 8, $10@$10.50; Millfield lump, $13.50; Cannel lump, $14.50.

Steam coal—No. 6 and No. 8 slack, $10@$11; No. 6 and No. 8 mine-run, $10@$11; No. 8 ¾-in. lump, $10.50@$11.

MILWAUKEE

Apathy Rules the Coal Market—Lake Receipts Are Slow—Stocks Absorbed as Fast as They Are Received.

Apathy and resignation, born of utter helplessness, rule this coal market. There has been no perceptible increase in Lake receipts since the recent priority order in favor of such shipments was issued, but a better movement is expected daily. Receipts by rail continue slow. Small dealers complain that their coal allotment from the docks is hardly sufficient to enable them to assure their patrons, who are becoming more and more concerned over their fuel supply. In the first ten days in August a dozen cargoes of soft coal reached port, including some Pocahontas. Seven loads of anthracite have come in during the same period. Lake receipts thus far this season foot up 425,907 tons of anthracite and 690,688 tons of soft coal, against 461,372 tons of the former and 1,895,929 tons of the latter during the same period last year.

BUFFALO

Bituminous Prices Slackening—Cars Are More Plentiful—Anthracite Moving More Slowly—Lake Shipments Increase.

Bituminous—The trade is quiet, jobbers apparently waiting to get a supply after the new freight rates come in, anticipating lower prices in the meantime. For some time the demand has been lessening, which some shippers say is merely the lull before the fall trade sets in.

Jobbers say they can secure coal for about $8.50 net at the mines, while quotations from Pittsburgh range to $12.

Complaints from operators who are not able to keep their men continue. Many of the mines are actually receiving on contract less money per ton than the wildcat mines are paying for their labor. This state of affairs will last till prices drop considerably further than they have yet. As a rule, contracts at low prices are only about half filled.

Anthracite—Supply is very low and if labor difficulties continue the situation will be serious. Shippers with several mines idle are very uneasy but they cannot pay the wages demanded and so wait developments. Locally the complaint of no coal to distribute is common. Canadian dealers continue active in their efforts to secure tonnage.

Lake shipments increased 25,000 tons over the previous week.

The week's shipment was 119,220 net tons, of which 60,520 tons cleared for Duluth and Superior, 21,200 tons for Chicago, 16,000 tons for Milwaukee, 7,800 tons for Port Arthur, 6,400 tons for Fort William, 6,000 tons for Racine and 1,300 tons for the Soo.

Coke—The market is high, though not active, most furnaces having a good contracted supply. Prices remain strong, $18@$20 for the highest grades.

Inland West

DETROIT

Coal Hoarding Is Denied by Industries — Authority To Supervise State Shipments To Be Asked — Anthracite Stocks Are Low — Lake Tonnage Bounds Under Priority.

Bituminous—Charges by members of Michigan's recently appointed coal committee that large Detroit industrial plants are contributing to create unduly high prices for coal by hoarding unnecessarily large reserve stocks, are met with denial by officers of a number of the leading manufacturing establishments.

To date the state committee has apparently made little progress in increasing the supply of coal available. It has been decided to send a delegation to Washington to ask President Wilson to designate the state committee as Fuel Administrator for Michigan, conferring on it authority to supervise reconsignments of coal, confiscations and general supervision over distribution in the state. An attempt will be made to obtain from the Interstate Commerce Commission an order directing preferential shipments of coal to Michigan for about 10 days, after termination of the order increasing Lake shipments to the Northwest.

Anthracite—Very little anthracite is to be found in the yards of Detroit retailers. Shipments are not arriving very freely and household consumers are waiting anxiously for the delivery of old orders. Predictions are being made that anthracite will be selling at $18@$20 a ton in Detroit before winter arrives.

Lake Trade—There has been a substantial increase in volume of shipments to Lakes. On several days recently receipts exceeded 4,000 cars. Additional vessel capacity is sought by shippers.

COLUMBUS

Car Supply Is Somewhat Reduced—Lake Trade Is Increasing Under the Influence of Priorities — Prices Still Remain High.

A better tonnage is going to the Lakes and public utilities are taking a large percentage of what is left. Little coal is moving in commercial channels. Reduced car supply is reported from most of the producing fields of the state. Railroads are taking a large tonnage at present. Steam plant stocks are short and some have been compelled to close down. Others are securing a supply of coal on day to day basis.

The domestic trade is slightly better as dealers are securing a larger tonnage to take care of urgent orders. Retail prices continue high and show a wide range. Hocking lump retails $8.50 @$9.50, while Pomeroy Bend lump is about 25c. higher. West Virginia splints sell in the neighborhood of $10 @$10.50. Pocahontas retails for $11@$11.50.

The Lake trade is showing up better. The priority order is now having its effect but with it has come some congestion which is hindering the free movement of Lake coal. At the Toledo docks loadings have been increased fully 65 per cent over the earlier records of the season and this same increase is shown at other docks.

Prices at the mines of the principal coals used in central Ohio are:

Hocking lump	$5.50@$7.50
Hocking mine-run	5.50@ 7.50
Hocking screenings	5.00@ 7.25
Pomeroy lump	6.00@ 9.00
Pomeroy mine-run	6.00@ 8.50
Pomeroy screenings	5.75@ 8.50
West Virginia splints, lump	7.50@ 9.50
West Virginia mine-run	7.50@ 8.75
West Virginia screenings	7.00@ 8.50
Pocahontas lump	8.00@ 9.50
Pocahontas mine-run	8.00@ 9.25

ST. LOUIS

Conditions Show Considerable Improvement — Outlook Is Extremely Good — Prices Remain Firm — Miners Have Returned to Work.

The St. Louis situation has improved considerably in the last week. There is at the present time a sufficient supply of coal coming in to take care of requirements.

Mines in the Standard field are shipping the greater part of their tonnage to Chicago, northern and eastern markets where prices are better. Car supply in much improved.

Coal coming into St. Louis, sells from $3.50@$6, which is top for Standard coal. The Chicago market is about $7 on coal from this field. Very little coal is coming from the Carterville field and prices range from $6@$8. A few operators are maintaining their circular prices and taking care of some of their customers.

All striking miners have gone back and conditions as far as production is concerned look extremely good if the car supply and transportation hold up.

In St. Louis no anthracite is coming in, nothing from Arkansas and no smokeless, and the coke production continues to decrease.

INDIANAPOLIS

Demand Is Strong from Industries, Utilities and Railroads, but Householders Delay Ordering Coal.

Demand for Indiana coal continues to be the predominating feature of the market. However, there is a noticeable tendency on the part of the private individual to postpone his buying for home use. The demand from industries, public utilities and railroads continues with unabated vigor and is out of all proportion to the visible supply. Coal operators declare that it is impossible to supply the demand with the present car service. Railroads are continuing to confiscate coal almost as fast as operators can find cars to put it in.

Wholesale dealers say there is hardly any demand from the retailer and that most of their trade is with the industries. Free coal is bringing from $7@$7.50 a ton for steam purposes. However, it is seldom that a car can be found and relief must be had shortly or the entire section will freeze during the winter.

Retailers are advising the general public not to purchase coal at the present time. They say coal will be more plentiful as the fall season approaches, because they look for some relief in the transportation problem. Operators declare that if they were given 100 per cent car supply, they would be able to break the present market within 30 days.

CHICAGO

Purchasers Are Refusing To Buy at High Prices—Demand Is Slackening—Buyers Await Contract Shipments.

Since resumption of work, on the part of the strikers at the Illinois and Indiana mines, there has been a decided tendency on the part of the public to keep out of the market and await developments. Several of the bigger buyers of steam coal in the Chicago market have made no purchases for the last few days. A price of $5.25 per ton is all that representative buyers are offering for steam coal, either screenings or mine run, and for the time being are refusing to purchase, except at that figure. Sellers are demanding from $6.25@$7.25, f.o.b. mines, for spot shipments and are having little difficulty in getting their price. The buyers of domestic coal are not quite as anxious as heretofore to purchase spot coal. They are showing a decided tendency to rely on their regular connections and wait until coal is shipped to them on contract.

MIDWEST REVIEW

Market and Labor Conditions Greatly Improved — Prices Steadier at Lower Levels — Production Is Increased Materially.

Since last Monday there has been a decided change for the better, both in regard to healthy market conditions and from the stand point of operation of the mines. Coal is now to be had in larger quantities than heretofore and consequently at prices nearer to normal. The activity on the part of the buying public still continues, but there is some slight letup noticeable. It must be understood, however, that there is no weakening in the market.

Labor conditions in the mining fields are now fairly satisfactory. It is said that West Frankfort was the last district to go back to work in a normal manner, but this is explained by the severe riots that this town has been experiencing during the past week. Outside of West Frankfort, labor conditions both in the Illinois and Indiana producing districts, are reported as satisfactory and no further strikes are looked for.

As was expected, the car supply this week has been excellent. Mines have been able to run about 80 per cent, so far this week; however, it is not thought that the railroads will be able to keep up their car supply on this basis during the next three or four weeks. It has been a decided advantage to the trade to have had plenty of cars at the mines this week, as it tended very strongly to ease the market and put an end to a buying panic that was well under way.

There are certain communities in the Middlewest and Northwest that are still in dire need of coal, but taken all in all, the situation is better and the outlook brighter than it has been for some time. Provided the railroads are in a position to supply the mines with the same proportion of cars as furnished before the strike, the market will continue in a fairly satisfactory way with prices at about the same levels as before the strike.

South

LOUISVILLE

Prices Are Higher and Demand Good —Export Quotations Lead — Field Affected by Various Local Strikes.

Prices have advanced due to heavy demand and are now much higher than ever before known. Eastern Kentucky reports good movement to the Lakes and Northwest. There is a good export demand, although some tonnage has been checked by embargoes, especially through Norfolk. It is reported that export buyers have been offering $12.50@$14 a ton for gas coal.

There is a demand developing for western Kentucky coal for export through New Orleans. Some western Kentucky coals are fairly free of sulphur, and were exported successfully two years ago.

Eastern Kentucky is having severe labor troubles. The western Kentucky operators are a bit worried, labor having become disgruntled as a result of the troubles in Illinois and Indiana.

Several suits have been filed by jobbers during the past week, protesting the operators' failure to supply coal on contracts. Steam grades are extremely scarce and retailers' stocks are depleted.

Car supply shows very little improvement. The Louisville & Nashville R.R. contends that it is supplying a larger amount of equipment but that shortage is largely due to increase in number of mines and size of operations served.

Eastern Kentucky quotations on gas mine run $10@$10.50; steam $9.50@$9.75. Western Kentucky lump average $5@5.50; mine-run and screenings $4.75@$5.

BIRMINGHAM

Car Shortage Blocks Increased Production — Labor Conditions Show Steady Improvement — Market Is Strong and Active, but Little Coal Is Offered.

An acute shortage of equipment has developed on the Southern Railway, resulting in loss of time and tonnage at mines. Much Southern Ry. equipment has been withdrawn from this section and sent to other coal fields on the lines of the system or its connections. Other lines are furnishing cars on about the same basis as has existed for the past several weeks.

Market conditions have undergone practically no change since last report. Demands are as keen as ever, while production has not yet approached figures which will make coal available in excess of contract and booked requirements. Movement of coal is slow and irregular and not in sufficient volume to allow any stock accumulation by coal-consuming interests.

Conditions in sections affected by strikes are showing satisfactory improvement. Mines which have mostly been affected by labor troubles report greatly increased working forces and better production.

Canada

TORONTO

Bituminous Situation Is Unchanged—Anthracite Supply Is Fair, With No Shortage Expected for Winter.

There is no improvement in the situation as regards bituminous coal and it is rapidly becoming serious. Recent shipments show considerable loss of tonnage. Industries are much depressed, throwing many men out of employment. Anthracite supply is fairly satisfactory and dealers are gradually cleaning up delinquent orders, taking new business at prices at time of delivery. No serious anthracite shortage is anticipated for the winter.

The Canadian Railway Commission is now hearing the application of the railroads for an increase, which is practically certain to be granted.

Quotations per net ton are as follows:

Retail:	
Anthracite egg, stove, nut and grate	$15.50
Pea	14.00
Bituminous steam	$15.00 to 16.00
Domestic lump	18.00
Cannel	16.00
Wholesale f.o.b. cars at destination:	
Three-quarter lump	$14. to 16.00

News From the Coal Fields

Northern Appalachian

UNIONTOWN

Car Supply Affects Prices, as Recently Illustrated — New 24-Hr. Demurrage Will Improve Quality of Coal Shipments.

The contention of responsible operators that the acute car shortage is responsible for the high market apparently has been borne out by the fact. A record car placement for two weeks, in many instances approaching requirements, has brought quite a decided break in the market which at this writing is yet uncertain. It is in such a condition that it will be immediately responsive to a turn either way in the car supply.

There is the possibility ever present, however, that railroad motive power will not be equal to a normal car placement, but to date the railroads have been able to move all the freight offered.

Monongahela R.R. car placements this week approximated requirements for the first time since April. In several instances more cars were placed than could be loaded. For the week that line placed 88 per cent coal cars and 90 per cent coke cars, being 2,982 and 2,115, respectively. The placement for the other roads serving the territory was not so good but was much better than has heretofore prevailed.

Coke prices are much in sympathy with the sliding market, and while quotations yet remain stationary there is every indication that a downward trend will shortly make its appearance. Spot offerings are increasing but the trade has been able to absorb all tonnage, as yet at a high figure.

The new 24-hr. demurrage ruling will have a decided bearing on improving the quality of coal shipments. With the market sliding, operators can ill afford to run the risk of having a shipment refused at destination because of quality.

CONNELLSVILLE

Decided Improvement in Car Supply Is Due to Better Movement—Prices Not Quotably Lower, but Market Shows Easier Tone.

Car supplies in the Connellsville region underwent a distinct increase Monday, Aug. 1, and the increased supply has continued to date, with correspondingly heavier production. The better placements are attributable to cars moving less slowly rather than to any additional cars being put into the coke service. In the past few weeks there has been testimony by several furnace interests, of their having to have more than twice as much coke en route, in order to maintain required receipts.

The market has not responded to any extent thus far to the heavier production, but it shows a slightly easier tone. It is related that some consumers who have been free buyers of late have decided to stay out of the market in anticipation of lower prices. Offerings of foundry coke have become distinctly more numerous; but there is no really perceptible change in furnace-coke offerings. The spot market is unchanged: furnace, $17.75@$18.50; foundry, $19@$19.50, per net ton at ovens. It should be noted that for particular quality some consumers have paid $20 and even more.

The *Courier* reports production in the Connellsville and Lower Connellsville region in the week ended Aug. 7 at 194,140 tons, an increase of 21,270 tons over that of the preceding week, and a gain of 10,000 to 15,000 tons over the average for the last two months.

PITTSBURGH

Lake Shipments Are Increasing—Labor Situation Is Unsatisfactory—Some Consumers Predict Lower Prices, but Same Are Holding Firm.

The Lake priority order is being complied with fairly well by the Pittsburgh district. In some quarters it is predicted that a continuance of these shipments will cause a shortage for the line trade. There is little doubt but that the Lake movement will increase the total movement of coal from Pittsburgh district mines by the cars making a greater number of round trips when in Lake service than when engaged in miscellaneous coal service.

There are more cases of plants that are important consumers of coal closing for a combination of reasons, the high cost of coal, the difficulty in moving their finished products and uncertainty as to the future of their markets.

At this writing a meeting is being held in Cleveland on wage matters. Pittsburgh district coal operators have no disposition to give the day men an increase in wages over the recent award, and in some circles it is thought far from impossible that a strike will be attempted.

Car supply continues to improve and while supplies remain far below mine ratings, cases are now becoming frequent of men not working full enough time to load all the cars provided each day. The condition is by no means general, but the cases are not insignificant.

The spot market remains about the same as for several weeks past, quotable at $10@$12 per net ton at mine, Pittsburgh district, there being quite a range on account of quality. Good gas and byproduct generally bring $11 or more. In the past few days a little falling off in demand has been noticed, while several consumers have made definite predictions that there will be a drop in the market very shortly. If they carry out their view by refraining from buying, some price developments may occur within a week or so.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

BITUMINOUS COAL.

	1920 Week	1920 Calendar Year to Date	1919(a) Week	1919(a) Calendar Year to Date
July 24	10,470,000	293,369,000	9,988,000	248,201,000
Daily average	1,745,000	1,630,000	1,665,000	1,422,000
July 31b	9,366,000	302,735,000	9,943,000	258,144,000
Daily average	1,561,000	1,676,000	1,657,000	1,429,000
August 7c	0,334,000	313,069,000	9,359,000	267,503,000
Daily average	1,722,000	1,678,000	1,560,000	1,434,000

ANTHRACITE

	1920 Week	1920 Calendar Year to Date	1919(a) Week	1919(a) Calendar Year to Date
July 24	1,770,000	48,701,000	1,803,000	45,496,000
July 31b	1,860,000	50,561,000	1,812,000	49,309,000
Aug. 2c	1,757,000	52,318,000	1,870,000	49,177,000

BEEHIVE COKE

United States Total

Week Ended Aug. 7 1920c	Week Ended July 31 1920b	Week Ended Aug. 9 1919	1920 to Date	1919 to Date a
409,000	395,000	389,000	12,819,000	11,579,000

(a) Less one day's production during New Year's week to equalize number of days covered for the two years. (b) Revised from last report. (c) Subject to revision.

FAIRMONT

Production Is Best of Year — New England and Lake Shipments Are Heavy, Also to Railroads — Prices Remain Firm.

Production has been greater in northern West Virginia during the first week of August than at any time in the present calendar year. Percentage of supply has probably not been materially increased, since mine rating has been increased to cover shipments to New England and the Lakes. Mines on the Monongahela R.R. fared very well, though about a third of the supply was assigned, running over 100 cars a day. All previous loadings in the history of the Morgantown & Wheeling R.R., which serves the Scott's Run field were eclipsed in the week ending the 7th, owing to a splendid run of cars on that road.

Large quantities of New England coal began moving on Aug. 2. The tonnage allocated to Fairmont field mines was 115 cars a day.

During the early part of the week prices showed a tendency to soften, particularly as to the Lakes and New England, yet after the middle of the week prices rallied and were about on the same level with the previous week.

NORTHERN PAN HANDLE

Car Supply Here Hardly Enabled Mines To Furnish Lake Quota—Eastern Ohio Mines Were Similarly Situated.

While transportation conditions in other parts of the state were conducive to larger loadings such was not the case during the first week of August. There was no change for the better during the first week of August in the general situation in the northern Pan Handle. Indeed, the car supply was hardly more than sufficient to enable mines to take care of their Lake quota of coal under Service Order 10. By the time Lake requirements had been met, there was nothing left for commercial shipment. There seemed to be no reasonable excuse for a shortage of equipment in a field reached by so many railroads.

Eastern Ohio mines were similarly situated, however, it was estimated that only about eight per cent of production was available for industrial and domestic use. As a result of the diversion of so large a part of the allotment of Pan Handle and eastern Ohio mines to the Lakes, industrial concerns faced a scarcity of fuel for operating purposes. There seemed to be little hope of any improvement in transportation facilities, the railroads being unable to promise much relief.

Middle Appalachian

VIRGINIA

Production Increases Slightly — Inland Markets Get More Coal—Coal Moving Heavily on Priority Orders.

Production for the first week of August was 190,000 tons, an increase of about 3 per cent. The average car supply for mines on all five railroads serving the field was 83 per cent.

Embargoes on exports are tending to make more coal available for Inland markets, allaying somewhat the apprehension existing among Virginia consumers. Despite the increased production, the amount of free coal available was greatly restricted as priorities, contracts, railroad requirements and public utilities were taking virtually the entire output of Virginia mines.

LOGAN AND THACKER

Production Makes Marked Gain in Both High-Volatile Fields — Car Supply Improves in Logan and Number of Mines Resume in Thacker Field.

Strides were made forward in production in both the high-volatile fields on the Chesapeake & Ohio and on the Norfolk & Western though from different causes. A marked gain was made in the Logan output through a further improvement in the car supply in the week ended Aug. 7. As the United Mine Workers lost ground in the Thacker field, the mines gained in the amount of coal mined, though the strike was a serious factor in retarding the production of a large tonnage in that field. The car supply was so much better that the necessity of shipping to the Lakes was not working a hardship as it had done during the last week of

the week ended Aug. 7 in the Logan field was the banner week of the year, the mines producing approximately 240,000 tons of coal, representing about 55 per cent of capacity. However, the unusually large number of cars on hand during the second week of August was a result of the suspension of activities at Illinois and Indiana mines during the latter part of July.

Of the total production of Guyan mines in the period ended Aug. 7, fully 75,000 tons were shipped to the Lakes. Eastern shipments were increased somewhat owing to the larger production and because no Tidewater embargoes were in effect.

The resumption of mining took place at some nine different operations in the Williamson field during the first week in August. It was not believed that more than 1,800 miners in all were still affiliated with the union.

POCAHONTAS AND TUG RIVER

Pocahontas Gradually Eliminates Losses From All Causes, Output Closely Approaching a Maximum — Larger Part of Production Moves Eastward — Big Percentage of Tug River Output Goes to New England.

Labor shortages in the smokeless fields on the Norfolk & Western at the beginning of August presented more of a problem than any other phase of mining in the effort of producers to reach maximum output, but during the week ended Aug. 7, operators were gradually overcoming such a shortage. That was an indication of an improvement in the labor situation in the adjoining Thacker field. During the early part of August Norfolk & Western mines received a full car supply.

Losses from all causes were gradually eliminated in the Pocahontas field, however labor shortage was still the largest source of loss.

The shipment of a large tonnage of coal to New England from Pocahontas points was mandatory under Service Order 11; however, there was a heavy demand at Tidewater as well as at Inland East points, and the larger part of the Pocahontas production was moving eastward.

Tug River producers find themselves seriously handicapped in trying to raise production over 85,000 tons a week by their inability to secure results from the miners. Labor simply will not bestir itself. However, as labor conditions are better in the Thacker field, there is also an improvement observable in the Tug River section.

Cars were plentiful in the region during the period in question with no signs that there would be any decrease in the supply. The output for the first week of August totaled about 86,000 tons.

As seven per cent of the field was consigned to the Northwest, and as there was also a large percentage of production moved eastward for New England delivery, little more coal was available for general distribution than had been the case previous to the increase in transportation facilities.

NORTHEAST KENTUCKY

Production Increases 14 Per Cent—Tidewater Shipments Heavier — Lake Requirements Are Met — Prices Are Firm With Byproduct Coal in Demand

Production increased 14 per cent in the first week of August, reaching 144,720 tons, or 58 per cent of potential capacity. Labor shortage and mine disability losses amounted to 5 per cent or 13,000 tons, an increase of 3 per cent in a week.

Tonnage for Lakes was increased to the extent of more than 160 cars, there being shipped in all 623 cars. Not only was Lake tonnage increased, but Tidewater coal was also speeded up, movement to the coast being doubled for the first week of August. Embargoes during part of the time, however, tended to check tidewater shipments.

Mines were generally able to meet Lake requirements. The additional car supply also enabled mines to more nearly take care of commercial orders. However, there was no diminution of demand; gas and by-product coal being in particularly strong demand.

NEW RIVER AND THE GULF

Production Is Much Increased, Due to Good Car Supply—New Rolling Stock Facilitates Car Movements — Export Shipments Heavy — Prices Remain Firm.

In both the Winding Gulf and New River fields the car supply is undergoing improvement and operators hope that perhaps the improvement is perma-

nent. The betterment in transportation facilities comes just in time to enable shippers to take care of the large quotas assigned them for loading to New England and Lakes. Shipping so heavily on priorities has created a scarcity of coal at tide. Prices remain firm with perhaps an upward tendency.

With six hundred cars available on Aug. 2, New River mines were able to produce about 30,000 tons on that date, production dropping through the week to 17,000 tons on Aug. 7. On Monday, August 9, there was more than a 100 per cent supply available for New River mines, the number of cars on hand that date being in excess of 1,000.

Impetus has been given to coal production in the Winding Gulf district not only through increased car supply but also because of equipment being added to the rolling stock of the Virginian Ry. New trains are being added at the rate of three a week on the Virginian and during the week ending August 7 mines were able to secure almost a full week's supply of cars, production being at the rate of 80 or 85 per cent.

KANAWHA

Production Is Greatly Increased—Freight Congestion Temporarily Hampers Mines—Outlook for Cars Is Good — Priority Loadings Progress Satisfactorily.

The percentage of car supply was little better than during the final week of July. That is accounted for because of the necessity to increase the allotment of C. & O. mines to meet the additional demand for priority shipments to New England and the Lakes. The supply at the opening of the week was perhaps 85 per cent, but toward the end of that period it had declined to about 40 per cent. Mines were seriously handicapped during both the first and second weeks of the month by inabilty of the Toledo & Ohio Central R.R., connecting with the Kanawha & Michigan R.R. to handle loads or empties, owing to freight congestion. When the second week of the month opened, however, there were more than a thousand cars available for loading, about 112 per cent of allotment. The increase was said to be due to the sudden influx of cars formerly used in the Illinois and Indiana fields.

Mines were able to make Lake shipments without causing a shortage elsewhere, as had been the case the week before. It was generally understood that some buyers were offering as high as $18 and $20 a ton for export coal. Most producers were fighting shy of such prices.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Miners Strike Against Wage Scale—Many Operators Are Refusing To Abide by Knoxville or Jellico Agreement—Labor Is Going to the Highest Bidder.

Mines in this section are in a chaotic state, due to the varied wages being paid by mine operators. The large operators in the Straight Creek field called a recent meeting to enlist the aid of all operators on both forks of Straight Creek in conforming to a uniform wage and to abide by the Knoxville agreement. Union officials were in attendance and in order to push their cause for recognition took up the plea, advising all operators to sign the Knoxville or Jellico agreement. They favored the latter as it carries recognition of the union. A number of the operators consented to this with the result that their mines promptly closed, miners going over to those who refused to abide by the agreement. Consequently, labor in this field is now going to the highest bidder.

Middle Western

INDIANA

Indiana Operators Ask I. C. C. To Regulate Traffic on Pennsylvania R.R.—Reports Show That Other Roads Provide Good Car Service.

Telegram after telegram is being sent to members of the Interstate Commerce Commission by coal operators of Indiana, who have mines located on the Pennsylvania R.R., asking that the commission take some st
traffic on that road, in order th
may get better service. They point to the number of mines closed down during the past two weeks and show a high percentage of these mines located on the Pennsylvania R.R.

Statistics show, according to the operators, that on Aug. 7 nine of the ten mines closed down in the state, because of car shortage, were on the Pennsylvania R.R.; that on Aug. 9 five, or all of the mines down, were on that road; that on Aug. 10 some 16 out of 20 were Pennsylvania road mines, and on Aug. 11 some 17 mines down, out of 39, were on the same road.

A slump occurred in the Indiana field, due entirely to car shortage, in the opinion of the operators. They point as proof to the fact that during the first three days, following the resumption of work on Aug. 1, the mines worked nearly 100 per cent, but a drop was shown after the supply of cars was exhausted, so that the week's average was only about 50 per cent. The second week cut this average in half.

Western

NORTH DAKOTA

Utility Companies Are Asking Permission To Increase Gas, Electric and Steam Rates in the State

The coal shortage facing the Northwest and the increased freight rates are expected to result in many petitions for the increase in rates by utility companies in the state of North Dakota.

The Red River Valley Power Co., of Grand Forks, represented to the Railroad Commission, in its plea for authority to make surcharges on gas, electric, and steam rates, that the increased cost of coal in the next ten months will be 25 to 60 per cent. The same position is taken by the Union Light, Heat & Power Co., of Fargo, and the Northern States Power Co., of Minot, in asking for authority to make increases. The Railroad Commission set Aug. 16 as the date for the hearings.

UTAH

Circular Announces Prices and Shows Upward Trend—Other Companies Are Expected to Follow.

Coal is once more on the upward trend. The Lion Coal Co., of Ogden, Utah, is announcing by circular that at its Wattis mines in Utah, and at the Rock Springs mines, lump coal will be $5 per ton at the mine; $4.50 for nut or egg; mine-run, $4; slack, $2.50. It is stated that this move is due to the prevailing general prices.

It is expected that one or two operating companies in Salt Lake City will follow the lead of the Ogden concern, and the belief is current that while there is as yet no general concerted action in the direction of raising prices it will be but a short time before all the companies do the same. This will make it necessary for the retailers to add 50c. per ton to their present prices. The new schedule will, therefore, be as follows: Lump coal, $10; nut, $9.50.

Canada

BRITISH COLUMBIA

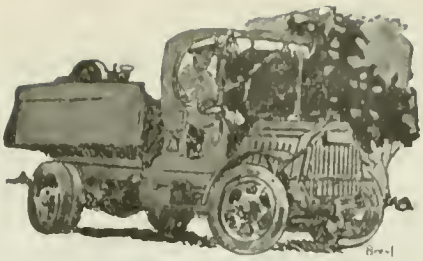
Fatalities in Mines Here Increase in 1920 Over Same Period in 1919—Distribution and Causes of Fatalities Are Noted.

Victoria—The last quarterly report of the Chief Inspector of Mines for British Columbia shows that fatalities in the coal and metalliferous mines over that period totalled five—four in coal mines and one in the metal mines. In the corresponding period last year fatalities were two in coal mines and one in the metalliferous mines.

For the first six months of the year, coal-mine fatalities numbered eight, compared with two in the same period last year, and in the metal mines one as compared with a like number in 1919. Coal-mine fatalities up to June 30 were distributed as follows: Two in the mines of the Canadian Western Fuel Co., at Nanaimo; two in the coal Creek mines of the Crow's Nest Pass Coal Co.; one in the Reserve mine of the Canadian Western Fuel Co.; and one in each of the mines of the Crow's Nest Pass Coal Co. at Michel, No. 4 and No. 6 mines of the Canadian Collieries, Ltd.

Four miners were killed by falls of rocks, two by falls of coal, one by mine cars and one by falling material in a shaft. The single fatality in metal mines occurred at the Nickel Plate Mine, Hedley district.

Mine and Company News



ILLINOIS

Du Quoin—The Bell & Zoller Mining Co. has recently completed the sinking of a material shaft at Mine No. 1 near Zeigler. Sinking has been going on for some time and when this new shaft is in operation it should greatly increase the output of the mine, as no time will be taken up at the main shaft for letting down supplies, etc.

Blairsville—The Madison Coal Corporation has located a site for sinking their new mine here. Plans call for one of the largest and most modern collieries in the field and as soon as the switch is completed, material and equipment will be rushed to the site and the mine sunk. The plans also include the erection of 25 houses near the mine site and later on for the erection of 75 more.

Colp—A new five-track, steel tipple is now being erected by the Franklin County Mining Co. at Franco mine No. 2, at Colp, Williamson County, to take care of its recently increased tonnage. The Link-Belt Co. of Chicago, is installing the shaker screens and picking tables and the construction work is being done by the Wisconsin Bridge & Iron Co.

OHIO

Columbus—The Puritan Coal Co. of Chicago, which has been doing a general jobbing business for twelve years has been reorganized with A. H. Kuhns, formerly salesmanager of the Peacock Coal Co. of Columbus, as vice president and manager. Headquarters are located in the Huntington Bank Bldg. C. L. McGraw is president, R. L. France, secretary, and H. B. Kuhns is treasurer.

PENNSYLVANIA

New Geneva—The Atlantic Coal Co., operating a mine in New Geneva, has been returned to its owners by order of court, discharging Receivers T. J. McClernan and D. J. Murphy. Mr. McClernan has purchased a controlling interest in the company and has assumed its obligations. The company was brought out of its financial difficulties largely by the present coal market actitvities.

Uniontown—The Superior Connellsville Coal Co. has purchased 184 acres of the Pittsburg vein in Luzerne township from Newell A. Porter and James West. The property adjoins the present holdings of the company which were recently purchased by George Whyel, of Uniontown.

Hauto—The Lehigh Coal & Navigation Co., Cranberry Creek Coal Co., Harwood Coal Co. and the Alliance Coal Mining Co. will hold their annual outing and first-aid contest Aug. 21, 1920 at Greenwood Park, Hauto, Pa. Special train leaves Broad Street, Tamaqua at 8 a.m., stopping at Seek and Coaldale. Train leaves Lansford for Greenwood Park at 8: 30 a.m.

Washington—Renewed hope for the early completion of the Chartiers Southern R.R. from Van Eman station or the Chartiers branch to Marianna is given by the closing of a deal in Somerset Township, in which the Hillman Coal & Coke Co., of Pittsburgh, purchased approximately 800 acres of coal land along this line, paying $405 an acre for it.

Work on the Chartiers Southern branch to Marianna was started several years ago. The grading was all completed, a tunnel driven, concrete abutments finished and then the building stopped suddenly and no work has since been done.

TENESSEE

Chattanooga—G. F. Meehan, president of the Ross-Meehan Foundry Co., has been named president of the Signal Mountain Coal Co., recently formed here with a capital of $2,000,000. The concern has taken over the interests of the Suck Creek Coal Co., the Montlake Coal Co., and the Chattanooga & Montlake Railway Company.

WEST VIRGINIA

Bluefield—With a view to leasing a part of the holdings of 10,000 acres on Elk Creek in Logan County, stockholders of the Newberry Coal Land Co. held a meeting here the last of June with prospective lessees, among whom were A. J. King, of Huntington, Secretary Galloway of the King Fuel Co. and W. R. Lilly, of Logan, of the Elk Creek Coal & Coke Co.

War—The Oriental Navigation Co., of New York, has purchased the Williams Pocahontas Coal Co. It is understood that the price paid was in the neighborhood of $400,000. The product of the company purchased will be used in bunkering the steamship company's boats. The Williams Pocahontas Co. ranks as one of the largest on Dry Fork in McDowell County. Control of the company was held by Frank Truscott, of War, W. Va.

Welch—Paul N. Bogart, of Terre Haute, Ind., and others, have organized the By-Products Co. with a capitalization of $250,000. The company does not expect to operate a byproduct plant as its name might imply, but will operate mines working in the Pocahontas No. 3 and No. 4 seams. However, the coal is said to be well adapted for byproduct purposes, the name of the company being chosen for that reason. Officers and directors have not so far been elected. Among those active in organizing the company were: Paul N. Bogart, Warren S. Blauvelt, James S. Raysey and Leon Stern, all of Terre Haute, Ind.; Thomas D. Sheerin and Elmer W. Stout, both of Indianapolis.

WYOMING

Kemmerer—Recently an explosion of a powder magazine at Sublet No. 6 mine of the Kemmerer Coal Co. resulted in eight men losing their lives. The cause of the explosion is a mystery, according to officials of the company, but it is thought that the powder man (who is among the dead) lighted a match while in the magazine. Of the other seven men present at the time of the explosion, some had stopped on their way to work while others had just come off a shift.

CANADA

Sydney, N. S.—A definite plan for the development of the coal properties of the Dominion Steel Corporation has been decided upon by President Roy M. Wolvin, after a tour of inspection.

In addition to extensive development of the Cape Breton properties, involving a probable expenditure of $4,000,000, it has been definitely decided to immediately reopen No. 3 Slope at Springfield, which has not been worked for some years. Another slope known as No. 7 has been worked at Springfield and sunk 100 ft. on a 5-ft. coal seam of excellent quality. No. 6 slope will be more extensively developed for an output of eventually 1,000 tons per day. When the improvements at Springfield are made it will be one of the best equipped coal properties in Nov Scotia with four producing pits.

Kamloops, B. C.—Chua Chua coal lands on the North Thompson River, near Kamloops, B. C., have been bonded to the Queen Bess Mining Corporation of Seattle, Wash., approximately $500,000 being involved in the transaction. Glenville A. Collins, who was chairman of the recent international mining convention at Seattle, Wash., was instrumental in putting the deal through. Drilling is to commence at once and it is expected that the first shipments will be made next September.

Montreal, Que.—To relieve shortage in eastern Canada the Dominion Steel Corporation will spend $5,500,000 in developing its Nova Scotia coal properties, it was announced here today.

Trade Catalogs

Locomotive Coal Plants. The Roberts & Schaefer Co., Chicago, Ill. Folder. Pp. 2; 8½ x 11 in.; illustrated. Photo-cuts of some of the recent plants designed and built by this firm.

Use of Stenches as a Warning in Mines. By S. H. Katz, V. C. Allison and W. L. Egy. Department of the Interior. Bureau of Mines. Technical Paper 244. Illustrated; pp. 31; 6 x 9 in. An account of experiments carried on at the Bureau's experimental mine and at commercial plants.

Time-Saving Accessories for Use with Graphic Meters. The Esterline Co., Indianapolis, Ind. Bulletin. Pp. 4; 8½ x 11 in.; illustrated. Description of some of the things the company has done to make Esterline instruments more serviceable.

Hoisting Hints. Yale & Towne Manufacturing Co., Stamford, Conn. Booklet. Pp. 16; 6 x 8½ in.; illustrated. Notes latest machine shop hoisting hints.

Stratton Air Separator. The Griscom-Russell Co., 90 West St., New York City. Bulletin 1111. Pp. 11; 6 x 9 in.; illustrated. A description of the apparatus and partial list of users.

Elevator Controllers. The Cutler-Hammer Manufacturing Co., Milwaukee, Wis. Publication 840. Booklet. Pp. 24; 8½ x 11 in.; illustrated. Illustrates the new controllers and emphasizes their simplicity, quiet operation and smooth acceleration.

Personals

Dewitt Clinton Grove, past vice president of the Technical Publicity Association, has become advertising manager of the Blaw-Knox Co. of Pittsburgh, Pa., manufacturers of "Blawforms" for concrete construction. Mr. Grove succeeds **George Land,** who resigned July 1, to enter the agency field as head of the Technical Publicity Co., of Pittsburgh. Mr. Grove came to the Blaw-Knox Co. from the H. S. Cameron Pump Co., a subsidiary of the Ingersoll-Rand Co., where he was in charge of the advertising department. Previous to that, he handled the advertising of mining machinery and other equipment for the Ingersoll-Rand Co. Another new man in the Blaw-Knox advertising department is **Leo Robin,** a former newspaper editor of Pittsburgh, who in connection with other duties is editing "Blaw-Knox Life," the company's house organ.

T. E. Spence has recently been appointed manager of the new district sales office which the Reading Iron Co. has established in the Compton Building, 161 Devonshire Street, Boston, Mass. After taking his degree as electrical engineer at the University of Colorado, in 1906, Mr. Spence passed several years with the American Gas Co. He then conducted a private engineering practice in Philadelphia. Later he was associated with the Vacuum Oil Co. of New York in a special sales capacity. This position he resigned in order to join the sales staff of the Reading Iron Co. Before entering upon his new duties in the selling field Mr. Spence spent considerable time gaining a first-hand practical knowledge of the manufacture of pipe by taking an extensive apprenticeship course at Reading.

Edward J. Hackett, president of the E. J. Hackett Coal Co., was elected president of the Louisville Truck Dealers' Association recently. The association has been incorporated under the laws of the State for the purpose of co-operation, establishment of standards of practice and promotion of "good roads."

W. E. Holland, secretary to the vice president of the Lehigh & Wilkes-Barre Coal Co., has heard the call of the suburbs and will move to Long Island early in August. Mr. Holland has purchased a house on Nottingham Road in Malverne. This town is a unique community for better homes two miles south of Garden City and within five miles of Long Beach.

M. G. Sellman has been named as resident manager of the new branch office of the Blair-Parke Coal & Coke Co., a Philadelphia concern in which Fairmont people are to some extent interested.

C. W. Clark, assistant general manager of the Standard Oil properties in Carlinville, Ill., and vicinity, has promoted **Earl W. Anderson** to be assistant electrical engineer at the Schoper power house. This promotion comes after two years of service with the company. The Schoper power house is one of the largest in Illinois.

Thomas F. Kelly, formerly with The Lackawanna Steel Co., has been appointed sales engineer of the Flue Dust, Ore and Byproducts Department of the General Briquetting Co., 25 Broad St., New York

C. F. Huber, of the Lehigh & Wilkes-Barre Coal Co., was in an accident while out riding in an automobile recently. The car turned over and his wife was badly cut, and a Miss Welles of Mississippi, accompanying the party, was so badly injured that she died shortly after the accident.

A. J. King, one of the leading coal operators of the Logan field of West Virginia, who makes his headquarters at Huntington, W. Va., has taken out a life insurance policy for $500,000, naming as beneficiaries the ten companies in which Mr. King is an important factor.

J. H. Brown, of Ashland, Ky., has resigned as assistant State Mine Inspector, effective July 1.

The appointment of **John Macdonald,** of Middlesboro, B. C., and **John G. Biggs,** of Cumberland, B. C., to vacancies on the staff of the Chief Inspector of Mines of the Province of British Columbia is announced by Hon. William Sloan, Minister of Mines. These positions were thrown open, respectively, through the death of **H. Lancaster,** Inspector of Mines in the Fernie district, as a result of an automobile accident, and by the retirement of **George Wilkinson,** former Chief Inspector of Mines, and the promotion to his place of **James McGregor,** the present chief. Mr. Macdonald was 11 years in the different coal fields of Scotland, two years in the State of Illinois, and has been identified with coal mining in the Nicola Valley field, B. C., for the past ten years. Mr. Biggs started coal mining in the Newcastle district, England, as a young man, and for many years has been associated with the business in a practical way. He has been secretary of the Board of Examiners in the Cumberland district for about five years.

Association Activities

Kentucky Retail Coal Dealers' Association

One hundred dealers met at Lexington, Ky., recently to organize the Kentucky Retail Coal Dealers' Association. W. S. Glore, of Danville, was elected president. The purpose of the association is for mutual benefit, better deliveries and service to the public.

Other officers elected are as follows: Shelby Kinkead, Lexington, vice-president; C. P. Willoughby, Richmond, treasurer; and J. Crow Taylor, Louisville, secretary.

A second meeting was scheduled to be held in Louisville Aug. 10, to bring about a more perfect organization and inaugurate a membership drive.

At the meeting several dealers characterized the present situation as the worst crisis in the history of the country and said they could see no relief.

Industrial News

Plymouth, Pa.—The U. S. Government has forwarded an engraved certificate of merit to Franklin B. Spry, president and general manager of the Howells Mining & Drill Co., accompanied by a letter which gives the following citation of the important part the Howells Company played in the war: "This company willingly did development work gratis and its bids were in some instances 1-5 to 1-6 of its nearest competitors. Its business methods were of a high order and seldom equalled."

The Howells Mining & Drill Co. early in the war converted a large part of its factory at Plymouth for the development and manufacture of drills and entrenching machinery of which the allied nations were in great need. The Spry electric drill was received with enthusiasm by the army authorities and there was a great demand for the machine for tunneling work. These drills and augurs were shipped to France and were distributed from there to all parts of the fighting front.

The patriotic war work performed by the Howells Company was done at a sacrifice for so much of the factory was given over to the manufacture of these machines needed at the front that the company had to suspend a large part of its regular business.

Baltimore, Md.—The Black & Decker Co., manufacturing electric tools, air compressors and other special machinery, has recently advised jobbers handling its machinery that there will be no reduction in its prices this year. Starting Jan. 1, 1921, jobbers will be protected against loss through price reduction for 60 days after the purchase of the goods.

Obituary

Thomas N. Mordue, a prominent Chicago coal merchant, died on August 3d. Mr. Mordu has been long and favorably known in Middle Western coal circles. Some time back he was Western representative and Chicago manager for Castner, Curran & Bullitt. Later he severed this connection and organized some companies of his own. He was president of the Thomas N. Mordue Coal Company of Chicago, the Mordue Collieries Company of Mordue, West Virginia, and the Jellico Cannel Company of Newcomb, Tennessee.

Philip White, of the Marion Divisional Coal Association, controlled by the Peabody Coal Co., and prominent among coal officials in Southern Illinois, lost his life recently while trying to put out a fire at Mine No. 18 of the West Frankfort Coal Co., at West Frankfort, Ill. Mr. White had started inside with six men, and while on the way he became exhausted from gas which leaked through his helmet. Rescue teams from Du Quoin, Benton and Herrin were unable to bring the unconscious man to fresh air in time to save his life.

Joseph Whitehead, one of the oldest operators in Illinois and the organizer of many large and successful coal companies, died recently at his home in Farmington, Illinois.

John Calvin Skinner, prominnt retail coal dealer of Plano, Texas, for a number of years, died recently at a sanitarium.

Recent Patents

Coal Separator. William M. MacFarlane, Scrantnn, Pa., 1,345,453. July 6 1920. Filed March 30, 1917. Serial No. 158,543.

Power Mine Shovel. Patrick B. Brown, Shenandoah, Pa., 1,345,991. July 6, 1920. Filed June 3, 1918. Serial No. 237,915.

Coal-Oil Generator. Henry Gaston Epps, Waco, Texas, 1,346,370. July 13, 1920. Filed Sept. 9, 1919. Serial No. 322,616.

Coming Meetings

American Mining Congress will hold its annual meeting at Denver, Col., Nov. 15. Secretary, J. F. Callbreath, Munsey Building, Washington, D. C.

New York State Coal Merchants' Association will hold its annual meeting Sept. 9, 10 and 11 at Richfield Springs, N. Y. Treasurer, G. W. F. Woodside, Albany, N. Y.

The Rocky Mountain Coal Mining Institute in conjunction with the Colorado Metal Mining Association, the local chapters of the American Mining Congress and the American Institute of Mining & Metallurgical Engineers, and the International First Aid Meet will hold its annual meeting Sept. 9, 10 and 11 at Denver, Col. Secretary, F. W. Whiteside, Denver, Col.

National Safety Council will hold its 1920 congress on Sept. 27 to Oct. 1, inclusive, at Milwaukee, Wis. General Manager, C. W. Price, Chicago, Ill.

Oklahoma Coal Operators' Association will hold its annual meeting Sept. 14 at McAlester, Okla. Secretary, F. F. La Grave, McAlester, Okla.

COAL AGE

The Weekly Journal of the Coal and Coke Industries

Volume 18 NEW YORK, THURSDAY, AUGUST 26, 1920 Number 9

Another Scrap of Paper

HAVING agreed to disagree, representatives of the union and the operators in the Central Competitive field have gone home after several fruitless days at the Cleveland conference. In some way the idea has been fostered that the union had a real grievance in that the Bituminous Coal Commission had permitted an "obvious inequality" to creep into its award last winter. The commission is guilty of no such thing The increases awarded daymen and tonnage workers were carefully considered and the daymen were given a lesser percentage than the tonnage men because that was justice as the commission saw it. Because they did not get what they wanted the United Mine Workers have scrapped their contract.

The Robinson commission gave daymen an advance of $1 per day, or 20 per cent—a total increase over 1913 of 111 per cent, which the commission noted was greater than any estimates of the increase in the cost of living in the same period. The raise given tonnage workers last March was 31 per cent, or 88 per cent over the average 1913 rate. To these advances the mine workers agreed, although their representative on the commission, Mr. White, did not concur and in his minority report asked for $1.35 per day or 31 per cent increase for daymen over 1919.

Secretary Wilson would have settled the matter last fall by an increase of 31.61 per cent, because that advance would have raised tonnage men to the level reached by the cost of living. And when tonnage men eventually are given an increase by that amount and daymen but 20 per cent the daymen come back for more. A year ago it was tonnage men who started trouble because they had received but 40 per cent increase since 1916, whereas daymen had gained 76 per cent.

The average earnings of outside daymen in Illinois and Indiana are now a trifle over $6 per day and for inside labor about $5.85, if we add $1 to their earnings as reported for the first ten months of 1919. Loaders, paid by the ton, who last year averaged around $7 per day, now realize more than $9. Although the dayman can earn about 60 per cent as much pay as the tonnage man his greater opportunity to work the year around assures him monthly and yearly earnings up to 80 per cent of the piece workers.

Priority of Coal Should Be Continued

DIFFERENCE of opinion there may be on the question of whether the country will suffer from a coal shortage next winter, but the subject has now been narrowed down to a question of whether production in the next few months will be increased sufficiently to allay the fears of the consumer. The stage is set for a winter of coal shortage and frenzied prices. We believe even George Cushing will agree to this. There will be no shortage, however, if the buying public can be calmed and production maintains its upward trend.

Mr. Cushing will say that he was right all the time if the deficit in stocks is overcome this fall, as we are hopeful it will be. And if this comes about he will have been right—but only because others understood the situation in its true perspective and adopted measures to meet it. Statistics recently published by the Geological Survey and summarized in the following pages of this issue of *Coal Age* demonstrate the wisdom of the course consistently followed by the National Coal Association and to which American railroad executives and the Interstate Commerce Commission were early won. Those who opposed the open-top car priority orders should recognize now the wisdom of this measure so far and the necessity of its maintenance until the situation is rectified. Doubtless the policy of holding open-top cars solely for the use of coal has interfered with new construction and road building, which is to be regretted, of course. However, we cannot picture the country in a frenzy over lack of houses and roads at all comparable with the public uproar over coal shortage. In some way we can postpone some things, but not the use of coal.

England Preparing for Coal Strike

ADVICES from England are that the British Government is anticipating the possibility of a strike of coal miners in the near future. During the last few months every attention has been given to the accumulation of reserves of coal in the hands of consumers in the British Isles, a policy made particularly evident when in the first weeks of June exports from Great Britain were severely curtailed. It is reported that the stocks of coal are now sufficient to carry on necessary public service for a considerable time, perhaps longer than the funds of the various mine labor associations would enable them to pay double pre-war rates of strike pay. Railway companies are said to be particularly well stocked with coal, as are likewise gas and other public utilities.

Probably, as in the case of the strike in this country last autumn, there will be advance notice of the miners' intention of at least several weeks' which will enable the further accumulation of stocks. It has even been suggested that exports be absolutely embargoed for a short time to insure ample home supplies. The strike by the miners is expected as a result of the refusal of the British Government to accede to the coal miners' demands which specifically call for an increase in pay of 2s. per day and a decrease of 14s. 2d. in the price of coal sold for household use. It will be recalled that early in June the British Government increased the price of household coal by that amount, having arbitrarily held down the price previously. The miners are set upon more money for themselves and less profit for

the producers. Their program appears to be to reduce the profit of all coal producers and, if necessary, compel those who operate at a profit to share with those who operate at a loss—in other words nationalize the mines.

Labor is after a larger and larger share of the profits of industry. The coal miners of Illinois struck recently not so much because their wage was insufficient as because they want a larger share of the profit the coal operator is getting from coal at the prices prevalent today. Evidence of this is found in their reiterated statements regarding the large earnings of the operators and the small share the laborer receives.

Mr. Dunn and the Railroad Situation

IN HIS paper on "The Railroad Situation—Causes and Remedies," in this issue of *Coal Age* Mr. Dunn, editor of *Railway Age*, has treated the subject more simply and to better effect than has anyone else to our knowledge. A year ago Mr. Hines made an admirable presentation before the Frelinghuysen committee and Mr. Willard did himself justice before the Interstate Commerce Commission recently, but Mr. Dunn in this paper has told the story for the railroads in a way that no railroad man has done. His principal point is that with 5-per cent increase in equipment and facilities with which to do business the railroads since 1915 have averaged 45-per cent greater performance. Truly a remarkable record.

Mr. Dunn concludes that this demonstrates beyond doubt that the roads have been efficienctly managed. He points out as a matter of common knowledge that the roads have not been able to increase facilities in the years from 1915 to date because denied sufficient revenue. While a vast expansion of industry was in progress in this country the carriers were obliged to stand still—the country is paying the price for this neglect now. He points to the coal industry as one of those that experienced a large expansion due to large profits offered in the last few years. He erroneously quotes the Geological Survey as giving the bituminous coal mines of the country a total rating of 900,000,000 tons or more per year, an opinion we find others seem to hold and one we intend to discuss later.

Mr. Dunn appears to deplore the fact that there "seems to be a general impression that the railways within recent months and especially since they were returned to private ownership on March 1 have been seriously 'falling down' and that the amount of traffic handled has been substantially less than in past years." He states that in spite of the railway employees' strikes the carriers handled 20 per cent more traffic in the first five months of this year than in the same months of 1920 and substantially the same as in 1918. We are grateful to Mr. Dunn for these figures, for they explain a lot. With 20 per cent more total freight carried this year than last and bituminous coal increased but 17 per cent over the same period, it is evident that soft coal has not had its share of the increase—not from lack of demand, however. Furthermore, whereas total freight carried this year is substantially the same as in 1918, bituminous coal carried has been less by 36,000,000 tons.

Consider the significance of this statement. To move this substantially equal volume of freight required substantially the same quantity of engine coal and to produce the goods that were carried there must certainly have been consumed substantially the same quantity of coal. But the production of coal has been 36,000,000 tons less, coupled with which is the fact that something over 40,000,000 tons of production was lost to the country by the miners' strike last fall and we had a severe winter. If these things be true, is it any wonder we are experiencing a coal shortage, that the Interstate Commerce Commission has ordered that coal be given preference in the use of open-top cars, and that a continuance of that order has been granted?

That the coal shortage is mainly attributable to other things than the railroad situation is contended by Mr. Dunn, who traces the causes back to the early months of 1919, when there was a large surplus of coal cars and the railroads "Carried on a vigorous agitation to secure a larger production and transportation of coal, but consumers and dealers would not buy it in larger amounts." Coal operators need not be reminded of the battle over prices with the railroads last spring and how that fight did anything but promote buying of coal. He adds that "consequently the operators would not or could not produce it"—because they would not and could not afford to sell coal below the cost of production, even though the demand were zero, the reason not being offered by Mr. Dunn.

We differ with the conclusion that as a result of lack of production the first half of last year the country's available supplies were not increased as they should have been—a truer statement would be that the country's available supplies were decreased as they should not have been. There was an ample supply above ground and in the hands of consumers in the spring of 1919 but consumers elected to burn their stocks and not buy for current use, so that by the time the strike was over last winter stocks were as nearly exhausted as they might well be and industry proceed at all.

In the last analysis, according to Mr. Dunn, the present coal situation is not due to any failure of the railroads but to the loss of production last year, from lack of buying in the early months, and the strike later. What a help, he thinks, would be the coal that we did not produce last year, if we had but dug it. We submit that this is specious reasoning. Mr. Dunn notes that in the first three months of this year the mines were producing and the road transporting the coal that was needed. The crux of the whole situation is lack of production since April 1, which he correctly, we believe, attributes to the demoralizing effects of the outlaw switchmen's strike. We may as well mourn for the coal that could have been produced in 1914 and was not as for that which was not mined in 1919. We heartily concur with Mr. Dunn in laying this lack to no fault of private railroad management, but to labor. The coal operators are absolutely correct in attributing the lack of coal to lack of transportation, but that charge need not be construed as an indictment of private railroad management.

The insistence of the coal operators in 1917 that lack of transportation was the cause of coal shortage is held to have been the principal cause contributing to the assumption of Government control of the railroads during the war. Perhaps it was; at any rate the desired results were obtained and could not have been reached in any other way—again through no fault, perhaps, of private management of the carriers. It helps none for an advocate of the railroads to try at this date to endeavor to pass the responsibility for the coal situation to the coal operators. Better recognize the problem as it stands today and join in the constructive movement fostered both by railroad executives and coal men to work the way out with credit to all.

GIGANTIC MATERIAL-HANDLING MACHINERY

A striking view of the huge crane and belt conveyor system that is being used in the yards of the Byproducts Coke Corporation at South Chicago, an industrial suburb of Chicago. The cranes move on railroad tracks built for them. The buckets pick up coal and put it on belt conveyors which carry it to the factory. One of the big belt conveyors is at the right.

Is the Coal Shortage Real or Imaginary?

Stocks Are the Lowest in Five Years—Present Rate of Production Is Barely Sufficient for Consumption and Exports—Inequalities in Production and Distribution Make Necessary An Output of 11,500,000 Tons Per Week If a Serious Condition This Winter Is To Be Forestalled

By C. E. Lesher

DURING June and July of this year the production of bituminous coal after exports had been deducted was but little more than sufficient to provide for the actual summer rate of home consumption. For the preceding April and May, after total exports had been subtracted, the production lacked between 8,000,000 and 9,000,000 net tons of meeting our national needs, and stocks were cut into by that amount. Stocks of bituminous coal in the hands of consumers, including the railroads, are now and have been since last November the lowest of any period, summer or winter, in the last four years, back of which no record is available. Measured in terms of days' or weeks' consumption there is now but 85 per cent as much coal in storage as in the period from October, 1916, to April, 1918; while, measured in actual tons, only 81 per cent as much coal is on hand. Taking into consideration consumers the country over, there was on Aug. 1 but a trifle over two weeks' coal in storage, while in the eighteen months beginning with October, 1916, two and one-half weeks' supply was available for consumers.

This article deals only with bituminous or soft coal. Retail dealers and consumers of Pennsylvania anthracite or hard coal should not read into these statements a parallel to the situation with respect to that kind of fuel.

From the autumn of 1916 until the early summer of 1918, when output permanently overtook consumption, production less net exports barely matched consumption and this country passed through a period of sustained coal shortage, the public demanding more coal than the producer, hedged by lack of car service, could supply. To put the matter more clearly, while *on the average* during that period production was sufficient for actual needs, the output was entirely insufficient to satisfy the insatiable demand. Prices soared; the committee on coal production was organized and failed when it staked all on voluntary price fixing. Then the Lever Act was passed and the Fuel Administration came into being and fixed maximum prices for coal. Think back over those eventful months—of the tremendous public uproar on the subject of coal, of the shutting down of industry for which lack of coal production was blamed, though in justice to everybody the unusually severe weather should be held partly responsible. Recall also the efforts that were necessary to keep hospitals and homes warm and public utilities in operation, and bring

to mind again the Government control and regulation by which efforts were made to remedy the nation's fuel needs. No one cares to contemplate another such trying time, but in all essentials the country is now facing the definite possibility of a repetition of the same conditions, the same troubles and trials that faced us, all unknowingly, in the autumn of 1916.

In brief, the basic facts are that stocks of bituminous coal are below the safety level and consumers know it. Production, though gaining, is at too low a rate to assure us of reaching a safe level of reserves before winter, and there is therefore an actual present shortage of coal. There are but two possible avenues of relief, and as in 1918, when the same problem was gloriously solved, resort must be had to both in increasing degree. The first and most important is increased production, the second is proper distribution. Unless the anxiety as well as the actual needs of consumers of all classes are assuaged before Dec. 1, and possibly sooner, the sword of Damocles will fall on the coal industry.

Consumer Displays Variation of Interest

When the normal coal consumer thinks he has enough coal for his needs, he has no interest in the subject and when he thinks he has not enough his interest is keen, for coal is absolutely necessary. And when the coal consumer concludes that he needs more coal and he experiences increasing difficulty in obtaining supplies, he is quite likely to be stampeded. The individual consumer may not know how many tons of coal there are above ground in the whole country or how fast coal is being produced, but he does know about his own supply and needs, even if he does not always act intelligently on the information. Individually and in the aggregate coal consumers are slow to change their minds. When they stop buying, because they think they have sufficient supplies, they stay out of the market too long, and when they get started they are hard to stop.

Consumers are actively seeking coal this summer, and if past performance is any guide, consumers will stay in the market for more than actual daily consumption until stocks are again at a high level. Once stampeded the consumer will not cease his search for coal until his storage pile is above the normal. In the summer and autumn of 1918 the assurance of supply afforded by fixed prices and the absolute and effective control of distribution did not check the consumer's anxiety and eagerness for coal. Little wonder that today with prices on free coal the highest on record and with none but the most general control over distribution, the buyer is anxious. Proper distribution will prevent distress this winter, but augmented production is necessary to lower prices.

I do not believe that the market will fall to reasonable levels this winter unless stocks of bituminous coal mount to 40,000,000 tons by Dec. 1, a gain of 18,000,000 tons over Aug. 1. Consumption is estimated at 41,000,000 tons per month, and exports for June and July averaged about 3,500,000 net tons per month. Thus if we consider the four months, August to November inclusive, as representing the possible period of preparation for the rigors of winter, we must have in the seventeen weeks beginning with Aug. 1 an average production of 11,500,000 net tons to meet requirements for consumption no greater than those of today, we must export no more than we are exporting today and we must provide a surplus of 18,000,000 tons so as to raise the reserves from enough to satisfy for about two weeks to an amount that will fill our needs for nearly twice that length of time.

Can it be done? Yes. Furthermore it begins to look as if it were started on the way. Production of 46,000,000 tons was reached and exceeded during one month in 1916—January—for eight months out of the twelve in 1917, for eight months in 1918, for two months in 1919 and in January and March of the present year. This rate of output is not likely to be reached and maintained without continuance throughout the autumn of the open-top car priority order. Any rate of production that does not provide for current consumption, a practical doubling of stocks by Dec. 1, as well as for whatever exporting of coal may be permitted, will leave the country to suffer from a shortage similar to that experienced in the winters of 1916-17 and 1917-18.

It may be argued that an average weekly output of 11,500,000 net tons (10,700,000 tons after exports are subtracted) does not provide for the shortage of 5,000,000 tons in Lake movement and that this quantity should be spread over the period, thus raising the estimated rate required. However, it must be considered that by making allowance in the exports for shipment to Canada a part of the Lake shortage is provided and that the bulk of the remainder is in the increase in stocks in the hands of consumers, for which allowance has already been made in these figures.

Equal Distribution Must Be Maintained

Even though production is increased in the measure indicated as necessary, every effort must be made and maintained to correct evils of distribution. Since we are now producing coal at a rate sufficient to meet actual consumption, it is apparent that one important cause of trouble is and will continue to be unequal distribution combined with a condition of anxiety brought on through lack of abundant stocks. That is, consumers knowing that coal is reported short, will each and all endeavor to increase their reserves as an assurance against some unforeseen contingency.

If it were possible to have the distribution of coal so handled that stocks would be leveled up, each consumer in New England, for instance, having the same proportional share in accordance to his requirements, with the whole territory having a supply that would on an average last several weeks more than that afforded some other section of the country nearer to the mines, and if furthermore each consumer had assurances that he would get each week his proper share of the output, then we would be successful in managing with much less coal than we otherwise could. But these are ideal conditions that cannot be realized. Some steps in this direction are necessary, however, if trouble is to be avoided in the period running from the present date to that at which it is hoped that stocks will be so large that consumers will forsake the market and the newspapers forget coal.

In a large way the National Coal Association, the railroad officials and the Interstate Commerce Commission have solved the major problems in distribution—New England and the Northwest. By allowing assigned cars the Interstate Commerce Commission has taken care of the largest consumer—the railroads—and also of many smaller and essential users—the public utilities and institutions. That seems to be about as far as that body can proceed with distribution, but it is

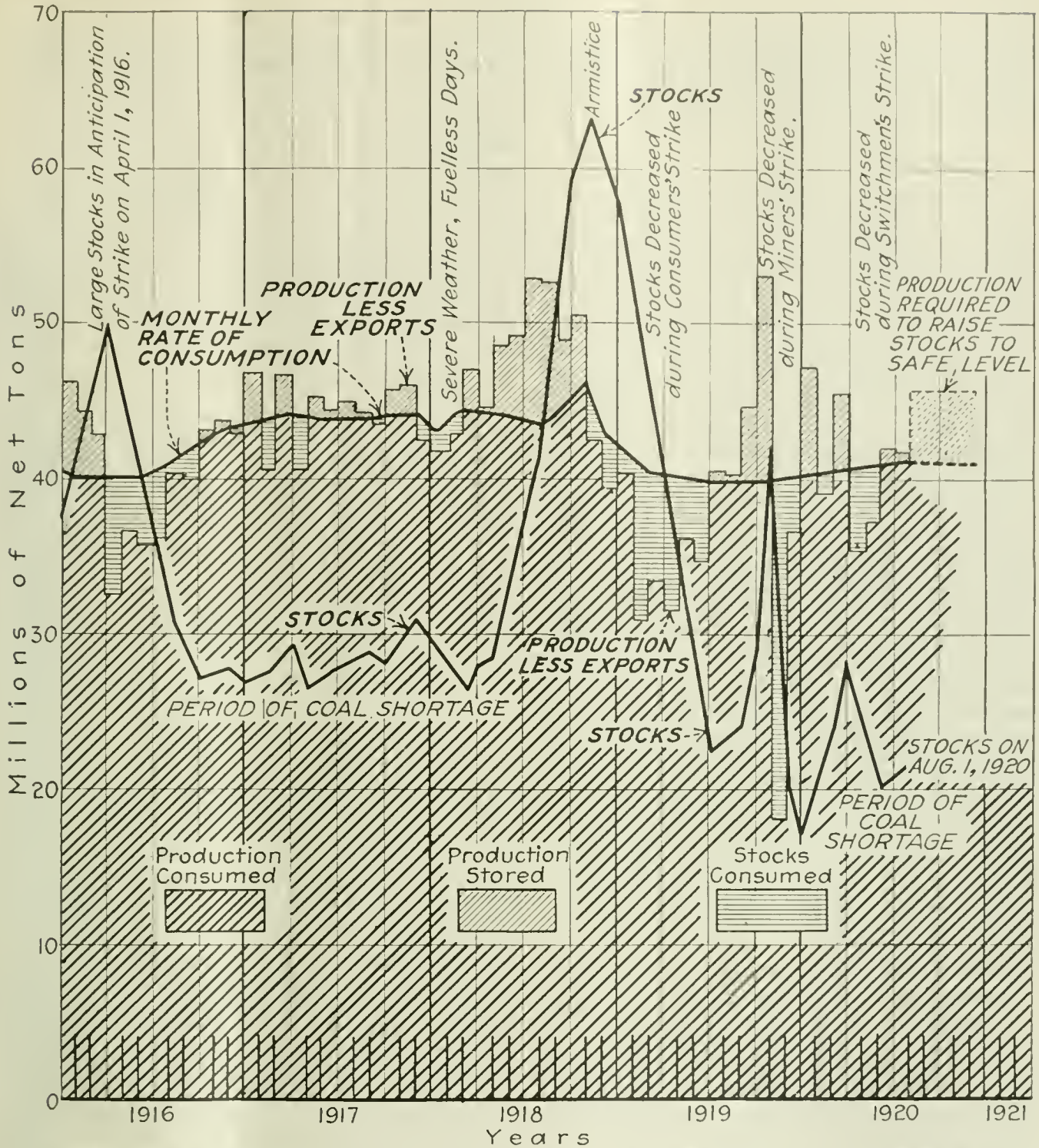


DIAGRAM SHOWING RELATION OF AVAILABLE PRODUCTION, CONSUMPTION AND STOCKS OF BITUMINOUS COAL IN THE UNITED STATES FROM JAN. 1, 1916, TO AUG. 1, 1920

The data from which this diagram has been constructed are taken from official reports of the U. S. Geological Survey. The line of production less export is the monthly record of production of bituminous coal from which has been subtracted export less import. The result is production available for consumption or storgae within the United States. Crossing the diagram in a somewhat irregular manner is a heavy line representing consumption.

It will be noted that consumption increased nearly 10 per cent at the end of 1916 over the rate in the arly part of that year, and that this rate of consumption was maintained until shortly before the armistice, when a sharp upward trend, culminating at the date of the armistice, took place. Immediately after the armistice consumption decreased, reaching its lowest level in several years in the months that followed. Its trend is now believed to be slightly upward. The small depression in the curve of consumption in the middle of the winter of 1917-1918 was due to the severe weather in those months and the extreme shortage of coal due to the inability of the railroads to make deliveries, although the coal was produced and on the railroads en route to the consumer. The fuelless days decreed by Dr. Garfield in January, 1918, are reflected in this decrease in consumption.

only the starting point for the shippers of coal. Shippers of coal—operators and jobbers—can by exercising self-restraint and judgment in their daily distribution of coal, do more than by any other means to avert the falling of the house on their heads. If each coal man will distribute his coal where, in accordance with his good judgment as a coal distributor, that coal is needed the most; if he will sell his coal more freely to consumers who have little than to those who in proportion have much, and if he will not be governed in this distribu-

tion by prices, then will we have less complaint of the coal industry as profiteers and less cause for complaint of coal shortage. I know that many large and small companies with an interest in the future and a business to maintain are doing this now and doing it well. But many are not.

Small Operator Sells to Highest Bidder

In some instances the entire output has been sold to a jobber, and in this case the duty is the jobber's and not that of the producer. In many other instances the smaller operators have no contracts and are selling to the highest bidder, who is usually represented by a jobber or jobbers. Such cases are almost hopeless, for the producer has no interest in the future of the industry, being interested only in price. If the jobber does not offer the highest price he does not get the coal, no matter how needful his customer. Complete elimination of wagon mines would only partly remedy this evil, for there are many small tipple operations whose selling policy is jeopardizing the welfare of the industry.

The dangers in the present situation—dangers both to the coal industry and the public—cannot be too often or too clearly stated. Stocks are below the safety level, production has but begun to approach the rate that will supply the current needs, will provide coal for export and swell the stock piles to a degree that will give confidence to the consumer. In the meantime the clamor for coal is insistent, spot prices exorbitant and the country is experiencing all the symptoms of a coal shortage. In the last analysis the fault lies more largely with the coal consumer than with any other agency, even as the remedy lies with coal and railroad industries, but the consumers will not accept the responsibility and will not hesitate to foist on the coal producer some form of Government control if all other measures fail. In the words of Harry Taylor, former president of the National Coal Association, the coal producer should concentrate on production and on leveling off the peaks and filling in the low spots of supply. I would further urge taking the public fully into our confidence, admitting the dangers, and creating a spirit of helpful co-operation and conservatism.

Reliable Estimates of Stocks Now Available

Four elements enter into the study of the coal situation—production, exports (less imports), stocks, and consumption. For years we have had accurate information on the first two elements only. Consumption and stocks have been matters of speculation and guess work. Thanks to the zeal and efforts of Mr. Tryon, of the Geological Survey, there has within the last few weeks been placed at our disposal reliable estimates of stocks of bituminous coal in the United States on a sufficient number of dates to enable an intelligent study to be made of all the factors, for, having three of the four, the fourth can be deduced with reasonable certainty.

The importance of data on stocks of coal in the hands of consumers was clearly recognized by the distribution division of the Fuel Administration, and in the summer and winter of 1918 the bureau of statistics collected at great cost a vast amount of information on this subject. Without these figures it would have been impossible to know whether or not the coal production in those trying times was meeting the needs of the country. After the war was over an attempt was made to continue the study of current stocks, and figures were collected for the first quarter of 1919, but lack of appropriation prevented the Geological Survey from continuing the work, although Senator Frelinghuysen gave his full support to the project. Recently, through funds appropriated for the Bituminous Coal Commission, it has been possible to add to the knowledge on this subject at an extremely vital time. In reducing to a comparable basis all the data on stocks of coal from the earliest record of the Fuel Administration (October, 1916) to June of this year, Mr. Tryon has contributed the missing chapter in the story of coal. I am fully conversant with the raw statistical material from which these figures are drawn and the statistical methods used in arriving at the totals, and do not hesitate to accept the results as sufficiently within reasonable limits of error to be trustworthy guides.

Relation of Output to Consumption Shown

The diagram accompanying this paper tells the story better than words. Month by month from the beginning of 1916 to the end of July, 1920, the relation of available production (actual tons produced plus imports less exports) to consumption is shown and the curve of stocks in its upward and downward movements is traced. Although data on stocks are available for but nine dates from Oct. 1, 1916, to June 1, 1920, it has been possible to interpolate figures for each month and extend the curve back to January, 1916. The line of monthly consumption is determined from the averages in the periods between the dates for which stock figures are available. Thus, by adding to the number of tons of coal on hand at the beginning of a period the production plus imports less exports during that period and subtracting from that total the stocks at the end of the period, consumption in the interval is determined. Dividing this figure by the number of months in the period gives the average monthly consumption. The eight points thus determined between the nine dates for which figures of storage are available were connected, due allowance being made for local variations. The average daily production of pig iron published by the *Iron Age* was used as indicating the trend of consumption of coal.

The first point to be noticed is that the rate of production is not an indication of the rate of consumption. Comparatively, the rate of consumption is regular, while the rate of production and the amount of stocked coal are quite variable. The intense activities of war in 1917 and 1918 raised the rate of consumption only 10 per cent over that in the early part of 1916 and the rate now is approximately that of the period immediately before the United States entered the war. Compared with a maximum variation of 15 per cent in consumption in the period covered by this diagram, production had a maximum change (excluding that during the coal miners' strike) of over 40 per cent from September, 1918, to March, 1919, and stocks a maximum change of more than 200 per cent.

Conditions Clearly Explained by Events

The picture of the coal business of the country in the last five and one-half years is plainly revealed in the diagram. The situations that have developed in that time carry their own explanations. Beginning with the first quarter of 1916 it is noted that in anticipation of the usual cessation in mining in the Central Competitive field in the even years while a new wage contract

is being negotiated consumers increased their surplus by 12,000,000 tons. The expected closing of the mines did not take place and the output in April of that year was almost equal to the normal production for that month. Consumers, however, were so well stocked up that they went out of the market and burned storage coal, all unmindful of the increase in consumption that was already taking place as a result of the quickening industry that followed the heavy buying of war materials by the European allies. Consumers did not wake up until August, and the demand for coal and the sudden increase in prices that date from that month are matters of history. This lack of foresight of the managers of industry in the summer of 1916 was directly responsible for the coal shortage of the next year and a half, because the storage that was needlessly consumed that summer while mines were idle for lack of orders left the country with depleted reserves that were not brought back to a proper level until late in 1918.

Stocks were down to 27,000,000 tons by the end of September, 1916, before the rate of production overtook that of consumption and a state of equilibrium was reached. In the eighteen months beginning with October, or until April, 1918, production was no more than sufficient to meet actual needs and reserves were not increased. This was a period of coal shortage, nevertheless, and the conclusion cannot be escaped that the reason was not lack of sufficient production month by month to run the country, but paucity of reserves. Wihout question an average supply in the hands of consumers sufficient for but two and one-half weeks spells coal shortage when the consumer finds it out.

Armistice Marked High Point in Stocks

From the first of April, 1918, to the day of the armistice production gained on consumption and reserves were steadily increased. It will be recalled, however, that it was not until October of that year, after total stocks had considerably more than doubled over those held in April, that there was any let-up in the demand for coal, and that a slackness of trade developed and that lack of market was observable only in the Middle West. The Fuel Administration, the railroads and coal industry, having set out to give the country all the soft coal it desired, builded better than they knew, for on the day of the armistice stocks had reached the unprecedented figure of 63,000,000 tons.

This country is in its present predicament regarding coal because of three strikes that followed one after the other when hostilities abroad had ceased. The first of these strikes, the greatest of them all, and I believe the most momentous that ever affected the coal industry, was that of the coal consumers. From the day of the armistice until awakened by the "Buy-Coal" campaign of the National Coal Association in June of 1919, a total of 41,000,000 tons, or more than 5,000,000 tons a month, was taken from storage. The consumer refused to buy, and the drop in reserves in extent and precipitateness is without parallel in our history. It is not too much to say that had this consumers' strike been settled three months sooner than it was—had the decrease in reserves ceased in April rather than in July—there would have been no strike of the bituminous coal miners last November. The chief cause contributing to the unrest among mine labor in the summer of 1919 was lack of work. The mines were idle a great part of the time for lack of orders. Plenty of railroad cars were on the tracks, empty, waiting for loads of coal, but industry did not want the coal. The miners' claim for a 5-day week was based on the theory that they could in that time produce all the coal required. It mattered not that the theory was unsound because coal was being burned at a rate 14 per cent greater than it was being produced, a condition that could not endure for long.

Certainty of Strike an Impetus to Store

The nation's stock pile began to grow in July and August of last year but the real impetus to store did not come until the possibility and then the certainty of a huge strike of coal miners was discerned. Thanks to the co-operation of every one—the coal miners included and the Railroad Administration in particular—production was increased in the two months before the strike to such an extent that reserves were again elevated to a safe level. These stocks carried the country through the strike, not without many discomforts, however, but left us on New Year's Day of this year with less coal on hand than ever before—namely, about 17,000,000 tons. Thus the second of the three strikes, that of the coal miners, served to put the country still further in a precarious condition regarding coal.

We would have been all right even then had it not been for the third successive strike, that of the switchmen, last April and succeeding months. Stocks of coal made a satisfactory gain in the first quarter of this year, for production in January and again in March was at a high level, and total reserves approached the 30,000,000-ton mark. The damage to reserves caused by the switchmen's strike was small compared to that of the two preceding strikes, but a drop in the second quarter of the year, though not great, when there should have been a gain, has brought the country into a condition of coal shortage. To raise the nation's coal reserve from 22,000,000 tons to 40,000,000 tons in four months is not impossible. The same increase was effected last year in the same period of time and much more was done during the war.

Some are sure to ask why, if we are exporting 3,500,000 tons of coal a month, should we not keep that coal at home and thereby make a further gain of 14,000,000 tons in the four months. I will say nothing more here than that it cannot be done in that way. A fraction of the amount might thus be saved, but only a fraction.

Consumer Blamed for Low Reserves

I believe it has been made clear that the consumer, through lack of foresight and refusal to buy coal when he had what probably appeared to him to be an inexhaustible supply, was directly responsible for bringing the country to a condition of such low reserves in the autumn of 1916 and again in 1919. This statement of the situation would not be complete without adding that our ability to recover has been and is absolutely dependent on the ability of the railroads to move the coal from the mines to the consumers. In the autumn of 1916, when the laggard consumer did wake up, he found that car shortage prevented acquisition of supplies at the desired rate. This condition obtained throughout 1917 and well into 1918. Again this spring, after getting away with a good start, the railroads, crippled by the outlaw strike, failed to meet the demand for transportation of coal, and the figures of car shortage are the greatest on record. This is not stated as a criticism of the railroads but as an exposition of fact.

Electrical Engineers Accept Federation Invitation

At a meeting of the Board of Directors of the American Institute of Electrical Engineers held in New York Aug. 12, the institute unanimously adopted a resolution accepting an invitation to become a charter member of the Federated American Engineering Societies and pledged hearty co-operation.

New York Central Increases Freight Movement

Despite shortage of equipment and labor troubles the New York Central lines increased their freight transportation for the first five months of this year 12½ per cent over the same period last year, according to figures made public by A. H. Smith, president of the New York Central system.

Seek Coal in Saskatchewan

An expedition consisting of the principal mines inspector, chief land surveyor and a geologist left Prince Albert, Sask., Aug. 9, for the Lake Laronge country to explore for coal deposits and other natural resources. The party has been sent out by the Saskatchewan Government to make a complete survey of the area, in which it is asserted that many valuable resources abound. There have been repeated stories of valuable coal deposits in the lake country.

Effort for Record Kills Miner

Tony Bannock, who held a record of having loaded sixteen cars with coal in one day, died at Fair Point, Ohio, Aug. 11 while attempting to break his own record. He had loaded six cars in less than two hours when death occurred from a ruptured heart. Bannock was employed at the Troll Coal Co. mines.

Railroads May File Blanket Schedules of New Rates

The Interstate Commerce Commission on Aug 11 granted the railroads special permission to file blanket schedules to make effective new passenger, Pullman, excess baggage and milk rates recently authorized.

New Freight Rates to Boost Coal Price 75c. to $1.35 a Ton

That the advance in freight rates recently granted by the Interstate Commerce Commission will cost the consumer at least 75c. extra on a ton of coal, the railroads are forced to admit, although they continue, through press agents, to flood the public with statements that the increased rates should not cause an appreciable advance in retail prices. "Coal," says *American Railroads*, the organ of the railroad executives of the country, "is one commodity that will be directly and appreciably increased to the consumer by the rate advance, the amount being from 75c. to $1.85 a ton."

Seek Priority for Gas Coal

The Emergency Committee of the American Gas Association has announced that the Interstate Commerce Commission will be urged to issue priority orders upon shipments of coal intended for use in making gas. It is the suggestion that these shipments have priority over everything but food. Another suggestion is that foreign coal shipments from Atlantic tidewater points be restricted until winter bins of New England are partly filled. Henry G. Bradlee, president of Stone & Webster, points to a gas shortage in the coming winter unless some such steps are taken.

NEWS BRIEFS

Terse Items Chronicling Events of Interest to the Industry

Navy Discontinues Commandeering of Oil and Gasoline

The Navy Department has arranged contracts for approximately 90 per cent of its West coast fuel oil requirements and its complete supply of gasoline, thereby enabling it in most cases to discontinue the practice of commandeering these supplies.

New York Utilities Still Far Behind Normal Coal Surplus

A report received by Acting Public Service Commissioner Barrett showed that on Aug. 18 the various public utilities in New York City, had a total of 273,313 tons of coal, an increase of 14,000 tons over the preceding week. Mr. Barrett said that the companies were more than 100,000 tons behind their normal coal supplies and that he regarded inability to increase the surplus more rapidly as indicating a serious shortage in the autumn. He said the Interstate Commerce Commission would be asked to extend the city's priority order until the utility coal stocks were great enough to tide them over any possible delay in deliveries.

Steel Demand Less Active, but Shipment Improves

In its weekly summary of the iron market as of Aug. 18 the *Iron Age* says in part: "The steel market is less active. There have been further cancellations of steel by automobile makers, but the effect has been greater on sentiment than on steel-mill operations. The shipments of steel from mills is better on the whole and the situation is expected to work easier, notwithstanding that Pittsburgh reports of improvement are qualified. Production results are more satisfactory, most Chicago district plants having gone back to the schedule prevailing before the Illinois-Indiana coal strike.

Wage Board Asks Pennsylvania Miners to Return

Striking coal miners in western Pennsylvania are expected to return to work after the appeal to them from Washington by the Federal Anthracite Coal Commission to resume work pending settlement of their grievances by the Board of Mediation and Conciliation. The commission appealed directly to the Pennsylvania Coal Co. miners. The Conciliation Board may report on the strike grievances this week.

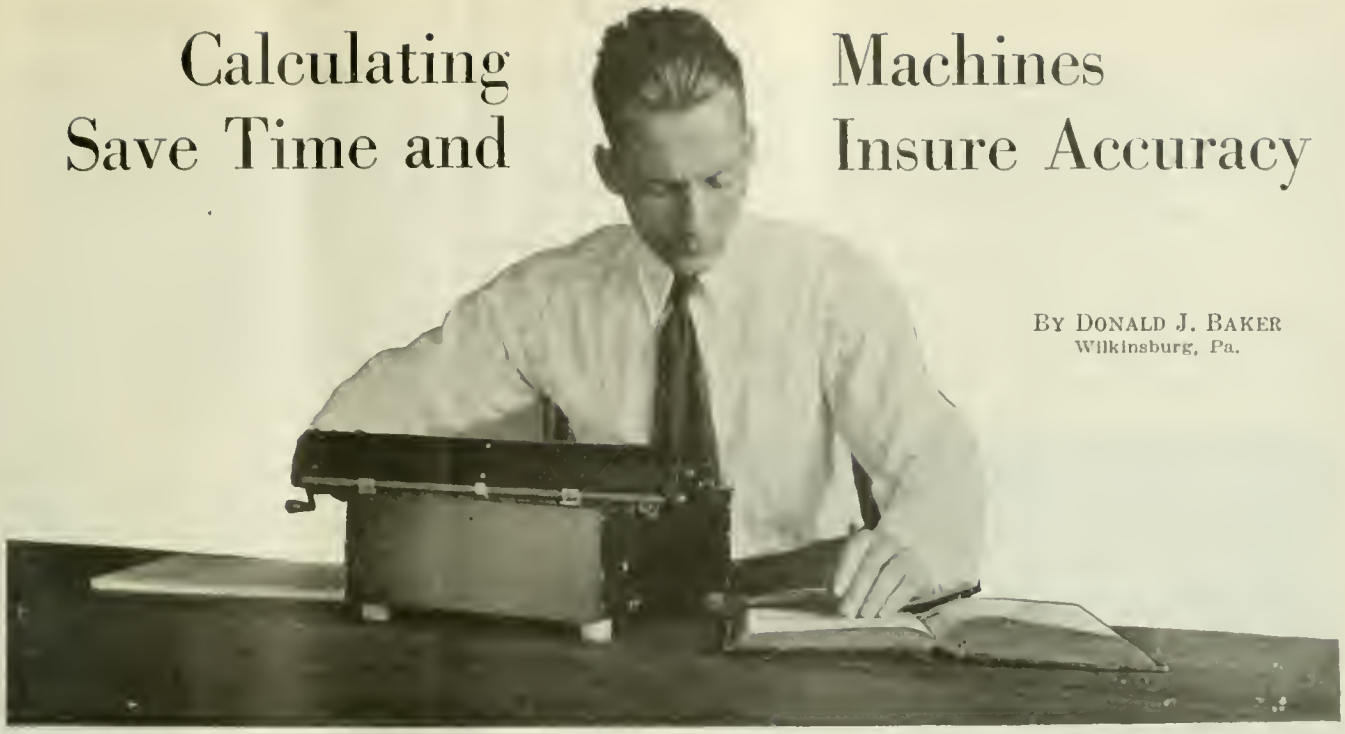
New York Central May Issue New Securities

Application has been made by the New York Central Railroad Co. to the Interstate Commerce Commission in Washington for permission to issue new securities amounting to between $20,000,000 and $25,000,000. These securities, should the application be granted, would be sold to refund the forthcoming maturities of the company, $15,000,000 of which falls due on Sept. 15 and the remainder at later dates in this year.

I. C. C. Recommends Loan of 200 Milllions to Roads

Distribution of almost $200,000,000 to the railroads of the country was recommended to the Interstate Commerce Commission Aug. 17 in the final report of the Association of Railway Executives on the applications of the various carriers for loans from the $300,000,000 revolving fund created by the Transportation Act. Under the new recommendations loans for additions and betterments would be increased from $7,062,053 to $8,317,943; those for additional cars and equipment would be increased from $35,050,289 to $78,349,389, and those for freight and switching locomotives from $28,868,629 to $29,054,323. A total of $52,839,943 was recommended for loans for building 15,300 new box cars and loans to meet maturing obligations would total $28,800,875.

Calculating Machines Save Time and Insure Accuracy



By Donald J. Baker
Wilkinsburg, Pa.

Engineers' Work Should Be Aided Mechanically as Much as the Work of Men in Active Coal Production—When Survey Parties Perform Their Own Calculations in the Field There Is Less Chance for Misinterpretation of Figures in the Office

IT HAS often been said that we are living in a mechanical age. Labor-saving devices have been placed on the market recently with such rapidity and in so great profusion that many have facetiously asked if there will be any room for a laboring man in the industries of tomorrow. Usually, however, when we think of a labor-saving machine we connect its operation with the husbanding of brawn and muscle; but as labor may be of two classes—physical and mental—mental labor-saving machines are quite as necessary as those of the other type. Indeed they may be even more so, for they find a general use among men in executive positions. The time of a man of marked ability is more valuable and therefore more carefully to be conserved than the time of a less-talented individual.

The wide or nearly universal adoption of calculating machines by offices of all kinds within the last few years is significant of the change which is coming. Engineering offices in particular have taken them up rapidly. Where long and tedious computations were formerly executed via the scratch-pad route we now find the calculating machine installed and doing the same work. It, however, accomplishes the results with a speed and accuracy unattainable by other methods. No lightning calculator in human form can hope to compete with a calculating mechanism.

Most engineering computations in themselves are more or less mechanical; that is to say, after the correct substitutions of figures have been made in long-established formulæ the actual solving of the resultant equation involves nothing more than the most rudimentary of arithmetical operations, namely, addition, subtraction, multiplication, division and an occasional use of square and cube root.

These calculations take the greater part of the time occupied in the solving of any mathematical problem. The assembling of the figures involved is a small matter and quite readily accomplished, especially where the formula is one that repeated use has made familiar. In a problem that may require an hour's work, perhaps forty-five minutes will be expended in labor which requires only the ability and the patience to add, multiply and divide with accuracy.

Calculation of Double Meridian Distances

For instance: Suppose it is desired to find the area of an irregularly-shaped tract of land that has been surveyed by the azimuth method. Usually after the field bearings have been reduced to their quadrant values and the latitude and departure distances ascertained with the aid of Gurden's traverse tables and duly recorded, we say the remainder of the problem is easy. But is it? Rather do we mean that the latter half of the problem is mechanical and is easy only in that no constructive thought is demanded, as definite and well-memorized rules are available for the calculator.

These, however, involve much multiplication, some addition and subtraction and a small amount of division. Inasmuch as the major portion of the problem demands nothing but multiplication—that is, as far as actual time required for the solution is concerned—it is apparent that our brains are being burdened with the simplest of arithmetical computations. Thus while the operation is simple it nevertheless consumes a large amount of time and paves the way for the entrance of many petty inaccuracies.

In the accompanying line drawing a double-meridian distance problem has been solved by two methods—one with the aid of scratch pad, pencil, time and thought, and the other by means of a Monroe calculating machine. This computing device adds, subtracts, multiplies, di-

vides and extracts square and cube root with surprising speed and absolute accuracy. The type of engineering calculation illustrated is one that is well known to all mining engineers, for it is constantly being encountered. Note the amount of pencil work required in the one case as against the other.

Figures Are Put Directly in Columns

No scratch pad is needed in conjunction with the machine, as the only figures desired can be immediately placed in columns prepared for them. The machine has performed the same mathematical work that has been done with paper, pencil and mental effort, and accomplished it not only more rapidly but also more accurately. The outstanding feature, however, of the one operation as compared with the other is the immense saving in time, although the comfortable feeling produced by a knowledge that the results are accurate is no small consideration.

So many and varied are the calculations encountered in the engineering field that heretofore every available assistance for the attainment of accuracy has been sought, including tables, slide-rules and logarithms. In particular has the slide-rule had an extensive use, even though by its aid only approximate results can be attained, while the placing of the decimal point has always been a bugbear. It is improbable that the slide-rule will be entirely displaced by calculating machines, but it will not be used as generously as it has been in the past.

Gurden's Table a Dubious Competitor

As regards logarithms, their death knell appears to have been sounded. It is so much easier to employ the tables of natural functions and multiply directly on the machine than to employ tables of logarithms. So it is a safe prediction that the time is not far off when logarithms will be dispensed with altogether. Even with the problem that is illustrated a book of traverse tables is not a dire necessity for conserving time.

As a matter of fact, it is possible to set the natural sine or cosine value on the machine and multiply by the latitude or departure distance nearly as quickly as it is to secure the same figure directly from the many pages, columns and tabular lines of the traverse tables, on which, be it remembered, it is customary to use both a teller and recorder. In this manner also more accuracy may be attained when dealing with large figures where calculations to two places are required. Furthermore, when the calculation is performed by a novice there is not so great a possibility of an error being introduced as there is with traverse tables.

Drafting Room, Bertha Coal Co.

Ordinarily one calculating machine will serve the needs of the drafting room, but when there is an exceptional demand for calculations two others, as shown here, are borrowed from the auditing department, and the need of the moment is thus met.

Survey Party Ready for the Field

The size of the Monroe calculator may be judged by comparison with the transit on the left. A special case is provided for the machine so that without injury it may be subjected to severe usage in traveling.

There is no engineering calculation involving addition, subtraction, multiplication, division, square or cube root that cannot be performed on a suitable calculator. This range, of course, covers a multitude of long and tedious computations that are the *bête noir* of an engineer's life and lower his output considerably. It is difficult to imagine an engineering office in this country operating without such a machine, regardless of the amount of work that it may be required to perform.

Well-Suited to Computations of Elevation

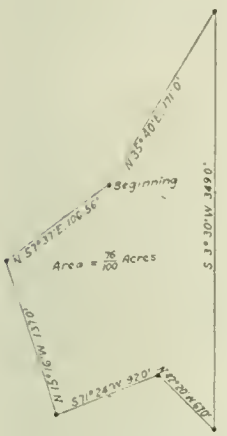
Another series of computations to which the machine is well adapted is the rapid calculation of levels. Starting out with the original benchmark, backsights may be added and foresights subtracted so quickly that the carrying of elevations becomes the simplest and most accurate of operations. If several rod-readings are to be taken from a single setting of the level the calculation is quite simple, as the height of the instrument plus the elevation is set upon the calculator, after which the various rod-readings may be subtracted for the desired elevations. One turn of the crank on the calculator subtracts the foresight, while a turn in the opposite direction adds it back in and gives the original elevation of the level.

Thus it is not necessary to reset the figure after each calculation. This sort of computation involves a series of additions and subtractions and is remarkably easy to perform. By the old plan, when a level has been run between two bench marks, the levelman sets himself down on a log or the bole of a tree and laboriously adds the backsights and foresights and takes the difference between the totals, only to find that they do not agree with the difference in elevation as he has figured it. A mistake has been made somewhere and only by much work it is found out and, with much erasure and recalculation, corrected.

On the other hand, if a calculator has been used the levelman knows that his work is correct and that it is a waste of time to total the backsight and foresight columns. In fact, it probably will be the custom where it is possible to have a calculator at hand to omit their use altogether and to enter only the results in the notebook. Other figures are useless and cannot be checked.

The calculating machine is a time saver in more ways than one. Survey parties working out of the main office of the United States Coal & Coke Co., at Gary, W. Va., are equipped with these devices before they take the field. This concern realizes that much time is lost in the engineering office in working up survey notes before plotting. Especially is this true in the making of maps.

Outside of the loss in time involved there is always the possibility that some small error may have crept into the notes of which the draftsman, unfamiliar with the ground, might not take cognizance but which the man who had been in the field would instantly recognize. A man who makes an excellent chief of a survey party often is a poor draftsman, and it becomes impossible to obtain a nicely-drawn map when he is permitted to plot his own notes, even though the most accurate results are attained by this method. Besides, there is so much field work to be done by a large company that it would be inadvisable to hold the members of a survey party in the main office part of the time.



The Survey of an Irregular Tract

This furnishes a ready comparison of the machine and hand methods of calculation. The upper figure shows the tract of land and the tabulated machine calculations; the lower shows the same tabulation and the laborious computations by which the results are obtained.

NO.	BEARING	DISTANCE	N OR +		S OR −		E. OR +		W. OR −		D. M. D.		+ AREA		− AREA	
1	N.35°40'E	171	138	92			99	71			279	69	38	54	53	
2	S.3°30'W	349			348	35			21	31	358	09				124740 65
3	N42°20'W	67	49	53					45	12	291	66	14	445	92	
4	S.71°24'W	92			29	34			87	20	159	34				4675 04
5	N.15°16'W	137	132	17					36	07	36	07	4767	37		
6	N.57°37'E	106 56	57	07			89	99			89	99	5135	73		
			377.69		377.69		189.70		189.70				63,203	55	129,415	69

63 203.55
2 | 66 212 14
43560 | 33 106.07 Sq Ft
Area ------ .76 Acres

NEATNESS IS OFTEN AN INDEX OF EFFICIENCY

The draftsman's table should be kept clear of a promiscuous display of pencils and scraps of paper. Scratch pads and logarithmic tables soon grow dusty when the calculator is employed. This is a Bertha Coal Co. scene.

NO.	BEARING	DISTANCE	N. OR +		S. OR −		E. OR +		W. OR −		D. M. D.		+ AREA		− AREA	
1	N.35°40'E.	171	138	92			99	71			279	69	38,854	53		
2	S.3° 30'W	349			348	35			21	31	358	09			124,740	65
3	N42° 20'W.	67	49	53					45	12	291	66	14,445	92		
4	S.71° 24'W.	92			29	34			87	20	159	34			4675	04
5	N.15°16'W.	137	132	17					36	07	36	07	4767	37		
6	N.57°37'E.	106.56	57	07			89	99			89	99	5135	73		
			377.69		377.69		189.70		189.70				63,203	55	129,415	69

63,203.55
2 | 66,212.14
43,560 | 33,106.07
30,492.0
2614.07
2613.36
.71

Area = .76 Ac

1 81.242 58.307
57.682 41.398
138.924 99.705

2 299.440 18.315
48.909 2.991
341.349 21.306

3 49.529 45.121

4 29.344 87.195

5 96.471 26.331
35.694 9.743
132.165 36.074

6 53.558 84.448
3.213 5.067
.299 .473
57.070 89.988

6 89.99
89.99
179.98
99.71

1 279.69
99.71
379.40
21.31

2 351.09
21.31
336.78
45.12

3 291.66
45.12
246.54
87.20

4 159.34
87.20
72.14
36.07

5 36.07

1 + 279.69 6|3 / 138.92 / 5|3
559.38
251721
223752
83907
27969
38854.5348

2 − 348.35 5|8 / 358.09 / 7|8
31.3515
2786800
174175
104505
124740.6515

3 + 291.66 6✓ / 49.53 / 3✓
874.98
145830
262494
116664
14445.9198

4 − 159.34 4✓ / 29.34 / ✓|✓
63736
47802
143406
31868
4675.0356

5 + 132.17 5|8 / 36.07 / ✓|✓
92519
793020
39651
4767.3719

6 + 57.07 1|8 / 89.99 / 8|✓
51363
51363
51363
45656
5135.7293

CALCULATOR MOUNTED ON PLANE TABLE

If the engineers do not intend to do any plane-table surveying the table may be used as a stand for the machine, thus providing a portable outfit.

When a party intends to absent itself for any considerable length of time on topographical work, a calculating machine is just as important a piece of equipment as any with which the party is supplied. No attempt is made to take the machine into the field during the day. It is left at the camp and is available at night or on rainy days and foggy mornings for the ready working up of the notes obtained during daylight and surveying hours. An old plane table may be used as a stand, thereby making a portable outfit.

While the machine is not particularly adapted to plane table surveying, it is well suited to stadia methods. For the reduction of stadia shots to horizontal distances and the calculation of elevations greater economy may be attained and with greater speed than is possible through the use of the regular stadia reduction charts or slide-rules. In ordinary traversing the co-ordinates of the different stations in the field may be determined. Thus it becomes possible to send the notebooks to the main office by mail, fully worked up. The draftsman can then go ahead on the making of the map without loss of time. This unquestionably is a more advantageous method than the one commonly followed and in practice today.

At the main offices of the Bertha Coal Co. in Pittsburgh five Monroe calculators are in use. Four of these are in the auditing department, while the fifth is kept in the drafting room. The one machine in the engineering office usually suffices adequately to handle the various calculations that arise from day to day. However, when there is a sudden influx of notebooks from the field, one or two machines from the adjoining department are borrowed for the emergency.

By reason of the diversity of the work that can be accomplished with such a calculator the demand for it around coal-company offices is perhaps greater in the auditing than in the engineering department. Here the machine is not called on to handle such complex calculations and the work is more nearly of a routine nature. The saving in time is therefore perhaps even greater.

Calculating machines were designed primarily for the rapid and accurate juggling of figures for the auditor and cost accountant and these men were among the first to realize the immense saving of time resulting from their use. Engineers now appreciate the machines quite as fully, as is evidenced by the growing number of offices equipped with them. Engineering-office efficiency has attained a new meaning, as has also the conduct of survey parties in the field. A closer co-operation now exists between office and field than was possible heretofore.

The illustration which forms part of the title head of this article was taken in the office of Howard N. Eavenson, consulting mining engineer, of Pittsburgh.

Twenty Years of Experience Have Made Mine Locomotives Reliable and Efficient

In the Last Two Decades Many Have Been the Improvements in the Mechanism of the Electric Locomotive—Indications Are That This March of Betterment Is Not to Stop in the Near Future

By M. S. Beddow
Scranton, Pa.

A SCORE of years has wrought many important and interesting changes in the electric locomotive, for there were, of course, weak spots in the mechanism which actual use could not do otherwise than reveal and mechanical genius could not fail to rectify. Some changes that appeared radical at the time they were made do not seem so in the light of after events. In retrospect we see that they were natural occurrences forced on the designers and builders by the severe service imposed.

To some these improvements have seemed not only few and far between but of a minor character, for the external appearance of the machine is practically the same as it was twenty years ago. The major changes have been in operating parts, which are not easily observable. Only one who has kept in touch with these various innovations as they were introduced can know with certainty what they have meant in the hauling of coal. As each obstacle arose it was met and mastered by the designers. As soon as the redesign was completed the mine electrician would start a careful scrutiny with a view to familiarizing himself with the changes so that he would be able to locate trouble promptly, should the locomotive at any time appear to be functioning badly.

Early Locomotives Too Lightly Motored

It will be the purpose of this article to enumerate and describe the various changes in this important coal-mine machine and the reasons for their introduction. Not many years ago mine locomotives were sadly under-motored and consequently overloaded. The sur-

prising part of the whole affair was not the undermotoring but the fact that any considerable time should have elapsed before motors of sufficient horsepower were installed. This came at last, however, although the change came slowly.

With the motor problem successfully solved it was naturally supposed that the efficiency of the locomotive would increase, and this belief was not without solid foundation. Modern mining, however, necessitated increased output, and this cannot be secured except by getting the maximum efficiency out of the equipment. Continuous severe operation will ultimately reveal the weak spots in any mechanism and of course point the way for improvement. An electrical breakdown is gratifying only because it shows a way whereby to prevent a recurrence of the trouble.

Four-Brush Holder Gave Much Trouble

Probably the one detail about the old locomotive that had the unanimous disapproval of mine electricians was the four-brush holder motor. Many of these are still in service, but fortunately on machines of sufficient horsepower to do the work imposed upon them. Narrow-gage machines were so limited in width and their armatures were provided with commutators of such slight stock that four brush holders were necessary to prevent sparking under heavy loads.

In order to examine the two bottom holders it was necessary to move around the yoke that carried them. Because the brush holders grounded and frequently flashed over to the iron, hardened beads were burned on these yokes. This of course interfered with their easy rotation when an examination was attempted.

This gave so much trouble that fewer inspections were made than occasion demanded, and electrical trouble was the natural result. Complaints from this source were so frequent and persistent that later-type locomotives were fitted with sufficiently liberal commutators to allow of the installation of two top brush holders. These were in plain view, where they could be readily watched by motorman and electrician.

Controller Is the Heart of the Locomotive

There is an old saying among mine electricians that the controller is the heart of the locomotive. There is much truth in this statement. It is here that the power is distributed to the motors when operating either in parallel or series. Any trouble here means that the operation of the locomotive itself is affected. The inside of the controller is made up of parts intricate yet essential to the proper operation of the motors. It was therefore not surprising that this particular unit would not endure the severe stresses to which it was subjected. This was true at least on locomotives weighing ten to thirteen tons or more.

The turns of the blowout coils were not built with sufficient cross-section, and when the controllers were installed on the heavier locomotives, short circuits and grounding were the result. Also because there were too few turns in the coil it was discovered eventually that the magnetic flux set up was insufficient to smother the heavy arc which resulted from the great amount of power which the heavier machines consumed.

Thus the demand for a more rugged type of controller soon became so insistent that a change was made. The general arrangement of the improved controller was the same as that of the old with the exception of a few small details. The alterations that went farthest toward making them stand up in service were simply heavier contacts and heavier finger bases.

Next in order after the controller naturally came the resistance. Only those who have had experience with what was known as the pressed-ribbon type can appreciate the advantages of the cast-grid variety now used. The pressed-ribbon resistance was an inclosed affair with no means for heat radiation. As probably a half dozen different kinds of panels went to make up one set, there was strong liability that a panel having a wrong resistance would be installed. This occurred time and again, and resulted in quickly burning out the resistance.

The cast grid with its uniform resistance in each panel has only to be connected in series or parallel to give the proper starting voltage to the motor. As these grids are open, excellent means is afforded for the radiation of heat. The present method of holding the panels in place is much superior to the old. Hardened bricks with end indentations (slots) were used to hold the pressed ribbon firm. When these bricks broke, as they often did, a half mile of ribbon might be strewn along the mine road. Sometimes the whole of the resistance would be lost in this way before the mishap was discovered.

The ribbon could not be reclaimed and was of course a total loss. The cast grid cannot give this trouble, as each section is provided with a hole in either end through which a mica tube, reinforced by a steel rod, is passed. When this resistance is assembled it forms a compact whole with no possible chance of separation. Probably no resistance yet devised will endure hard mine service as well as will this one.

Commutating-Poles Save Much Sparking

When the motor itself is considered one is confronted with a number of important improvements tending to keep the locomotive in continuous service. The motor, of course, is the most delicate as well as the most useful part of the entire mechanism. Many mishaps may befall it that cannot be repaired even temporarily, and which consequently put the locomotive out of commission.

Only within recent years has the commutating-pole motor been perfected to the point where it has become of practical value. Even after it had been successfully tried out on all kinds of direct-current motors some hesitation was felt about embodying it in the mine locomotive. Today, only a few years after its intrduction, electrical men around coal mines are unanimous in declaring that the commutating pole was an improvement which the locomotive greatly needed.

Motor-Driven Versus Chain-Driven Reel

Not the least important of locomotive improvements was the motor-driven reel. Its predecessor, the chain-driven reel, was never satisfactory, as under certain circumstances the cable would be pulled under the drivers and a large amount of it destroyed. Something that would be free from any action of the locomotive wheels was desired. A 2-hp. motor having a resistance of about twenty-six ohms directly in series with it was finally introduced and met with instant favor. This motor exerts a pull of about 25 lb. on the cable and thus tends to keep it off the ground.

It is obvious that this motor must be extremely durable, for it is subjected to the severest kind of service. When the locomotive upon which it is installed is coming out of a chamber this motor simply drives a reel which in turn picks up the cable. If its duties

consisted only in driving a cable reel through a set of gears there probably would be no need for extra insulation and the precaution of cutting down the line voltage, but there are other demands made on the motor.

Still Holds While Locomotive Is Standing

In order to keep a uniform tension of 25 lb. against the cable there must be impressed on the motor terminals a potential of 119 volts, regardless of whether the motor is operating or standing still. When the locomotive has reached the inner end of the miner's chamber there is in most cases a delay of several minutes during which the power is not thrown off. The stand-still torque of the motor is then sufficient to exert the necessary pull. Of course if the delay at the chamber is indefinite the reel switch is thrown to the off position.

When power is on, however, no counter electromotive force is generated and all that holds the current flow within reasonable bounds is the resistance of the circuit. It is not difficult to see why the current flow would be dangerously high at such times if this motor were constructed in the ordinary manner.

The first armatures sent out with these reel motors were of the ring type and they were not any too efficient in consequence. Winding of these armatures also was difficult. Before long, however, an armature was made with form-wound coils, and this type is in use today. The recent addition of ball bearings to the revolving parts makes this locomotive still more durable.

One Locomotive Serves Twenty-Five Places

It is a sufficient testimonial to the ruggedness of this locomotive to say that in the anthracite region most of them are taking care of from twenty to twenty-five chambers a day, and that these chambers are entered anywhere from three to five times. Most of these chambers are 500 to 600 ft. long and in addition are quite steep. Naturally, it is the man on the job, who comes in daily contact with these little motors, who is in the best position to understand and appreciate their full value.

It would be a mistake to bring an article of this kind to a close without making some mention of the ball bearing, as it is being used on the mine locomotive in general. I doubt if the true value of this bearing is fully appreciated. This device is compelled to endure abuse to which the old sleeve-type never was subjected, simply because it was well known that it would not stand up under such treatment. A motorman whose locomotive was equipped with the sleeve type of bearing soon learned that to run it dry meant that an armature was on the poles. He accordingly made provision against this occurrence.

Ball Bearings Protected the Windings

With the introduction of the ball-bearing armature there were new things to learn. One of these was that a dry ball bearing did not necessarily mean that the armature was rubbing. Some warning, fortunately, such as excessive heat, is given, and the trouble is discovered before the armature reaches the pole pieces. The bearing is ruined, of course, but the winding is not destroyed, as would have been the case if the bearing had been of babbitt.

It is utterly needless for an armature equipped with ball bearings to go down onto the poles, and it is a careless motorman indeed who will allow the bearing to get in such condition as to permit this to happen. Because they require less attention than the babbitt bearing is no reason why they should be subjected to abuse of any kind. Unfortunately when they do "go bad" they cannot be reclaimed. This is, however, merely an added reason why they should be kept lubricated at all times.

To one who has made a close study of mine locomotives they seem marvelous in many ways. The work they have to do must not be compared to that performed by similar equipment on the outside. The roadbed over which they operate must of necessity be rough and uneven, for conditions are all against perfect ballasting. In many cases, especially in the anthracite region, this road-bed is laid over ground that is caving, and the track is irregular in consequence.

While the efforts of all concerned are directed toward perfect track conditions, attainment even in part seems to be a hopeless task. Only the improvements noted above have kept these machines in service throughout a score of years. Of course, the obstacles encountered have brought the weaknesses in construction to the surface and finally paved the way for their proper rectification.

"Motor" More Dependable Than "Lokie"

One more thought will not be amiss. As a comparison to the work of the electric locomotives let us consider the duties performed by the steam "lokie" on the surface. This work is not so gruelling in nature and has the added advantage of being performed on a much better roadbed and under the watchful eye of the official in charge. Yet it is an undisputed fact that 90 per cent of these steam locomotives are taken into a repair shop several times a year for a complete overhauling.

How much of this kind of work is done on electric locomotives? Very little. True, they are taken to the pits at frequent intervals for the renewal of wheels, resistance or controller parts, brakes, etc., but the steam locomotives go through a similar process quite as frequently while in addition they receive the benefit of a complete repair-shop overhaul.

Here's to the mine locomotive, the most abused and yet the most dependable of all coal-mining equipment! It will have a future just as surely as it has had a past, and all appearances indicate that this future will be a bright one. Twenty years from now one will undoubtedly be able to look back at many changes that have come to pass, and where is the person who will be sufficiently foolhardy to assert that the improvements made will not be comparable to the ones recounted in this article? As in the past, increased difficulties in mining will be the main contributing factor in bringing these improvements about.

Hard-Coal Miners Would Name President

ARGUING that it is time the anthracite field had a man in the presidential chair of the international United Mine Workers of America, the union leaders of the hard-coal region are supporting Thomas Kennedy, of Hazleton, as successor to John L. Lewis, of Ohio, when that functionary's time expires. Lewis beat Kennedy for vice-president at the last election and replaced Frank J. Hayes as president when he became incapacitated. In view of the split in the bituminous regions Thomas Kennedy's supporters are quite hopeful of presidential honors for their candidate.

Great Britain's Cabinet Seeks Substitute for Discredited Nationalization Scheme

This Plan Does Not Please the Workman, for Under It Prices Must Still Be Competitive and Variant, and So Long as Wages are Dependent On Unequal Prices They Cannot Be Uniform for Which Uniformity the Mine Workers Have Long Hoped

By W. W. Wallace
York, England

COAL is a burning topic in Britain. After many months the Cabinet (Government) has finally decided upon its policy and has incorporated it in a bill which was brought before Parliament a few days ago. In introducing it, the president of the Board of Trade stated that the bill would bring about "a state of harmony in the coal fields such as had not been seen before," and one of the coal owners declared that the bill would "strangle the coal industry with red tape." The miners' leader pleasantly remarked that if the Government "wanted chaos in the industry" it could go on with the bill. Proposals which call for such varied comment must be worthy of notice.

In Great Britain the best coal is generally extracted with the least effort. In consequence wages vary immensely, seeing that all the coal that can be mined is needed and a mine which is worked at the expense of much labor is not closed down but worked at the expense of labor and profit. In the United States the most expensive coal to mine is anthracite, which commands a big price on the market, while the lower grades of coal if not cheap enough to meet competition need not be mined. Consequently wages are reasonably uniform and the call for nationalization is neither as loud nor as excusable as is that heard demanding it across the water. As state ownership has been a failure in Great Britain only the prospective employees of the state want it.

First, a brief statement of the problem. Britain's industrial future depends largely upon coal. The annual value of the coal produced is about £440,000,000 ($2,142,800,000 at normal rates of exchange). The number of men employed in the industry is 1,180,000. Almost 100 per cent of the manual workers are organized in the Miners' Federation of Great Britain, probably the strongest trade union in the world. Working in conjunction with it are the railwaymen and the transport workers, forming together the formidable "Triple Alliance."

The first plank in the platform of the miners' union for some years has been that of nationalization. The demand was suspended duing the war, but revived immediately after the armistice. Faced with the prospect of a disastrous strike at a critical time, the Government offered to appoint a royal commission to inquire into the whole question of wages and hours and the future of the industry. This offer was accepted by the miners and a commission appointed under the chairmanship of Justice Sankey (one of the ablest High Court judges, possessing special knowledge of the industry).

The commission presented an interim report on wages and hours which was adopted by the Government. The final report dealt with nationalization. The chairman of the commission joined with the miners' representatives and the other labor men on the commission in recommending nationalization. Sir Arthur Duckham, one of the independent employers, recommended a scheme of unification under which private enterprise would be retained but profits would be limited and the miners given a share in control including representation on the boards of directors. The coal owners on their part not only refused to consider nationalization for even one moment but declared further that they would not agree to give any share whatever in the control of the industry to the miners. That was the situation with which the Government had to deal.

Ministers to Fix Wages, Prices and Profits

The policy adopted is contained in the Ministry of Mines Bill. This bill creates a Minister of Mines, whose duty it will be to effect the most efficient development of mineral resources and the safety and welfare of the miners. He is to appoint an advisory committee representative of all the different interests. For one year from Aug. 31, 1920, he is to have power to regulate coal exporting and bunkering, and to fix prices for bunker coal and for the home trade. When such regulations are made he is to have power also to fix wages and profits. After Aug. 31, 1921, such powers may be exercised only if authorized by express resolutions of both houses of Parliament. He is given, in addition to these more or less temporary powers, the right "at any time" to put into force any recommendations submitted to him by a district committee, an area board, or the National Board, which bodies may now be described.

Pit Committee of Operators and Miners

The Minister is to make regulations setting up different representative bodies. First of all, every coal mine is to have a "pit committee." This is to consist on one side of owners and management and on the other of an equal number of miners' representatives selected by and from themselves. Its functions are to discuss and make recommendations with regard to (a) safety, health

and welfare; (b) the maintenance and increase of output; (c) certain reports from Government inspectors; (d) disputes arising in the mine in question, including disputes as to wages, and (e) any other questions prescribed by the regulations.

District committees are similar joint bodies representing a specified district. How they are to be elected and whether or not election is limited to members of pit committees is not stated. They are twenty-four in number and their functions are to consider similar questions in so far as they affect the district. They are also to consider questions referred to them by a pit committee, an area board, the National Board or the Minister of Mines.

Six area boards also are created, three for England and one each for Scotland, Ireland and Wales. The representatives of the owners and management are to be nominated by the representatives of owners and management on the various district boards and similarly in the case of the miners' representatives. Their functions are to deal with questions affecting the whole area. In particular they are to formulate at such intervals and on such principles as may be prescribed by the National Board schemes for "adjusting remuneration of the workers within the area, having regard to the profits of the industry within the area," such schemes being submitted to the National Board and the Minister for their approval.

National Board Surveys Work of Others

The National Board is a similar body representative of the whole Kingdom. Its business is to consider questions affecting the industry as a whole and in particular those referred to it by area boards or the Minister. It also is to deal with workers' remuneration, as mentioned in the previous paragraph.

This being the scheme, what does it amount to? It recognizes that the day of absolutely free private enterprise in coal mining in Great Britain is done. It grants the right of the consumer to an interest in the conduct of the industry, through the Minister and through representatives on the Advisory Committee. It admits the right of the producer to some share in control. But the miners say, and probably they are right, that the heart of the bill is to be found in the provisions that their remuneration is to be based on the profits of the areas.

For forty years the miners have been fighting for the principle of a uniform, standard wage throughout the Kingdom. It is a generally recognized principle that no large organization can keep together without unity of aim. That applies with special force to trade unions. The coal fields of Britain vary greatly in productivity as well as efficiency. Wages have varied accordingly. Miners in South Wales have been better paid than their fellow workers, say, in Somerset; miners in Northumberland than those in Scotland, and similarly all over the country. So long as this continued, solidarity of action was obviously difficult and the policy of the Miners' Federation was to alter it.

Since the outbreak of the war and particularly since the armistice the miners have been demanding and receiving flat-rate increases in wages over the whole country instead of percentages, with the result that wages have been growing more uniform. This policy has been made possible only by reason of the fact that the industry has been under Government control and that consequently the surplus profits of the more productive areas have been available to make good the losses in the less productive areas. It is the clear recognition of this fact which has provided a large part of the driving force behind the demand for a more advanced form of control in the shape of nationalization.

The Government now refuses to entertain the idea of nationalization, and proposes the removal of control in twelve months' time. If this policy is carried through one of three things must happen. Either (1) all wages must be reduced to the figure which the least productive coal field can afford to pay, (2) the less productive coal fields must be closed down, or (3) wages must vary from area to area. The last is the alternative provided for in the bill. Indeed it would seem to be the only practicable alternative to nationalization.

The miners on their part seem determined to fight the proposal and to stand for nationalization. They have presented demands (1) for the reduction of the price of household coal by 14s. 2d. per long ton ($3.08 per short ton, normal exchange), and (2) for a uniform increase of 2s. (49c., normal exchange) per shift worked. If successful this would mean, as I have tried to show, that the less productive coal fields would have to depend upon the profits of the more productive.

In other words, private enterprise could not continue. Both sides seem equally determined. The miners are over a million strong, they are almost "blackleg" proof, they are skilfully led, they are producing a vital commodity, and they have the backing of the more important sections of the organized labor of the country. On the other hand, the Government's rallying call will be that the whole community is being attacked. If the matter comes to a final issue it is difficult to see how something approaching civil war can be avoided. That is the true significance of the Ministry of Mines bill.

Coal and Coke Exported by Customs Districts During June

DOMESTIC exports of coal and coke from the United States by customs districts during June, 1920, according to figures issued by the Bureau of Foreign and Domestic Commerce, are given herewith:

EXPORTS OF COAL AND COKE IN GROSS TONS

Customs Districts:	Anthracite	Bituminous	Coke
Maine and New Hampshire	19	40	134
Vermont	2,257	3,353	30
Massachusetts	228	.....	.....
St. Lawrence	169,871	176,808	2,494
Rochester	87,349	91,651	.....
Buffalo	221,556	167,480	20,058
New York	8,008	5,090	337
Philadelphia	11,760	218,176	440
Maryland	.....	602,739	1,479
Virginia	6,423	1,022,603	653
South Carolina	.....	71,548	.....
Georgia	.....	8,875	.....
Florida	719	1,309	..
Mobile	.....	470	.....
New Orleans	703	1,131	63
Sabine	.....	18	.....
San Antonio	138	1,067	415
El Paso	24	3,474	4,079
San Diego	2	3	.....
Arizona	.....	1,983	7,191
San Francisco	45	.....	353
Washington	39	2,436	101
Dakota	788	631	310
Duluth and Superior	2,019	2,229	100
Michigan	.....	132,103	15,083
Ohio	3	617,036	2,100
Totals	511,951	3,132,253	55,420

BUNKER COAL
Customs Districts

Maryland	110,064
New York	283,049
Philadelphia	31,484
Virginia	261,252

Good Briquets Made of Oklahoma Coal with Crude-Oil Residue as a Binder*

Ascertained That Wheeler Crude Oil Should Be Reduced by Distillation to 15 Per Cent of Its Original Weight and Pressure of 2,000 lb. Per Square Inch Used—Mix Should Be Between 180 and 200 Deg. F. and Moisture 3 to 5 Per Cent

By J. C. Davis
Norman, Okla.

TESTS were recently conducted at Oklahoma University to determine whether certain Oklahoma coals—those from the Lehigh and McAlester-Wilburton fields—could be profitably briquetted, using a crude-oil residue, and while the process is not new, some interesting data were obtained during the procedure.

The U. S. Bureau of Mines some time ago made extensive researches on the subject of briquetting and briquetting materials in its plants at Norfolk, Va.; Pittsburgh, Pa., and St. Louis, Mo. Binders of various kinds were tried, including both inorganic and organic materials. Among the inorganic materials utilized at various times were clay, lime, magnesia, magnesia cement, plaster of paris, portland cement, natural cement, slag cement and water glass.

Briquets did not smoke more than coal from which they were made, and burned readily. They did not soften, disintegrate or fall through the grate. Washed-coal briquets did not clinker; those from unwashed coal did. The former had a heat content of 12,570 B.t.u., while the washed coal from which they were made ran 12,200 B.t.u.

Tests at Oklahoma University

Some of the organic materials experimented with were wood products, such as rosin, pitch and pine tar; sugar-factory residues, such as beet pulp, beet-sugar molasses, and cane-sugar molasses; starches, tars and pitches from coal, such as blast-furnace tar, producer-gas tar, coal-tar creosote and various grades of pitches from various tars; natural asphaltum and petroleum products such as crude oil and crude-oil residue. Any one interested in these results may find a complete summary of the experiments in Bulletin No. 58 of the Bureau of Mines.

The experiments, made in the materials testing laboratory at the University of Oklahoma, were conducted by C. T. Griswold, mining engineer for the Atchison, Topeka & Santa Fé R. R., assisted by myself, and it is with his permission that the data given herein are made public. After consulting the bulletin to which reference has been made it was assumed that a standard mixture should be made of 90 per cent moisture and a 7 per cent binder. The coal was then ground and thoroughly washed to rid it of slate and other impurities so far as practicable.

In order to carry out the tests a hollow cast-iron mold was made measuring approximately 4¾ x 4¼ x 2¾ in., with a central hole of about 1¾ x 2¼ in. and with rounded corners. A base plate was made so as to have a projecting rim extending into this opening from the under side. A plunger, sufficiently long to compress the coal, passed down through the opening from the upper side. The mold was then filled with the coal and binder; the plunger was placed in position and the mold put under the compression head of the 100,000-lb. Riehle testing machine resting on the self-adjusting lower head. Due to the roughness of the casting, trouble was experienced in getting the briquets to come free from the mold, and it was decided to have the entire inside of the mold finished, together with the projecting portion of the base plate and the plunger. The briquets then came out freely, perfect in shape and of a size to give a weight of approximately 2¼ ounces. A number of experiments were then made to determine the best pressure to use. Pressures were tried out varying from 1,000 to 5,000 lb. per sq. in. The former pressure seemed too low to compress the binder properly into the coal. At a pressure of about 2,000 lb. per sq. in. the materials seemed to unite very satisfactorily. An increase to 3,000 lb. per sq. in. did not seem to improve the binding qualities materially and with pressures above this amount the particles of coal were crushed. It was therefore assumed that 2,000 lb. per sq. in. would be the proper pressure to use in the briquetting work.

Asphalt Binder Melted at 160 Deg. F.

The binder used was a Wheeler crude oil. Tests were first made to see to what degree it should be distilled in order to produce a satisfactory binder. The oil was reduced to 50 per cent of its original volume and continued by 10 per cent reductive steps down through 40, 30, 20 and 10 per cent. A briquet was then made with a binder having 15 per cent of the original volume, and it was found highly satisfactory. Briquets were formed using 5, 6, 7 and 8 per cent of each binder. Until the 20-per cent reduction was reached all the briquets were soft and could be easily crushed in the hand, even after they had been given sufficient time to cool completely and thus to become hard. The briquet with 10 per cent of binder seemed too hard and rather brittle, while briquets made from the 15 per cent were excellent.

The distillation test furnished by the oil company showed this crude oil to contain an asphalt base of 36 per cent—10 deg. penetration. The laboratory check made at the university showed the following:

*Abstract from a paper entitled "Some Investigations in Briquetting Oklahoma Coal," presented before the chemists' and engineers' meeting at Tulsa, Okla.

STEAM DISTILLATION ON BASIS OF DEHYDRATED CRUDE

	Per Cent
Kerosene distillate (40 5 deg. Bé.)	2
Gas oil (34 3 deg. Bé.)	14
100 viscosity (at 100 deg. F.) lubricating oil	21
Fuel oil (calculated)	43
Residue	15

A binder was then made by the Cameron Refining Co., at Ardmore, Okla., to meet these specifications, and it was found to check with the above distillation test. Further tests by the New York penetrometer on this binder registered penetration 26 at 25 deg. C., 50-g. weights being used for five seconds. The melting point as shown by the ball-and-ring method is 126 deg. F. These tests led us to make the following final specifications:

The asphalt binder must have a penetration of 20 and a melting point of 160 deg. F. Otherwise it will not withstand the excessive summer heat of this section. It is safe to assume that any other asphalt answering these specifications would be equally satisfactory for use. It may be necessary in any case to require a slightly higher melting point.

Slack and Dust in Proper Proportions

The coal used in all these tests was ground to pass a 10-mesh after studying the action of ¼-in. to 60-mesh. The 10-mesh did not seem to crush under pressures sufficing for the manufacture of a satisfactory briquet. The samples used were made from all coals passing a 1¼-in. round-hole screen and contained both the slack and the finest dust mixed in the proper proportions of 31 to 9. Analyses of these coals showed the following percentages:

PROXIMATE ANALYSES OF COAL BRIQUETTED

	Lehigh Unwashed	Lehigh Washed	Average Slack of McAlester Wilburton
Moisture	2.30	2.79	2.04
Ash	19 54	12.10	10.93
Volatile matter	31 20	31.23	35.83
Fixed carbon	48 04	53.32	53 23
B.t.u	10,710	12,200	

Calorimeter tests on the finished briquets showed that the unwashed samples contained 10,543 B.t.u. and the washed samples 12,570 B.t.u. Washing appears to increase the heat content about 20 per cent.

Rolling and Dropping Tests Successful

Temperature and moisture variations were tried throughout the tests. The variations in temperature lay between 60 and 450 deg. F. and the moisture variations between 3 and 10 per cent. It was found that the best results were obtained when the temperature was kept between 180 and 200 deg. F. When coals of moisture content between 3 and 5 per cent were used the difference in the quality of briquets seemed to be small, but when 5 per cent was exceeded the briquets showed voids and crushed much more readily.

Some of the briquets were subjected to rolling and drop tests. Twenty pounds of the briquets made from unwashed coal were placed in an oil barrel, and the barrel rolled over the rough ground for two minutes at 32 r.p.m. These briquets showed a loss in weight of 3½ per cent. Some of them were then dropped from a height of six feet three times onto a concrete floor and showed a loss of 1 per cent from this test. The washed briquets, then subjected to the same treatment, showed losses of 1¼ per cent from rolling and ½ per cent from dropping.

None of the briquets of either kind were broken into parts, the losses being due to breaking of the edges and corners. The height of the drop was then increased to twelve feet, and the briquets were then broken into parts only on the third drop, showing in all cases clean-cut cleavage planes. Any of the briquets tested were sufficiently strong to withstand the pressure of a man's weight, as was shown by placing them on the floor and stepping on them.

Results of Test in Heating Stove

As the "test of the pudding is in the eating," so the test of the fuel is in burning. A fire was made in an ordinary round heating stove having ¾-in. grate openings. The fire bed was eight in. deep. Both kinds of briquets kindled readily, burned freely, made no more smoke than an ordinary coal, and did not soften, disintegrate or fall through the grate bars during the process of combustion. The washed coal briquets, however, made a much hotter fire. The unwashed left a refuse of 28.7 per cent and clinkered badly, leaving a hard consolidated clinker. The washed coal briquets left a refuse of 11.6 per cent and showed only a small amount of soft clinker.

These tests show beyond doubt that Oklahoma soft coal of the above grades can be successfully briquetted, will make a cleaner domestic fuel than the ordinary bituminous coals, and to a remarkable degree will stand handling and rough usage. As a locomotive fuel they would no doubt prove satisfactory. The initial cost for a plant to make briquets of a desirable kind is high, but it is believed that these briquets can be made at such a cost that they can be sold at a price no higher than the better grades of bituminous coal and will give greater satisfaction to the consumer.

Gillespie Makes 5,000-Ton Hoisting Record

DURING the month of June Mine No. 3 of the Superior Coal Co., Gillespie, Ill., broke all its previous records for a month's run. During that month the hoisting time was 22⅞ days and the total output raised amounted to 110,103 tons, making an average of slightly over 4,813 tons per working day.

On June 9, 12, 29 and 30 the coal lifted ranged from 5,020 to 5,140 tons, with an average of 5,098. On these days the number of cars hoisted averaged three per minute, the lift from bottom to dump level being 365 ft. The hoist is a Litchfield 24 x 36-in. engine raising Olson cages. The hoistmen, George Klein and Fred Hoppe, change places every hour. Seventeen locomotives and four mules transport the coal underground. Cutting is done by Sullivan and Jeffrey machines, and the coal is loaded out by 392 men. In making the above record much credit was due to rapid caging and discharge rather than to the size of the mine cars, these averaging 6,700 lb. each.

The above output of over 110,000 tons breaks the record for this mine and for the county. F. S. Jorgenson is general superintendent, P. H. Shanahan, superintendent and James Powell, mine manager. The operation is now thirteen years old. (For another interesting record of production see *Coal Age* of March 20, 1920.)

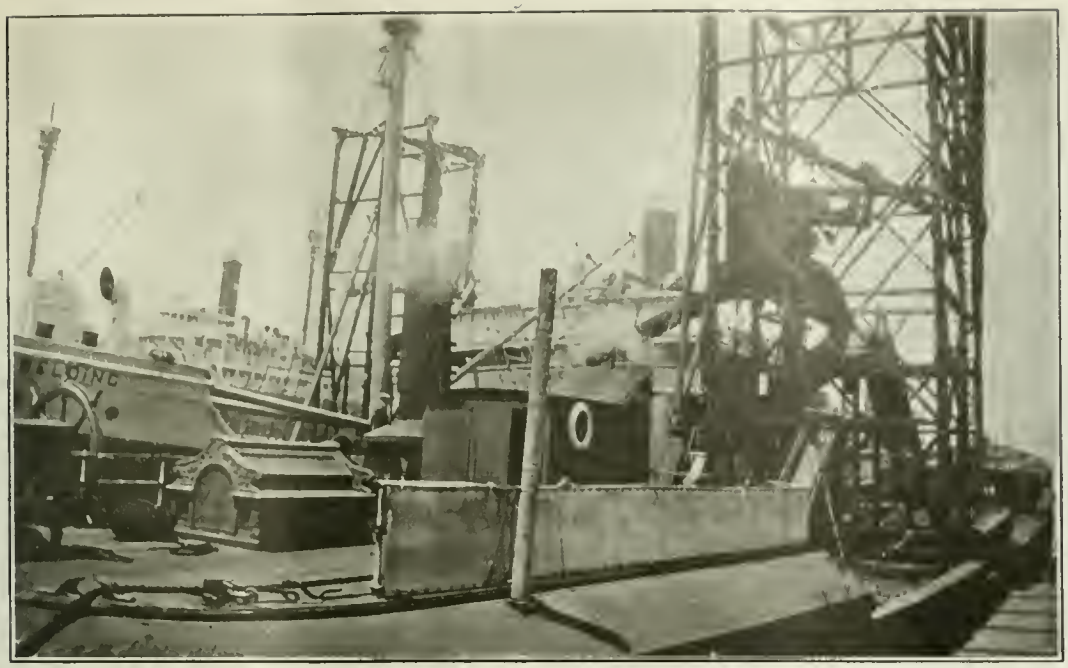


FIG. 1.

Loading Bunker Coal

A barge 195-ft. long, 40-ft. beam and 11-ft. draft meets ocean liners and fills their bunkers with coal. The tower is operated by a 65-hp. engine and the trolley is actuated by a separate machine. One man handles both engines from the tower.

San Francisco Develops as a Coaling Station

Newly-Installed Barges Can Deliver Coal at the Rate of 150 Tons Per Hour—Labor of Coaling Is Reduced to a Minimum by Design of Barge to Fit Clamshell Operation

By Charles W. Geiger
San Francisco, Cal.

IMPROVED bunkering facilities at San Francisco are attracting steamships to that city. Some are going to Oriental ports, others are on their way to New York, Philadelphia or some other Atlantic port, while still others are proceeding north or south along the Pacific Coast. Shipping men say that steamers get better coal and in much less time at San Francisco than anywhere else on the Pacific.

The Rolph Coal Co. operates extensive bunkers at San Francisco, while the King Coal Co. has its storage yard at Oakland. At this latter point about 100,000 tons of coal are kept as a reserve at all times. Both concerns operate an extensive fleet of coal barges that can fuel steamers either in the stream or alongside while the vessel is loading or discharging.

It was the impression in shipping circles for some time that vessels coaled at San Francisco on the theory that the "longest way round is the shortest way home." As a matter of fact, however, vessels do not come to this port merely because of the superior service but

FIG. 2.

Coaling a Big Liner

Barges can discharge coal at a rate of 50 tons an hour. One has a capacity of 800 tons. The coal is lifted by a clamshell bucket which is suspended from the traveler, carried to the tower and thence discharged into the waiting vessel.

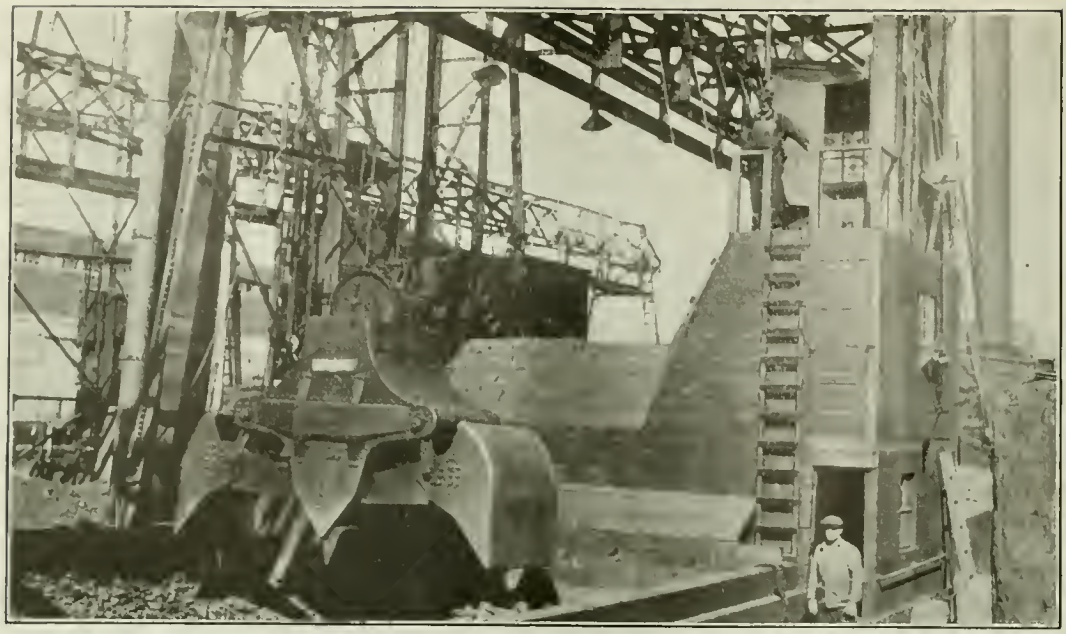


FIG. 3.

Clamshell Bucket

The clamshell bucket by which the coal is lifted from the barge and run out to the tower has a capacity of two tons and a spread of 18 ft. As the barge is suitably shaped the bucket will clean the coal out completely without hand shoveling.

because it is a point on the shortest route between the Atlantic and the Orient. The distance from New York to Yokohama by way of Honolulu is 10,108 miles; from New York to Yokohama by way of San Francisco, 9,810 miles. The difference in steaming in favor of San Francisco is thus 298 miles.

Two of the barges of the King company have recently been equipped with up-to-date mechanical devices for rapid bunkering and each can discharge coal at the rate of 150 tons an hour. These barges are shown in Figs. 1, 2, and 3. The Nanaimo, one of these barges, has a coal capacity of 800 tons and is equipped with a Brown 2-ton clamshell bucket with a spread of 18 ft. The bottom of the barge is so shaped that this bucket can pick up all the coal and leave the bottom clean without the employment of shovelers.

This barge is 195 ft. in length, has a 40-ft. beam and a draught of 11 ft. loaded. The traveler is 20 ft. in height and is supported at both ends of the barge by steel girders. A 65-hp. engine operates the bucket, while the trolley is actuated by a separate machine. One man handles both of these engines from the tower shown in Fig. 1.

One Man Tends Boiler and Hoist

The clamshell bucket delivers the coal into a hopper at the center of the barge, whence it runs by gravity into a skip. At this point is stationed a weigher who weighs each skipload of coal, and by means of a semaphore signals the engineer when to hoist. The skip is so arranged as to dump its contents automatically at the proper height into a chute which delivers the material into the ship's bunker.

The engineer handling the skip also acts as fireman, the boiler room being at the forward end of the barge. The boiler is of the Scotch marine type of 150 hp., working at a pressure of 140 lb. Three-inch steam pipes extend under the deck to the engines operating the bucket, the trolley and the skip. The latter rests on a hydraulic bumper, thus eliminating the possibility of damaging the scales. The steel tower in the center of the barge is of such height that the skips can be raised vertically 60 ft.

Five thousand gallons of fresh water is carried in tanks forward, for supplying the boiler. A Westinghouse generator also is installed and produces current for lighting the barge at night. The generator is of 4-kw. capacity, the lights are 300 cp. and are provided with reflectors, which floodlight the entire barge.

The second barge operated by the King company is equipped with similar apparatus, and it is proposed to provide two additional barges with the same mechanical equipment.

As the British Coal Industry Looks to a Mining Man

Great Britain Has a Patchwork of Wages—She Looks Back Forty-One Years for Some of Her Basal Scales and Thirty-Two Years for Others

QUOTING Carlyle's melodramatic language about the mine worker, H. F. Bulman, a mining engineer, writes an interesting, yes and, after all, a sane book on "Coal Mining and the Coal Miner."* In case you have not read Carlyle's words here they are: "Venerable to me is the hard hand; venerable too is the rugged face. Is it not the face of a man living manlike? Hardly entreated brother! For us was thy back so bent! For us were thy straight limbs and fingers so deformed! Thou wert our conscript on whom the lot fell, and fighting our battles thou wert so marred."

This opening quotation and two frightful illustrations of miners in unsightly Weg apparatus crawling through the stage-managed disarray of an apparatus-testing chamber only open the book, they do not typify it. It starts with striking words and startling illustration, but it proceeds with the due deliberation and sober reflection of an engineer. One wonders if Methuen & Co., Ltd., the publishers, are not responsible for these two pages, which would draw readers and purchasers for the books if, as is the British practice, they were deftly opened at the points indicated and duly exposed in some bookseller's window.

It is the same author who records that, despite the

*Pp. 333 + 5 index; 22 illustrations; 5¾ x 9 in.; cloth boards. Methuen & Co., Ltd., 36 Essex St., London, England.

unsanitary surroundings of cottages built in 1802, with rooms small and low and windows as a rule that would not open and open sewers running past the doorways, which must be crossed by all going in and out, with but two rooms to a family, however large the family might be, and the newly married with but one room, no less than thirty sexagenarians were employed in the pit and "several men of seventy years or more were still at work."

Many are the interesting facts which Mr. Bulman collates for us. He shows us how by five-year periods from 1894 the tonnage per person employed per year in the United Kingdom has run as follows: 1894-1898, 367 tons; 1899-1903, 372 tons; 1904-1908, 363 tons and 1909-1913, 328 tons. But the last five years includes 1912, when there was a six-weeks' national strike. The average for the other four years of the last quinquennial period was 333 tons, 30 tons less than for the preceding five years and 42 tons less than in the five years preceding that. Not a cheering condition, for, as Mr. Bulman shows, Germany and the United States produced more per man in 1912 than in 1902 and the United Kingdom less.

In 1915 the hewers of the County of Durham averaged daily 3.4 tons per man and in 1919 2.7 tons. The minimum wage increased 123 per cent and the output per hewer dropped 20 per cent.

Sometimes Only a Third Produce Coal

The reason why coal is so expensive is partly explained by the large number of men engaged in doing other work than strictly mining. One Welsh steam colliery group had only 36 per cent of its men mining and loading coal; 28 per cent were "repairers," working mostly when the colliers were out; 18 per cent were "traffic men" and 2 per cent were officials. The other 16 per cent consisted of surface men. But in Durham the hewers or coal getters form 56 per cent of the total.

Wages are fixed as percentages of the rates which were being paid in certain years long since past. Thus in the Federated Districts (comprising Yorkshire, Lancashire, Cheshire, Derbyshire, Nottinghamshire, Leicestershire, Shropshire, part of Staffordshire, Warwickshire and North Wales) and in Scotland the basing date is 1888; in Northumberland and Durham, November, 1879, and in South Wales and Monmouthshire, December of the same year.

The increases over these basal rates are large. In 1916 Northumberland exceeded its 1879 figures 120 per cent and Scotland its 1888 figures by 150 per cent. But this is not all, for on Sept. 17, 1917, a special advance was given in the shape of a war wage of 18d. (36c.) a day to all colliery workers (male and female), including apprentices 16 years of age or over, and 9d. (18c.) a day to those under 16 years.

This bonus was given to men whenever they were ready and able to work whether the mine was able to work or not. Lack of trade or a shutdown of the mine for repairs did not prevent the operator from paying this minimum. The minimum wage, however, was something apart from this, and men often regarded it as large enough for sustenance and so forebore to do their best, relying on the fact that they were assured of a minimum in any event.

Here it may be said that the date line of the preface of Mr. Bulman's book is July 2, 1919. The book is marked as being first published in 1920 but there are earmarks that the wage section of the volume is not as recent as the preface would indicate and perhaps the latest date given is November, 1918.

In speaking of the sliding scale in which wages are fixed in accord with the selling price he says: "The regulation of miners' wages by the selling price of coal . . . has a serious drawback in its tendency to limit the output of the miner, because an increased supply tends to lower the selling price. It is mainly with securing a high rate of wages that the miners' unions have adopted the deliberate policy of restricting output."

In its account of the accidents and diseases (also somewhat behind date, doubtless for good reasons) reference is made to nystagmus, and the author says "It is worth noting that at several large collieries there has been a marked decrease in the number of cases of nystagmus since the introduction of electric safety lamps in place of the safety lamps that burn oil."

The statistician of the United Kingdom has an advantage over his brother in the United States in his knowledge of the extent to which electric power is used above and below ground at mines. In 1917, 913,640 hp. had been installed. There were 1,739 electrically driven coal-cutting machines. It may be noted that there were 600,919 flame safety lamps and only 146,651 electric safety lamps.

The book does not confine itself to sociological subjects or to statistics; it covers broadly coals and their composition, their distillation products, the laws relating to mining machinery, rescue work and housing. Despite a few references to American conditions, regarding which the author is apparently not widely read, it really may be regarded as a purely British publication. However, if the reviewer is a judge, there is room for such a book in American libraries, and no one will hold the author at fault unless it be for having occasionally trespassed across the Atlantic when he had at home so much to occupy his pen.

Washington Mine Workers Accept Agreement

IT WILL BE remembered that the officials of the United Mine Workers, District No. 10, recently made a tentative agreement with the operators, this contract being subject to the approval of the members of the union. The date of acceptance was Aug. 4 and the agreement carries with it a 20-per cent increase in wages over and above the terms existent prior to the award of the Bituminous Coal Commission.

Broad Top Strike Comes to an End

AFTER being on strike for five weeks 3,000 coal miners in the Broad Top fields of Pennsylvania returned to work early last week, an agreement having been made by the aid of the Department of Labor after two days' conference ending on the evening of Aug. 15.

Indiana Production Drops Owing to Strike

PRODUCTION of coal at 189 mines in Indiana during the week ending July 31 is reported as 157,577 net tons as compared with 473,103 net tons the week preceding. These mines worked 27.67 per cent of full time. Labor trouble was responsible for 67.31 per cent of the time lost, while car shortage and mine disability accounted for 2.29 and 2.73 per cent respectively.

Discussion by Readers

Edited by
James T. Beard

Fire Protection at Mine Tipples

AFTER reading Dever C. Ashmead's splendid article relating to the means taken to afford needed fire protection for the breaker at Colliery No. 4 of the Kingston Coal Co., *Coal Age*, July 15, p. 113, my thoughts have gone back to the few hundred visits I have made to different mine operations, and I can recall but one mine where any special precaution had been taken to guard against fire that might occur at night or, indeed, at any time.

The Brier Hill Coal Co. had installed a two-inch pipe-line in their tipple, for the purpose of fire protection. The pipes were drilled with small holes, about one-sixteenth inch in diameter and at frequent intervals. These pipes are placed near the roof and at the sides of the tipple, well out of the way where they will not obstruct the daily operation of the mine.

The whole system is connected to the town water main and controlled by a valve on the ground placed at a sufficient distance from the breaker where it can be readily reached in case a fire should occur night or day. Should this happen, all that would be necesasry would be to open the valve and the entire breaker would be quickly flooded by a giant spray of water.

In the Eastern Kentucky coal field I know of many large wooden tipples that handle the output of several operations, and although the water tanks are conveniently located so that a suitable spray system could be installed at small cost, this has not been done. When making such installations some thought should be given to the proper protection of the electrical equipment in and about the tipple or breaker, if the sprinkling line is to be used from time to time for the laying of the dust to make the working conditions more comfortable. Also, water barrels and fire extinguishers should be provided where they would be immediately available for use at the origin of a fire.

G. E. DAUGHERTY.

Pikeville, Ky.

Shaft To Replace Chains in Mule Haulage

SINCE reading the interesting description, regarding the method employed by the Kingston Coal Co., at Kingston, Pa., *Coal Age*, June 10, p. 1,200, who work a large number of mules in their mines, and have adopted a form of shaft to replace the ordinary trace chain, for hauling cars in the mine, I have been wondering if the advantage gained thereby would be realized under all conditions.

It is stated that the use of shafts provides a rigid connection between the mule and the car, which is under better control on a moderate downgrade. It is also said that the shaft enables the mule to exert a more effective pull on the drawbar of the car. It is possible that there are other advantages besides those mentioned, and I am led to ask the following:

Can a mule with kicking propensities be kept under better restraint by this method of hitching? Again, is the mule less liable to leave the track and less likely to get his foot caught in the angle of the frog?

It does not appear, in the illustration shown on page 1,200 to which I have referred, that any opportunity is afforded the driver to ride on the forward end of the car, as he does with a trace-chain connection where the mule is at a greater distance from the car, permitting the driver to support himself between the car and the mule while standing on the hitching or sitting on the end of the car.

It also occurred to me that the ends of the shafts appear to extend too far ahead of the mule, making it possible for a high-spirited mule of a nervous disposition to injure another mule when making a sharp turn on reaching the sidetrack or parting. It would seem that the shafts could be made shorter or the ends turned downward to avoid such an accident.

With these questions in mind, I sought and obtained the following information, together with a dimensioned drawing, as shown in Figs. 1 and 2, which may be of interest to others who have read the article. There is little doubt that the rigid connection of the mule with the car, afforded by the shaft (Fig. 2), is an advantage in giving a better control of the car on a downgrade that is not too steep for mule haulage. With regard to restraining the kicking propensity of a mule with a shaft hitching, little can be said, except that the direction of the kick will probably be limited, until the fellow kicks over the shaft. It would seem, however, that the driver would be in less danger with a shaft hitching than when trace chains are used. There is practically no opportunity for the mule to leave the center of the track when hitched in a pair of shafts, and the danger of his foot being caught in a frog or between the rails of a switch is less.

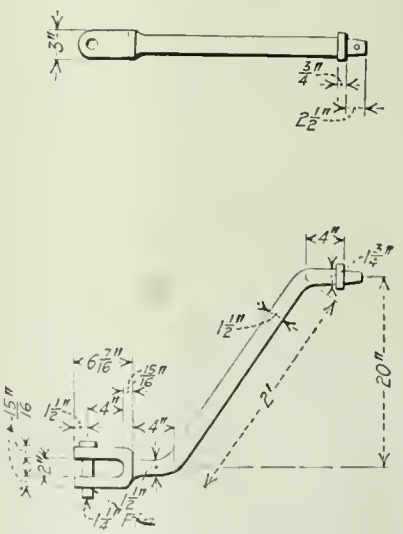


FIG. 1. PLAN AND ELEVATION OF THE SHAFT CONNECTION

In respect to the driver riding on the front end of the car, the shaft connection affords equal or better opportunity for his support than is possible with a trace chain. The distance of the mule from the car can be regulated according to choice; also, the shaft ends can be shortened and rounded or curved downward, as desired, to prevent the possible injury of another mule. The hitching shown in the illustration given in the previous article is said to have given good satisfaction.

In Figs. 1 and 2 are shown the general form and working dimensions of the shaft employed in the Kingston mine. However, these dimensions should be altered to suit any given conditions, respecting the height of the mule and the elevation of the drawbar above the track, the size and weight of the cars hauled and other data that would modify the results. It is stated that the shaft should come to the same height on the mule as

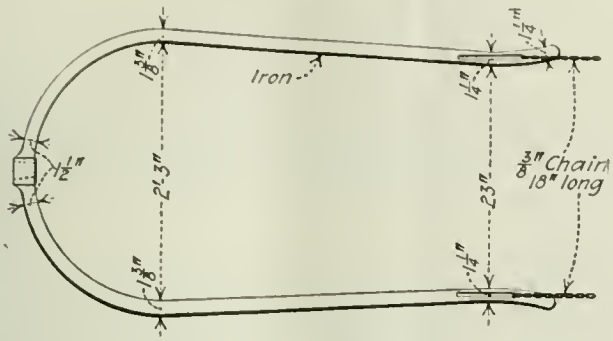


FIG. 2. PLAN OF A SHAFT HITCHING

if he were pulling in the shafts of a single wagon. It will generally be necessary to experiment a little before deciding on the style or form of shaft to be employed. This will doubtless prove of interest in the operation of many mines where mule haulage is employed.

JOSEPH CAIN,
Stearns, Ky. Supt. Stearns Coal Co.

Plain-Bearing Car Wheels Are Frequently Much Underestimated

THOUGH at a late hour, it gives me pleasure and satisfaction to reply to the letter of Richard W. Harris, *Coal Age*, Mar. 4, p. 455, which set forth in emphatic terms that contributor's evident partiality for roller bearings for mine-car use.

Mr. Harris has also taken such a pronounced exception to any of the merits of the plain-bearing carwheel, and to certain claims made in my letter regarding the same, Jan. 15, p. 148, that I feel it is only fair to ask permission to vindicate my previous defense of the use of plain-bearing mine-car equipment, which he has styled as being "antiquated." Moreover, many of Mr. Harris' claims are misleading to one not acquainted with all the facts.

While admitting the truth of my former statement that the large majority of coal mines, in Illinois, are still equipped with plain-bearing wheels, Mr. Harris passes over that fact, by saying simply that these are only the "smaller mines," which does not change the fact nor attempt to explain the reason why those operations have not discarded their plain-bearing equipment for roller-bearing cars.

Type of Bearing Best Suited to Conditions May Be Determined by the Grades

The grades of a mine will invariably dictate the type of bearing that is more economical and practical to employ in hauling. There are many mines that have steep grades and sharp pitches to contend with and, as a result, runaways and wrecks are liable to occur in them at any time. These can only be avoided by the maintenance of care and caution on the part of drivers and motormen. Bearing this in mind, we can readily understand the underlying reason why many mines have not made the change to roller-bearing equipment, which presents greater difficulties when these frequent repairs have to be made.

Again, Mr. Harris attaches much significance to the fact that a large exhibitor of roller-bearing equipment, at a recent meeting of the American Mining Congress, in St. Louis, displayed a sign stating that the firm had done more business in their mine-car department, in two-and-one-half months, in 1919, than they had done during the fiscal years of 1914 and 1915.

Now, it would not occur to anyone to deny such a statement or consider it at all strange, when it is remembered how all lines of business were demoralized from the time the war started till the armistice was signed, except such enterprises as were directly involved in meeting the demand for preparedness.

Even the reference made by this writer to the driver who chained the wheels of his wagon to the wagon bed when going downhill, as proving that sliding friction is greater than rolling friction, appeals to me as irrelevant, since he fails to take into account the relatively large leverage of a wagon wheel as compared with a 16- or 18-in. carwheel.

Grease for Lubricating Plain Bearings

In his comparison of the relative costs of lubricating plain- and roller-bearing wheels, Mr. Harris loses sight of the fact that it is very much the custom of the users of plain-bearing equipment to lubricate their wheels with grease instead of black oil or "blackstrap," as it is commonly called. Assuming that all operators of plain-bearing equipment lubricate with oil, he finds that it is necessary to apply the oil at least four times a week when the mine is running.

The equipment in use in a mine must, indeed, be very poor to require this frequent application. When using blackstrap on our carwheels, I have found it necessary to lubricate the cars but twice a week when the mine was running full. The use of grease on plain bearings, at intervals ranging from five and six weeks to three months and more, depending on conditions in the mine and its equipment, would greatly modify Mr. Harris' results and show that the lubrication of plain bearings exceeds but little, if any, that of roller-bearing wheels.

Questions Estimated Cost

Practical miners will question the statement that roller-bearing trucks are being lubricated at a labor cost of 10c. per car. One writer who signs himself, "R," Robertsdale, Pa., states that he uses a grease on plain-bearing wheels, at a cost of $2.46, per car, per year, which is only 46c. more than the estimated cost of lubricating roller-bearing wheels, as given by Mr. Harris. As it is possible that the latter estimated the cost closely, this margin may be still further reduced.

Now, regarding the claim made that flexible roller bearings eliminate the wearing out of the steel hubs of such wheels, the condition must be truly Utopian if such a statement is correct. My experience is that plain-bearing equipment when properly lubricated, gives little trouble on this score, although the hub will wear out in time if the tire is sufficiently durable. In my experience, the latter is a greater source of failure in carwheels wherever there are heavy grades.

Speaking of broken wheels, it is quite true that less than five per cent of these are the result of wrecks in the mine; but the expense and trouble of replacing

roller-bearing wheels having worn-out tires is the same as when the wheel has been broken in a wreck; and, as I said before, this is one of the chief causes affecting the life of the wheel.

One point in the claim of Mr. Harris regarding the percentage of power saved in the use of roller-bearing equipment is quite misleading because it refers to the haulage on level track and makes no allusion to the decrease in the saving of power as the grade of the road increases. On a level track, the tests referred to by Mr. Harris show a drawbar pull of 24.3 lb. per ton for plain-bearing cars, as compared with 12.8 lb. per ton for roller-bearing equipment, showing a saving in power of (24.3 — 12.8) ÷ 24.3 = 0.473 or 47.3 per cent.

The following table will show the decrease in the percentage of power saved with respect to the increase of grade:

DRAWBAR PULL (LB. PER TON)

Grade	Level	2%	4%	6%	10%
Plain bearings	24 3	64 3	104 3	144 3	224 3
Roller bearings	12 8	52 8	92 8	132 8	212 8
Percentage of power saved	47 3	17 8	11 0	8.0	5 1

In the Carbondale test referred to by Mr. Harris where the average drawbar pull for plain-bearing car-wheels was 32 lb. per ton, against 13 lb. per ton for roller-bearing wheels, it is my belief that the poorest type of plain-bearing equipment was used at the time of making that test. The dynamometer reading is referred to as revealing the interesting fact that it took "twice as much power to start the plain-bearing cars as was required for those mounted on roller-bearings."

No mention is made, however, of the equally interesting fact that the trip mounted on roller bearings was started slowly and gradually, while the trip mounted on plain bearings was started off at two miles per hour, that speed being picked up right at the beginning. The record showed that the roller-bearing cars only attained a speed of two miles per hour after the train had gone a distance of 0.02 miles (105.6 ft.). This difference in starting should explain clearly why it took "twice the power" to start the trip of cars with the plain bearings as was required for the trip with roller bearings.

W. H. NOONE.

Thomas, W. Va.

Safety in Planning Circulation System

THERE is little doubt but that the plan of circulating the air in the mine illustrated in the letter of W. H. Luxton, *Coal Age*, July 15, p. 133, would be a great improvement over the circulation he describes as being that employed at present.

In the original plan, the fan was operated as a blower and the entire mine was ventilated by two splits of air, one passing to the east and the other to the west from the foot of the fan shaft and returning by the main haulage road to the hoisting shaft, which was the upcast. There were no overcasts and the system required a door at the mouth of each pair of cross-entries, as well as one on each crossover, making 15 doors in all.

The plan urged by Mr. Luxton suggests the building of two air bridges or overcasts, thereby providing four separate air splits instead of the two in the original plan, and reducing the number of doors to eleven. Of course, regulators will be required in the two short splits circulating on the north side of the mine, which will have some effect on the reading of the water gage in the fan drift. The regulators should be placed on the return and as close as possible to the overcasts so that they will not obstruct the haulage on the roads. The opening in each regulator should be arranged to give the proper proportion of air in that split.

Accidents Result from Improper Ventilation

One can hardly read Mr. Luxton's letter carefully without realizing that many avoidable accidents can occur as the result of an improper system of ventilation. In the instance cited, the mine is said to be very gaseous; and one great improvement is the change suggested of employing the exhaust system of ventilation whereby the main haulage road is made the intake, thus reducing the danger of the ignition of gas in the return current.

However, allow me to suggest the need of using double doors on each side of the hoisting shaft, instead of the single doors shown for deflecting the air into the two south entries on either side of the shaft. Perhaps the mining laws of Indiana do not require the use of double doors at these important points; but the practice of allowing an air split to be controlled by a single door should not be tolerated in a mine generating gas. A better plan, however, and one that would avoid double doors on the main haulage road would be to build two more overcasts for these south entries, thereby providing six splits of air in this mine, instead of four as suggested.

Plan the Mine with Respect to Ventilation

When planning a mine a careful study should be made of its future requirements in respect to ventilation, with a view to building overcasts only at points where they will be of permanent use. Another suggestion I would offer is the driving of three entries abreast in the development of a gaseous seam. It has the advantage of allowing the intake current to pass directly to the live workings at the inby end of each pair of headings, returning through the gob section that has been worked out in the advancing system of mining.

It is to be regretted that, so frequently, the plan of developing a mine is drawn up in the office with more regard to the extraction of the coal than the proper ventilation of the working places. It is true that the mining laws of Pennsylvania give the mine foreman full charge of all matters pertaining to ventilation, and for this reason, the foreman should be consulted in drawing up the plan of working. Instead, however, he is generally given the plan with orders to see that it is carried out in every detail. At the same time the foreman is held responsible for the proper ventilation of the mine.

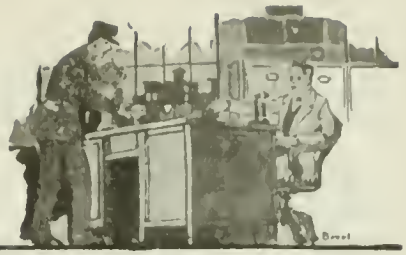
Before closing, allow me to draw attention to a point that has not been mentioned; that is the erection of so-called "emergency doors." That is a door that is hung and set open ready for use in case the original door is destroyed by accident. Such emergency doors should be erected at all important points in the circulation of a mine, as a means of safety, to prevent the temporary disarrangement of the circulation in any section, which is liable to result from accident and would endanger the men working at the face where the mine is generating gas. Whenever doors are required in a gaseous mine they should be in charge of a reliable person to avoid any interference with the circulating system.

Plains, Pa. RICHARD BOWEN.

Inquiries of General Interest

Answered by

James T. Beard



Estimating Requirements and Equipment When Opening a Mine

BEING about to develop a coal property of 1,500 acres in extent, we are anxious to obtain what information we can on the following points:

Assuming the specific gravity of the coal is 1.3, the seam being five feet thick, what tonnage can be taken from this property, allowing ten per cent for loss in mining?

This seam lies at a depth of 400 ft. below the surface; the coal is overlaid with five feet of black slate and above the slate are sandrock and shale. Below the coal is one foot of fireclay on four feet of limestone. The seam is known to give off gas.

We desire to open a mine that will permit the hoisting of 1,500 tons of coal in 8 hours; and want to ask, What should be the size of the shafts; and what pillars should be left in the mine for their protection? At what distance apart should these shafts be sunk? Starting from the bottom of the hoisting shaft, should the main headings be driven two abreast or three abreast; or how many parallel entries should be driven to insure the safe and economical operation of the mine? If more than two headings are needed, please explain why.

We expect to use mine cars weighing 1,500 lb. each and holding two tons of coal, employing mechanical haulage. What size of hoisting rope will be necessary, and what would be the proper size of engines to make this hoist? We will employ 500 men. What volume of air will be required to comply with the law and what size of blower or exhaust fan would give the best results?

JOHN SMITH.

Republic, Pa.

Answering these questions in the order asked, we estimate the available tonnage of coal in this property as

$$\frac{0.9 \times 1{,}500\ (43{,}560 \times 5 \times 62.5 \times 1.3)}{2{,}000} = 11{,}944{,}968\ tons$$

The size of the hoisting shaft will depend on the length and width of the mine cars. Estimating on a capacity of two tons, at 40 cu.ft. per ton, gives for the cubic contents of a car 80 cu.ft., making the inside dimensions of a car, say 8 ft. long; average width, 4 ft.; depth of coal, 30 in. The dimensions, out to out, including bumpers, would be, say 9 ft. long and 5 ft. 2 in. width on top.

Then, allowing for a clearance of six inches between the bumpers and the sides of the shaft makes the required width of the shaft 10 ft. in the clear. Again, allowing for three inches clearance on each side of the car, four 4-in. guides and 4-in. buntons at the center, gives for the length of a double-compartment hoisting shaft, with a 3-ft. manway, 16 ft. in the clear.

The size of shaft pillars will depend chiefly on the character of the strata and method of working adopted. A safe rule for worst conditions is to make the diameter of a circular pillar, or the side of a square pillar, equal to the depth of cover. Another rule makes these dimensions six times the square root of the product of the depth of cover and thickness of the seam, all in feet and assuming a fairly level seam. This latter rule gives for the diameter or side of the shaft pillar, in this case, $6\sqrt{400 \times 5} = 268+$ ft., as compared with 400 ft. required by the first rule.

The distance, measured on a straight line, between the hoisting shaft and the air shaft or escape shaft should not be less than 300 ft.

Inasmuch as this seam is known to generate gas, the main headings starting from the foot of the hoisting shaft should be driven at least three abreast, so as to provide a separate main return airway on each side of the mine, the middle entry being the main intake and haulage road for the entire mine. But, owing to the extent of this property, it will generally prove more economical in the end to drive these main headings four abreast, which will provide separate haulage roads and return air-courses for each side of the mine and avoid delays in hauling.

To ascertain the size of rope required in hoisting from a depth of 400 ft., assume weight of car and coal to be $2 \times 2{,}000 + 1{,}500 = 5{,}500$ lb., and weight of cage, say 2,500 lb., making in all $5{,}500 + 2{,}500 = 8{,}000$ lb. or 4 tons. Then, since a 1-in. rope weighs 1.58 lb. per ft., its ultimate strength being 39 tons, and adding ⅛ for the friction of the hoist, using a factor of safety of 5, we have for the diameter of the rope,

$$d = \sqrt{\frac{5 \times 4}{0.9\ (39) - \frac{1.58}{2{,}000}(5 \times 400)}} = say\ \tfrac{3}{4}\ in.$$

To allow for wear and corrosion, we would use a 1-in. cast-steel, 6-strand, 19-wire hoisting rope, weighing $400 \times 1.58 = 632$ lb.

To find the size of engine required, assume the weight of the car and cage is balanced leaving the unbalanced load, coal, 4,000 lb.; rope, say 600 lb.; friction, 400 lb.; total, 5,000 lb., which is the load on the engine.

Hoisting 1,500 tons in 2-ton cars, requires making 750 hoists. Allowing, say 30 min. for delays leaves $8 \times 60 - 30 = 450$ min. for 750 hoists; or $(450 \times 60) \div 750 = 36$ sec. per hoist. Again, allow, say 16 sec. for dumping in self-dumping cages and accelerating and retarding trips, gives 20 sec. for 400 ft., showing an average speed of $400 \div 20 = 20$ ft. per sec., or 1,200 ft. per min. The effective power is then $(5{,}000 \times 1{,}200) \div 33{,}000 = 181.8$ hp.

Assuming 80 per cent efficiency of engine; piston speed, 600 ft. per min.; mean effective cylinder pressure 65 lb. per sq.in., gives for the diameter of the cylinder

$$d = 205\sqrt{\frac{181.8}{0.80 \times 65 \times 600}} = 15.65,\ \text{say}\ 16\ in.$$

Using a second-motion engine, geared 4:1; circumference of winding 24 ft.; if the piston speed is 600 and the rope speed 1,200 ft. per min., the length of stroke is

$$l = \frac{24}{2 \times 4} \times \frac{600}{1{,}200} = 1.5\ ft.,\ \text{or}\ 18\ in.$$

Examination Questions

Answered by

James T. Beard

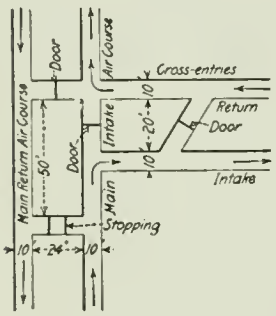
Foremen's and Asst. Foremen's Examinations
Centralia, Pa., May 6, 7, 1920

(Selected Questions)

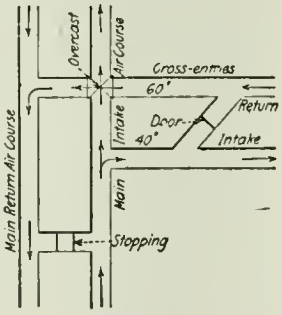
Ques.—In a mine ventilated by one current, what would be the effect of splitting the current into two or more different splits? Explain how it can be done and why such a result is obtained.

Ans.—The effect of splitting the air current into two or more separate currents is to produce a larger circulation of air by the same power. The pressure producing the circulation is reduced, also the velocity of the air at the working face, in the several splits, is reduced. Better air is supplied to the working face, since the return from each section of the mine passes at once into the main return airway leading out of the mine. An explosion occurring in one section is not liable to be transmitted to another section of the mine.

On the right of the accompanying figure is shown the manner of circulating air in a continuous current,



COURSING THE AIR IN A SINGLE CURRENT



DIVIDING THE AIR INTO TWO SPLITS

which is deflected by the door on the main intake air-course, and made to circulate through the cross-entries, after which it escapes by the main return air-course to the upcast shaft or mouth of the mine. On the right of the same figure is shown how this current of air is divided into two spilts, one of which circulates through the cross-entries and returns over the overcast or air-bridge to the main return air-course. The other split passes up the main intake to the face and returns through a crosscut to the main return leading out of the mine.

Ques.—How should a person who has received an electric shock be treated?

Ans.—Assuming the person has been released from contact with the wire but is unconscious, he should be removed to fresh air if this can be done quickly. Otherwise, artificial respiration must be employed promptly, using the prone or Schaefer method in which the person is laid on the ground, face downward but turned slightly to one side to allow freedom of breathing. The operator then kneeling a-straddle of the man's thighs brings his whole pressure to bear on the lower ribs and abdomen, for a brief period only, and again releases the pressure. This is repeated alternately at the rate of sixteen times a minute, corresponding to the normal rate of breathing. This action must be kept up for an indefinite period, perhaps one or two hours, until the man shows signs of life or is pronounced dead by a physician. While applying this method of respiration, further effort at resuscitation must be made by chafing the limbs of the victim, keeping him warm and protected from cold or draft. The application of smelling salts to the nostils may also be of assistance.

Ques.—As a first-aid worker, how would you treat an injured person having a fractured leg and a crushed foot?

Ans.—Send at once for a physician, and, in the meantime, carefully handle the injured limb and foot in an attempt to place it in a more comfortable position. In doing this, care must be taken to avoid the possibility of the broken bone piercing and lacerating the flesh. If the break is a simple fracture it may be possible to apply splints and bandages in a manner to permit the injured person to be laid on a stretcher and removed to where he will be more comfortable and have better air. Give no stimulant while waiting for the arrival of the physician, but do all possible to supply him with fresh air, and prevent undue bleeding or loss of consciousness.

Ques.—If, in making your morning examination, you discover ten inches of gas at the face and trailing back along the roof twenty feet to a point, what would be your duty in such a case?

Ans.—It is hard to understand how a careful fireboss would proceed a distance of twenty feet, under an accumulation of gas at the face of a room or heading. In such a case, it would be difficult to retire safely after reaching the face, since the man's movement in passing has disturbed the gas and created a dangerous atmosphere by its diffusion. It is not to be assumed that this accumulation represents a body of pure gas; it is, rather, a firedamp mixture. Having ascertained approximately the quantity of gas in the place the duty of the fireboss would be to retire quietly and with caution, in order to avoid unduly disturbing the gas. He should then place proper danger signals barring every entrance to the place. It may be advisable to bar the entrance of anyone into that section.

Having finished his examination of the mine or section of the mine in his charge, the fireboss should enter his report in the book kept for that purpose and state the condition he has found verbally to the mine foreman, first taking the precaution to remove the checks of men working in that portion of the mine where the gas was found. By consultation with the foreman, it should be decided whether it is safe to permit the men to enter the mine or the affected section of the mine, before the gas has been removed and all the places examined on that split of air and reported as safe for work. The removal of this body of gas is a serious proposition and should be attempted only by experienced men in charge of the fireboss.

The Railroad Situation—Causes and Remedies*

For a Freight-Traffic Increase of 45 Per Cent Equipment and Facilities Have Been Enlarged Only 5 Per Cent—Coal Crisis Laid to Strikes and Failure to Buy Normal Amounts in 1919—Intensive Loading, Increased Mileage and Prompt Unloading Urged

By Samuel O. Dunn
Editor of *Railway Age*

FOR a long time there have been complaints that the railways have been failing to handle satisfactorily the traffic which the industries of the country have been offering to them, and indeed failing to handle some of it at all. Complaints regarding their failure to handle all the coal traffic offered have been especially loud and insistent. For some years coal-mine operators and others interested in the coal industry have been attacking the managements of the railways upon the ground that their failure to handle the coal offered to them has been due to inefficient operation. The National Coal Association, the principal organization of the bituminous operators, constantly assailed the managements of the railroads in 1917 because of the inadequate car supply furnished to the mines, and by the propaganda carried on by them in that year the coal operators did more to force Government operation of the railroads on the country than any other class of business men. After Government control was adopted they continued to attack the operation of the railroads under the Railroad Administration upon similar grounds. Since the railways were returned to private operation on March 1 they have renewed their attacks upon the private managements.

Freight Service Unsatisfactory Since 1915

Now it is a matter of common knowledge that there has not been a time since late in the year 1915, except during a few months in the early part of 1919, when the railways have satisfactorily moved all the freight traffic the industries of the country have offered them. This has not been true merely as to coal. It has been true as to lumber, grain, iron and steel, and most other kinds of commodities. To what has been due the failure of the railways to render adequate and satisfactory service? The main reason can be given in a sentence. Since 1915 they have actually increased the total amount of freight traffic handled by them 45 per cent, but meantime there has been an increase in their equipment and other facilities of less than 5 per cent.

Furthermore, for some years prior to 1915 there had been a steady and rapid decline in the amount of new facilities provided by the railroads in proportion to the growth of traffic. When it can be shown that the concerns in an industry have increased by 45 per cent the amount of service rendered by them during a time when there has been an increase in their facilities of less than 5 per cent I do not believe it is fair to conclude that their failure to handle satisfactorily all the business offered is due mainly to inefficiency of operation. I think it would be more just to concede that they had been efficiently operated, and that their inability to handle satisfactorily all the business offered had been due mainly to the fact that their business had increased out of all proportion to the increase in their facilities.

Why have railroad facilities not been increased more? In the seven years ending with 1917, which was the last year of private operation, the railroads repeatedly asked for advances in their rates on the ground that their expenses were increasing faster than their earnings. Although prices and wages in all industries were increasing these applications of the railways for advances in rates were almost uniformly denied, with the result that in the last two years of private operation, 1916 and 1917, the average freight rate in this country was lower than ever before. Meantime from 1910 to 1915 there was a steady decline in the percentage of return earned by the railroads. The inevitable consequence was a decline in the investment made in them. The investment made in railroads went down from $800,000,000 in 1910 to less than $300,000,000 in 1915 and 1916. That is why the facilities of the railroads were inadequate when this country entered the war. Under Government control the increases made in equipment and other facilities were only about one-half as much in proportion as they had been under private operation.

Meantime a vast expansion was going on in many other industries due to the fact that in other industries large profits were being made. The coal industry affords a good example. The largest production of bituminous coal ever obtained was in 1918, when it amounted to 579,386,000 tons. Within recent years, however, the capacity of the mines operated has been so greatly increased that they are given a total rating by the Geological Survey of from 900,000,000 to 950,000,000 tons a year, or over 50 per cent more than ever was produced.

Tremendous Growth by Automobile Industry

The expansion of some other industries has been far greater in proportion. In 1914 the automobile industry produced 573,000 cars. It is estimated that this year it will produce 2,250,000 cars, an increase in output of almost 350 per cent, and the capacity of the automobile manufacturing plants is estimated to be five times as great as the number of cars produced six years ago. In view of the very small increase in the facilities of the railways and the vast expansion of the productive capacity of many other industries, is there any reason why we should be surprised that the railways are unable to handle all the business that is offered to them? When such general facts as these, showing that the productive capacity of the industries of the country has increased much more than the transportation capacity of the railways, are presented some persons concede that the facilities of the railways, through no fault of the railway managements, have become inadequate and

*Address delivered before the Illinois and Wisconsin Retail Coal Dealers' Association at Milwaukee, Wis., Aug. 5, 1920.

that they must be greatly enlarged, but charge that the railways have not within recent months been making reasonably efficient use of what facilities they have, attributing to their alleged inefficiency the major part of the existing shortage of coal and failure to secure transportation for a large part of the commodities which are being produced. In fact there seems to be a general impression that the railways within recent months, and especially since they were returned to private operation on March 1, have been seriously "falling down" and that the amount of traffic handled has been substantially less than in past years.

What are the facts about this? You may be surprised to be told that statistics of the Interstate Commerce Commission show that in March, the first month after the railways were returned to private operation, they moved 30 per cent more freight than in March, 1919, and more than ever was transported in any March in history. At the end of March there began a series of "outlaw" railroad strikes which for some months seriously interfered with the normal operation of the railways. There is no more justification for criticising the managements of the railways because these strikes came and resulted in a reduction of transportation than there is for criticising the steel companies or the coal operators because they had strikes last year which resulted in a reduction of the production of steel and coal. As a matter of fact the private managements of the railroads were not responsible for these "outlaw" strikes at all, because they were a result of the delay and final failure of the Government's Railroad Administration to settle controversies which arose between it and the railway employees long before the railways were returned to private operation. Nevertheless, in spite of the strikes the railways in the first five months of 1920 handled 20 per cent more freight than in the same months of 1919, and about the same as the same months of 1918.

Railroad Inefficiency Not Solely to Blame

But it may be said at least that the railways recently have been very inefficient in the handling of coal, and that as a result the country is today confronted with a serious coal shortage. I may surprise you by saying that I challenge as unfounded the statements which have emanated from many sources to the effect that failure of the railways to move coal is mainly responsible for the present and prospective coal shortage. I am going to present to you some facts which I believe demonstrate that the coal shortage is mainly attributable to other things than the railroad situation.

The causes of the present coal crisis date back to the early part of the year 1919. During the first four months of that year there was a large surplus of coal cars. The railways carried on vigorous agitation to secure a larger production and transportation of coal, but consumers and dealers would not buy it in normal amounts. Consequently the operators would not or could not produce it, and the country's available supplies were not increased as they should have been. After the middle of the year 1919 the demand for and production of coal increased, and the railways handled the business so well that there was no coal shortage in 1919. In the four weeks ending on Oct. 25, 1919, the average amount of coal produced and transported weekly had risen, according to the reports of the U. S. Geological Survey, to 12,089,000 tons.

In November, 1919, however, there came the strike of miners, which shut down most of the bituminous mines. Owing to the small production in the spring of 1919 the country's stored supplies were below normal. The railroads were in no measure responsible for this. And what was the effect of the coal strike? This is a point of the utmost importance in relation to the present situation. The facts are clearly set forth in the reports of the Geological Survey. The normal production of coal at the time the coal strike came, as estimated by the Geological Survey on the basis of the amount actually produced and transported during the four weeks just before it began, was 12,089,000 tons a week. The effects produced by the coal strike, as shown by the Geological Survey's figures, were as follows:

	Normal Production, Tons	Percentage of Actual to Normal Production	Actual Production, Tons
Week ending Nov. 8	12,089,000	29.6	3,582,000
Week ending Nov. 15	12,089,000	33.3	4,024,000
Week ending Nov. 22	12,089,000	44.3	5,344,000
Week ending Nov. 29	12,089,000	47.4	5,334,000
Week ending Dec. 6	12,089,000	43.5	5,245,000
Week ending Dec. 13	12,089,000	48.0	5,800,000
Week ending Dec. 20	12,089,000	86.9	10,501,000
Totals	84,623,000	47.8	39,830,000

It follows that the direct result of the coal strike was that at the beginning of the year 1920 there were immediately available in the country almost 45,000,000 tons less coal than there would have been if it had not occurred. In the entire year 1919 the reduction in the production of coal as compared with 1918, due almost entirely to causes for which the railways were not responsible, was 121,000,000 tons. In consequence the country entered the year 1920 with a serious coal shortage.

How Coal Cars Became Scattered

There was another important condition the coal-mine strike created. Bituminous production during the strike was continued in only a comparatively few mines, located chiefly in West Virginia. It was necessary to concentrate on transportation from these mines and to send cars all over the country regardless of their ownership. The coal cars of the railways were thus scattered everywhere, which, on the resumption of the general operation of the mines, was certain to make it impossible for months for the railways to move coal in a normal manner. With a coal shortage and the demoralized transportation conditions due to the coal strike confronting them at the beginning of this year the railways began a strenuous effort, which has been continued up to the present time, to replenish the country's coal supply. In spite of all the difficulties under which they were working the railways between Jan. 1 and April 10 moved 140,600,000 tons of bituminous coal. This was 29,400,000 more tons than had been produced and transported in the corresponding period of 1919; it was 900,000 tons more than in 1918 and only 1,850,000 tons less than the highest record ever made up to that date, which was in 1917. Up to this time it looked as if the railways were going to be able to haul enough coal entirely to offset the shortage which existed on Jan. 1 owing to causes for which they were in no degree responsible.

At this time, however, the railways began to have labor troubles of their own. The "outlaw" railway strikes began in April. In consequence in the week ending April 17 there was a sharp increase in the shortage of cars at the mines and a sharp decrease of coal production. The railway strikes have continued sporadically and intermittently almost ever since. In spite of

them, however, the railways up to July 24 had moved 283,000,000 tons of bituminous coal. This was 45,000,000 tons more than was produced and transported in the corresponding period of the year 1919. It was only about 31,000,000 tons less than had been transported in 1918 during the same period, and the record of 1918 up to July 17 was the highest record ever established.

The foregoing facts demonstrate that the present coal situation is not mainly due to the failure of the railways to move the coal. It is due to the reduction of production in 1919, and especially to the loss of 45,000,000 tons of production in November and December because of the coal strike. If the coal which was lost to production by the strike in the mines in November and December were now available the country would not have any coal shortage or be confronted with the prospect of one.

Since the railways have moved an enormously greater tonnage of coal than they did in the same period of last year, and since, nevertheless, certain sections of the country, especially the Northwest, are confronted with real danger of a fuel famine, the question naturally arises as to whether there has not been something in the distribution of the coal actually transported which has contributed to the present situation. Why, especially, is there an acute shortage of coal in the Northwest? The following statistics partly answer the question:

	First Five Months of 1919, Tons	First Five Months of 1920, Tons	Decrease; Increase Tons
Coal shipped to head of Lakes	5,000,000	1,650,000	3,350,000 Decrease
Coal exported, including Canada	1,706,000	5,796,000	4,090,000 Increase

It will be seen that in the first five months of this year, when the total coal transported was almost 37,000,000 tons more than last year, there was a decline of 3,350,000 tons in the coal moved to the head of the Lakes, compared with last year, while there was an increase of 4,090,000 tons in the number of tons exported.

Freight Movement Easily Disrupted

Do I mean to give the impression that the railways have handled and are able to handle all the coal that the welfare of the country demands? By no means. While the present acute coal situation is not chiefly due to inadequacy of railway facilities, it is partly due to it. The railways with existing facilities can transport substantially 12,000,000 tons a week, or about 625,000,000 tons a year, provided the transportation of coal can be kept uniformily at its practicable maximum throughout the year. But the country needs this much or more coal. In consequence anything, such as a strike in the mines or the recent "outlaw" railroad strikes, that interferes with the railways moving in every week of the year practically the maximum amount of coal experience shows they are capable of moving causes the country to fail to get as much coal as it needs.

The total capacity of the bituminous mines, as rated by the Geological Survey, is about 18,000,000 tons a week. I do not know whether a market, both domestic and export, for this amount of coal could be found at prices which would justify the operators in producing it. Of one thing, however, I am sure, and that is that the railways with their existing facilities, even when working to capacity, cannot transport more than about two-thirds this much coal and handle equally well the country's other traffic. If they should move more than this much coal it would be done by devoting a disproportionately large part of the railways' tracks, locomotives, cars and terminals to the transportation of coal. It follows that unless the railways are to discriminate unfairly in favor of shippers of coal they cannot handle anywhere near all the coal the mines can now produce without a very great enlargement of their facilities.

What are the prospects of an enlargement of facilities? I believe they are better now than for many years. They have been made better by the recent decision of the Interstate Commerce Commission in the rate-advance case. Before the recent wage award of the Railroad Labor Board the total earnings and expenses of the railways were running at a rate which would have produced for them not more than $200,000,000 net operating income annually. The wage award provided for advances in wages amounting to over $600,000,000 annually. This addition to operating expenses without any advance in rates would have made total operating expenses and taxes at least $400,000,000 more than total earnings. The advance in rates will, according to the latest estimate, increase the earnings of the railways about $1,550,000,000 a year. This will enable them to earn a net operating income of, roughly, $1,150,000,000, or about 5⅝ per cent upon their book cost of road and equipment and about 6 per cent upon the valuation of $18,900,000,000 which the Interstate Commerce Commission has placed upon the properties.

Improved Outlook for Railway Securities

The net return they will be able to earn seems small compared with that of most large industries. But it will be larger than the railways have earned in past years except in 1910 and 1916. Furthermore, there apparently will be greater certainty in future regarding the net return of the railways than regarding those of most other business concerns. It therefore seems reasonable to believe that railway securities will again become what they formerly were—a preferred form of investment.

The point cannot be too much emphasized, however, that the present shortage of railroad facilities of all kinds is very great and that it will require the investment of a vast amount of new capital and years of planning and work to bring the transportation capacity of the railways again abreast of the productive capacity of our industries. At the present time concerns which are among the strongest financially can hardly raise large amounts of new capital even by the selling of bonds on a basis to yield less than 7 per cent. Since the railways are to be allowed to earn a return of only 6 per cent it is evident that until financial conditions improve they will meet with great difficulties in raising large amounts of capital. The problem presented to them, it should be understood, is not merely that of acquiring more locomotives and cars. We always speak of the inability of shippers to get enough transportation as due to "car shortage," but for every increase in the number of cars there must be, if the cars are to be efficiently moved, a proportionate increase in locomotives, main tracks, yard tracks and terminal tracks. On the basis of present wages and prices the total new investment which should be made in the railways during the next three years to make up for the existing deficiency of facilities and provide for handling the normal increase of business is at least $6,000,000,000, or $2,000,000,000 a year.

Now it will obviously be very difficult to raise such a vast amount of capital and provide such vast additional

facilities. While these things were being done if there should be an increase in the efficiency with which existing facilities are used there would be a chronic shortage of transportation and a chronic limitation of production in all lines. So we have confronting us not only the problem of securing vast increases in railway facilities but the immediate and pressing problem of increasing the efficiency with which the facilities now available are used in order to enable the country to get through as well as possible the time which must elapse before adequate increases in facilities can be made.

Responsibility of Shippers and Consignees

The essence of this problem is that of getting each car moved more miles per day and of getting each car loaded more heavily. The railway managements are now making extraordinary efforts to speed up the movement and increase the loading of cars. They have created what is known as the "Advisory Committee," of which Daniel Willard, president of the Baltimore & Ohio, is chairman, to supervise the operation of all the railways; and local committees in all the large industrial centers have been created to work under the direction of the advisory committee. In past years the average miles made per car per day has seldom exceeded twenty-five. The railways have set themselves as a standard to attain an average of thirty miles per car per day. Although the average capacity of a freight car is over forty tons, the average load has never equalled thirty tons. The railway managements have set an average of thirty tons as the standard hereafter to be attained in loading cars.

The chief responsibility and duty of securing more intensive and efficient use of cars and other facilities rest upon the managements of the railways. But cars are loaded and unloaded by shippers and consignees. For this purpose they are in the hands of shippers and consignees about one-third of the time. Therefore whether there will be a great increase in the loading of cars will be determined chiefly by the shippers themselves, and whether there will be a great increase in the average miles made per car per day will depend largely upon whether the shippers and consignees do or do not reduce the average time they hold them for reconsignment, loading, unloading, etc.

All-Round Efficiency Essential

It is obviously to the interest of the railways to secure the very greatest practicable efficiency from the use of their available cars and other facilities. It is even more to the interest of the shippers and consignees of the country to do so, because for months to come the amount of freight which the shippers and consignees will be able to get handled, and therefore the amount of business they will be able to do and the amount of profits they will be able to make, will depend very largely upon the efficiency with which the existing facilities of the railways are used.

Since the railways cannot secure the greatest movement of business with the available facilities unless the shippers and receivers of freight will give them the utmost co-operation by loading cars as heavily as possible and loading and unloading them as promptly as possible any shipper or consignee who fails to give this co-operation will have absolutely no right to criticise the management of any railway because it does not make the best possible use of its cars. Every increase of one mile per day in the average movement of freight cars will add 100,000 to the available supply of cars. Every increase of one ton in the average amount of freight loaded per car will increase the available supply of cars by 75,000. It is practicable for the railways and shippers, by the most energetic efforts and the closest co-operation, to so increase the amount of business handled with existing cars as to enable the railways, the business interests and the nation to pass safely through the transportation crisis with which we are now confronted.

I appeal to each of you, and to all other shippers, not in the interest of the railways, nor merely in the interest of the country as a whole, but in your own selfish interest, to help the railways and other business interests of the country in every way that you can in solving this problem of securing the most efficient possible use of the available railroad facilities in the period of stress that is immediately ahead of us. I have no doubt that if this period is safely passed a solution of the railroad problem will finally be achieved which will contribute considerably to the prosperity of every business concern in the country and to the welfare of every individual.

Reduction of U. S. Exports Offset by Increase In Manufactures Exported

SHORTAGE in our exportable surplus of food, to which British Ambassador Geddes has just called attention, is evidenced, says a statement by the National City Bank of New York, by the figures of our export record. Our surplus of food products for exportation has been gradually but steadily dwindling for several years. Foodstuffs formed 56 per cent of our exports in 1880, 42 per cent in 1890, 40 per cent in 1900, 27 per cent in 1910, and 18 per cent in 1914, the year immediately preceding the war. Our recorded exports of foodstuffs jumped from $430,000,000 in the fiscal year 1914 to $980,000,000 in 1916; $1,538,000,000 in 1918, and $2,505,000,000 in the fiscal year 1919.

This war-time increase, however, was temporary. In the month of April, 1920, the latest for which detailed figures of exports are available, foodstuffs form only 21 per cent of the exports, against 43 per cent in April 1919, and practically 40 per cent in the corresponding month of 1918.

Notable Gain in Manufactures Exported

This falling off in exportation of foodstuffs is offset by a corresponding increase in the share which manufactures form of the total of outgoing merchandise. Manufactures formed in April, 1920, 52 per cent of the total value of merchandise exported from this country, against 43 per cent in April, 1919; 47 per cent in the full year 1914; 45 per cent in 1910; 35 per cent in 1900; 21 per cent in 1890; and 15 per cent in 1880. The value of manufactures exported from the United States in the year which ends with this month will approximate $3,750,000,000 as against $1,100,000,000 in the year preceding the war.

Thus while our surplus of food which can be spared for the outside world is declining, manufactures are taking the place of the food in the export trade of the country, which will total about $8,000,000,000 in 1920 against $7,000,000,000 in 1919, and $6,290,000,000 in the highest war year, 1917, manufactures more than offsetting the fall off in value of foodstuffs exported.

Fuel Stocks Reported by Railroads

OF THE soft coal mined in the United States the railroads consume 28 per cent and normally hold about the same proportion of the total quantity of coal in storage. Data on railroad-fuel stocks from July 1, 1916, to Jan. 1, 1919, prepared by the Geological Survey, are given in the following table:

STOCKS OF BITUMINOUS COAL HELD BY RAILROADS FOR FUEL, EXCLUDING COAL IN TRANSIT (a)

(Net Tons)

Date	Eastern District	Western District	Southern District	Totals
July 1, 1916	6,115,000	2,246,000	824,000	9,185,000
January 1, 1917	3,981,749	2,234,345	427,388	6,643,482
July 1, 1917	3,622,000	3,068,000	486,000	7,176,000
January 1, 1918	4,051,193	3,960,269	878,789	8,890,251
July 1, 1918	3,797,000	4,849,000	1,310,000	9,956,000
January 1, 1919	4,736,693	7,111,268	1,796,741	13,643,702

(a) Complete data on railroad fuel stocks are available for Jan. 1 of the years 1917, 1918 and 1919. For the other dates the figures given are estimates of the total based on actual reports from roads normally carrying over 90 per cent of the stocks.

It will be seen that stocks of railroad fuel ranged during the two and a half years covered by the table from a minimum of 6,643,000 tons to a maximum of 13,644,000 tons at the beginning of 1919.

In comparison with these figures the stocks held by the railroads in the first half of 1920 were small. Data furnished by the American Railroad Association indicate that 124 of the principal carriers had on hand on Feb. 29, 1920, in cars and in stockpiles 4,275,348 net tons of coal, and that on May 31 their holdings had decreased to 3,411,348 tons.

Questionnaire Brought Diverse Returns

The questionnaire used in obtaining these statistics asked specifically for "Tons in cars" and "Tons in stockpiles." Many roads furnished also the tons in chutes, and it is probable that others included the quantity in chutes under the caption "Tons in cars." As not all of the quantity in chutes was obtained, however, the figures are somewhat short of the total amount of fuel coal held by the railroads. Allowing for the small roads not reporting, the results of the inquiry may be summarized as follows:

STOCKS OF BITUMINOUS COAL HELD BY RAILROADS FOR FUEL, IN CARS AND IN STOCK PILES, FEB. 29, AND JUNE 1, 1920

(In Net Tons)

Date	Eastern District	Western District	Southern District	Totals
February 29, 1920	2,290,000	1,880,000	614,000	4,484,000
June 1, 1920	1,461,000	1,840,000	443,000	3,744,000

These figures, although not strictly comparable with the data for previous years, indicate clearly that railroad-fuel stocks on Feb. 29, 1920, were far below those of the years immediately preceding. Yet from Feb. 29 to June 1, 1920, largely as a result of the switchmen's strike, the stocks continued to decline.

Like other Eastern carriers, the New England roads reported stocks far below their customary holdings in the last four years. On Feb. 29, 1920, they had on hand in cars and in stockpiles 365,000 tons, sufficient on the average for about three weeks and two days' operation. Between Feb. 29 and June 1 their stocks declined 30 per cent, reaching on the latter date 254,000 tons, or about two weeks and three days' supply.

Depleted stocks of railroad fuel are particularly significant to the general consumer because they point to the probability that the railroads will have to confiscate coal or assign cars freely, measures which necessarily interfere with the regular deliveries of coal to other users.

E. H. Coxe Considers Lewis Overgenerous In Shifting All Blame to Farrington

EVERY person interested in the production of coal should read and carefully ponder the statement of President Lewis of the United Mine Workers of America, which appeared in the press on July 31, commenting on President Wilson's telegram to him requesting that the striking miners in Illinois and Indiana be ordered back to work.

For the benefit of those who have not seen the statement it is quoted below:

I am profoundly impressed by the President's telegram. The fairness of his statement must be apparent to everyone with respect for constituted authority or the least regard for the public welfare. The suggestions of the President will be approved by every right-thinking and loyal member of the United Mine Workers of America, and will be considered as a stinging rebuke to men of the type of Frank Farrington, who has deliberately and maliciously incited men to disregard their contract obligations to the detriment of themselves and the inconvenience of the nation. Public castigation of such leaders cannot be too severe.

Up to this time the Illinois coal operators have not requested this office to enforce the validity of the wage agreement in that state. I intend, however, in compliance with the wishes of the President, to immediately issue a mandatory order instructing and directing all miners now on strike in Illinois and Indiana to immediately return to work so as to permit the normal operation of the mines. Compliance with this order by the mine workers will pave the way for the calling of a wage convention as suggested by the President for consideration of inequalities in the agreement.

This seems to me to be about the weakest, most ridiculous statement ever issued by a labor leader. Why was it necessary for the President of the United States, the Illinois Coal Operators or any one else to call on him or his office to act? Was it not his plain duty, if he had the power (which he seems to have had), to see that the agreement entered into by his organization was lived up to by that organization, without waiting to be called on by the President of the United States to act?

It would also seem that he was very generous with President Wilson's "rebuke," which was apparently aimed about one-third at him and two-thirds at Frank Farrington, president of the Illinois miners, passing it all on to Farrington and keeping none for himself. If he really regarded Farrington's action as malicious, as he would now have the public and the miners believe, why didn't he make some effort sooner to interfere instead of waiting until conditions got so bad the President of the United States had to intervene?

Surely there seems to have been little use in making an agreement with such an organization headed by such men, for it is now plainly apparent that it was not entered into in good faith with any idea of living up to it, for the ink on the signature was hardly dry before the Illinois miners, headed by Farrington, set about violating it, and Lewis by his self-confessed silence encouraged the violations.

EDWARD H. COXE,
General Manager Snowden Coke Co.

Brownsville, Pa., Aug. 3, 1920.

Terms of Spa Coal Agreement with Germany Published and Epitomized

Credit Provision for Purchase of Foodstuffs and Raw Materials as Well as Penalty Clause Likely to Insure Prompt and Abundant Deliveries

The following is the British official version of the conditions laid down in the Allied Note on the subject of coal deliveries by Germany in carrying out the terms of the Versailles peace treaty:

"(1) The German Government undertakes to place at the disposal of the Allies, from Aug. 1, 1920, for the ensuing six months, 2,000,000 tons of coal per month, this figure having been approved by the Reparation Commission.

"(2) The Allied Governments will credit the reparation accounts with the value of this coal, as far as it is delivered by rail or inland navigation, and it will be valued at the German internal price in accordance with Paragraph 6 (A), Annex V, Part VIII, of the Treaty of Versailles. In addition, in consideration of the admission of the right of the Allies to have coal of specified kind and quality delivered to them, a premium of 5 gold marks, payable in cash by the party taking delivery, shall be applied to the acquisition of foodstuffs for the German miners.

"(3) During the period of the coal deliveries provided for above, the stipulations of Paragraphs 2, 3 and 4 of the draft Control Protocol of July 11, 1920, shall be put in force at once in the modified form of the Annex hereto.

"(4) An agreement shall be made forthwith between the Allies for distribution of the Upper Silesian coal output by a commission, on which Germany will be represented. This agreement shall be submitted for the approval of the Reparation Commission.

"(5) The commission, on which the Germans shall be represented, shall meet forthwith at Essen. Its purpose shall be to seek means by which the conditions of life among the miners with regard to food and clothing can be improved, with a view to the better working of the mines.

"(6) The Allied Governments declare their readiness to make advances to Germany equal in amount to the difference between the price paid under paragraph 2 above and the export price of German coal f.o.b. in German ports, or the English export price f.o.b. in English ports, whichever may be the lowest, as laid down in paragraph 6 (D) of Annex V, Part VIII, of the Treaty of Versailles. These advances shall be made in accordance with Articles 235 and 251 of the Treaty of Versailles. They shall enjoy an absolute priority over all other Allied claims on Germany. The advance shall be made at the end of each month, in accordance with the number of tons delivered and the average f.o.b. price of coal during the period. Advances on account shall be made by the Allies at the end of the first month, without waiting for the exact figures.

"(7) If by Nov. 15, 1920, it is ascertained that the total deliveries for August, September, and October, 1920, have not reached 6,000,000 tons, the Allies will proceed to the occupation of a further portion of German territory, either the region of the Ruhr or some other.

ANNEX

"(1) A permanent delegation of the Reparation Commission will be set up at Berlin, whose mission will be to satisfy itself by the following means that the deliveries of coal to the Allies provided for under the agreement of July 15, 1920, shall be carried out: The programs for the general distribution of output, with details of origin and kind on the one hand, and the orders given to ensure deliveries to the Allied Powers on the other hand, shall be drawn up by the responsible German authorities and submitted by them for the approval of the said delegation a reasonable time before their despatch to the executive bodies responsible for their execution.

"No modification in the said program which may involve a reduction in the amount of the deliveries to the Allies shall be put into effect without prior approval of the delegation of the Reparation Commission in Berlin.

"(3) The Reparation Commission, to which the German Government must periodically report the execution by the competent bodies of the orders for deliveries to the Allies, will notify to the interested Powers any infraction of the principles adopted herein."

Some doubts have been expressed as to the exact meaning of the conditions. They have been epitomized in the following manner:

The German home price per ton is 225 mk., or 75 fr., the British export price is 110s., or 200 fr., making a difference between the two prices of 125 fr. Thus for every ton delivered by Germany 75 fr. will be credited to her account with the Reparations Commission for the general benefit of the Allies, while the Allies will allow Germany a credit of 125 fr. for the purchase of foodstuffs and raw materials. Finally, France, or other purchasing country, will pay Germany 5 mk. gold in cash. This is a premium on coal of special quality, and is to be directly utilized for the improvement of the German miners' conditions. The credit based on the difference between the two prices would aggregate 2,500,000,000 fr. yearly on the proposed basis of 2,000,000 tons monthly, but the present arrangement is provisional, and is to be reconsidered at the close of a six months' period.

Under the scheme Belgium will receive from Germany 85 per cent of her coal requirements, Italy 68 per cent, and France and Germany each 72 per cent. In the end it was decided to leave the question of the Silesian coal in abeyance pending the plebiscite.

In the meantime, according to the *Colliery Guardian*, there appears to be considerable unrest among the miners in the Ruhr district. A meeting of the workers' section of the Chamber of Labor at Essen has decided, as a protest against the Entente ultimatum, to refuse to work extra shifts, and not to submit quietly to the confiscation of coal and the armed occupation. The trade union of Christian Miners protests against considerably longer hours being imposed on German pit workers than those elsewhere are prepared to work.

In an interview, July 20, Herr Simons said the German delegates would, nevertheless, not have signed the agreement if they had not been convinced that the coal demands of the Allies were capable of fulfillment.

The Cabinet has decided to reorganize the production and distribution of coal.

Freight Market Active; Rates Unchanged

W. W. Battie & Co.'s coal trade freight report announces that freight market conditions are practically the same as a week ago. Numerous steamers have been chartered to carry coal to European and South American ports at or about rates previously quoted. A fair demand for tonnage still continues.

Freight rates by steamer are as follows:

		Tons Discharged Daily
Malmo	$11 50 12 00 —	1,000
Copenhagen	11 50 12 00 —	1,000
Stockholm	12 00 12 50 —	800
Gothenburg	11 50 12 00 —	1,000
Antwerp/Rotterdam	9 50 10.00 —	1,000
Hamburg	About 12 00 —	1,000
French Atlantic ex. Rouen	9 50 10 00 —	700
Algiers	About 13 50 —	800
West Italy	About 13 50 —	1,000
Marseilles	About 13 50 —	1,000
Piraeus	About 14 00 —	1,000
Trieste/Venice	About 14 50 —	1,000
Port Said	About 15 00 —	1,000
Coostantinople	About 15 00 —	500
Gibraltar	11 00/11 50 —	1,000
Pernambuco	About 11.00 —	500
Bahia	About 11 00 —	500
Rio	10.00/10 50 —	1,000
Santos	10.50/11.00 —	600
Buenos Aires or Montevideo or La Plata	10 00/10.50 —	1,000
Para	About 11.00 —	500
Rosario	About 11.00 —	750
To Nitrate Range	About 9.00 —	750
Havana	About 6.00 —	500
Sagua or Cardenas	7 50/ 8.00 —	300
Cienfuegos	About 7 00 —	500
Caibarien	7 50/ 8 00 —	300
Guantanamo	7 00/ 7 50 —	500
Manzanillo	About 9 00 —	300
Bermuda	About 6.50 —	300
Bermuda p. c. and dis. free		
Kingston	About 8 00 —	400
Barbados	About 8 00 —	500
St. Lucia	About 8 00 —	500
Santiago	7 00 7 50 —	500
Port of Spain, Trin	About 8 00 —	500
Curacao	About 8 00 —	500
Free p. c. Curacao	13 00	400
Demarara	About 750 —	500
St. Thomas		

All above rates gross form charter.

News from the Capital

By Paul Wooton

May Quash Assigned-Car Order

ASSIGNED cars will be a thing of the past if the Supreme Court upholds the decision of the U. S. Circuit Court of Appeals at Asheville in the Lamberts Run case. This is the opinion of Rush Butler, counsel for the National Coal Association.

Commission Postpones $10 Demurrage

AFTER having notified the roads that changes in tariffs would be allowed placing a demurrage charge of $10 per day on coal cars held after the free time had elapsed the Interstate Commerce Commission on Aug. 18 refused the application of the railroads for this change in tariffs and ordered hearings on the subject, setting a new time limit of Dec. 17, 1920, as the earliest date at which the new charge can become effective.

Special permission number 50,321, issued by the commission on July 31 (*Coal Age*, Aug. 19, page 415), provided for a storage charge of $10 per day on coal cars and authorized and directed the railroads to file modification in their tariffs to make such a charge effective. The railroads, through their common agent at Washington (J. E. Fairbanks), made such application, but were notified on Aug. 19 that as regards this feature of the special permission the commission had suspended action until Dec. 17. The reason assigned is that as the rights and interests of the public appear to be seriously affected by this provision a public hearing is considered necessary before such charges be permitted to become effective.

Aitchison Upholds Roads' Right to Insist on Return of Cars Empty

IN a letter to H. B. Thurston, chairman of the Pittsburgh Terminal Committee, Commissioner Clyde B. Aitchison, of the Interstate Commerce Commission, says:

With reference to the distribution of available equipment and the point raised by you as to whether a railroad has the right to refuse to accept a carload from a shipper when the car has been received by the shipper under load and reloaded by him contrary to the requirements of the carrier:

It is generally understood that when a car received by a consignee who is also a shipper is unloaded by him, the contract with the railway company for the delivery of his goods is thereby fulfilled, and if in the interests of a fair distribution of cars the carrier desires that such a car be not reloaded by the shipper unloading the car it has a perfect right to request return of the car empty, and in the event of the shipper loading the car is justified in refusing to accept the load, requiring the shipper to release the equipment and turn it back empty.

If such a practice were not proper it would be impossible to make a fair distribution of empty cars, and shippers who are also large receivers of freight would at all times have more cars for outbound loading than they were entitled to, to the disadvantage of other shippers.

Bureau of Mines Will Classify and Analyze Coal at Sewalls Point Pool

A CO-OPERATIVE agreement between the Bureau of Mines and the Sewalls Point Coal Exchange, Inc., whereby the former will grade and classify coal shipped to the tidewater pools at Sewalls Point was signed by the Secretary of the Interior Aug. 20. The agreement had been signed previously by F. G. Cottrell, director of the Bureau of Mines; G. H. Caperton, president of the Sewalls Point Coal Exchange, and S. T. Snead, secretary of the same organization. The text of the agreement is as follows:

The U. S. Bureau of Mines (hereinafter referred to as the Bureau) and the Sewalls Point Coal Exchange, Inc., Norfolk, Va. (hereinafter referred to as the Exchange), desiring to conduct investigations concerning preparation of coal with a view to increasing efficiency in use and economic development of the industry by improving the grading and classification of coal shipped to Tidewater Pools, hereby mutually agree as follows:

(1) All work herein described shall be directed by the Bureau of Mines according to a program as mutually agreed upon between the Bureau and the Exchange, and all methods employed shall be the standard methods of the Bureau of Mines.

(2) In the district to be investigated the Bureau agrees to complete a list of mine samples and analyses.

(3) The Bureau agrees to obtain at the mine tipple, point of delivery, or other place as agreed upon, representative samples of the commercial coal as shipped by the several mines.

(4) The Bureau agrees to furnish the necessary portable field equipment for the samplers.

(5) The Bureau agrees to make, at its Pittsburgh laboratory, proximate analyses and B.t.u. determinations of all samples which are acceptable to the Bureau, and ultimate analyses and fusing temperature of ash determinations of such samples as may be mutually agreed upon. Reports of the laboratory determinations will be furnished the Exchange as soon as made, together with such information as appertains thereto.

(6) All analyses may be published by the Bureau of Mines, due credit being accorded the Exchange for its co-operation, but the Exchange shall have the privilege of prior publication in a form mutually agreed upon for the confidential information of members of the Exchange.

(7) The conduct of all the foregoing described work shall subject the Bureau of Mines to no expense other than for general direction. To this end the Exchange agrees to pay salaries, subsistence, and traveling expenses of field men engaged in taking mine samples while so engaged; to pay the salaries and expenses of samplers obtaining commercial samples, and to furnish all necessary labor and such heavy appliances as may be needed in the sampling, and to

pay the salaries of men engaged in laboratory work to the extent of the actual cost of such analyses made for the Exchange.

(8) The extent of this program as to number of men employed and amount of work undertaken shall be a matter of mutual agreement in writing between the Exchange and the Bureau.

(9) It is mutually understood that this agreement shall be effective after being signed by the parties thereto, upon its approval by the Secretary of the Interior, and that it shall continue in effect until the work herein contemplated shall have been completed, provided that at the end of six months the agreement can be terminated by either party upon not less than thirty days' notice to the other party.

Cleveland Conference Fails and Central Competitive Group Breaks Up Into State Scale Meetings

Arrangement to Make Local Agreements Unusual — Resumption of Relations Expected Before April 1, 1922 — In Telegram to President Wilson Operators and Mine Workers Give Reasons for Failure to Agree

AFTER more than twenty years of unified collective bargaining the Central Competitive Field has broken up and for the settlement of the present demands of the local unions dependence must be placed on the actions of the local or at best the state scale committees. It will be recalled that following the recent Illinois-Indiana strike the President asked John L. Lewis and the operators to get together and settle any inequalities in the working out of the award of the Bituminous Coal Commission, which it was asserted by the miners were responsible for the uprising in the Middle West. A meeting was held in Cleveland at which the demands of the daymen were presented and also a new set of demands of the tonnage men. After several days of conference the meeting broke up with the announcement that settlement would be had locally and the several state presidents of the United Mine Workers announced that they would call a meeting for this week to consider what demands they would make on the operators in their respective fields.

Local Agreements May Be Far-Reaching

This action, which it is understood is almost without precedent, may have far-reaching conequences, although many are of the opinion that both sides will get together again before April 1, 1922, as in the past, and that the present action is but an agreement to disagree entered into purely for reasons of policy. It is pointed out that should any marked changes in wage rates be made in any of the fields that are not at the same time matched by similar changes in the other districts there will be a grand mixup when they do get together again to handle the central field as a whole. The differentials and relationships between local fields have been most zealously guarded both by miners and by operators for many years and all previous attempts to set any of them aside have failed.

Of particular interest is the statement of John L. Lewis that there will be no general strike, although local strikes may be expected—some are in effect already —and that the whole matter can be adjusted without inconvenience to the public. These local strikes are certain to decrease production, however.

As the joint conference now ended was called by President Wilson for the purpose of adjusting inequalities in the present wage-scale agreement, operators and miners at the close of the session sent separate telegrams to the President advising him of their failure to reach an agreement.

The operators' telegram to President Wilson was as follows:

At your request the scale committee of operators and miners of the central competitive field met at Cleveland to consider and attempt to adjust any inequalities in the existing contract resulting from the award of the bituminous coal commission. The miners contended that the day and monthly men had not received an equivalent advance that the award allowed the tonnage men.

In order to meet the situation in its broadest sense and in conformity with your suggestions, the operators proposed to advance this class to the equivalent of that granted the tonnage men in machine mining, this class having received the largest percentage of advance.

The miners refused to accept, and demanded an advance of $1.50 per day, which, if granted, would have created further inequality, to the disadvantage of the tonnage men.

This would lead to more serious trouble and dissatisfaction in districts in full operation under contracts entered into between operators and miners.

The operators then proposed that the question in dispute be submitted for final settlement to a commission, as suggested in the report of the bituminous coal commission. This proposition was also rejected by the miners. Finding ourselves hopelessly deadlocked, we regret to report that we were compelled to adjourn *sine die*.

Michael Gallagher, Chairman.

The miners' telegram to the President, sent after the adjournment of the supplemental meeting, Aug. 19, was as follows:

Pursuant to the request contained in your telegram of Aug. 10, the mine workers' representatives of the Central Competitive Field met in joint conference with the coal operators in Cleveland on Aug. 13. We have diligently applied ourselves to the task of adjusting the inequalities contained in the basic interstate agreement growing out of the award of the Bituminous Coal Commission. We have found it impossible to reach an agreement with the coal operators of the Central Competitive Field bearing upon the issues involved.

There is no controversy affecting any principle but merely a difference of opinion as to what constitutes an inequality and the degree to which it should be adjusted.

As a consequence, the joint interstate conference adjourned last night without decision. While this circumstance may be regarded as unfortunate, I am of the opinion that there is no necessity for any public apprehension.

There are reasonable grounds for the belief that the questions at issue between the operators and miners may yet be harmonized through the instrumentality of agreements which may be consummated in the individual coal-producing districts without inconveniences to the public. The sincere efforts of the representatives of the mine workers will be promptly exercised to the application of this policy.

John L. Lewis,
President United Mine Workers of America.

Speculation in Tidewater Coal To Be Stopped

New Rules Issued by Tidewater Exchange—Railroads To Make More Stringent System of Permits—All Legitimate Shippers Protected

FOR several weeks the National Coal Association has been working on the problem of preventing speculation in coal shipped to tidewater. A special committee, of which W. J. Andrews is chairman, has been studying the question from all angles and this committee on Aug. 18 presented the result of its findings to a meeting in Washington at which were present in addition to the members of the committee, A. G. Gutheim and D. J. Spangler, representing the American Railroad Association; Messrs. Howe and Graham, representing the Interstate Commerce Commission, and Mr. Owen, president of the Tidewater Coal Exchange.

It is understood that the consensus of opinion was that steps were necessary to make it impossible for the promiscuous dealer in export coal to tie up equipment and otherwise interfere with the orderly processes of shipments in his effort to play the coal market. It is generally understood that many who have never seen a car of coal except from the car window have been trying to reap an unreasonable profit in the export market and although they are new at the game, they have been adept in finding ways to tie up credits in the pools and hold cars for speculative purposes. The conclusion of the Andrews committee was that changes should be made in the rules and regulations of the Tidewater Coal Exchange that would prevent such manipulation. These changes have been made and are given in full below.

It will be noted that no change has been recommended on existing tidewater coal demurrage tariffs, although there was some desire to decrease free time and increase detention charges. It was particularly emphasized that more effective embargo and permit regulations should be had but because of the different conditions at each port and pier, these are to be left to the officials of each road. If the desires and recommendations of the committee are followed by the roads it will be exceedingly difficult for anyone to load coal for tide unless he has a boat ready to receive it, which means that he cannot hold the coal for speculation and cannot tie up cars.

Changes and additions to rules and regulations Tidewater Coal Exchange, Inc., adopted by the Executive Committee at a meeting held in the office of the exchange, New York City, Thursday, Aug. 19, 1920.

Change Rule 27 to read: "The account of a member in one designated pool shall not have any bearing on his account in another pool at the same or other piers, unless said member neglects to make up existing shortages; except that failure to take delivery of credits available for dumping in any pool shall be sufficient cause for embargoing shipments for member's account to all pools at all ports as provided for in Rule 30. Members, however, may be permitted to offset overdrafts in one pool with shipments made to the same pool at another pier, subject to the approval of the commissioner or his deputy.

"In the case of a member of the Exchange having a debit in a given pool, he may be permitted to make good the debit by the exchange of the same or higher quality coal at the pier at which the debit exists or at any other pier, subject to the approval of the commissioner or his deputy."

Change Rule 30 to read: "Failure of a member to provide vessels in which to transport coal from any pier shall be sufficient cause for the commissioner or deputy commissioner to request the issuance of railroad embargoes prohibiting the forwarding of coal to the exchange for his account. Request on the railroad for modification or cancellation of such embargo will not be made until such member has given satisfactory evidence to the commissioner or his deputy that he has made proper arrangements for vessels."

Add to Rule 32: "The transfer between members of actual cars will not be permitted. The transfer of tonnage credits will only be made upon authority of transferer in writing and acceptance by transferee in writing and upon transferee furnishing satisfactory evidence of his ability to immediately furnish vessel for dumping."

Add to Rule 33: "Upon failure of any member to dump credits available for dumping promptly the commissioner shall direct him in writing to dump such credits immediately. For failure to dump such credits within forty-eight hours after date of such notice a penalty of ($.10) ten cents per ton per day on credits not dumped shall be assessed against said member and collected by the commissioner."

Daniel Willard, chairman of the Advisory Committee of the Association of Railway Executives, and Colonel D. B. Wentz, president of the National Coal Association, met in conference on Wednesday, Aug. 18, with representatives of the Commission on Car Service of the American Railroad Association, the National Coal Association, the tidewater coal-carrying lines serving ports at Hampton Roads and north, representatives of the various tidewater coal exchanges, and the president of the American Wholesale Coal Trade Association, to consider what more effective means could be adopted to reduce to a minimum the accumulation of cars of bituminous coal awaiting transshipment at tidewater, and to determine the number of cars required in regular service in that traffic.

The conference considered particularly a report of the Special Committee of the National Coal Association in the matter of shipment of tidewater bituminous coal, and unanimously reached the conclusion that such changes should be made in the regulations of the Tidewater Coal Exchange which handles shipments through New York, Philadelphia and Baltimore, as would result in penalizing the holding of bituminous coal by individual members of the exchange beyond the free time permitted in established tidewater-coal demurrage tariffs. Further than this, the meeting unanimously agreed that, as the only effective means of adequately controlling the situation, all tidewater coal-carrying lines should immediately embargo the movement of tidewater coal and simultaneously provide for the acceptance of such traffic only upon permits to be issued by the tidewater bituminous coal terminal railroad.

It was recognized that the issue of the permits must depend in the first instance upon transportation conditions upon the railroads concerned, but beyond this it was unanimously agreed that no permits should be granted except upon a definite showing that the coal upon arrival at the pier at tidewater would be unloaded into vessels with reasonable promptness, this ability on the part of the permittee to be ascertained by his showing as to vessels under charter and his record in meeting the conditions of permits heretofore issued.

The meeting also agreed, without dissent, that the issue of permits should be to the loading mines, with provision made that if the amount to be loaded was exceeded the mine so violating the permit should be penalized in its car supply so long as the coal so billed

without permit remained unconsigned elsewhere and undisposed of. The purpose of the arrangement is to prevent unnecessary delay to equipment and to promote transportation, and these recommendations are to be utilized with that in mind.

Rail Shipments of Coal to New England Fall Behind Last Year's

IN CONTRAST with the tidewater movement to New England, rail shipments through the Hudson gateways declined sharply during the week ended Aug. 14. Cars forwarded through the five gateways of Harlem River, Maybrook, Albany, Rotterdam, and Mechanicsville, as reported to the Geological Survey by the American Railroad Association, numbered 4,860 as against 6,732 during the preceding week. For the first time since June 26 the movement was smaller than for the corresponding week of 1919. In spite of the decrease, the week's performance was 45 per cent above the average for the first six months of the year.

CARS OF BITUMINOUS COAL FORWARDED THROUGH HUDSON GATEWAYS DESTINED FOR NEW ENGLAND POINTS (*a*)

Week Ended	1920	1919
July 24	7,033	4,527
July 31	6,358	4,879
Aug. 7	6,732	4,643
Aug. 14	4,860	5,064

(*a*) Furnished by courtesy of the American Railroad Association.

Reported Destination of Coal Dumped at Hampton Roads

THE only port for which information is at present available as to the destination of coal dumped over tidewater piers during the week of Aug. 14 is Hampton Roads. Reports to the Geological Survey from the three exchanges at that port, given in the following table, indicate a decline in the tonnage handled for New England account and a slight increase in the quantity exported:

DESTINATION OF COAL DUMPED OVER TIDEWATER PIERS AT HAMPTON ROADS
(In net tons)

Week Ended	Coastwise to New England(*a*)	Exports	Bunker(*b*)	All Other(*c*)	Total Dumped
July 10	149,000	295,000	71,000	11,000	526,000
July 17	108,000	262,000	65,000	10,000	445,000
July 24	148,000	332,000	67,000	6,000	553,000
July 31	136,000	392,000	68,000	8,000	604,000
Aug. 7	134,000	326,000	75,000	12,000	547,000
Aug. 14	116,000	358,000	71,000	6,000	551,000

(*a*) Cargo coal only. A small amount of other coastwise coal is included. (*b*) All bunker, whether foreign or domestic. (*c*) Includes coal used inside capes, and other local and coastwise tonnage, coal for the Navy and for Panama.

Coal Shipments to New England Under Service Order No. 11

ACCORDING to statements furnished by the American Railroad Association, the results obtained under the amended order giving preference to New England (Service Order No. 11, effective Aug. 2) have been as follows: Short on Aug. 7 (at end of first week), 1,588 cars; short on Aug. 13 (near end of second week), 1,621 cars.

As the initial assessment under the order was 923 cars per day, this means that the cumulative movement was 1.7 days behind at the end of the first week, and 1.8 behind at the end of the second, or to put it another way, shipments during the first two weeks amounted to 84 per cent of the program.

Indiana Miners Refuse to Return to Work—Practically Entire Field Idle

ORDERS of officials of district No. 11, United Mine Workers of America, issued Aug. 21, that men now out return to the mines have been disregarded and practically the entire Indiana field is idle. The field is faced with the closing of the nine mines still at work and a 100-per cent state of non-production. The present situation is the result of orders given by the miners' officials with one eye shut.

An official of the operators said: "The orders to return to work were given with a wink, and I doubt seriously whether they were intended to be complied with." The railroads are reducing consumption to a minimum. For the time being coal is coming regularly from the Illinois and Kentucky fields and practically all of the railroads of the state are supplied temporarily with sufficient coal for comfortable operation. Some of the rolling stock, however, is being diverted to other fields.

Members of the Indiana Bituminous Coal Operators' Association at a meeting Aug. 23 in Terre Haute approved a report of the scale committee on the recent wage conference at Cleveland and agreed to meet a committee of the miners and negotiate a new scale as regards the pay of day and monthly men. The action was almost unanimous, but came after many of the operators opposed the signing of any more contracts with the union in view of the frequency with which old ones have been disregarded. The operators agreed to co-operate in promoting increased production.

Weekly Movement to Tidewater

TIDEWATER shipments declined slightly during the week ended Aug. 14. The total number of cars dumped over tidewater piers (in part estimated) according to reports furnished the Geological Survey by courtesy of the American Railroad Association, was 25,740, as against 27,464 during the preceding week. That the movement was nevertheless very heavy is seen from the fact that it exceeded by 2,120 cars the weekly average for July.

CARS OF BITUMINOUS COAL DUMPED WEEKLY OVER TIDEWATER PIERS AT THE FOUR NORTH ATLANTIC PORTS AND CHARLESTON (*a*)

Week Ended	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Totals
July 24	8,424	3,456	3,683	9,601	526	25,690
July 31	8,685	4,211	3,935	10,512	118	27,461
Aug. 7	10,065*b*	3,151*b*	4,580	9,394	274	27,464
Aug. 14*c*	9,026	2,878	3,787	7,716	333	25,740

(*a*) Furnished by courtesy of American Railroad Association. Includes coal destined for bunker, for New England, or other coastwise and local use, and for export. (*b*) Revised. (*c*) One day estimated, subject to revision.

Six More Warrants Charging Profiteering Bring Total to 52.

SIX more warrants charging profiteering in the sale of coal were issued Sunday night, Aug. 22, at the instance of the U. S. Attorney for the Southern District of West Virginia, according to an announcement made by A. E. Hayes, special agent of the Department of Justice. This brings the total number of warrants issued against coal companies in this district up to fifty-two.

The companies against whom warrants were issued on Sunday are the Chesapeake Mining Co., of Handley; Silush Coal Co., Charleston; Seng Creek Coal Co., Charleston; Dry Branch Coal Co., Dry Branch; Coalburg Colliery Co., Ronda, and Big Creek Coal Co., Big Creek.

Federal Trade Commission May Suspend Publication Of Monthly Coal-Cost Reports

Number of Operators Making Voluntary Returns Insufficient to Make Commission Data Representative National Coal Association Charged With Breaking Agreement in Bringing Legal Action

IN ISSUING its fifth monthly bulletin on bituminous coal costs, covering May, 1920, the Federal Trade Commission announced on Aug. 25 the possible suspension of the monthly publication, which informs the operators, the miners, the consumers of coal and the public at large with respect to current average production costs and sales realization prices at the mine for bituminous coal. The likelihood of suspension is due to a reduction in the number of operators reporting voluntarily, pending final court decision as to the commission's powers to require the reports. Unless sufficient reports are received to be representative the commission prefers to discontinue publication rather than risk giving out figures that may prove misleading.

The announcement follows:

"When the Federal Trade Commission in January, 1920, resumed the collection of information as to the cost of bituminous-coal production it was upon the understanding by the commission that the cost of production and sales-realization figures would be supplied by the coal operators. The coal operators had a written opinion by the counsel of the National Coal Association to the effect that the commission had the lawful power to collect this information. The commission was supplied with copies of this brief.

Commission Agrees to Legal Tests

"The commission proceeded accordingly, but there came a change on the part of the association. The commission was asked to make possible the bringing of a series of test suits which would represent all variations of the coal industry with reference to the interpretation of the interstate commerce clause. It was understood at the time by the commission and the officers and counsel of the National Coal Association that the necessary default notices and other acts and proceedings to complete the record in four test cases should be completed by the commission and simultaneous actions brought thereon, and that pending these suits the National Coal Association would take no steps to discourage or interfere with voluntary cost reporting by operators.

"Instead of bringing four suits, testing all the issues, the National Coal Association brought but one suit (the Maynard Coal Company suit), in which the questions involved were most favorable to the complainant, and the other three suits have never been started.

"Following the issue of the injunction in the Maynard suit the Federal Trade Commission invited voluntary co-operation by the coal operators in supplying the necessary reports and made it clear that pending final decision compulsory process or the collection of penalties would not be applied in case of failure to file reports.

"The commission received reports from 1,589 operators for January, 1,431 operators for February, 1,081 operators for March, 812 operators for April and 680 operators for May. During the Fuel Administration period 2,482 bituminous operators reported to the commission. The value of these current coal-cost bulletins depends entirely upon the relative quality of the figures contained therein, and when it appears that out of the total operators an insufficient number of reports are made, the figures obtained fail to maintain their relative quality. This condition seems to be realized and publication of the cost bulletins must cease unless the number and character of reporting operators shall be such as will insure that the bulletins are representative and not misleading.

"These cost bulletins have been widely published and the National Coal Association, as well as individual operators, has constantly made use of these figures and facts. Thus the reports which have voluntarily been made by that group of the operators which undertook to share the labor of preparing them have been utilized to the advantage of that other element in the coal industry which has discouraged the making of these reports.

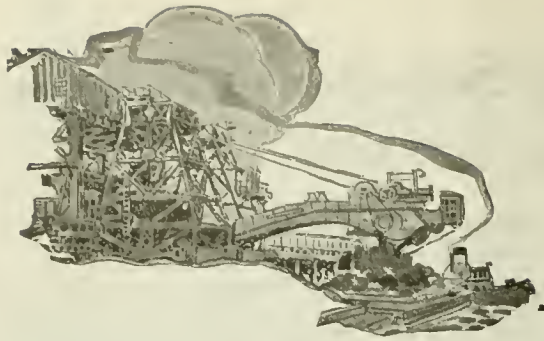
"The commission believes that the ascertainment of facts relating to cost of production in such a fundamental industry as that of bituminous coal production is of the greatest usefulness to the industry. It is likewise obviously of benefit to the public to know what the cost of coal production is, and what the sales-realization price at the mine is, and, being informed as to these factors, to determine whether any intervening agency is occasioning an undue rise in price to the consumers.

Continuance Depends on Number Reporting

"If a sufficient number of operators report their production costs, the commission will continue the issue of monthly and quarterly cost bulletins. Otherwise, while still continuing to solicit these reports for the continuity of these records the issue of the coal-cost bulletins will be discontinued pending a judicial decision of the objections raised."

The May bulletin, which, as pointed out in the announcement, is perhaps not representative of the large number of operators who failed to report, shows the average sales, realizations and reported costs of 680 operators producing about 20 per cent of the estimated total bituminous coal mined in the seventy-four mining districts of the United States during that month. Revision of costs usually reduces reported costs only a few cents per ton. All figures in the bulletin are based on tons of 2,000 pounds.

The average sales realization of the 680 operators reporting to the commission for May was $3.31 per ton, while their total reported mine cost amounted to $2.77. Of the latter amount $2.07 represented labor costs per tion and the f.o.b. mine cost per ton is the "margin," (or overhead). The difference between the sales realization and the f.o.b. mine cost per ton is the "margin," which was 54c. per ton. These average figures for May did not vary more than 5c. per ton in sales realization, in costs, or in margins from the averages shown for 812 operators in April, which is an important fact if that same relation holds for non-reporting operators.



Production and the Market

Weekly Review

Good Car Supply Continues—Heaviest Production Reported Since January—Growing Labor Troubles May Curtail Output for Next Week—Prices Stiffen—Tonnage to Lakes Again Exceeds One Million Tons

PRODUCTION of bituminous coal rose in the second week of August to 11,728,000 net tons, according to figures of the Geological Survey. This is the highest production figure since last January, an increase of 1,300,000 tons over the preceding week and also exceeds the last pre-strike week by some 848,000 tons. Anthracite production showed a slight increase. Beehive coke increased to 417,000 net tons, compared with 382,000 the preceding week.

How long this increased rate of production can be maintained remains to be seen. Late reports from the field indicate that loadings are somewhat lighter. The inability of operators and miners to reach an agreement at the recent Cleveland meeting is already resulting in unauthorized strikes in the Central Competitive Field. Many Illinois and Indiana operations are down and the growing disaffection may be expected to seriously effect production.

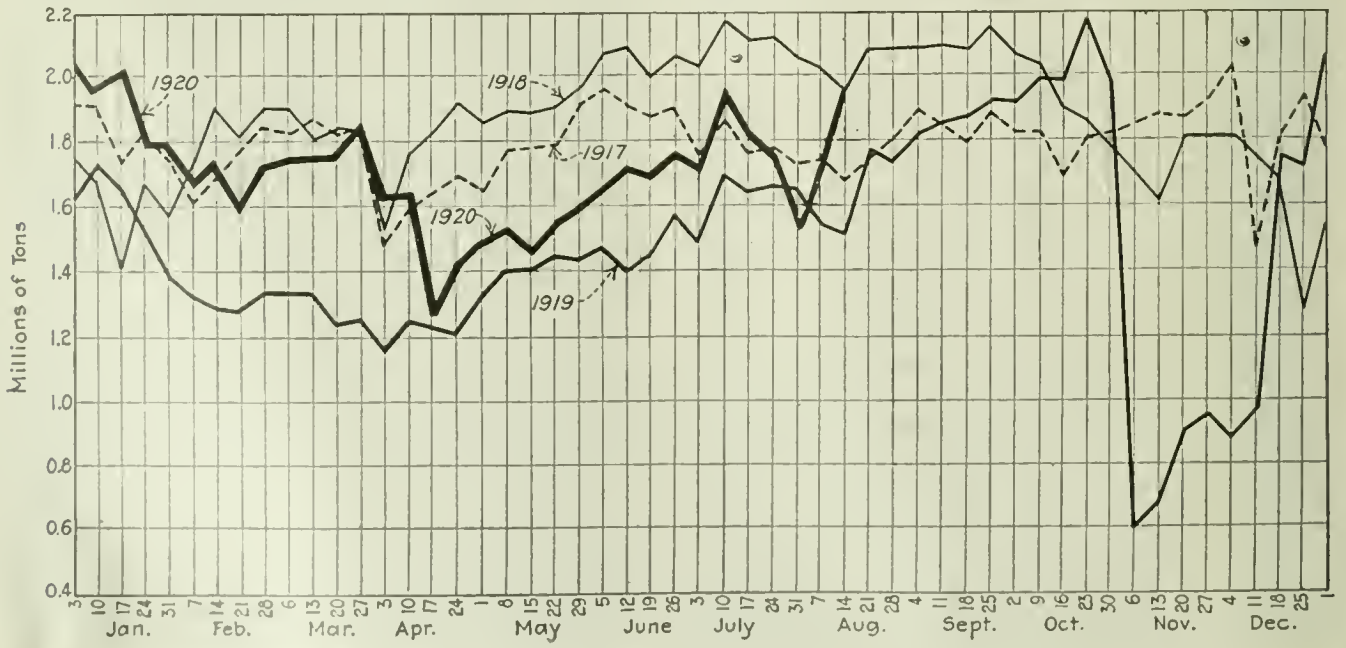
In the face of this anticipated labor trouble prices have stiffened, especially in the Middle West. Buyers who had adopted a policy of awaiting developments were again forced into the active market. The result is that a distinctly easier market has again advanced under the heavy demands being made upon it.

Shipments to priority points are progressing satisfactorily. Export tonnage is again advancing, the better production having increased tonnage available for non-preferential points. Stock piles are gaining as a result. Preliminary figures for the week ended Aug. 21 show Lake dumpings of 1,090,000 tons, as compared with corrected figures for the second week of August of 994,426 tons. While the dumpings are still behind the scheduled rate, little fear of a shortage in the Northwest this winter is now felt.

Lake Coal Dumped Season to Aug. 21
(NET TONS)

	Cargo	Fuel	Total
1919.....	14,373,948	644,422	15,018,370
1920.....	9,118,159	584,638	9,702,797

Average Daily Production of Bituminous Coal*



*From weekly report of Geological Survey.

Reports From the Market Centers

New England

BOSTON

Heavier Receipts Allay Anxiety About Fuel — Rumored Assigned-Car Order Has Been Continued — All-Rail Movement Is Heavy — Order 11 Is Not Working Smoothly — Hampton Roads Despatch Is Excellent — Receipts of Anthracite Gain.

Bituminous—As compared with 60 days ago a pronounced change has come over the market. Receipts have bulked so large since July 15 that buyers show much less concern over the future of the market. Prices will have a long way to drop before anything like normal conditions can prevail, and much greater stocks will have to be accumulated before consumers here will be cared for as in ordinary years.

Just now rail coal from Pennsylvania is quoted higher even than shipments by water from Hampton Roads or Baltimore. Should there be free offerings of water coal in the next fortnight, there would doubtless be enough reduction in spot prices by rail to offset the advantage water coal has within a 50-mile radius of Boston.

It is rumored here that the assigned-car order has been continued for another 30 days and this will of course have its bearing on car supply in certain districts. The object of the order was to provide utilities, etc., with coal for current consumption and surely in another 30 days most power plants and other public requirements will have accumulated 60 to 90 days' supply.

All-rail movement is remarkably heavy, shipments pouring in well up to gateway capacity. To such extent is this true that there have even been cancellations of purchases made in May and June. Better deliveries on contract by tidewater shippers have also had their bearings on this new development.

Railroad confiscations occur much less frequently and are now confined to crippled cars of which there is an astonishingly large number.

Service Order 11 is not yet working smoothly. Apparently there is little coordination among shippers, or coal would not have been allowed to accumulate in such volume at some of the piers. Liberal use of the embargo power is expected to correct this situation. Whether New England will absorb much increase over shipments in their present volume remains to be seen.

At Hampton Roads despatch is excellent. Coastwise steamers are loading regularly in 24 hr. or less and the August tonnage for Providence, Boston and Portland will even exceed that for July.

Current quotations on bituminous at wholesale range about as follows:

	Clearfields	Cambrias and Somersets
F.o.b. mines, net tons	$10 00@11 50	$10 75@12 00
F.o.b. Philadelphia, gross tons	13 25@14 75	13 90@15 25
F.o.b. New York, gross tons	13 50@15 00	14 25@15 50

On cars Boston, high volatile grades via Hampton Roads have been quoted at $13.50 per gross ton.

Anthracite — Receipts of domestic sizes both by rail and water continue to show gains. The recent arrangement made by the New Haven road for a given number of cars per day from the anthracite roads is not yet working smoothly. Certainly the area served by the New Haven has been kept on a starvation basis since Jan. 1. The contemplated addition of new motive power will considerably impress the New Haven service.

The general advance in railroad rates is expected to cause another wave of retail advances throughout New England. Communities to the eastward where rates are so much higher all-rail will suffer particularly. Twenty-dollar coal at retail is by no means out of the question in many parts of New England this fall.

Tidewater

NEW YORK

Domestic Anthracite Demand Increases with Approach of New Freight Rates — Stronger Steam-Coal Situation Due to Bituminous Scarcity — End of Marine Workers' Strike Is Expected To Help Bituminous Situation — Market Improves and Increased Demand Expected.

Anthracite—Receipts of the domestic sizes are quickly absorbed. There is more activity in the demand and shippers are receiving more orders for these coals. The increased interest shown is attributed in many circles to the increase in freight rates recently granted the railroads and which are soon to become effective, followed, it is expected, by an increase in the price of coal to the consumer.

The resumption of towing from Port Reading, following the settlement of the harbor boatmen's troubles, will aid considerably in improving the local situation as under normal conditions much coal is delivered locally from that port.

Demand for egg, stove and chestnut continues to be strong. Some dealers are now complaining of the lack of chestnut, while egg appears to be strongest in demand.

Independent producers find a steady market for their product. Buyers continue to invade the regions and are said to be bidding high for the coal.

Sections of the outlying territory surrounding this Tidewater, but, not dependent upon Tidewater delivery, appear to be well supplied. Most yards have full bins and consumers say they have no difficulty in getting deliveries.

Much of the strength in the steam-coal market is attributed to the scarcity of bituminous here. Buckwheat and rice are comparatively short and quotations for these two sizes are much stronger. It was also announced that the change in freight rates had had its effect in stimulating the demand.

Quotations for buckwheat No. 1 of the best grades ranged from $5.65 to $6 at the mines. Rice coal was held firm, quotations ranging from $4@$4.50, while barley, the longest in supply, was held around $2.25@$2.50.

Quotations for company coals, per gross ton, at the mine and f.o.b. New York Tidewater, lower ports, are as follows:

	Mine	Tidewater
Broken	$7.50@$7.65	$9.35@$9.50
Egg	7.50@7.65	9.35@9.50
Stove	7.75@8.00	9.60@9.85
Chestnut	7.80@8.00	9.65@9.85
Pea	6.05@6.45	7.80@8.20
Buckwheat	4.00@4.10	5.75@5.85
Rice	3.00@3.50	4.75@5.25
Barley	2.25@2.50	4.00@4.25
Boiler	2.50	4.25

Quotations for the domestic coals at the upper port are generally 5c. higher on account of the difference in freight rates.

Bituminous—The ending of the marine workers' strike is expected to have a beneficial effect on the local market and a further softening of prices for loaded boats is to be expected.

The situation shows some change for the better. Inquiries come oftener and shippers look for an increased demand for coal. While it was expected that New England would be in the market for a heavy tonnage, conflicting reports are received as to the amount of coal needed.

Coalmen were not inclined to voice their opinion regarding the action taken in Washington on Aug. 19, by which it was agreed to place an embargo on the movement of coal to tidewater, except upon a definite showing that the coal upon arrival at the piers would be unloaded into vessels with reasonable promptness. Official notice of the action taken was awaited.

Troublesome conditions are reported from the mines. The workers are reported as being dissatisfied and frequently change their scenes of employment. The car supply is bad, some mines receiving less than 50 per cent of their normal requirements.

Early in the past week low-volatile coals were being quoted at from $12@$12.50 at the mines. Later on Pool 10 was quoted at around $12; Pool 11,

around $11, and Pool 18, around $10. In the harbor Pools 10 and 11, mixed, were quoted at around $17.75, while Pool 18 was quoted around $15.65 alongside.

BALTIMORE

Permit System for Exports Should Improve Situation — Prices for Soft Coal Break—Anthracite Price at Retail Seems Sure To Run Around $15.

Bituminous—A period of unusual stress and uncertainty exists here. With piers congested and the charge being flung openly at public hearings that the present jam is due to speculators shipping to tide and then dickering for highest prices to ships that must get away or pay heavy demurrage charges, the railroad action instituting a new kind of embargo here was but a natural outcome.

Instead of shippers being given permits to dump so many cars over the piers permits will be given to ship from the mines, only when the shipper furnishes proof that he will have vessels here to take the coal promptly. It is thus planned to break up excessive speculation and at the same time make a quick turn-around of cars.

A meeting called by the mayor to take up the question of bunkering a-stream vs. bunkering at the piers also discussed this subject and a committee was named to go over the entire situation. Meanwhile leading coal men got into the public discussion, and while there was much difference of opinion the general belief was that some action was needed to clear up the serious transportation mix-up that has followed Government priority and railroad embargo orders. It was openly stated at the meeting that these orders had been widely and promiscuously violated because proper supervision under the existing system was impossible.

The Baltimore & Ohio R.R. is giving 50 per cent. or better car supply at this time. This fact, with prospect of elimination of speculation at tide and the amount of coal now on reserve at tide or rolling—between 4,000 and 5,000 cars destined for or at this point —has caused a slump. Coal on the Baltimore & Ohio R.R. is quoted over a wide range, practically the same fuels at times being quoted at $8.50@$10 f.o.b. mines, and on New England sales from the run of Service Order 11, as low as $7@$8. The prices on the Pennsylvania are holding close to $9@$10 f.o.b. mines, and largely at the latter figure, presumably because of inadequate run of cars to the mines on that system.

Some 40 ships are still here awaiting export coal despite heavy loadings, which for the first seventeen days of the month are in excess of 330,000 tons.

Anthracite—Some coal is now beginning to filter through, but is declared to be largely of the premium character. The new freight rate for Baltimore with a tax of 11c., makes a total of $3.75.

As company coal of the most popular grade used is $7.85 and independent coal is as high as $9, retail stove prices will likely be about $14.50@$15.50. If the rate of less than one-third of company coal delivered here continues it will be difficult to hold retail prices to $15 even before any other wage increase is added.

The trade is interested in the talk of "stabilizing" prices through government action, with a plan of equalizing both company and independent coals to the advantage of the public, but is frankly skeptical of seeing any early change in conditions and is planning business on the higher cost basis.

PHILADELPHIA

Reading Embargo to City Being Modified, but Much Anthracite Goes to Northwest — Consumer Demand Is Strong as New Freight Tariffs Come In—Stove Leads—Steam Coals Are in Strong Position—Bituminous Is Somewhat Improved with Prices Slightly Easier.

Anthracite—The trade approaches the month of September with the smallest stocks in the yards for years. On the whole there is little improvement in the situation. The embargo via the Reading to this city continues to be modified and the embargo may be removed in its entirety quite shortly.

Light shipments have come in since the middle of June and the producers are giving particular attention to consignments to the Northwest, particularly the larger concerns who have docks on the Lakes.

The shippers are daily receiving the new tariffs covering the increases in freight which are to take effect on Aug. 26. Up to this time the tariffs only cover rates to interstate points.

The consumer demand is still strong and seems to have swung now almost exclusively to one size—stove. Most dealers have small stocks of the other sizes.

The retail prices at this time, on an average for the city, run: $13 for egg; $13.50 for stove and nut; and $11.25 for pea. Should the new freight rates become effective this week these prices will have to be advanced from 60 to 80c a ton.

All the shipping offices report the strongest kind of demand for family sizes from outside markets, and some of the smaller producers claim they could sell their entire output at $12 a ton at the mines, which is about $3.00 above what they are charging the local trade.

The steam coals are shaping up to the point where buckwheat and rice of the White Ash grades are really scarce at company figures. Independents are getting well over $5 on such quantities of buckwheat that they have to offer spot and about $3.50 for rice. Barley can still be had at circular of $2.25. The above are mine prices. At tide there has been little trouble in getting $6 for buckwheat and rice at $4.75.

Bituminous—The bituminous situation seems to have improved, at least from the consumer's standpoint. However, prices still tend to shade downward and there has been a fair amount of coal coming in to meet the current demand. Under the various priority orders, the utility plants are getting into good condition.

Up to this time gas coals have been extremely scarce. The claim was made that tide embargoes at southern ports had forced this coal out. The Baltimore & Ohio has just had an embargo placed on line shipments to this territory and this has greatly interferred with the movement of coal. The Fairmont prices generally have run close to $10@$10.30.

In the Pennsylvania steam grades, ordinary coal has recently been offered around $10, with fair grades at $11 and some of the best at $12. There have been some reports of sales at $13.

There is only a fair volume of trade at tide, yet even that has been more than one of the roads could handle, as they were compelled to hold up shipments to one of the piers. The permit system is still in force and there is not likely to be increased activity until this plan is abandoned.

Lake

BUFFALO

Bituminous Prices Decline Slowly—Demand Is Light—Steady Price Decline Is Anticipated—Anthracite Is Moving Slowly.

Bituminous—Shippers report that conditions are improving every day, but the change is slow. About $9 at the mines is a pretty fair average.

It is odd that the shipper has become the bear in the market. However, they know that conditions can never become normal till coal again sells at least as low as $6. It is necessary to come down to this level to stop wildcat scheming and selling at prices that encourage the miner to demand exorbitant wages.

The car supply is improving slowly. The more hopeful shippers claim that under the present active management of the railroads the car shortage is bound to disappear slowly.

Much uneasiness exists on the part of certain members of the trade who are trying to carry on a legitimate business. The Government has been expected to put a stop to wildcat trading, but beyond a threatened prosecution of those who are guilty of taking advantage of the consumer nothing has been done.. Shippers who have been called in to advise on the matter report that consumption is now less than production. At that rate the trade ought to right itself unaided before long.

Anthracite.—Conditions are not improved. Coal is not coming in as it should and before long it may be found impossible to get coal enough to the upper-lake ports to meet the winter needs in that territory. This shortage makes it necessary to cut down local and rail supplies and as a consequence consumers and distributors are complaining.

Some operators are demanding as high as $13 at the mines for any domestic size. The persistence with which these quotations appear shows that they are getting their price. At last accounts the strike in some of the leading anthracite mines continues, with no prospect of immediate settlement.

Lake.—Shipments by Lake for the week were 84,500 net tons, a decline of 34,000 tons as compared with previous week's dumpings. Of this amount 29,800 tons cleared for Milwaukee, 18,000 tons for Chicago, 17,400 tons for Duluth and Superior, 15,000 tons for Fort William, 3,350 for Manitowoc and 1,000 tons for Sheboygan, Mich.

Coke.—Trade is still light, so far as single orders are concerned. Jobbers get some business from those who need a special grade and they have to pay heavily for all they get, $20 for 72-hour Connellsville foundry, $19 for 48-hour furnace and $17.50 for off-grades.

Inland West

ST. LOUIS

Local Steam Situation Is Fairly Good, but Domestic Is Growing Acute—Conditions West of River Are Bad—Northern Markets Are Paying Premium Prices.

The local steam situation is fairly good; there is enough coal coming in to take care of requirements but little tonnage is being stored. The domestic condition is growing acute. Only the larger dealers, who have contracts, are able to get Mt. Olive and Standard coal. The tonnage of Carterville coming in is next to nothing.

This puts the burden of the retail trade on five or six large dealers, and between 30 or 40 small dealers have their yards tied up with no coal, and the people who depended upon them have no prospects of getting any.

Retail prices here on Carterville are $8.50@$9; Mt. Olive $7@$7.50, Standard $6@$6.25. Mine prices on Carterville range from $4.50@$6; Mt. Olive to regular trade $3.50@$4; and Standard sells from $4@$7.

Buyers from Chicago, Detroit, and the North and East were paying as high as $7.50 for all sizes of Standard coal on Aug. 19, and possibly two-thirds of the tonnage is moving to these markets, whereas in normal times it moved into St. Louis and Missouri.

The conditions west of the river is worse now than at any time in the past. Twelve mines in the Standard field are on strike over the Cleveland disagreement. Nearly every mine on the Illinois Central has been idle for the past four days on account of no cars.

Car supply in the Standard field is from 30 to 40 per cent. In the Mt. Olive field, it is about 60 per cent. Railroads are drawing heavily on both fields. Throughout the main Carterville field, as well as near Duquoin, about 50 or 60 per cent car supply prevails with conditions in general satisfactory.

The labor trouble in Franklin County at West Frankfort has quieted down. There are no receipts of anthracite, smokeless, or Arkansas at St. Louis, and no coke available.

INDIANAPOLIS

Car Situation Is Not Improved — Reserves Are Low—Industries Face Shut-Down—Retail Demand Exceeds Available Supply.

The car situation has improved so slightly that it is hardly perceptible. The supply of free coal is short and prices continue high. The demand is very heavy and will be accentuated shortly when those industries which have small reserves on hand have exhausted their supplies. At the present time the large furniture factories just south of Indianapolis are facing an indefinite suspension because of fuel shortage.

Wholesalers in the entire central section of the state report that they are unable to get coal. Prices range from $7.50@7.75.

Retailers are puzzled by the situation. Unable to obtain any coal in sufficient amounts to build up their sadly depleted stocks, they are advising the public to postpone the purchasing of winter's supply until later in the season. Several recent interviews with prominent retail dealers indicate that coal prices will not be so high this fall and supplies will be more plentiful.

MIDWEST REVIEW

Threatened Strike Affects Production—Many Mines Are Idle — Prices Rebound—Lake Shipments Are Heavy.

A strike in the Illinois and Indiana coal fields again threatens our production. The joint scale committee of operators and miners of the Central Competitive Field have adjourned sine die and no agreements were reached during the entire course of the conference. The leaders of the United Mine Workers are planning to submit their case to President Wilson, setting forth that the operators failed to make any proposition satisfactory to the demands of the miners. Word from the conference in Cleveland reached the more remote mining districts and as a consequence, but very few mines are running either in Illinois or Indiana. This is extremely unfortunate, because the railroads appear to have been in a position to supply the mines with a fairly respectable car supply. Last week there was a decided tendency toward lower prices, but with this new strike in immediate prospect, prices are stiffening. Prices on steam coal are now around $7@$7.50 per ton, at the mines.

Conditions in the Middlewest are a little better than heretofore. During the past week or so, both retailers and buyers of steam coal have had an opportunity to get hold of a little extra fuel. If this new strike continues over a week or so, what little advantage has been gained, will soon be lost.

Reports coming in from the Northwest are very encouraging. Shipments are moving to the Lakes from eastern coal fields in fairly satisfactory quantities. To counter-balance this, however, practically no coal is moving into the Northwest from the Illinois and Indiana fields, as what little coal is being produced in those districts, is being sold in the big centers or disposed of locally.

CINCINNATI

Stocks Are Ample—Car Supply Is Improved—Demand Continues Strong and Prices Remain Firm.

There is less talk about a fuel shortage in this city than perhaps in any other coal distributing center in the country. Being right on the edge of the rich coal producing fields of Kentucky, West Virginia and parts of Ohio and Indiana, coal users in this section see no need to worry.

The car supply to the mines in West Virginia has increased considerably in the past few weeks as has it to Kentucky. In Ohio the improvement is ever more noticeable.

Prices on all kinds of coal continue high with the trend towards the upward. Demand continues strong and it is anticipated that prices will remain firm.

Operators feel confident that there will be no serious shortage of coal in this section. Householders have heeded the warning of the coal men and consequently cellars are all well filled. The big industrial plants are getting coal wherever they can and there are no reports of serious shortages.

The general opinion prevails that the car shortage will improve right along and that there will be no cause to worry about winter's fuel requirements.

DETROIT

Shipments Barely Cover Current Requirements — Prices Are Firm With Further Increase Predicted — Lake Tonnage Continues Heavy.

Bituminous—Only about enough bituminous is coming into the city to supply the current requirements of plants and utilities. Detroit dealers are inclined to take a gloomy view of the outlook. They insist the deficit in coal supply is an existing condition, that car supply is not large enough to permit early improvement of this condition, while the advance in freight rates recently granted the railroads will still further advance the cost of coal.

Jobbers and wholesalers figure the advance in freight rates will increase the cost of coal transportation from the Fairmont district to Detroit from $2.05 to $2.87 a ton and that the new rate from the Hocking fields will be about $2.45 a ton.

Though the railroads apparently are confiscating less coal in transit the practice is continued to an extent that arouses considerable complaint among the local dealers.

Anthracite—Predictions are being made among dealers that anthracite will be selling in the local market next winter at $20@$22 a ton. This forecast is based on present mine prices with the increased freight rates, and a $3@$4 handling charge. The supply is far short of requirements. In most instances shipments have not been sufficiently liberal to enable the dealers to fill orders booked in the spring.

Lake Trade—Operation of the preferential ruling has given a decided impetus to move the Lake coal. The supply arriving at loading docks for several days has exceeded carrying capacity of contract vessels. Arrangements are being made to increase the available carriers.

CHICAGO

Prices Increase as Result of Threatened Strike—Supply Drops.

An attempt made about a week ago by some of the buyers of steam coal to keep prices down to a certain level was headed for success, when the unexpected happened and the industry is once more threatened with a strike. This has had a great deal of influence on the market and those operators and wholesalers who have spot coal to offer are once more able to get from $7@$9 per ton, f.o.b. mines for their product.

Usually it is not the operator who is getting these big prices, but rather the wholesaler, and especially that type of wholesaler who has recently entered the coal business with the hope of realizing large profits. Prices on all eastern coals are reported to be very strong. Anthracite coal, in the more popular domestic sizes, is bringing a price of $18.75 per ton, f.o.b. Chicago. This means at least $21 to the householder. Pocahontas is sold on a basis of $12.50, while West Virginia splints, in some cases, have reached the same levels. There are, however, a number of firms who have been established for years in the Chicago market, who are still supplying their trade with very good coals at a reasonable price. The parties who are giving the coal trade a black eye with the public are men who are anxious to get as much as they can out of the market, without any thought for the future of the industry.

These new elements in the coal market are sending men into the coal fields and whenever they find a mine running they are buying the output on a day to day basis and selling it on the open Chicago market.

COLUMBUS

Cars Are More Plentiful — Not Much Free Coal Is Available — Prices Continue High — Lake Tonnage Increases.

Railroads have been giving a better car supply with the result that the output is larger. Congestion which appeared on lines several weeks ago is improving with the exception of the T. & O. C. Ry.

The supply to the Hocking Valley district was between 75 and 80 per cent of normal. In the Pomeroy Bend district placements were about 80 per cent; Crooksville and Cambridge reported about 75 per cent supply. Eastern Ohio also showed a big improvement when the supply increased from 58 to 67 per cent.

A large proportion of the tonnage mined is still being applied on priorities. Manufacturers have been buying on the open market when possible, which accounts for the high quotations. Some manufacturing concerns have been compelled to close and scarcely any large consumer has accumulated a surplus stock.

Retail prices continue high. Hocking lump is selling from $7.50@$9.50; West Virginia splints retail about $8.75@$10.50. Pocohontas is quite scarce and little is available in the local market.

Lake trade shows a good increase during the week. The H. V. docks at Toledo for the week ended Aug. 14 loaded 176,000 tons. The T. & O. C. docks during the same week loaded 83,000 tons.

Prices at the mines for Columbus shipments are:

Hocking lump	$6 00@$8 50
Hocking mine-run	5 50@ 8 25
Hocking screenings	5 25@ 8 00
Pomeroy lump	7 00@ 9 00
Pomeroy mine-run	7 00@ 8 75
Pomeroy screenings	6 50@ 8 50
West Virginia splints, lump	7 00@ 9 50
West Virginia splints, mine-run	7 00@ 8 75
West Virginia splints, screenings	6 75@ 8 50
Pocahontas lump	7 75@ 9 50
Kentucky lump	7 00@ 8 75

South

BIRMINGHAM

Coal Is in Strong Demand, but Sales Are Limited by Short Supply — Labor Forces Are Sufficient for Larger Output—Car Shortage and Slow Movements Hamper Production.

The loading producers have no coal to sell and representative quotations are not available at this time. Such spot coal as is being thrown on the market commands a large premium.

Labor conditions at the mines are much better. Operations in the Cahaba field and other sections where strikes have been hindering production for some weeks were materially improved with proportionate gains in output except where interruptions have been caused by insufficient car supply. This latter trouble was experienced by mines on both the Southern and Frisco Rys. to a greater extent than the week before. Production was curtailed considerably at mines which would have otherwise shown largely increased tonnages. The car supply on the L. & N. R.R. remains around 45 or 50 per cent.

The movement of coal after leaving the mines is slow. Consumers are not only receiving a limited supply of fuel contracted for but deliveries are irregular and uncertain.

LOUISVILLE

Retail Stocks Show No Gain — Prices Are Firm—Car Supply Is Improved—Additional Breach of Contract Suits Are Filed.

Stocks of coal in the city are still short. Retail yards are reduced to a bare daily delivery basis and orders are being taken subject to receipt of fuel.

The Louisville and Nashville R.R. is in better shape than ever to furnish coal cars to mining districts supplying the city but a very large part of coal loaded is applied for their own use.

Eastern Kentucky coal is practically removed from the local market as it is in great demand for northern by-product plants. Western Kentucky must therefore supply the bulk of Louisville's fuel requirements this winter.

The market is practically unchanged. Demand is as strong as ever and prices remain firm.

Operators are using the inadequate car supply as a reason for curtailing some contract shipments, throwing their tonnage on the open market. This has resulted in additional suits being filed by jobbers, charging lack of good faith on the operator's part in failing to make contract shipments.

West

SAN FRANCISCO

Freight Increase May Bring Foreign Coal—Buyers Do Not Welcome Change.

Shipping men are watching with much interest the consequences of the raise in freight rates, some predicting there will be an influx of coal from Australia and British Columbia. Plenty of bottoms are available for transporting coal here by water. At present steamships are bunkered with coal brought from Utah.

In former years most of the coal used here was imported from British Columbia. Shipping men would not welcome a return to old conditions as the Utah coal is vastly superior to either the Australia or British Columbia coal. If the high freight rates militate against the handling of Utah coal, shipping men in San Francisco plan a concerted movement to compel the authorities to give relief.

Bituminous prices, f.o.b. mines, wholesale, Utah and Wyoming, per net ton, are as follows:

Stove and lump, $4.50; bunker $13.55.

News From the Coal Fields

Northern Appalachian

PITTSBURGH

Car Supplies Increase — Failure To Make Wage Agreement Makes Sporadic Strikes Not Improbable—Market Slightly Lower.

Car supplies have increased further and now approach the average that the miners are willing to load. This output would of course still be considerably below rated mine capacities.

After being in session at Cleveland almost a week the Joint Scale Committee of the Central Competitive Field has adjourned without reaching any agreement. The operators offered to advance daymen by the same percentage the tonnage-men had been advanced at the settlement early in the year while the miners reduced their demand from $2 to $1.50 a day increase.

The miners refused to concur in a set of resolutions calling upon the President to take steps for the establishment of a commission.

Prospects are that there will be some individual strikes without direct authorization by the national officials of the United Mine Workers.

The labor situation is becoming the main factor in the coal market, for there has been only a slight decline in the past week. This view is shown by the fact that in the Connellsville region, which has the distinction of being non-union, the market has declined sharply, some coal being available at $6@$7. This is partly due to the Baltimore & Ohio R.R. refusing to accept coal for shipment east. The Pennsylvania Ry. accepts coal for the east and coal on its divisions has declined very little. The Pittsburgh district market has declined and is quotable at $9@$10 per net ton at mine, against $10@$12 formerly quoted.

UNIONTOWN

Excellent Car Supply—Pier Embargoes and Slackened New England Demand Soften Local Prices — Labor Supply May Control Future Output — Thousands of Workers Have Emigrated.

With a continuation this week of the excellent car supply that has been a feature through August, embargoed pier shipments and at least a temporary saturation of the New England markets has softened the local coal and coke prices.

Pier embargoes furnished the key to the price drop, coincident with a slackening of the New England demand on account of reported rail congestion. Lake shipments continue, with the local team trackers getting some fair car consignments off to that mandatory destination early in the week.

Coal-car placement has been excellent, with the Monongahela Ry. and Redstone branch of the Pennsylvania furnishing better than 50 and 65 per cent, respectively. The Southwest branch of the Pennsylvania averaged an even higher percentage on a smaller number of cars. Loads were moved promptly, yards being cleared and the present week-end clean-up finding conditions rather better than for many weeks.

Coke-car supply even exceeded coal several days of the week, the Monongahela Ry. averaging over 55 per cent, with 85 and 80 reached by the Southwest and Redstone branches, respectively. Some complaints regarding "dirty" coke shipments have been received, indicative of a gradual return to less fevered purchasing. It was reported that in some instances placements exceeded loading capacity.

With the approach of winter and the consequent shifting of labor always to be observed at this period, the manpower equation is looming up as a possible future controlling factor. Also so many thousands of coal and coke workers have left the region for foreign countries that further drain on its manpower would prove embarrassing.

No further drop in price quotations is regarded as likely, as the next month is believed to mark the beginning of a lessened car supply. River shipments of fuel this month will break all records, it is confidently believed, and coke production is soaring to the highest levels in months.

CONNELLSVILLE

Increase in Car Supplies Continues—Coal Much Lower—Coke Prices Yield Slightly—Production Increases 27 Per Cent in Two Weeks.

The increase in car placements at coke ovens continues. Production is something like 30 per cent above the previous average.

There has also been a better supply of cars for coal loading in the region and that, together with the order of the Baltimore & Ohio R.R. refusing to accept coal shipments east has caused a sharp decline in Connellsville coal, now quotable $6@$7. Thus the support of a high coal price is withdrawn from the coke market while at the same time coke supplies are increased.

Proportionately the production by furnace ovens has increased much more than the production by merchant ovens, and thus not much additional coke has been thrown on the market.

Off-grade coke has been most conspicuous in the market. For a time it was bringing nearly standard-grade prices, but in the past ten days it had to decline enough to bring out a demand. A large tonnage has been absorbed at about $16. We quote the spot market at $17.50 for furnace and at $19@$19.50 for foundry, per net ton at ovens.

The *Courier* reports production in the Connellsville and Lower Connellsville region in the week ended Aug. 14 at 219,440 tons, an increase of 25,300 tons in one week and an increase of 46,570 tons in two weeks.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

BITUMINOUS COAL

	1920 Week	1920 Calendar Year to Date	1919(a) Week	1919(a) Calendar Year to Date
July 31b	9,371,000	302,739,000	9,943,000	258,144,000
Daily average	1,562,000	1,676,000	1,657,000	1,429,000
August 7c	10,410,000	313,149,000	9,359,000	267,503,000
Daily average	1,735,000	1,678,000	1,560,000	1,434,000
August 14c	11,728,000	324,877,000	9,092,000	276,595,000
Daily average	1,955,000	1,687,000	1,515,000	1,436,000

ANTHRACITE

	1920 Week	1920 Calendar Year to Date	1919(a) Week	1919(a) Calendar Year to Date
July 31	1,860,000	50,561,000	1,812,000	47,307,000
Aug. 7b	1,756,000	52,317,000	1,870,000	49,177,000
Aug. 14	1,801,000	54,117,000	1,640,000	50,817,000

BEEHIVE COKE

United States Total

Week Ended Aug. 14 1920c	Week Ended Aug. 7 1920b	Week Ended Aug. 16 1919	1920 to Date	1919 to Date (a)
417,000	382,000	387,000	13,210,000	11,966,000

(a) Less one day's production during New Year's week to equalize number of days covered for the two years. (b) Revised from last report. (c) Subject to revision.

NORTHERN PAN HANDLE

Local Mine Ratings are Increased from 85 to 60 Per Cent for Lakes Shipment—Cars Are More Plentiful — Demand Is Heavy and Prices Are Firm.

The Ore & Coal Exchange at Cleveland having increased the percentage of coal necessary to meet the requirements of the Lake situation, it became incumbent upon the mines in the Northern Pan Handle to consign more of their coal to Lake piers. Up until the second week of August, 35 per cent of mine rating had been the tonnage apportioned to Northern Pan Handle mines; now the percentage is 60.

Cars were more plentiful during the second week of August than in the previous period and yet little coal was available for commercial shipment, aside from the tonnage destined for the Lakes. Although congestion was evident in many quarters, the rail movement was good.

There was quite a heavy demand in all markets for northern Pan Handle coal, and coal prices had not receeded to any appreciable extent.

Eastern Ohio mines, in common with Northern Pan Handle mines, succeeded in forging ahead of the previous week in their output, although a car shortage was still such as to force idleness upon a good many operations and miners, and a growing congestion at certain Lake points threatened to eventually affect the car supply.

FAIRMONT

Local and Outside Causes Reduce Car Supplies in Northern Part of State—Congestion at Curtis Bay Embargoes That Port—Coal Sent to Tide Goes to New England—Lake Terminals Are Congested Due to Priority Order—Prices Fluctuate.

Production of coal in the Fairmont and other northern West Virginia regions, during the second week of August, suffered in comparison with the output of the previous week to a slump in the car supply. Some of the increase in equipment during the previous week had been as a result of the suspension of activities in Illinois and Indiana. A wreck on Aug. 9 interfered with the flow of cars from the West, cutting down the supply from that source temporarily.

The average number of cars furnished Monongah division mines on the Baltimore & Ohio was not over 900 cars during the greater part of the week. Mines, both on the Monongahela and on the Morgantown & Wheeling in the Scott's Run field, were without cars for commercial loading.

Cars had piled up to the extent of about 7,000, at the beginning of the second week of the month, at Curtis Bay and naturally that particular terminal was under embargo. No coal was being exported from any of the piers except Port Richmond, the only coal shipped through Curtis Bay being that destined for New England.

It was learned late in the week that a number of Lake terminals were becoming congested, that being particularly true as to the B. & O. pier at Lorain and the Hocking Valley piers at Toledo. When 4,000 cars a day reach the Lakes it is expected that there will be a most marked accumulation at such points.

During the second week of August, railroad-fuel loading was extremely heavy in northern West Virginia. Mines using assigned cars were being vouchsafed a 100 per cent car supply throughout the week.

Prices in northern West Virginia were fluctuating a good deal last week though there was little break in the market. However prices were most decidedly lower toward the end of the second week of the month than during the previous period. Indeed the recession on the thirteenth amounted to as much as $4 a ton. The fact that coal had become so plentiful at the Lakes and that exports were so limited had a decidedly softening effect on the market in northern West Virginia at least.

Middle Appalachian

POCAHONTAS AND TUG RIVER

Car Supplies Excellent But Labor Shortages Curtail Output—Priorities Absorb Majority of Tonnage—Unionization Growing Unpopular Among Men.

With the Norfolk & Western R. R. furnishing a full car supply, labor shortage alone hampered production on that road for the week of Aug. 14. The strike of course made it difficult to produce coal in the Williamson field. A labor shortage was affecting production in the fields of McDowell and Mercer counties, a partial outgrowth of the strike, as it had been necessary to dispense with the services of a small percentage of miners who were bent upon forcing recognition of the union.

Pocahontas production slumped in the second week of August because of a continued labor shortage, though not to any appreciable extent. While for a time the weekly output of the Pocahontas region was maintained at 350,000 tons it is now about 60,000 tons short of maximum production.

A large share of the output of the Pocahontas region was divided between the Lakes and New England so that there was little free coal available. A small portion of the total output only was consigned to tidewater for export.

A total of 85,750 tons of coal were loaded in the Tug River field in the week ending Aug. 14, but operators said production should be higher in view of the good car supply maintained during the greater part of the week. There was probably less unrest among mine workers as a result of union agitation than during the few weeks preceding. There appears to be a growing sentiment among mine employees against the attempted unionization of Tug River and neighboring fields.

The Tug River field, in common with the Pocahontas field continued large shipments to Lambert's Point. It was reported that maximum tonnages were also shipped to Lakes.

LOGAN AND THACKER

Car Supply Causes Slump in Logan Output—Resumption of Work at 18 Thacker Mines Increases Production—High-Volatile Coal Is Embargoed to Tide—Demand Is Excellent.

While the car supply made no difference to mines in the Williamson high-volatile field it was responsible for a slump in production in the Logan field. A strike in the former region only prevented capacity production, but there was a growth in the outut of that field, showing a break in the ranks of strikers. The loss in the Logan region, however, more than offset the gain in the Williamson field.

Eighteen companies in the Thacker field, whose mines were forced to suspend operations because of the strike, were able to start the production of coal again at their plants. Resumption was made possible owing to the protection afforded the men from the roving band of strikers who have spent most of their time firing upon such plants as attempted to work.

Production in the area heretofore affected by the strike had been increased to about 100 cars of coal a day, exclusive of the Pond Creek section of the Williamson field.

There was a loss of 20,000 tons in the production of the Guyan field in the second week of August, the total output reaching 218,000 tons. A rather large tonnage was sent to the Lakes due to the fact that no Logan coal could be sent to tidewater owing to an embargo. There was still an excellent demand in all quarters and particularly for coal for export.

NORTHEAST KENTUCKY

Output Slumps Here in Second Week of August—Lake Shipments Decrease—Ban Is Placed on High Volatiles to Tide—Demand Is Slightly Lower on Industrial Fuel, with Prices a Little Softer.

There was a slump in the output of coal in the Northeast Kentucky field during the week ended Aug. 14. During the week ended Aug. 7 Big Sandy mines on the Chesapeake & Ohio had 1,630 cars while during the following week they only had 1,546. Conditions were similar on the Sandy Valley & Elkhorn R. R. On the Long Fork the supply also slumped.

As a result of the inferior car supply, production dropped from 58 to 54 per cent, only 132,000 tons out of a possible total of 244,000 tons being produced. Shipments, however, were much in excess of the corresponding period of a year ago, for at that time shopmen were on a strike.

Lake shipments were not quite so large as they had been during the week ended Aug. 7, only 555 cars being sent to the Lakes. While Tidewater tonnage had been running as high as 300 cars, no shipments to the seaboard were possible because of the Tidewater ban on high-volatile fuel.

While prices seemed to be a little softer than had been the case prior to the ban on exports in general, yet there had been no decided recession and there appeared to be little diminution in the demand for gas, byproduct and steam coals.

KANAWHA

Car Shortage Again Hampers Production—Little Free Coal Is Available—Export Demand Is Strong.

Production decreased materially in the second week of August. While at the beginning of the week mines on the Chesapeake & Ohio R.R. had a surplus of cars, by the end of the week there was only a 38 per cent supply available.

The supply for Kanawha mines on Monday, Aug. 9, was 112 per cent, there being 1,069 cars on hand on that date while Coal River mines had 440 cars, equal to 107 per cent.. On the same day, however, mines on the Kanawha & Michigan R.R. had only a 10 per cent supply.

Little coal from the Kanawha region was exported in the period ended Aug. 14, an embargo being in effect. There was a strong demand at export points, however, and prices offered were around $17 a ton. Heavy shipments both to New England and the Lakes were tending to curtail tonnage for contract customers.

NEW RIVER AND THE GULF

Car Supply Is Improved—Production Increases — New England Shipments Require Majority of Output — Prices Are Firm.

There was an increased production in both fields, yet the car supply is still short. The Virginian Ry. continued to excel the Chesapeake & Ohio R.R. in car supply.

The gain in production in the New River field amounted to a little over 13,000 tons, total loadings for the week amounting to 3,082 cars or about 154,200 tons. The week was ushered in with a supply of 1,069 cars, or more than 100 per cent.

The necessity of shipping so large a percentage of coal to tidewater for New England curtailed the volume of western and export shipments. There was no diminution in the price offered for export coal.

Production on a much larger scale marked the second week of August in the Winding Gulf region, due to an improvement in the car supply. The augmented supply was more perceptible on the C. & O. than on the Virginian, owing to the fact that the first named road had a very poor supply during the first week of the month. During the week following, however, empties were nearly twice as plentiful, the placements being about 60 per cent of allotment. Virginian Ry. mines had a 70 per cent supply, the car shortage alone affecting production. A large percentage of the tonnage produced in the Winding Gulf region was sent forward for New England delivery, some of the output, however going to Tidewater for export.

Southern Appalachian

ALABAMA

Operators Oppose Plan To Make Cordova Interchange Point for River Traffic—Mobile Coal Terminal Site Is Selected.

Strong opposition has developed to the plans of the St. Louis & San Francisco R.R. to make its station at Cordova the point of interchange for river traffic using the Warrior River, instead of the interchange being made at the Port of Cordova as has been the custom since the beginning of traffic at the latter point. The matter has been taken up with the Alabama Public Utility Commission and the case will be appealed to the Interstate Commerce Commission if the desired results are not obtained from the state body. The switching charges incident to the proposed change would largely absorb the 20 per cent differential between the all-rail and rail and water rates afforded to competitive points by use of the river and would strike a serious blow at the movement of coal via this route.

Theodore Brent, manager of the Mississippi-Warrior Rivers Waterways, H. T. Debardeleben, manager of the Warrior River division, J. D. Cutter of the Inland Waterways department, together with Army and Navy officials, met in Mobile recently and selected a site for the coal terminals which the Government will construct at that point at a cost of $400,000. The cost of the site will be provided for by the city of Mobile, the funds for its purchase having practically been subscribed. Storage capacity will be provided for 40,000 tons of coal and 20,000 tons of ore, with all necessary handling equipment to enable the prompt loading and unloading of cars and bunkering of ships.

Western

OKLAHOMA

New Companies Open Up Mines in the Pittsburg District After Three Years Little Development.

Coal activities in Pittsburg County are being resumed after a period of about three years during which time no new mines were opened with the exception of a few small operations. Two mines are being put down in a new area of development two miles north of Savanna. A big opening at Lehigh in the property of the Fulsom-Morris company also is expected to add prosperity to the district.

One of the new projects near Savanna, which is being developed by the McAlpine-Cobb Co., a new firm, is expected within the next three months to be producing approximately 100 tons daily. The mine is the first operation of the new company on a tract of 877 acres. George C. McAlpine, superintendent of the mines of the Southern Fuel Co. at Brewer, and Earl Cobb, coal operator of Amarillo, Texas, are the owners. The second mine in the district is being put down on an adjoining tract under the direction of Dan McAlpine of Haileyville.

The McAlpine-Cobb Co. mine now is down about 400 ft. and has almost reached coal.

WASHINGTON

Seattle Organization Enters Pleas for Development of Alaska's Coal Beds.

As shown by the reports of several New England states, Alaska can mine enough fuel to supply all Pacific Coast demands and thereby assure the East the full output of the Eastern, Southern and Middle West fields, if the government will allow the development of the Alaskan coal beds, according to the Alaska Bureau of the Seattle Chamber of Commerce, in their plea for prompt development of Alaska's coal fields.

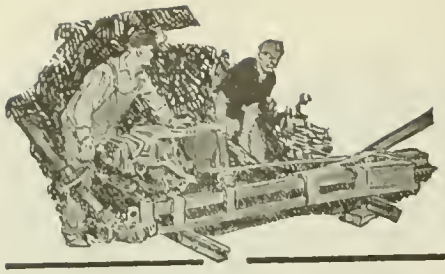
The situation in Alaska never has been understood in the East. Today, as a result of unwise laws, restrictions and handicaps, Alaska is tied up and its resources are not available. Alaska is importing coal from British Columbia when she should be exporting coal. Yet Alaska, with the New England states crying for coal, could supply enough fuel for all Pacific Coast demands and thereby assure to the Atlantic Coast the full output of its own mines.

UTAH

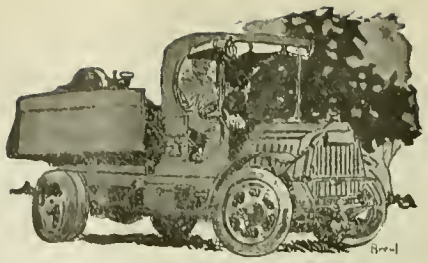
Modern Methods Will Be Used in Coalville and Grass Creek Districts—State Output May Be a Record for 1920—Leases Are Issued in Carbon County by the State—Price of Coal Will Be Advanced.

Preparations are under way for a busy season in Summit County coal mines in the Coalville and Grass Creek districts, according to William Peterson, State Geologist, who has just returned from a trip to that section of the state. Mr. Peterson says there is a good block of coal there 10 ft. thick and adds that the operators are preparing to install more modern methods of getting it to the surface.

Leases on state lands for the purpose of developing them for coal and oil have been issued by the State Land Board to Leon F. Rains, of Salt Lake City, covering 1280 acres in Carbon County. The leases provide for an annual rental of $1 per acre and a royalty of 10c. per ton on all coal mined. Operations will begin within five years from July 7 last.



Mine and Company News



ALABAMA

Montgomery—Bloodhounds from the state penitentiary were sent to Boothton, Shelby County, to assist in tracing the assassin of Chief Engineer Comer of the Southern Coal and Coke Company's properties there. Mr. Comer while standing on the pumphouse at the mine was shot in the back reports stated. Death was almost instantaneous.

ILLINOIS

Carlinville—The Carlinville mine has been leased to a local corporation with Harry Bartels at the head. Mr. Bartels has had considerable training in the operation of a mine, his father, W. G. Bartels, having been for years the manager of the Carlinville plant which is now the property of the Standard Oil Company. A number of prominent Carlinville men are associated with Mr. Bartels and a thoroughly equipped and efficiently operated mine will be the result of their labors.

INDIANA

Sullivan—Articles of incorporation have been filed by the Templeton Coal Co., Sullivan, Ind., with a capital stock of $400,000. The company will do a general mining business. The directors are John A. Templeton, Phil H. Penna, secretary of the Indiana Bituminous Coal Operators' Association, and Charles N. Templeton.

MARYLAND

Cumberland—Shipment of coal by the Tunnelton-Freeport Coal Co. will begin this week. The development operations of this company are the most extensive in this section and when completed, about Sept. 15, will consist of a mile of standard gage railroad, 700 feet of tramroad, tipple and storage bins, two mine openings and all accessories.

OHIO

Youngstown—Added development of its coal stripping operations in Columbiana county has resulted in application to the secretary of state by Miller Bros. Coal Co., for permission to increase its capital stock from $30,000 to $150,000.

Columbus—The Gnaden-Goshen Coal Co., with offices in the Citizens Trust & Savings Bldg., is issuing $200,000 stock which has been placed on the market through the Lincoln Branch of the Citizens Trust & Savings Co. G. L. Stephan is president; Fred Anthony, vice-president and W. J. Eckart, secretary-treasurer of the company.

The Pomeroy & Hocking Mining Co. has been chartered with a capital of $250,000 to operate a mining company. The property is located in Pomeroy Bend field.

The Aberdeen Coal Co., chartered with a capital of $25,000 will take over a tract of 320 acres of coal lands on the T. & O. C. Ry. in Perry County. The incorporators are H. H. Orr, J. W. Bricker, R. G. Martin, F. Falk and D. N. Postlewaite.

Jacksonville—The Northern & Southern Fuel Co., of Columbus has consolidated the holdings of the Northern Coal Co., and the Southern Fuel Co., both of which were formerly controlled by C. C. Sharp of Nelsonville. Offices of the company are in Columbus and the output of the mines, about 1,500 tons daily, will be sold through the Central West Coal and Lumber Co.

PENNSYLVANIA

Uniontown—The Whiteley Coal Co. has purchased the coal underlying the following farms in Franklin Township; Inghram Cummins farm, containing 133 acres and 22 perches; consideration $37,944.19. Thomas H. Montgomery, two tracts, containing 115 acres and 56 perches and 100 acres and 38 perches, respectively; consideration $61,383.66. Alcinda Wood farm, containing 100 acres and 38 perches; consideration $28,567.89.

On September 11 at 2 p.m. at the court house in this city the holdings of Wm. M. Thompson, consisting of ½ of a 640-acre tract of coal-bearing land in Springhill Township, Fayette County, Pa., will be offered for sale. Part of the property is on lease to several small companies and the balance is virgin coal land.

Brownsville—The Crystal plant of the Hecla Coal & Coke Co., seriously damaged by a recent fire, resumed operations a few days ago, using a temporary frame tipple. A steel tipple and bin is in prospect.

Johnstown—A million dollar coal deal, one of the largest consummated in the Johnstown district, has been closed whereby the Robindale coal plant, including the mining village of Robindale, a short distance below Seward, is transferred from the Conemaugh Smokeless Coal Co. to H. D. Waldbridge & Co., of New York, for the Penn Public Service Corporation, which is controlled by the purchasing company.

The purchase includes the entire holdings of the Conemaugh Smokeless Coal Co., including 1,800 acres of coal, more than 100 acres of surface, a modern mine and a mining village of nearly two score of houses. The coal is what is known to coal trade as the "B," or "Miller," seam.

TEXAS

Eagle Pass—The International Coal Co. is spending about $200,000 in improvements on its property two miles north of this place in Maverick County. A new shaft is being sunk, and a spur is being built from the Southern Pacific Ry. branch connecting Spofford and Eagle Pass. The company is now under the management of Dr. R. R. James and D. H. Echols, formerly of Cotton Plant, Ark.

UTAH

Salt Lake City—Articles of incorporation have been filed with the office of the secretary of state by the Sims Coal Co. of Idaho Falls. The company is organized with a capital stock of $20,000. A. S. Sims of Idaho Falls is president and general manager and J. V. Sims is the secretary and treasurer of the company.

WEST VIRGINIA

Huntington—The Logan-Elkhorn Coal Corporation is planning for the development of coal properties in the vicinity of Fleming, Ky. It is planned to install equipment to allow for a maximum of 1,000 tons capacity. The company recently increased its capital from $200,000 to $500,000 for expansion. A. B. Ewen is general manager.

Bridgeport—The Purseglove - Maher Coal Co., operating in the eastern Ohio district, has arranged for a change in company name to the Maher Collieries Co. The Purseglove holdings in the organization were recently acquired by the Maher interests.

Bower—The Copen Gas Coal Mines Co., recently organized, with a capital of $2,000,000, is planning the development of about 1,000 acres of coal property. A large mining plant will be installed. The company is headed by Jeremiah J. Kelly, C. W. Flesher and John Clifford, Bower.

Clarksburg—The Dixie Mining Co. is planning for the installation of a new plant with daily capacity of about 300 tons of coal on its property in this section. The company has a site totalling about 250 acres.

Charleston—The Indian Run Collieries Co., recently incorporated with a capital of $1,000,000, will operate large coal properties in this section. The company is headed by W. E. Wright, T. B. Price and D. W. Hills.

Bluefield—Fire completely destroyed the foundry, machine shop and carpenter shop of the Virginian Iron Coal & Coke Co. at Toms Creek, Va., on June 23, the loss entailed amounting to $100,000. The fire had its origin in the foundry, quickly spreading to other buildings.

Fairmont—The Fairmont & Cleveland Coal Co., of this place, is arranging for the installation of additional machinery at its properties to increase the capacity from 1,500 to 3,500 tons per day. The company recently increased its capital from $600,000 to $1,250,000 for expansion.

A large tract of coal land in Harrison County comprising about 178,238 acres, was purchased by the Consolidation Coal Co., from the Monongah Coal Co., it was announced early in August, for the sum, it is understood of about $177,433.82.

Moundsville—Production has been begun at the new mine of the Woodland Coal Co. at Whittaker, W. Va. near here, the company having found it necessary to sink a shaft to the depth of 185 feet. It will be possible to produce about 2,500 tons a day when full production is reached, the company having a tract of about 3,000 acres in which to operate. However before production is begun on a large scale, it will be necessary to erect a tipple and to build a power house. The tipple will be of steel construction and will be sided with asbestos.

Fayetteville—The three Boone brothers, who have been operating smokeless mines in Fayette County for fully a quarter of a century, are said to have closed out their operations on Keeney's Creek. It is also being reported that the operations at Lookout, Blume and Michigan were sold to the Archibald McNeil Sons Co. of Bridgeport, Conn., who are engaged in the export business. It is understood that the sale became effective on August 1. It has only been a short time since the same Bridgeport interests acquired four operations on Piney Creek near Beckley. The Boone brothers still own a considerable acreage in Fayette County which they may later decide to develop.

WYOMING

Rock Springs—General Manager E. S. Brooks of the Union Pacific Coal company has received official notice from President E. E. Cavin, that an appropriation of $160,000 had been made to take care of the housing problem for the official employees of the company in Rock Springs.

According to the plans now drawn, the center of the plot will be taken up with a large park, which will be in charge of a caretaker at all times. Surrounding this park will be the dwellings, club house, etc., as designated under the appropriation.

The appropriation calls for the erection of eighteen new and modern homes of from six to eight rooms, to be completed before winter.

CANADA

Lampman, Sask.—Coal mining operations will be commenced at the new coal field near Lampman, Saskatchewan, Canada, within the next sixty days. This field is being developed by the Farmers Coal Mining Co. Ltd. The shaft already has been sunk to a depth of 170 feet and the coal bed lies at a depth of 210 feet. When fully developed the mine will have a capacity of 1,000 tons a day. This will take some time, however, as it will be necessary to do a large amount of work before maximum capacity can be reached.

Victoria, B. C.—Coal production returns for the month of July, as far as are available, indicate that the collieries of British Columbia apparently are satisfactorily meeting recent heavier demands of the trade. The figures follow:

Nicola-Princeton Field	Tons
Middlesboro Collieries Co., Middlesboro	6,918
Fleming Coal Company, Merritt	2,626
Coalmont Collieries Co., Coalmont	1,984
Vancouver Island Field	
Canadian Western Fuel Co., Nanaimo	55,399
Canadian Collieries Ltd., Comox	41,089
Canadian Collieries Ltd., So. Wellington	8,904
Canadian Collieries Ltd., Extension	15,342
Pacific Coast Coal Mines, So. Wellington	7,680
Nanoose-Wellington Coal Co., Wellington	3,079
Granby Cons. M. S. & P. Co., Cassidy	9,019

Rate News

I. C. C. Decision—Ex Parte 74. In the matter of applications of carriers in official Southern and Western classification territories for authority to increase rates. Supplemental Order 1, Aug. 11.

It is ordered that in the application of the increases authorized in the report in this proceeding entered July 29, 1920, points in Illinois territory should be considered to be within the eastern group for the purpose of applying the increases on interstate traffic between points within Illinois territory; also on traffic between points in Illinois territory on the one hand and points in official classification territory east of the Indiana-Illinois state line on the other, and that an increase of 40 per cent may be made in such rates; and points within said Illinois territory should be treated as being in the western group on traffic subject to joint or single line through rates between points in said territory on the one hand, and points lying within the boundaries of the western group (west or north of Illinois territory) on the other, and that an increase of 35 per cent may be made in such rates.

For the purposes of this order Illinois territory is defined as consisting of all points in the state of Illinois, also points in Wisconsin on and south of the C. M. & St. P. Ry., Milwaukee to Madison, the C. & N. W. Ry., Madison to Dodgeville, and on and east of the Illinois Central, Dodgeville to the Illinois state line; also points on the west bank of the Mississippi River to which joint through rates, subject to the official classification, are now in effect from points in trunk-line and central territories.

Indiana—At a meeting of the directors of the Anderson Chamber of Commerce a committee was appointed to meet with similar committees of other Chambers of Commerce in Central Indiana, for the purpose of formulating a petition to the Indiana Public Service Commission for a revision of the coal freight rates from Indiana mines to the former Indiana natural gas belt. It is alleged that there is discrimination between the coal rate to Indianapolis and the rate to Anderson, Richmond, Newcastle, Muncie, Kokomo, Marion and several smaller cities and towns. It is said that the rate from the mines to Indianapolis has been 90c., and to the old gas belt counties the rate is $1.15. Manufacturers and operators of public utilities are making the principal complaints.

I. C. C. Decision—Investigation and Suspension Docket 1,173, Aug. 10.

Proposed cancellation by the Chesapeake & Ohio Railway Company of a charge of $5 per car for switching coal, loaded in cars furnished by the Carolina, Clinchfield & Ohio Railway, from the mine tipples of the Federal Coal Company and the Elkhorn City Coal Company, at Elkhorn City, Ky., to the connection tracks with the Carolina, Clinchfield & Ohio Railway at Elkhorn City, when destined beyond, found not justified and schedules under suspension ordered canceled.

Personals

F. R. Wadleigh has succeeded J. H. Davison as manager of export sales for Weston Dodson & Co. and will make his headquarters in New York City.

C. P. Ware, formerly with the Middle West Coal Co., has joined the sales force of the Emmons Coal Mining Co. at the Cincinnati office.

Philip A. Castner has resigned as secretary of Castner, Curran & Bullitt, of New York City, and George Derbyshire has been elected to fill the office.

Abel Mishler has been appointed as manager of Coale & Co., New York City, and his position as manager of domestic sales will be filled by L. A. Robinson, a member of the company's sales staff.

J. W. D. Moodie, for many years general manager of the Britannia (B. C.) mines, has resigned and will be succeeded on Aug. 1 by B. B. Nieding, a mining man now living in the state of Washington.

Frank T. Powers, of Frostburg Md., has been appointed by Gov. Ritchie mine inspector for Allegany and Garrett Counties, succeeding Lawrence Dunn, Midland. Mr. Powers previously occupied this position until he entered the U. S. Army during the war period.

W. E. Brandt, formerly with the Rutledge & Taylor Coal Co. and the Thompson Coal Co., both of Chicago, and later identified with the Fuel Administration, has recently been elected president of the newly organized Lafayette Coal Co., 609 Old Colony Bldg., Chicago.

M. A. Rowan, formerly of the Johnston City Coal Co., of Chicago, has established headquarters at Herrin, Ill., as practitioner of consulting safety engineer on mining problems.

Industrial News

Cleveland, O.—The National Sales & Trading Co. has established a coal and coke department in Philadelphia at its offices in the Finance Building. This department is under the supervision of Vernon B. Bickmore.

Boston, Mass.—The Somerville Coal Co. is adding to its storage space and making other noticeable improvements in its plant, the only one having a waterfront in this city of 100,000 people, situated on the Mystic River, three miles from the Boston State House.

Indianapolis, Ind.—The Ft. Dearborn Coal Co. is now opening a new office at Indianapolis, which will be in charge of W. R. Garstein, of that city. The new office of the company at Charleston will be in charge of G. E. Merriman.

Huntington, W. Va.—The Main Island Creek Coal Co. has opened an office in Huntington, W. Va., with G. M. Angell, sales manager, in charge.

Charleston, W. Va.—The Central Fuel Co., of this city has opened an office in the Kanawha Banking & Trust Building at Charleston, W. Va., with E. T. Donnelly in charge.

Philadelphia, Pa.—All the city pumping stations at Philadelphia are to be equipped to burn anthracite steam sizes. At present about one-half of them use bituminous.

Pittsburgh, Pa.—The Coal Mine Department of the Ætna Life Insurance Co. has been established in the Chamber of Commerce Building under the direction of Sim C. Reynolds, Chief Mine Inspector for the company. Mine inspection work for Pennsylvania and other coal mining states is to be carried on from this office. The following inspectors have been assigned to duty up to the present time: Clarence B. Nairn, for southern Illinois and Indiana; C. W. Hall and Wm. Elkins, for the bituminous district of Pennsylvania; James Weston, for the anthracite field; other inspectors are to be engaged for other fields.

New York, N. Y.—The export department of the Oxweld Acetylene Co., which was formerly located at the company's factory in Newark, N. J., has been removed to the Carbide and Carbon Building, 30 East 42d St., New York City. The department has been reorganized and is now under the direction of R. G. Noble, who will co-operate with the general sales department of the company.

New York, N. Y.—The International Fuel & Iron Corp. has moved its New York office from the Marbridge Building to the Trinity Building at 111 Broadway, where increased floor space, made necessary by the company's rapidly increasing business, adds materially to its efficiency.

Reading, Pa.—Willson Goggles, Inc., announce their purchase of all patents, trade marks, machinery and good will of Walter Soderling, Inc., makers of "Dustite" Respirators. Hereafter "Dustite" Respirators will be made at the Willson factory under personal supervision of Mr. Soderling.

Columbus, O.—The contract for supplying a coal crusher to the Scioto River pumping station of the Columbus Waterworks Department has been awarded to the Jeffrey Manufacturing Co. at $2,020. This was the only bid on hand at date for opening. The crusher will be delivered within two months.

Obituary

Jesse Nigh, father of B. F. Nigh, secretary of the Michigan-Ohio-Indiana Coal Association, died at his home in Circleville recently at the age of 72 years. He was formerly a resident of Columbus, Ohio.

Michael D. Barnitz, York, Pa. Aged 81 years. Retail coal merchant. Head of the coal business operated under the name of Geo. W. Barnitz Estate.

H. S. Evans, Chicago, Ill. Member of the firm of Evans Bros., retail coal merchants.

Henry Hazenwinkle, Bloomington, Ill. Aged 78 years. Well-known retired retail coal and grain merchant. Founder and president of the Hazenwinkle Grain Co., operating a line of elevators and coal yards.

Lauren Hilligoss, Shelbyville, Ind. Aged 55 years. Well-known retail coal merchant. Member of the firm of George W. Hilligoss & Son.

John Parkinson, Brooklyn, N. Y. President and founder of the Parkinson Coal & Coke Co., retail coal merchant.

Herbert G. Streat, New York, N. Y. Retail coal merchant; president of the Streat Coal Co.

Dr. D. H. Thomas, Columbus, O. Aged 52 years. Well-known pioneer coal operator. He was secretary and treasurer of the Mill Creek Coal & Coke Co. of Coopers, W. Va.; secretary of the Thomas Coal Coal of Thomas, W. V., and a director of the Flat Top Fuel Co. of Bluefield, W. Va. He was also identified with other enterprises.

Association Activities

Pennsylvania Wagon Coal Shippers' Association

At a meeting held at the Ft Stanwix Hotel, Johnstown, the association was formed by representatives of 18 companies operating in Indiana, Somerset, Westmoreland and Cambria Counties. Officers chosen are: President, Chas. W. Hammond; vice-president, M. C. Stewart; secretary, E. S. Bowden; treasurer, J. W. Rankin. The executive committee is comprised of the officers and J. L. Campbell, Harry Mainhart and M. F. Watters. Chief aim of the organization is to secure adequate car supplies from railroads.

Independent Coal Operators' Association

Second meeting of the association was held with 40 operators attending. A permanent organization was formed with M. F. Watters, president, and Jos. Gray, secretary. A committeee on grievances was formed, consisting of the following: P. M. Swope, J. W. Yeadlen, F. C. Lantzy, C. L. Bearer and E. P. Reed. Dr. J. Maucher and Secretary Gray were named a committee on by-laws. Meetings will be held on first and third Wednesdays of the month.

Oklahoma Coal Operators' Association

The Oklahoma Coal Operators' Association, in a meeting at McAlester, voted to hold coal miners to their contract entered into at the end of the national strike last November. The operators decided that the contract entered into at that time is valid and binding for a period of two years from that date, and that its terms should be enforced without further negotiations. The stand of the operators was made known in response to a request by John Wilkinson, president of District 21, United Mine Workers of America, asking what stand the Oklahoma operators would take on the question.

Pittsburgh Coal Operators' Association

The Pittsburgh Coal Operators' Association of Western Pennsylvania submitted a recent protest to the Interstate Commerce Commission, the State Public Service Commission and head officials of railroads serving the Pittsburgh area alleging preferred car placements at wagon mines, team track loaders and other small operations.

In brief, the protest covers the four following points:

That railroad officials and employees are buying coal from operations of the classes mentioned, selling the coal at a profit to themselves, and in return for this privilege are furnishing these operations cars in excess of the number to which they are properly entitled.

That railroad employees are accepting money payments for cars furnished to operations of the classes mentioned in excess of the number to which they are properly entitled.

That by the failure of railroad employees to make proper reports cars placed empty at operations of the classes mentioned and hauled to the scales loaded do not appear upon the percentage sheets.

Many operations of the classes mentioned are being allowed regular daily car supply on the theory that they are on construction basis, this long after the construction work is completed.

Railroad officials have promised Commissioner Gardiner of the Association that a searching investigation would be made immediately.

Tri-County Motor Mines Association

The order of the Public Service Commission denying cars to so-called team track operators frames the issue for which the Tri-County Motor Mines' Association is being formed by small operators from Fayette, Westmoreland and Washington Counties.

A preliminary meeting was recently held and the organization will be finally perfected at an early meeting in the Municipal Building. The fact that the Public Service Commission has taken official action against their industry is expected to result in virtually every operator of the district being present inasmuch as the association is being organized to fight just such an official action.

The Public Service Commission order relieves the railroads of responsibility in denying cars to team track operators. As reported at the meetings, there was nothing of greater force than an order by the railroads denying open-top cars to team track operators. It was said that the railroad order was not being enforced uniformly, mines on one branch being supplied with cars while those on another were denied them.

Panhandle Coal Producers' Association

Organization of the Panhandle Coal Producers' Association, composed of operators of the Panhandle district, was effected at a recent meeting in the First National Bank Building, Pittsburgh.

Members of the new organization will retain their memberships in the Pittsburgh Coal Producers' Association, according to a statement by J. H. Sanford, vice-president of the Carnegie Coal Co., who is a member of the executive committee named to bring about organization of the Panhandle association.

"It is the purpose of the new association to deal with the question of car shortage at our mines along the Panhandle, a situation for which various reasons the Pittsburgh association has been unable to alleviate, and as far as I know the Panhandle operators will remain indentified with the Pittsburgh Producers' Association." Mr. Sanford said. "There may be some, of course, who will withdraw, but we have many common interests with the Pittsburgh body."

In confirming the report the new organization was to be formed, Mr. Sanford said the Pennsylvania Railroad had failed to furnish 50 per cent of actual number of cars needed as provided in a recent ruling, but had been giving the Panhandle mines only 30 per cent.

Other Panhandle operators indentified with the Panhandle association are William Taylor, of the Cleveland and Western Co., chairman of temporary organization committee; A. M. Marion, Chartiers Creek Co., and B. H. Cannon, McClain Mining Co., as committee members. Twenty-five out of thirty-five Panhandle operators were expected to attend the meeting.

Northern West Virginia Operators' Association

Operators of northern West Virginia, at a meeting of the Northern West Virginia Coal Operators' Association, held at Fairmont, took appropriate action toward securing the co-operation of members in making Service Orders 10 and 11 effective by adopting a resolution pledging the support of the association in carrying out the provisions of the orders referred to. Operators show no disposition to combat the two orders, but an entire willingness to co-operate. Provisions of the Lake and New England priority orders were fully explained by G. T. Bell, vice-president of the association; C. H. Jenkins, a director of the National Association, and J. M. Orr, a director of the association.

The Northern West Virginia Coal Operators' Association continues to grow in size, there being at the end of July 160 different coal companies on its roll. The 160 companies represented in the membership of the organization operate about 250 mines. While the association had quite a large membership on January 1, there have been 39 companies added to the membership list since that time, the largest growth in any one month being 20 members added for July. The association has proved to be most beneficial to coal people and has so completely demonstrated its usefulness that many new members have been attracted.

Coming Meetings

American Mining Congress will hold its annual meeting at Denver, Col., Nov. 15. Secretary, J. F. Callbreath, Munsey Building, Washington, D. C.

New York State Coal Merchants' Association will hold its annual meeting Sept. 9, 10 and 11 at Richfield Springs, N. Y. Treasurer, G. W. F. Woodside, Albany, N. Y.

The Rocky Mountain Coal Mining Institute, in conjunction with the Colorado Metal Mining Association, the local chapters of the American Mining Congress and the American Institute of Mining & Metallurgical Engineers, and the International First Aid Meet will hold its annual meeting Sept. 9, 10 and 11 at Denver, Col. Secretary, F. W. Whiteside, Denver, Col.

National Safety Council will hold its 1920 congress on Sept. 27 to Oct. 1, inclusive, at Milwaukee, Wis. General Manager, C. W. Price, Chicago, Ill.

Oklahoma Coal Operators' Association will hold its annual meeting Sept. 14, at McAlester, Okla. Secretary, F. F. LaGrave, McAlester, Okla.

COAL AGE

The Weekly Journal of the Coal and Coke Industries

Volume 18 NEW YORK, THURSDAY, SEPT. 2, 1920 *Number* 10

Export Possibilities

DEMAND for coal for export has only begun, if the threatened strike in England takes place. A shutdown of coal production in the British Isles of even a few weeks will turn the eyes of every coal-consuming nation to the United States as the only source of supply. A prolonged strike would set the world begging at our ports instead of merely bidding for coal.

Evidence of Good Faith

QUICK response by the Tidewater Coal Exchange to the urgent demand that rules be amended and adopted to eliminate the possibility of speculation in tidewater coal has earned for this organization the commendation of any who suspected the shippers using this helpful medium of any desire to do other than play fair. The interest of the jobbers and the larger producers of bituminous coal can never from the very nature of their methods of doing business lie along the same line, but the fact that when the test came they were able, as they did in Washington recently, to sit around the same table and agree upon a common method of procedure to meet a public emergency is indeed a most helpful sign of co-operation rather than conflict.

Are Prices Going Down?

SCATTERED and recurring reports of breaks in the price of coal below the more or less accepted $10 market have given rise to much speculation as to whether a slump in prices is impending. The solid elements in the coal trade, both producers and jobbers, deplore these high prices, and of course all consumers who are called upon to pay them voice even more strenuous objections. The prices are as high as they are because of the consumer's anxiety and his urgent bidding. A real drop in prices will come when the consumer decides that if he will but hold off a short time he can secure a lower price, which he can do at any time, providing, of course, that he does not require coal for immediate consumption.

Wholesale indictments of alleged coal profiteers by the Department of Justice cannot be expected really to reduce prices. The consumer alone can bring them down. We are glad to note that the consumer is getting over his fear and is using judgment in his buying of coal. The downward trend will be slow at first but will gain momentum if production keeps up. A good-sized drop in prices now would be extremely helpful to the industry because it would discourage the fair-weather operator and allay impending labor trouble.

Recent advices as to the way the demands for wage increases are being settled give reason for the prediction that prices cannot drop to a level that in the viewpoint of the consumer would be considered reasonable compared with those of last April. In the middle West wages of daymen are being advanced 25 per cent on top of the increase of April and the miners are demanding, and doubtless will receive, some advance. This means greater costs of production, below which there is no prospect prices will drop within the year to come. Bottom levels of prices will therefore be reached before most buyers realize it, for the agitation for wage changes is not confined to the middle West but has made as much progress in central Pennsylvania. The Eastern market shows more evidence of recession than the West, where strikes have restricted production, but the drop in the East will not be as marked or as sudden, when it comes, as in the West.

Preparation for Wage Negotiations

IN THE first of a series of three articles on the consulting economist in wage controversies appearing in this issues of *Coal Age* pointed reference is made to the fact that it was left to the anthracite operators to puncture the statistical balloon of Mr. Lauck. We would like to add that it remained for an engineer, rather than a lawyer to turn the trick. The interest and sympathy of *Coal Age* with the engineering profession are too well known to need comment and we are particularly happy in this instance to point to the achievement of an engineer as a leader in industry. The anthracite operators under the leadership of S. D. Warriner so far outpointed, in their presentation before their particular strike commission, the bituminous coal operators before theirs that it certainly is not amiss to suggest that the bituminous operators take heed and do a better job next time.

The principal difference in the manner in which the soft- and hard-coal operators presented their respective cases—the one before the Robinson Commission, the other before the Thompson Commission—without doubt arose because of the lack of unity among the soft-coal operators as compared with the solidarity of the hard-coal men. Bituminous-coal operators at no time had a definite, consistent program of what they were going to do. Unable to agree upon a leader or upon a program, the soft-coal men hired a lawyer who, though able in law, was lacking in knowledge of coal and failed lamentably in digesting and presenting his case. Therefore the presentation of the bituminous operators was a series of star plays but with no team work, while that of the hard-coal men was obviously well considered beforehand and presented with precision and force.

Perhaps the very fact that the bituminous men were from so many fields operated to prevent unified action. If that be the case and it is true that the Central Competitive group is permanently disbanded as a medium for negotiating with the United Mine Workers, there may perhaps develop in some of the several states comprising this group, if not in the outlying fields, a technique in handling labor controversies both in private

and in public negotiations comparable to that staged by the anthracite operators.

There are sufficient men of vision among the bituminous operators in union fields who see and continually urge the necessity of persistent and continued study of labor problems and the accumulation of data designed to combat the aggressive demands of the union miners. The old way of negotiating the wage contract through barter behind closed doors and oratory in public has passed. The younger and more aggressive men in the bituminous industry know this but are handicapped in their efforts by the tenacity with which the old leaders with the time-worn methods of twenty years ago persist in clinging to the council table of the soft-coal men.

It might be suggested that if bituminous coal operators would spend as much in the next twelve months in the accumulation and study of data bearing on the labor question in their industry as on the spur of the moment they paid in legal fees for representation before the Bituminous Coal Commission, they would be buying the best kind of insurance against another lamentable fiasco.

Will New England Take the Coal?

COAL is now being forcefully diverted to tidewater and in a specified large volume for New England, but no congestion at the ports has so far resulted from this movement, and to the everlasting credit of the coal men of Boston, who have formed an emergency organization under the inspiration of Mr. Storrow to handle "S.O. 11" coal, buyers are connected up promptly for all coal shipped under the order. Emergency dispatch has characterized the handling of the New England soft-coal situation from the first action by the Interstate Commerce Commission to the organization of the special committee in Boston and the firm grip on the situation taken by the coal shippers and railroad officials. The coal is moving without delay and without interference with transportation.

Criticism of Service Order No. 11 is plentiful, both because of the pressure used to secure the order and for the alleged advantage in its operation being taken by New England consumers. The desire for larger supplies of soft coal and the demand for Federal support in getting it originated in New England, but the method of getting it there was devised by the coal operators, who patently were of the opinion that New England should have the coal and that the price should be reasonable. Now that the order is in operation at the tidewater ports and New England is in a tactical position to obtain price concessions, there are many who speak lightly of New England's need for coal when her buyers are offering $5 to $7 per ton on a $10 market.

Many elements enter into the New England soft-coal trade and one should examine all the facts before being too critical or concluding that after all this favored section of the Northeast has been crying wolf once too often. The consumers of bituminous coal in New England may be classified as between public utilities—including municipal and state institutions—railroads and industrial plants. There are also the retail dealers, who buy some coal for domestic consumption but whose largest market is really industrial. One-half the total it taken by the railroads, public utilities and retail dealers; the other half is consumed by industrial establishments.

Industries are paying the market price for their coal, taking it for storage and current consumption with very little objection. It is estimated on good authority that the stock of coal in the hands of industrial consumers in New England has more than doubled in the last ninety days. It does not follow, however, that when industrials are stocked up to the point of repletion the demand for soft coal in New England will cease. The railroads, retail dealers, public utilities and public institutions also must have storage coal to carry them over the winter.

Retailers purport to be fearful of accumulating large stocks at high prices—$8, $9, $10 or more per ton—because even with contracts on their books for the sale of this coal a break in the market might find them unable to move it. Nevertheless these retailers are the sole source of supply of a considerable number of industrial plants and some public institutions throughout New England. Municipalities and other public departments and institutions are holding back the purchase of coal until they can obtain it at a price which they consider reasonable. It is understood that there is no difficulty in making sales at $6 per ton to consumers of this class, although very little free coal is available to them at that price. It must be obvious to everyone that the railroads cannot afford to pay $10 per ton on any considerable portion of their requirements and stay in business. The same applies to municipalities and to public utilities. It is no wonder then that they are holding back waiting for the reduction in prices that they feel is bound to come when coal has been accumulated at tidewater loading ports as a result of Service Order No. 11.

There have been no undue accumulations of "S. O. 11" coal at tidewater points for which buyers have not been found. It is doubtless true that by far the larger part of the coal moving under this order from New York, Philadelphia and Hampton Roads is in fulfillment of contracts, every shipper with a New England contract having immediately taken advantage of the provisions of the order to meet his quota by shipping on his contracts.

Difficulty has been experienced at Baltimore because the high-volatile coal tributary to this port is suitable only for railroads and gas plants in the New England trade. Railroads are reported to have offered $5 for this coal, but, although the price is admittedly a reasonable one, no large movement at that price has been reported so far. The unwillingness of the railroads to give the operator more than 100 per cent profit is but natural.

The outlook in the New England market may be briefly stated. Industrial consumers, representing half the soft-coal consuming element in that section, have been and are taking coal at the market, high as it is, and they have been stocking coal for more than two months. This class of consumer will be out of the spot market before any other. They can afford to pay any price, as is evidenced by the case of one industrial plant that is reported to have closed a contract for this winter's delivery at a cost laid down of $20 per ton, which means but 30c. cost for coal on a manufactured product selling for more than $100.

The other classes of soft-coal buyers in New England need the coal and in the last analysis will pay what they have to for their requirements. No one can criticize them for taking advantage of every possible means of beating down the price below $10, and no one can justify charging them that price for their requirements.

Roads to Ask I. C. C. Aid in Inforcing Intrastate Raise

Alfred P. Thom, general counsel for the Association of Railway Executives, has announced that in the event of the refusal of any state commission to increase intrastate rates to the level of interstate rates, appeal would be made to the Interstate Commerce Commission to overrule the state body. Mr. Thom contended that the commission had this authority under the Transportation Act. He also has stated that the presentation of the railroads' case to the Federal commission was predicated upon action by the state commissions with relation to intrastate rates similar to that by the Federal commission with relation to interstate rates.

Coal Exports Increase $56,471,282 In Value in a Year

During the fiscal year 1920 22,976,325 tons of bituminous coal, worth $132,299,978, was exported from the United States, compared with 18,152,337 tons, valued at $75,826,696, in the preceding year. In addition, bunker coal laden on vessels engaged in foreign trade in 1920 amounted to 836,453 tons, valued at $7,233,478. Canada took nearly half of the bituminous coal exports of 1920, receiving 10,470,516 tons. Italy with a total of 2,862,773 tons stood next and Cuba with a total of 1,243,098 tons was third.

Canada's Mineral Output Slumps

The total estimated value of the metal and mineral production of Canada in 1919 was $173,075,913, which is less than the total value reached during each of the three preceding years. Compared with the production in 1918, valued at $211,301,897, a decrease of $38,225,984, or 18 per cent, is shown.

Canadian Coke Ovens Show Large Byproduct Yield

Coking ovens installed at Anyox by the Granby Consolidated Mining & Smelting Co. for handling Cassidy coal have proved a success. From 420 tons a day of this coal there are being produced 300 tons of metallurgical coke, while the byproducts recovered include 5,000 gallons of coal tar, 800 gallons of motor fuel and five tons of ammonium sulphate.

Colorado Fuel & Iron Earnings Increase Nearly Four Millions

The report of the Colorado Fuel & Iron Co. for the quarter ended June 30, 1920, shows gross receipts of $14,239,347 as compared with $10,529,415 in the corresponding period in 1919, while net earnings from operation increased to $2,130,272 from $1,144,316 in the June, 1919, quarter. After deductions for interests, taxes and other charges balance for the quarter was $1,546,881, as compared with $627,154 in the year before.

Commerce Commission to Probe Prepayment Regulations

On Aug. 17 the Interstate Commerce Commission ordered the suspension from Aug. 18 to Dec. 16, pending investigation, of regulations proposed by the railroads requiring prepayment of freight charges on traffic to points in Canada.

NEWS BRIEFS

Terse Items Chronicling Events of Interest to the Industry

Chicago & Alton to Spend Million For Coal Cars and Locomotives

President W. G. Bierd of the Chicago & Alton Railroad Co. has arranged for a loan of about one million dollars for the construction of five heavy freight locomotives and 500 coal cars. The company will utilize wheels, trucks and running gear saved from coal cars condemned on account of wornout bodies. The Chicago & Alton is handling a large amount of coal tonnage, the development of the Standard Oil mine properties at Carlinville and in the Springfield district having become among the largest in the central West.

Sixty Miles of Loaded Coal Cars Jam Tracks in Maryland

Sixty miles of loaded coal cars are choking the roads between Brunswick and the Curtis Bay terminals, Baltimore, according to President W. C. Byers of the Western Maryland R.R., who asserted that the present congestion, due to the failure of ship owners to load the coal and to the laxity in the issuance of coal permits, was the worst he had ever known. This congestion is the more deplorable, he said, in that there is an urgent demand for coal in New England and elsewhere and the idleness of so many freight cars will cause production at the mines to suffer.

Through Freight Rates in Canada Are Increased

The Dominion Board of Railway Commissioners has granted increases in through rates to United States roads in Canada to conform with those recently approved by the Interstate Commerce Commission at Washington. These increases apply to all commodities except coal and coke, and are effective on or after Aug. 26.

Canadian Trainmen Ask 100-Per Cent Raise in Wages

Canadian Pacific Railway trainmen in the western division on Aug. 17 presented claims for wage increases of from 50 to 100 per cent before the Board of Railway Conciliation in session at Winnipeg.

Dr. Eaton to Campaign for Republican Ticket

Dr. Charles A. Eaton, associate editor of *Leslie's Weekly*, declined to be a candidate for the Republican Congressional nomination in the Fourth New Jersey District, but has accepted the invitation of the Republican National Committee to devote his whole time during the campaign to speaking in some of the larger cities in the East and West.

Trade Board to Hold Hearing on Price Guarantees

Representatives of producing and distributing concerns in more than fifty industries and trades have been invited by the Federal Trade Commission to participate in a discussion before it Oct. 5 with the object of determining whether the business practice of "guarantees against decline in price" in selling commodities shall be declared improper under the commission's regulations.

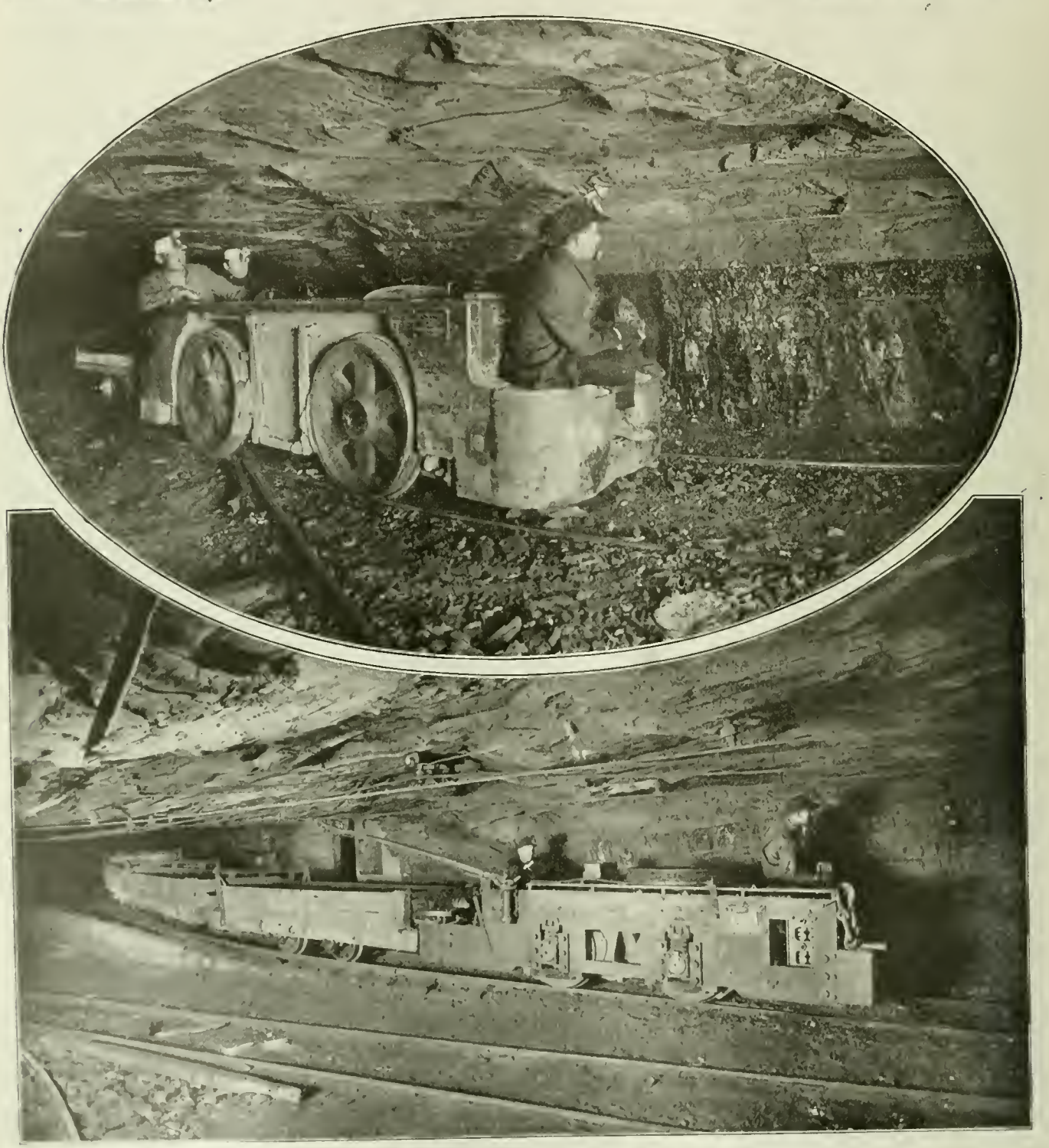
100 Women Mine Pickets Battle With Police

One hundred foreign-speaking miners' wives gave battle to the city police Aug. 24 in the Pittston section when the latter attempted to disperse a mob of women. The women intended doing picket duty at the No. 6 colliery of the Pennsylvania Coal Co. and had persuaded several men to return to their homes before the state police appeared.

Railroads Show Deficit for May

A deficit of $13,284,985 was reported by the railroads to the Interstate Commerce Commission as a result of operations in May as compared with earnings in May last year of $30,124,911. For the five months ended with May the operating income of the carriers was $21,294,679, against $90,863,877 for the same period in 1919.

Through the Coal Fields With a Camera



The Equipment That Has Revolutionized Coal Mining

Many times it has been stated that one reason for the high cost of coal in England has been due to the opposition in that country to the use underground of electric locomotives. It would be almost essential to abandon many American coal mines if the locomotive were eliminated. Many an early mine went as far as the three-mule team permitted and closed down, the cost of hauling being at least one-half as high as the cost of mining the coal.

Above—a Jeffrey machine belonging to the Kanawha Central Coal Company, working in the Black Band Vein No. 2. Below—a cable-reel locomotive, the property of the Hudson Coal Co., taking a trip of empties.

Waste Gases from Beehive Ovens Supply Power Needed in Star Junction Plant

By Clyde R. Weihe
Star Junction, Pa.

Heat Given Off by the Ordinary Beehive Oven During the Coking Process May Be Conducted to and Through a Boiler or a Boiler Plant, Thus Generating Enough Power for All Mining Purposes—Heat Per Oven in 48-Hour Cycle Supplies 21 B. H.p.

JUDGING from the present tendency to conserve the fuel supplies of the nation, we may safely predict that the heat lost by the beehive coke oven will soon be used by coal-and-coke companies as a means of producing the power needed for all purposes in and about the mines.

This means of generating power is no longer an experiment but an accomplished reality. It has been installed and operated successfully for the last fourteen years by the Washington Coal & Coke Co. at Star Junction, Pa. By heat from the ovens this firm makes all the electric power necessary to drive fourteen Sullivan shortwall mining machines, eight 13-ton and six 6-ton locomotives, one 500-hp. stationary haulage motor, three electric mine pumps, six Covington coke machines, two electric larries, four shop motors at the various shops and an outside electric pump which is used to supply water to more than 600 houses.

In all, eighty-two electric motors are thus operated with an aggregate capacity of 2,336 hp., to which may be added several thousand electric lights. Of course, the motor load is largely intermittent and self-compensating, otherwise it would be too great for the present generating equipment.

A general idea of the appearance of the power plant can be gained from the headpiece. This shows the waste-heat ovens in operation. Had this picture been taken with the trunnel heads of the ovens open it would have been blurred on account of the flames rising from the ovens. This would have been especially evident had the photograph been taken immediately after charging. The same illustration likewise shows the coke-drawing machine and the headframe, tipple and coal bin of No. 1 plant.

The original installation as built in 1905-6 consisted of fifty waste-heat ovens, three 320hp. Stirling boilers and two 450-hp. cross-compound non-condensing Buckeye engines direct-connected to Westinghouse 300-kw. direct-current three-wire 275-500 volt generators. These latter units are designated as Nos. 2 and 3 in Fig 2. The original boilers are Nos. 1, 2 and 3; later No. 4 boiler was added as well as a 600-hp. cross-compound non-condensing engine direct-connected to a 400-kw. direct-current three-wire 275-550 volt generator. At the present time a boiler is being installed as No. 5 (see Fig. 2) and twenty-two more waste-heat ovens have been connected to the main flue, or conduit, as it is commonly called.

Fig. 2 gives a general outline of the ovens, their individual flues, the main flue, the individual boiler flues, the boilers, steam lines and generators. Fig. 5 is a cross-section of an oven, main flue, individual boiler flue, boiler, breeching and stock. Fig. 3 shows the ovens and the main flue.

About 1,000 Horsepower Is Generated

A charge ordinarily remains in an oven forty-eight hours so that each oven is drawn every other day. Ovens charged on Friday and Saturday, however, are not drawn until seventy-two hours have elapsed, that is, until the following Monday and Tuesday; the charge put in the ovens on Friday and Saturday are so heavy that they will not be fully coked before Monday and Tuesday respectively of the following week.

Strictly speaking, combustion is not completed in the ovens themselves but in the main flue. From that point the heat is conducted to the boilers. A temperature of from 1,900 deg. to 2,300 deg. F. is attained. An evaporation test conducted Jan. 10, 1920, from 6 a.m. to 6 p.m. with fifty-three ovens in operation, twenty-seven of which were charged that day, showed an average of 1,120 hp. developed in the boiler room and a maximum of 1,225 hp. during the hour from 9 to 10 a.m., when 39,218 lb. of water was evaporated from a feed water temperature of 180 deg. F. to steam at an average of 138-lb. gage pressure.

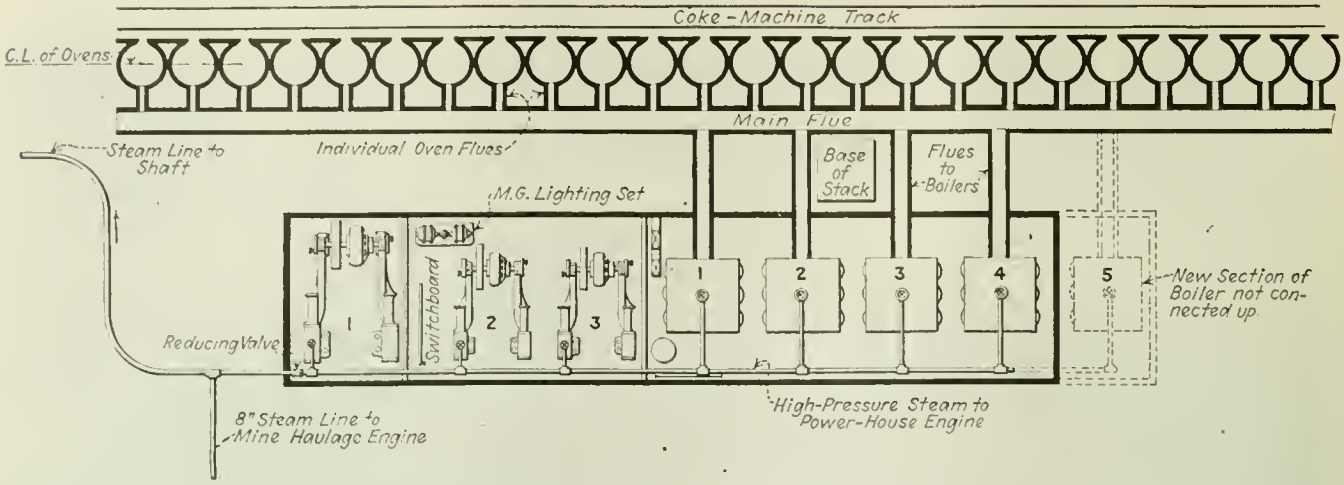


FIG. 1. GENERAL PLAN OF ENTIRE WASTE HEAT PLANT

This shows the arrangements of ovens, flues, boilers, engines, steam lines, etc. The layout of the power and boiler house is such that it may be readily extended in either direction as demands for more steam or more current make themselves felt

The minimum evaporation during this test showed 915 hp., developed during the hour from 5 to 6 p.m. This trial was conducted with only three boilers on the line, thus showing that these units were working at a slight overload. Those familiar with the demands made for power at a mine can readily see that the maximum amount was developed at a time when the demand usually is the greatest. This maximum was an average of more than 25 hp. per oven, and I have been informed that during a 48-hour period an oven containing a 48-hour charge will develop an average of 21 hp., and that without burning any more of the fixed carbon than is normally consumed in the process of beehive coking.

During this test the average power developed at the switchboard was 481.25 kw. or about 645 hp. The surplus steam went through the reducing valve shown in Fig. 1 to the No. 1 plant, where it assisted in operating a large haulage engine, a hoisting engine, a crusher and elevator engine, two air compressors and a 25-ft. mine fan. At this time there were four hand-fired boilers at the No. 1 shaft.

The load on the power plant varies from 25 per cent

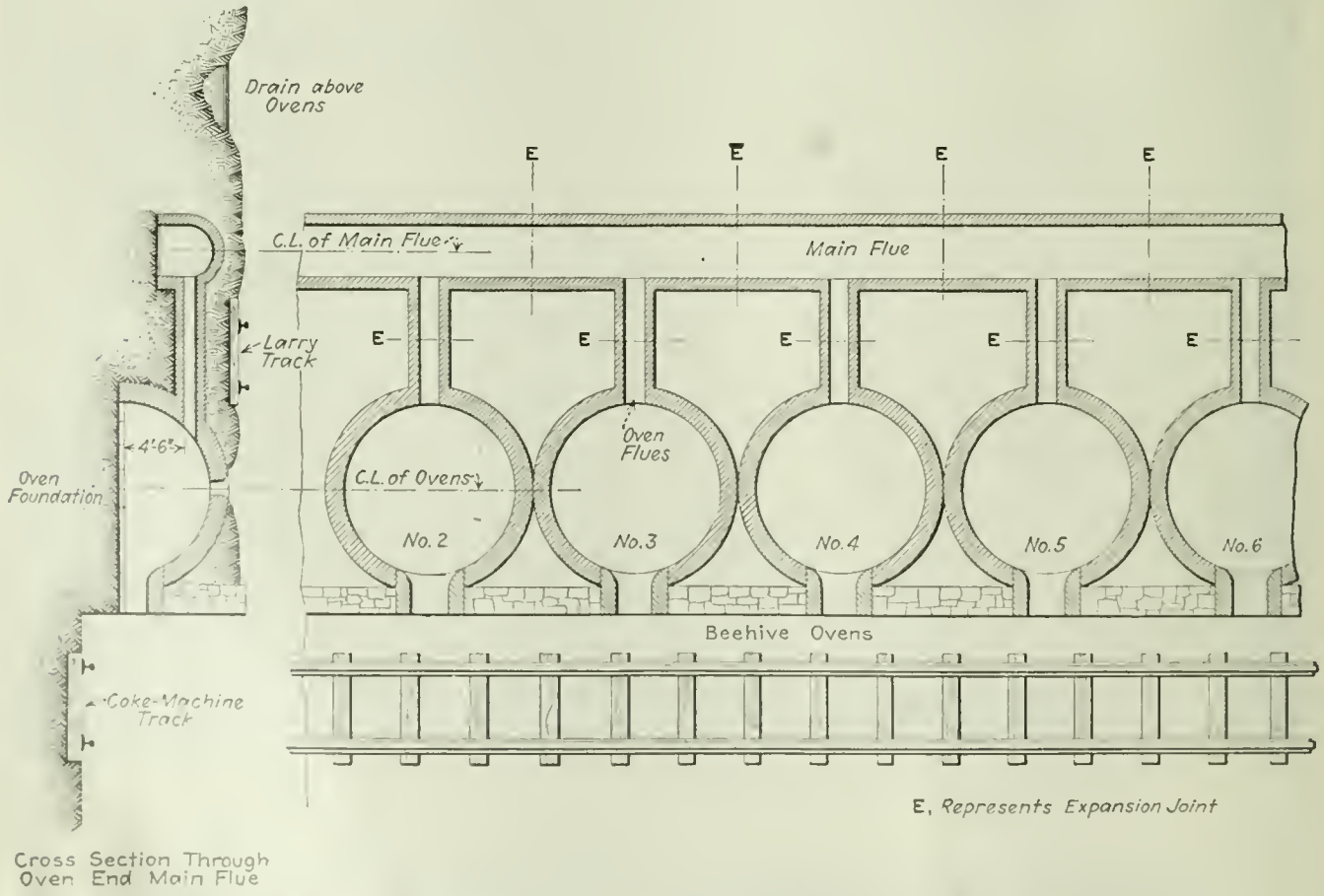


FIG. 2. DETAILED ARRANGEMENT OF OVENS, INDIVIDUAL OVEN FLUES AND MAIN FLUE

Each individual flue must be at such a height as to preclude its being clogged by the oven charge, and must be provided with an expansion joint. A similar joint is placed in the main flue between adjacent ovens.

of rating to 100 per cent overload, the maximum peaks being highly intermittent and lasting not more than ten minutes. The surplus steam during the minimum-load periods is used at the shaft. The apparatus here installed carries lower pressure and this makes it necessary to employ a reducing valve in the main header from the power house.

The ovens employed at this plant are of the ordinary beehive type except that they have flues that connect them to the main conduit. The oven trunnel head is opened only during the time of charging or when there is too much steam, as on a Sunday or a holiday. In constructing the flues, expansion joints must be provided at regular intervals, and the opening from the oven to the conduit must be sufficiently high that it will not become stopped or clogged (see O, Fig. 3). The main flue must also be provided with expansion joints and in each individual boiler flue a slot or guide must be provided for the dampers which are used in stopping off the heat when the boilers are taken out of service for cleaning or repairs.

The boilers are equipped with automatic feed-water control and are fed by a 20 x 10 x 30 in. Yough double-acting plunger pump taking water from a Pittsburgh open-feed water heater. The water is heated by the exhaust from the No. 2 and No. 3 engines.

Between the No. 1 and No. 2 engines is located a motor-generator set driven by a 145-hp. motor and generating 2,300-volt 3-phase alternating current which, after suitable transformation, is used for the lighting of the company houses.

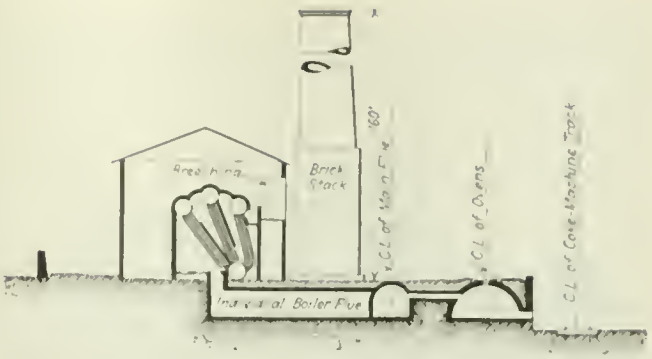


FIG. 3. CROSS-SECTION OF OVENS, FLUES, BOILER AND BOILER HOUSE

Hot gases from the ovens are brought into the boiler settings through a hollow bridgewall. Grates are of course provided for hand firing should this become necessary.

While the power generated at this plant is somewhat more than some companies might require, a smaller installation could be laid out and the height of the ordinary boiler stack increased. This means that each boiler could have its own stack instead of using a large brick stack in common such as is employed at this plant. The cross-section of each stack could be made the same as if the boiler was to be hand-fired. This would develop the same horsepower provided sufficient height were allowed to draw the gases through the conduit and boiler setting. In any event air should not be permitted to enter through the boiler brickwork, as this would lower the efficiency of the plant.

Lucerne Mines, Shaft and Two Drifts Make Current for Thirty-Two Plants

Three Practically Distinct Mines Are Joined Underground and Have a Common Tipple—Bone from Four Picking Tables, 28 Per Cent Ash, Is Used as Fuel at the Central Power Plant

By Ralph W. Mayer
Homer City, Pa.

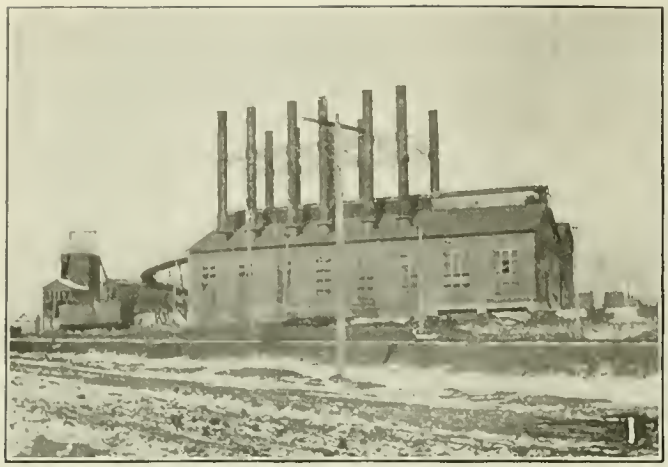
LUCERNE Mines is the name applied to the largest operation of the Rochester & Pittsburgh Coal & Iron Co. This firm has coal mines in no less than four counties of Pennsylvania—namely, Armstrong, Clearfield, Jefferson and Indiana. It is a subsidiary of the Buffalo, Rochester & Pittsburgh R.R. and most of the output of its mines is shipped over the tracks of the parent company. The plant in question, however, may be reached also by either the Pennsylvania or the Indiana County Street Ry.

Underground workings of this operation lie between Indiana and Homer City and some of the miners live in each of these municipalities. The majority of the mine workers, however, reside in Lucerne, where more than five hundred large and roomy company houses have been built. This town is provided with a gravity water system, a large company store, and a moving picture theater. The latter, as well as frequent interurban service to nearby points, affords ample opportunity for recreation and amusement.

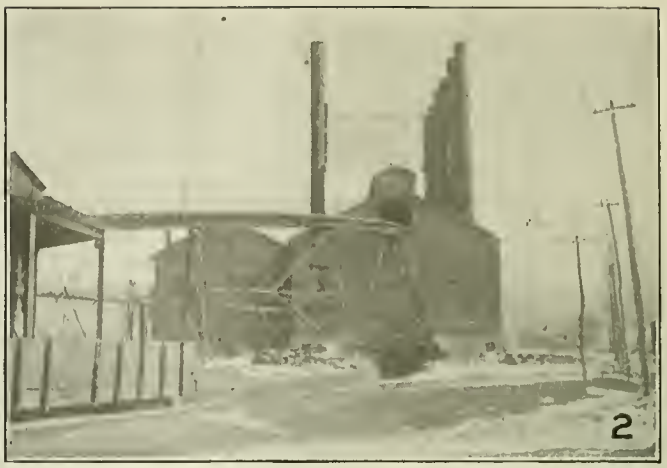
During the war this operation was worked at nearly full capacity. The daily output rose to about 5,000 tons while upon certain occasions over 6,000 tons were passed through the tipple. At times 3,000 mine cars have been dumped and 126 railroad cars loaded in an 8-hour day. The payroll then carried about seven hundred names. After the close of hostilities the output was rapidly curtailed. The portion of the mine that drained naturally was shut down and the balance was partially operated. At present the whole mine is being worked, but not to capacity.

The coal bed developed at this mine is the Upper Freeport, which at this point ranges from 5 to 7 ft. in thickness. Near the center of the bed is a band of bone 8 to 12 in. thick. Although this bone is supposed to be removed by the miners and left in the gob, the tipple is equipped with picking tables to facilitate the removal of any foreign matter that may find its way to the surface.

Mine cars enter the tipple upon two central tracks, are discharged by two cross-over dumps, pass to two kick-backs and then gravitate to the two empty tracks, one



POWER-HOUSE AND SHAFT HEADFRAME
LARRY-TRACK END OF POWER HOUSE



HEADFRAME AND TIPPLE, LUCERNE SHAFT
MAIN LUCERNE TIPPLE AND MACHINE SHOP

NOTE—The second illustration shows the larry-track by which the cleaned bone is brought to the boiler house bins to be directed to the stokers by downcomers, also the tracks under the boiler house by which railroad cars can be "spotted" for the reception of the ash from the stokers. The tipple in the third illustration was used in the early development, but it is now superseded by the main tipple shown in the fourth and fifth illustrations

upon either side of the loaded tracks. One man stationed on a small elevated platform controls all track switches within the tipple. Thus by means of levers, close at hand and connected to the switches by means of rods and bell-cranks, giving positive action, he runs the loaded cars to the dumps, the empties to the storage tracks and the like.

From the dumps the coal passes over shaking screens, from which the larger sizes go to four picking tables. After the bone has been removed the lump passes down chutes to railroad cars on the loading tracks beneath the tipple. The bone removed on the picking tables is thrown into hoppers terminating in chutes that lead to a conveyor. This discharges to a transverse conveyor that serves as a picking table. Here the rock is picked from the bone, which then passes to a crusher or pulverizer. After crushing, the bone goes to a storage bin, whence it is eventually removed and taken to the boiler house by a larry, to be used as fuel. The rock picked from the bone is conveyed to a bin, from which it is drawn into a car that is hauled by means of an electric hoist and cable over an elevated track to the rock dump.

Nine railroad tracks pass under the tipple. On five provision is made for loading cars. The empty storage tracks above the tipple are united in one track from which the loading tracks branch. Below the tipple the loading tracks are again united into one, from which the storage tracks for loads diverge. The grade of all of these tracks is such that cars will move by gravity from the upper end of the empty storage yard to the lower end of the loaded storage yard. A car upon any track of the empty yard may thus be shunted to any loading track and thence to any track in the loaded yard.

BURN BONE WITH TWENTY-EIGHT PER CENT ASH

The power house is situated a short distance from the tipple. An elevated track enters the boiler house near the top and from this the larry above referred to dumps the crushed bone to the boiler bunkers. Downcomers from the bunkers convey the fuel to the hoppers of automatic stokers under the boilers. After combustion the refuse—this fuel contains about 28 per cent of ash—passes by chutes to the basement of the building. Here it is loaded onto railroad cars that enter the basement by way of a cut. These cars are spotted under the ash chutes and are loaded as the ashes are discharged from the stokers. The cars move through this building by gravity.

Twelve 600-hp. Sterling boilers are installed. Now that changes have been made in the stoking equipment it is possible to operate at 60 per cent over nominal rating. Each boiler generates 960 actual boiler horsepower.

This plant is the central station supplying power to thirty-two of this company's mines operating in Indiana County. For this purpose three Curtis turbines direct-connected to General Electric generators are installed. These turbines take steam at a pressure of about 150 lb.

and exhaust into a vacuum normally maintained at about 28 in. One generator is of 6,000-kw. capacity while the other two are of 3,000-kw. capacity each. Current is produced at 6,600 volts.

The original water supply for the power plant was secured by damming a small stream not far from the plant, from which point it was pumped to the boiler house. This water caused scaling. An 8-in. pipe line has been laid to Cherry Creek about a mile away and the boilers are supplied from that source. The present pumphouse contains four centrifugal pumps all of which are motor-driven. All these machines are not in constant use, some being kept in reserve for emergencies. The total quantity of water required for both boilers and condensing plant is about 2,400 gal. per minute.

Opened as Three Separate Mining Plants

In order that the work of opening the mine might be rapid, development was started from three separate openings. These were called mines Nos. 1, 2 and 3. This appellation they still retain, although the workings are interconnected, have the same haulage and ventilation system and are under unit management. Two of the openings are drifts driven from opposite sides of a valley. The third is a shaft 192 ft. deep, located near Homer City and sunk to the bottom of a coal basin. Here three pumps—one centrifugal and two plunger machines—each with a capacity of 4,000 gal. per minute, are installed. Much of the water made by the workings, however, is drained out of the drifts which are opened in side hills just above flood stage of the creek.

A steel headframe has been erected over the shaft, and coal can be hoisted on two cages, each lifting two mine cars. Caging at both top and bottom is performed mechanically. Although this shaft is well equipped it is not now used for coal hoisting. Instead, a 5,000 ft. incline is employed to bring out the deepest coal.

Thirty-five General Electric and three Jeffrey locomotives are used for coal haulage. Three 20-ton motors, each having a 10,000-lb. drawbar pull when traveling 9.2 miles per hour, are used in main haulage. Each of these machines has six motors and six drivers upon which the weight is equally distributed. To facilitate passage around curves the middle pair of drivers is plain—that is, unflanged. The load hauled by these machines ordinarily ranges from forty-five to seventy-five cars, depending upon the grades traversed. Under certain particularly favorable conditions as many as ninety-five cars have been hauled.

In order to gain tipple height after the surface is reached the upward incline is continued through a cut in the side hill against which the tipple abuts. This incline is double-tracked, one track being used for loads and one for empties. The empty track is not provided with a trolley wire, gravity and the locomotive and car brakes being relied upon to secure and control move-

CLOSER VIEW OF NINE-TRACK TIPPLE
STEEL BRIDGE FROM TIPPLE TO ROCK DUMP

TIPPLE SEEN FROM MINE-CAR INCLINE
SUBSTATION AT OPENING OF NO. 1 MINE

Note—The seventh illustration shows the incline leading to the top of the tipple, some of the railroad tracks below the tipple, the railroad bridge and the bridge across the railroad by which the cars of rock reach the rock dump

COMPANY STORE OF LUCERNE TOWN, NEAR HOMER CITY

ment thereon. Rails on the loaded track weigh 60 lb. per yard, while those on the empty weigh 45 lb.

Gathering locomotives employed in this mine weigh from six to ten tons. These are provided with cable reels of the vertical type which lie close on top of the locomotives and are driven by small motors of high resistance that keep a uniform tension on the cable.

Most of the mine tracks are fairly level although some heavy grades occur. In some of the old workings inclinations as steep as 12 per cent are encountered. Over these the locomotives push empties up and bring loads down, one at a time. These grades are such that even the locomotive without load could not climb them if the rails were wet and unsanded. Experienced motormen by the judicious use of sand have little trouble, and even the coal-cutting machines go up and down under their own power. The small six-ton motors are apparently better suited to this work than the larger machines, as for some reason their wheels seem to hold to the rail better.

On the butt headings 35 to 45-lb. rails are used. On main headings 60-lb. steel is laid, while 85-lb. rails are employed on the 5,000-ft. underground slope or incline. Main haulage roads are all bonded. In most instances 000 and 0000 flexible copper bonds are installed. Holes in the rails to receive the bond terminals are drilled with a General Electric bonding drill weighing 75 lb. This can be operated by one man, although two are usually employed. About one minute is required to set up this drill, while the ¾-in. or smaller hole that receives the bond terminal is finished in a much shorter time. This machine is used also for drilling bolt holes in the ends of short or special lengths of rails.

Steel rails are largely employed in the rooms and elsewhere. Especially is this the case where light rails are used in entry driving. Here the light temporary track is taken up and replaced with heavier steel.

The mine cars employed are of two-ton capacity. Two types of couplings are used, the older of which is being gradually discarded. This consists of two clevises joined by three links. Each clevis, as is common practice, fastens to the drawbar by means of a pin. The new type of coupling consists of a single long link with a pin in either end.

Atlas explosives, mostly coalite 2D, are used. Detonization is secured by means of No. 6 iron-wire detonators. The miners carry their supply of explosives into the mine in wooden boxes constructed without metal. Each box will hold nine sticks of powder. Boxes of similar construction are used for the detonators.

The last car on the man trip is provided with a wooden box into which are put the boxes of detonators. Picks, shovels, drills, and other tools are then deposited in the next car while the men ride in the cars still farther forward. A second locomotive drawing one car follows the man trip at a safe distance. In the car is placed a wooden box in which are deposited the boxes containing the explosives. The powder car stops at points where men leave the man trip, allowing each miner to get his box of explosives. Clay for tamping is placed at convenient points along the entry, and the coal after being undercut by machines of the chain or continuous type is drilled, loaded and shot down. Each miner carries a battery and cable and fires his own shots whenever they are prepared.

Edison battery lamps are used in working, while Wolf safety lamps are employed for testing, although the mines are not gassy and the fire bosses make no morning inspection, except in the innermost workings, where traces of gas are sometimes found. No open lights are used. The electric cap lamps are charged and issued at a substation located between the two drift mouths.

One of the details of operation at this time which is somewhat out of the ordinary is the practice of making all ventilating doors on the haulage road of a standard size and construction so that they are strictly interchangeable. Such doors are 8 ft. wide and 5 ft. 3 in. high. They are constructed on the surface, are bolted together and a supply of them is kept near the foreman's office ready for replacements in case of damage to a set within the mine or for rapid installation in case a new door is needed.

Device That Will Show the Temperature of The Depths of a Storage Pile

Losses Through Oxidation of Coal in Storage Increase with an Increase of Temperature — Coalometer Shows Thermal Conditions Throughout the Coal Pile and Gives Warning When the Rise in Temperature Becomes Dangerous

By R. P. Nichols
New York

A NEW device has been introduced for indicating the thermal conditions existing in a pile of stored soft coal. A description of this instrument doubtless will be of interest to those who store bituminous fuel in quantity. It is known as the Thornley Coalometer.

Quoting from Porter on "Weathering of Coal," 1915: "A coal pile may be covered with snow, yet three feet below the surface of the pile the temperature may be quite high."

The instrument to be described was designed for either permanent or temporary installations, to meet the conditions encountered whenever soft coal is allowed to lie in storage for an appreciable length of time. This instrument has been perfected by the Federated Engineers Development Corporation, from a joint invention of A. W. Browne, professor of chemistry at Cornell University, and myself.

As is well known, bituminous coal has the property of spontaneously heating when exposed to the air. This increase in temperature does not always cause actual combustion in the sense that the coal burns with the presence of flame, though this condition often is encountered. There occurs almost universally, however, in stored bituminous coal a slow oxidation which in its aggregate effect is even more destructive than actual combustion because it cannot be so readily detected.

It thus accomplishes its destruction of fuel value quietly and unnoticed, extending throughout an ever-increasing zone, beneath the surface of the stored coal. This slow escape of valuable heat for which the consumer has paid is just as detrimental as if the same amount of heat had been lost by fire or other cause. Could the consumer look beneath the surface of his coal pile and definitely acquaint himself with conditions existing there, he could save himself enormous losses by using first that portion of his coal supply which showed a tendency to become even slightly heated. In other words, he could burn the heat units that are about to escape before they have had adequate opportunity to do so.

An Alcohol Thermometer Is Formed

It is for the purpose of indicating these conditions beneath the surface that the coalometer was designed. It consists of a set of temperature indicators incased in a long, pointed, steel tube, carrying at varying depths metal bulbs (corresponding to the bulbs of thermometers), and at its upper end a set of dials with pointers that indicate under all atmospheric conditions the exact temperature of the bulbs which actuate them. These bulbs and the pipes connecting them to the pressure gages are filled with alcohol, the expansion of which under increasing temperature actuates the pointers of the gages.

The hermitically sealed systems thus formed cause the pressure gages to act under the circumstances as highly reliable temperature indicators. Units built up in this way are forced down into the coal pile to predetermined depths and at various localities. Collectively they furnish definite information as to the exact temperatures existing throughout the storage pile. If an accurate record of readings from these instruments be kept the slightest rise in temperature is at once detected. Should this become excessive the consumer at once removes this particular portion of the pile, thus saving the heating value of the coal which had started to dissipate.

While coal insurance is in some measure a protection against fire, it at best merely furnishes reimbursement for fuel actually destroyed. It neither replaces the coal nor compensates the holder of such a policy for the slower leakage of heat occasioned by oxidation. Such losses are always present and in time may become appreciably destructive.

Locate Warmer Spots for Earlier Removal

If it were possible for an insurance company to measure the heating value of a coal pile and insure the owner against loss of thermal units occurring while in storage, whether by combustion or by slow oxidation, it is safe to say that the demand for such a policy would be universal. It would assure the owner of coal that each thermal unit that he had purchased would be available as fuel or that he would be reimbursed for the amount that escaped.

A set of coalometers will perform this function in an efficient manner. They indicate the exact location of hot spots as soon as they begin to form, giving warning of approaching trouble in ample time for the coal to be moved before rapid leakage of heat values can occur through excessive heating. Loss by fire can be entirely eliminated through the proper installation and intelligent use of a set of these instruments.

Tests have shown that an installation of one unit each 50 ft. in either direction will efficiently indicate temperature conditions throughout the entire pile. Thus the installation of one triple unit will protect a volume of about 50 x 16 ft. of stored coal measuring approximately 900 tons.

The accompanying illustration shows a triple unit for use in coal piles from 15 to 20 ft. deep. A galvanized steel tube, having a hardend-steel diamond-point drill at its lower end, carries three pressure bulbs, at depths of 5, 10 and 15 ft. Tubes from these three bulbs register temperatures in degrees Fahrenheit upon three dials by means of pointers provided for this purpose.

The scale on each dial, starting at 32 deg. F., runs upward. It is colored black until it reaches 120 deg.,

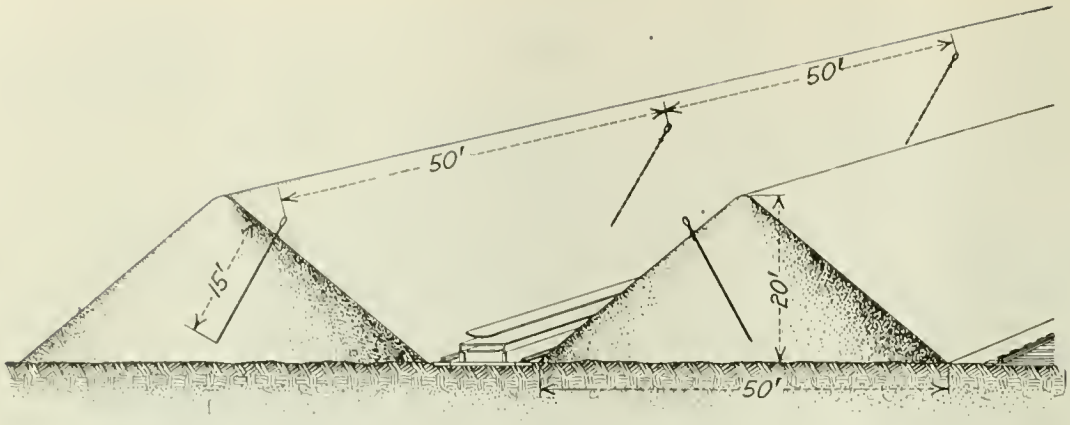


FIG. 1
Coalometers in a Stockpile
In order to show conditions existing in a large pile of coal it is necessary to place coalometers at regular intervals. As a general rule this distance should not exceed 50 ft.

where it changes to red, indicating when the hand reaches this point that there is excessive heat in this zone and warning the coal man to remove this portion of the pile. The depth of the hot spot is determined at a glance, for the dials are plainly marked 5, 10 and 15 ft. The dial showing the highest temperature thus indicates the locality nearest which the heat is generating.

These dials are inclosed in weather-tight metal cases with thick crystal faces, and the set is again inclosed in a galvanized cast-iron case. This furnishes ample protection whether the unit is in use or otherwise.

A slidable pipe wrench is provided on each unit, to aid in the rapid and easy boring or forcing of the tube to the desired depth. A large, plainly-marked lug, 12 in. below the instrument head, determines the exact depth at which the coalometer is to be placed, and renders guesswork unnecessary on the part of the man who makes the installation. The construction throughout is rugged and will allow of the quick installation, removal or storing of one or more units time after time without fear of damage to the temperature indicators themselves.

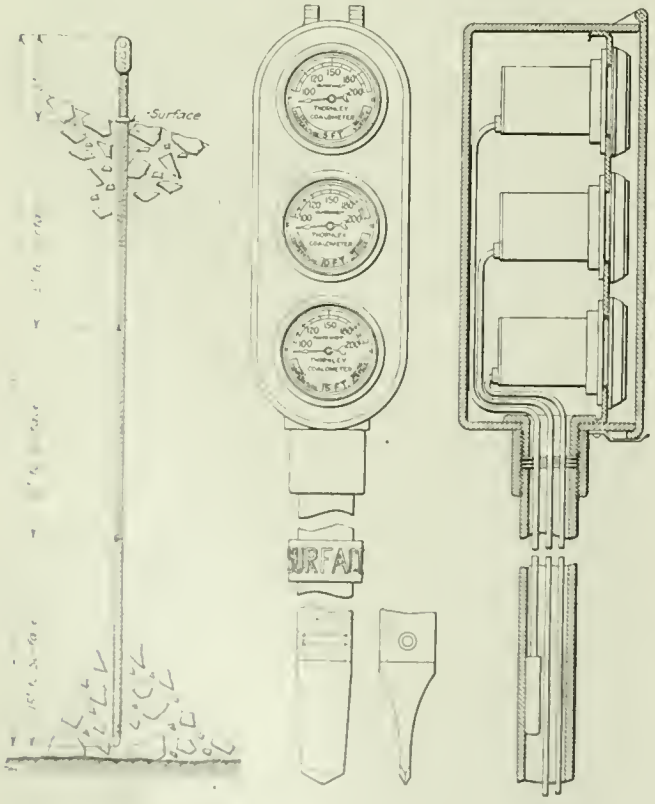


FIG. 2. DETAILS OF THE THORNLEY COALOMETER
Bulbs set at predetermined distances from either end of the instrument are connected by seamless pipes to pressure gages at the top. Alcohol within each bulb and pipe generates a definite pressure at a certain temperature this pressure is registered as a temperature.

These indicators are specially constructed to show temperatures accurately under the varying conditions encountered throughout the year. They will indicate exact bulb temperatures regardless of conditions existing at the head of the instrument and will retain their calibration under extreme vibration or violent shock.

It will readily be understood that it is necessary to use a complete installation covering the total amount of coal stored. To employ a few units only, scattered at improper intervals throughout a coal pile, would have the same relative protective value as would fire insurance on certain selected portions of the stored coal.

These coalometer units are supplied in two lengths, 12 and 17 ft. These carry, respectively, two and three temperature indicators, the bulbs being placed at 5-ft. intervals below the surface mark on the stem of the unit. This allows the unit heads to extend approximately 2 ft. above the coal pile and to be readily accessible for the reading of temperatures. A typical installation is shown in Fig. 1.

With each installation is furnished a leather-bound loose-leaf record book, each page of which covers a daily reading of the temperatures indicated by each coalometer. These records furnish complete information concerning the heat conditions beneath the surface of the fuel pile and enable the manager to determine readily what portion of the coal is losing its heating value through oxidation and at what rate.

A column on this record sheet shows the exact date at which any unit was removed, the temperature of that portion of the coal at that time, and indicates that the coal was removed from this point at that date.

Porter in his "Weathering of Coals," 1915, gives some interesting data on the loss in heating value occurring in three soft coals which had heated up only to between 158 deg. F. and 176 deg. F. It was found that the loss in heating value of these coals in fourteen days amounted to an average of 3 per cent.

From the above it is easy to calculate what losses as represented by dollars and cents may occur in storage piles. As is well known, the rate of oxidation increases with increasing temperatures and continues over long periods of time. For this reason the owner should be constantly posted as to existing temperatures beneath the surface of his coal pile. The coalometer was designed to furnish this information with great accuracy at all times.

Do Fans Operate by Centrifugal Force?

Motion of Blades Creates a Partial Vacuum and the Better Type of Fan Is That Which Protects This Vacuum so That Only Intake Air Can Reach It — Some Experiments Have Been Made to Establish These Facts

By David W. Evans

AUTHORS, schools and teachers generally have attributed the action of mine-ventilating fans to centrifugal force developed by the revolution of the air within the fan. Notwithstanding this general accord forty years of testing and experimenting with fans have convinced me that the teaching is wrong.

My view of the matter is that air, with its properties of expansion and mobility, is not subject to the same laws of centrifugal force as is a more solid medium. Long study and experimenting with fans have led me to conclude that in order to make air follow the same laws as solids its mobility must be restrained as in an air compressor or air pump.

Before going further let me refer to a few authoritative references on the mine fan. Perhaps the earliest of these analyzing the action of the fan as due to centrifugal force occurs in Beard's "Ventilation of Mines" (page 18), published in 1894. It reads as follows:

> The method here adopted for determining the static pressure due to the action of the fan depends, as previously stated, upon the centrifugal force developed by the mechanical revolution of the air contained between the blades of the fan. This contained air possesses a certain weight and, compelled to revolve at a certain speed by virtue of its mechanical environment, will develop a certain centrifugal force or outward pressure.

G. M. Williams, then an inspector of mines in Pennsylvania, published a small book or pamphlet in which he described the air as flowing along the face of the fan blades and increasing in velocity under the influence of the laws of centrifugal force. More recently Joseph J. Walsh, another Pennsylvania mine inspector, published a book (1915) entitled "Mining and Mine Ventilation." In describing ventilation by means of a fan, page 106, the author states as follows:

> If a fan, while working on a mine, is exhausting air therefrom the fan is then, due to centrifugal force, creating a partial vacuum at its center or axis; the extent of this vacuum depends on the peripheral or rim speed of the fan.

The reference library of the International Correspondence Schools, Scranton, Pa. ("Mine Gases and Ventilation," Sec. 15, page 6.) describes the principle of action of the centrifugal fan as follows:

> The principle on which a centrifugal fan acts is as follows: The air contained between the fan blades has a certain weight, and when the fan is revolved a certain force is developed, called a centrifugal force, that acts on each particle of the air in revolution and tends to throw it outward or away from the fan shaft and toward the circumference. The air within the fan, being free to move in a radial direction, when acted on by this force moves outward or toward the circumference of the fan. This movement of the air outward in a radial direction causes an area of depression or partial vacuum within the fan, and the outside air, under the influence of the atmospheric pressure, at once flows into this area of depression.

In view of these statements of well known authorities in fan ventilation, I realize that it is a serious undertaking to attempt to combat what has been so long accepted as the underlying principle of the action of a mine fan and must therefore proceed with caution. We all agree that air will remain at rest until it is disturbed by heat or some mechanical means, when it will flow from a point of higher to a point of lower pressure, the latter point being termed a "depression" or "partial vacuum."

In the movement of air in mines we have used *heat* in furnace ventilation, and *mechanical means* in fan ventilation to produce the desired depression or vacuum and the consequent flow of air. In the case of a mine fan the forward movement of the blades impels the air in front of each blade, leaving a vacuous space behind the blade, with the result that air from the mine rushes toward this vacuum. The fundamental problem presented in the design of a fan is to so protect the vacuum formed in the rear of each revolving blade that this vacuous space cannot be filled from any source other than the mine airways.

My reading of Mine Inspector Williams' article on mine fans, to which I have referred, was followed by an interesting discussion with him when I illustrated my idea by referring to what took place when a fast train swept over a place where considerable paper had been scattered. In front of the train there was no commotion; but at the rear the papers were swept along by a mighty rush of air that followed the last car of the train.

At one time I collected a wagonload of old papers serve the effect produced by a fast train that was soon to pass through the cut. There was no observable movement of the papers ahead of the train; but when it had passed there was the same rush of air following, which swept the papers along in the path of the train, some of them flying the full length of the cut.

Again, observe the action of a paddle or fan. For example, cover a large table with loose papers and, taking a paddle, say 18 x 24 in., swing it downward with all your might but stopping at an angle of 45 deg. with the table. Observe that little if any effect is produced on the papers. Now, move back far enough to permit the paddle to be swung down to a level with the table and notice that the papers will then be scattered and blown to the floor by the rush of air behind the paddle. The same principle is observed when using a large palm-leaf fan. Little air is felt by swinging the fan toward one's face, until the swing of the fan is such that the rush of air from behind the fan can reach the face.

Why Were the Blades Curved Forward?

Another instance that, to my mind, demonstrates the same principle occurred at the Tompkins Shaft, at Pittston, Pa. During a strike, about 1875, an attempt was made to burn the fine coal and slack under the boilers, instead of washing it into the river as formerly. To that end there was installed a small fan, 4 ft. in diameter and 2 ft. wide, having four straight paddles or blades. The front of the boiler was closed in, the idea being to blow the fine coal and dust into the furnace by means of this fan, which was run at a tip speed of 4,000 ft. per min.

The scheme was not successful until another fan was installed which was of the same size but had eight blades that were curved forward to almost half a circle. I asked the inventor of the fan, J. E. Patterson, Pittston, Pa., what was the purpose of curving the blades forward; but he could only say that the idea was to scoop the air. Mine Inspector Williams, an advocate of centrifugal force, failed to explain how centrifugal force could act in a fan with the blades curved forward in this manner.

Other matters prevented me from going further into the matter, however, until some years after, when the late William David Owens was transferred to Pittston as district superintendent of mines for the Lehigh Valley Coal Co. Having charge of an adjacent colliery at that time, I came into close association with Mr. Owens, whom I knew to be well versed in the sciences and one of the best authorities in this country on mine gases and fan ventilation. The centrifugal principle in its relation to the action of a fan became our pet theme of discussion. We failed, however, to reach a satisfactory explanation of the results obtained in the operation of the Patterson fan just mentioned.

Not being able to support my contention with figures I proceeded to design and build a fan for demonstration. This fan was 30 in. in diameter, 6 in. wide and was provided with a spiral casing, in accordance with the general practice. The fanwheel as then designed is shown in Fig. 1. The blades were 6 x 7 in. and constructed with two different faces, one face being flat and straight, while the other was wedge-shaped. The flat face had a half-inch flange on each side, as appears in the figure. The fanwheel was made reversible so that either of the blade faces could be made the forward face when the wheel was revolved. At an educational lecture on fan ventilation delivered by J. T. Beard, at Wilkes-Barre, Pa., this fan was mentioned in the discussion that followed the lecture.

FIG. 1. FANWHEEL FIRST DESIGNED

Reversing the Fan Improved Its Delivery

In response to his expressed desire to see the fan in operation, Mr. Beard and others were invited to meet a few days later at the colliery where this fan was installed. At that time the first test was made with the straight face running forward. The fan was driven by a belt at a speed of 581 r.p.m., the tip speed being 4,563 ft. per min. At this speed the fan delivered 1,285 cu.ft. of air per minute, as measured at the outlet or discharge at the top of the expanding chimney, the measurement being taken with a Gray recording anemometer.

At the suggestion of Mr. Beard the flanges on each side of the blade faces were turned down flat and a second test was made at the same speed as before, with the result that the yield of the fan was slightly less, being 1,174 ft. per min.

A third test was then made by reversing the fan and running the wedge-shaped face of the blade forward. Although the fan was now run at the same speed and under the same conditions as before, to the astonishment of all present, the volume of air delivered was 1,410 cu.ft. per min. Mr. Beard remarked when asked for an explanation, "It would seem that you can build a fan in any o'd shape and get results." Having himself designed a fan that has given good results, I felt that I had at least developed a point worthy of discussion.

Dust Congregates Behind Fan Blades

We were then building at this colliery a new 6-ft. fan to exhaust the dust from the breaker to improve the conditions of work therein. Two small windows were placed on each side of the fan casing, one above and the other below the intake, for the purpose of observation. When the fan was in operation, a quantiy of fine dust being thrown in at the intake, it was observed that a thick body of the dust followed close to the back of the blades in passing outward to the spiral casing, while there was little dust in front of the blades. This condition was found to continue all around the fan. It then dawned on me that I must build a fan with the least possible size of blades, giving these a form exactly opposite to that in general use, if I was to prove conclusively that the principle of centrifugal force so generally ascribed to the fan's action was incorrect.

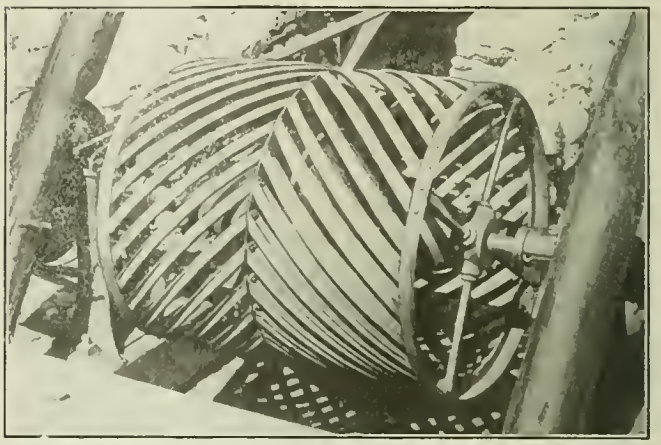


FIG. 2. FANWHEEL HAVING EXTREMELY SHALLOW BLADES DESIGNED TO ELIMINATE THE PRINCIPLE OF CENTRIFUGAL FORCE

With that end in view I then designed the fanwheel shown in Fig. 2, with the blades arranged in the herringbone style. The fanwheel was 30 in. in diameter and 30 in. wide. There were thirty blades on each side of the fan, the diagonal length of each blade being 40 in., while the width or depth of the blades, radially, was only 1½ in. The front face of each blade formed a half circle terminating in a back shield.

When completed this fan was tested by three of the leading officials of the Lehigh Valley Coal Co. The test was made with the fan drawing and discharging its air in the open atmosphere. The wheel was belt-driven and ran at a speed of 630 r.p.m. The results obtained were remarkable, the volume of air delivered being 25,389 cu.ft. per min., which was considerably more than three times the fan's cubic contents, per revolution—far exceeding all expectations.

Although getting good results and proving conclusively that centrifugal force was not the real factor in the yield of a fan, for practical reasons the herringbone construction was abandoned and a third fan was

designed and built as shown in Fig. 3, straight blades being substituted for the diagonal blades previously employed. The figure shows a 4-ft. fan with forty-eight 3-in. blades, each blade being shaped as shown in the small detailed cut at the left in the same figure.

The test of this third type was made on a fan somewhat smaller than the one shown in Fig. 3, the fan tested being 30 in. in diameter and 30 in. wide, with 1½-in. blades, which gave two intake openings each 27 in. in diameter. As shown in the figure, the front face of each blade was the arc of a circle or cup-shaped. The blades were made as small as possible, and this shape prevents any possible suggestion of centrifugal force entering into its action. At the back of each blade is a shield, shaped so as to allow the air to follow closely the vacuum formed behind the blades and to reduce the distance at the circumference between the shield and the next blade, so that the total area of discharge at the circumference is about 10 per cent more than the combined area of the two intake openings. The purpose of this is to prevent any back-current entering the fan from the spiral casing which would hinder the fan's action.

In the severe test to which this fan was subjected by Division Superintendent Owens, of the Lehigh Valley Coal Co., the fan was run at a speed of 581 r.p.m., giving a tip speed of 4,563 ft. per min. In measuring the air delivered the outlet was partly closed so as to give a uniform velocity at all points. An average of three tests showed that the fan delivered 29,400 cu.ft. per min., which was over four-and-one-half times its volume per revolution.

In the second test the two intake openings of the fan were boarded up as tightly as possible and the fan was run at the same speed as before. A water gage placed near the axis of the fan showed a constant depression of 1.3 in. In describing a test made on a Jeffrey fan, Mr. Owens referred to this fan in *Coal Age*, Vol. 13, page 1,188, by saying, "D. W. Evans, of Pittston, Pa., has constructed a fan with numerous blades, their depth being only 5 per cent of the diameter of the fan These blades are attached to a rim and a central plate at an angle of about 30 deg. This fan also produces about four times its own cubical contents per revolution.

In closing let me say that this fan and the well-known Sirocco fan, which appeared on the market about the time I designed the last mentioned ventilator, proved my contention that centrifugal force is not a factor in fan operation. The shallow 1½-half inch blades used on the fan tested were employed for the sole purpose of eliminating the influence of centrifugal action. It is my belief that a fan with 3-inch blades would produce five or six times its volume, per revolution, in the air delivered.

Reasoning from the principle of centrifugal force, it appears to me that a fan cannot produce more than its cubic contents, per revolution, while the tests referred to proved they do produce from four to seven times their cubic contents per revolution. The best results recorded from tests made on the general large mine fans of the Cymbal type are from 75 to 90 per cent of their cubic contents, per revolution.

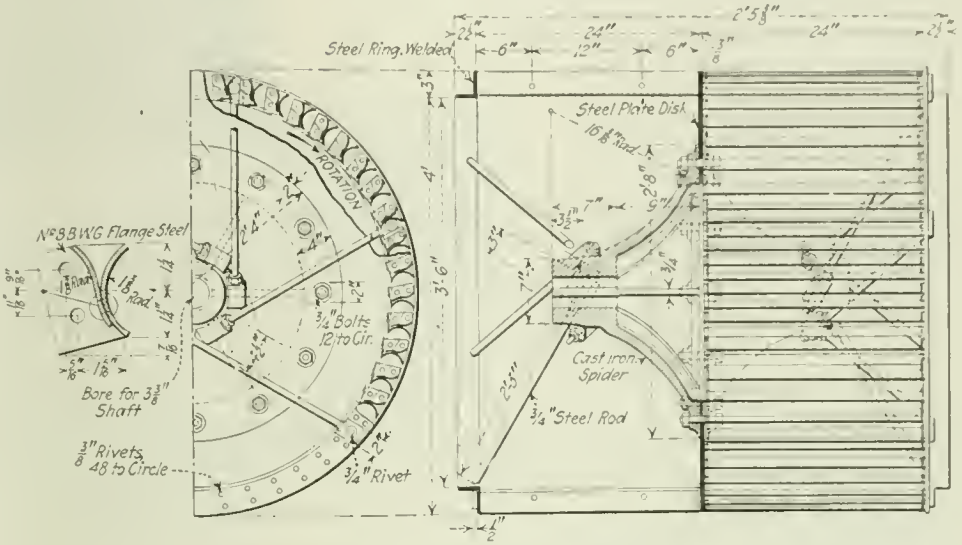
whether exhausting air from or forcing air into a mine,

My conclusion is, therefore, that all fans give their results by producing a partial vacuum back of the blades, and the better type of fan is that which protects this vacuum so that only air from the intake of the fan can reach it. Of course, it is well understood that there is no difference in the fan's action in this respect, whether exhausting air from or forcing air into a mine, the only difference being in the connection of the intake opening of the fan with the fan drift leading to the mine. If this contention is correct, it would be interesting to know what change would have to be made in the formulas giving the pressure and yield of a fan. Also, can a mine fan be called a centrifugal fan?

In preparing this article for publication I have recounted the mechanical tests made, and my observation of facts appears to me to illustrate the true principle of action of mine fans. Not being a graduate of a scientific school or university, my technical knowledge has been gained through a correspondence course of instruction, at a time when I had to work seven or eight shifts of ten hours each, every week. This continued for several years while I was employed in the Wm. A. Connell Colliery, Duryea, Pa. Supplementing this instruction, however, is a practical experience of sixty-seven years in the mines. When a boy of eight years it was always my disposition to ask the *why and wherefore* of everything I saw, which has made me a student of mechanical and natural laws. My arguments and conclusions must therefore be judged from that standpoint.

Type of Fanwheel Finally Adopted

This fan under a severe test delivered a volume of air more than four-and-one-half times its own volume per revolution. On the right of the figure, one-half of the blades are cut away to show the construction.



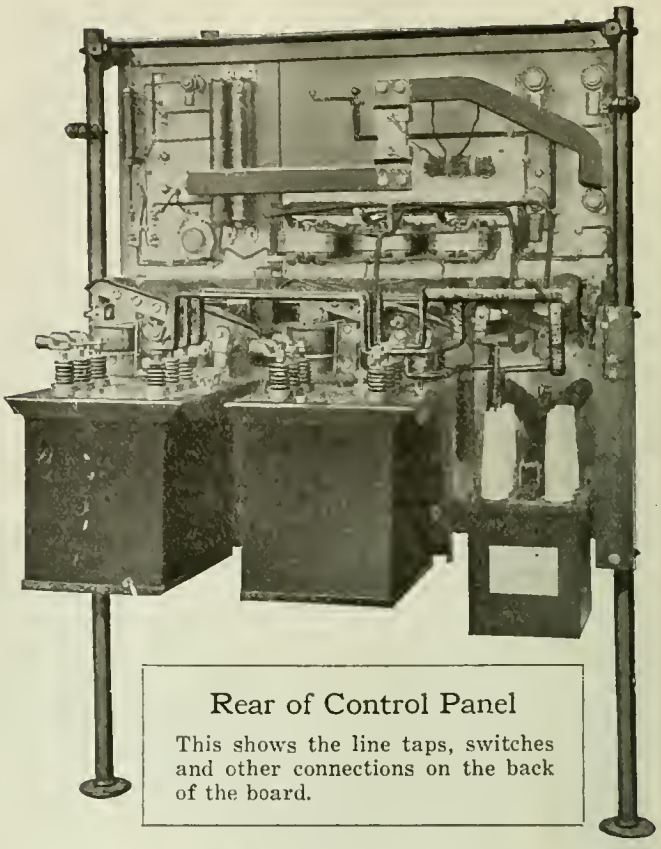
Automatic Starter for Motors Used For Driving Mine Fans

Series and Dash-Pot Relays Assure the Engineer That Speed Will Be Attained Without Excessive Peak Loads

THE control panel shown in the illustration has been developed by the Cutler-Hammer Manufacturing Co., of Milwaukee, Wis., for the automatic starting of polyphase squirrel-cage induction motors driving loads possessing great inertia, such as mine fans, and which therefore require several minutes to come up to speed. This controller is essentially an automatic starter of the auto-transformer type and consists of three double-pole magnetic contactors, two auto-transformers, a current-limit relay and a time-limit relay, together with the necessary auxiliary magnetic switches. The switch equipment is mounted on slate panels carried on a floor-type frame, with the transformers mounted separately.

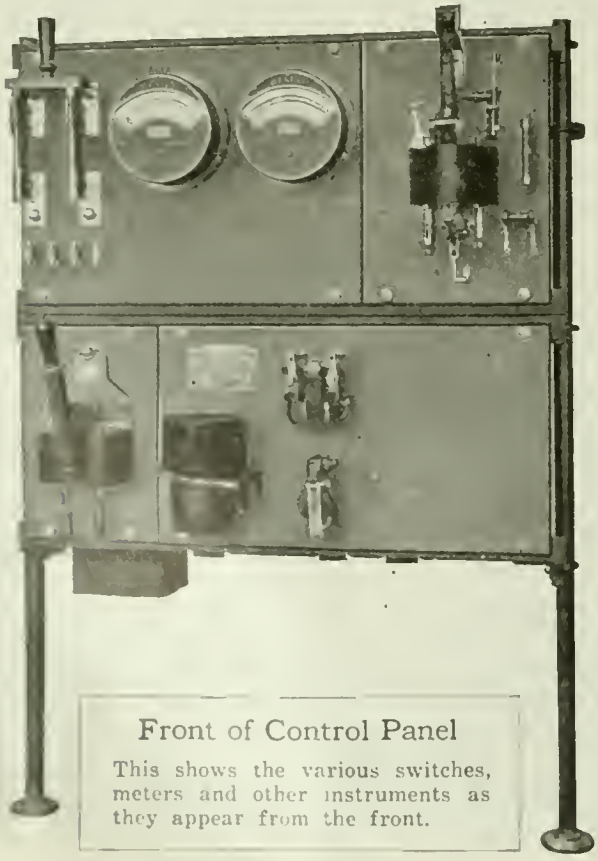
One contactor acts as a main-line switch, while the other two connect the motor to the starting taps of the transformers and to the line. The interval between the closing of the second and third contactors, which is the time given the motor to come up to speed, is governed by the series current relay and the dash-pot relay, either being externally adjustable for current or time values.

The use of both relays is made necessary for the following reasons: Time relays are generally unreliable when set to operate at a longer interval than ten or fifteen seconds, therefore they cannot be used by themselves under the above conditions of starting. Series current relays are reliable over a wide range of current values, but if set to release at the low values obtained when starting under normal conditions they usually will fail to function, if the load be increased even slightly or the line voltage fall below normal.. On the other hand, if set for higher values the series relay will connect the motor to the line before it has reached speed under normal conditions of load and line pressure, thus drawing undesirable peak currents from the line. By combining both types of these devices the current relay is made to function first, it being set for a current value sufficiently high so that its operation will be assured under practically all conditions of load and line voltage, while the dash-pot relay gives the proper time interval after the former has functioned.



Rear of Control Panel

This shows the line taps, switches and other connections on the back of the board.



Front of Control Panel

This shows the various switches, meters and other instruments as they appear from the front.

Control of this automatic starter may be by push button stations, snap switches, or other contact-making devices, from any remote point. Low-voltage protection is provided with 3-wire control by push buttons, and low-voltage release with 2-wire control. The adjustable feature of both relays makes this starter applicable to almost all operating conditions, regardless of the variation of the line potential and the load.

Strike Still in Progress in Northern West Virginia

STATE police are patrolling certain districts in Northern West Virginia, where a strike has been in progress since the middle of July directed against the mines of certain companies who have refused to accede to demands for a closed shop. A clash occurred between strike pickets and others at Dellslow on the night of Aug. 11 as a result of which state police are patrolling between Dellslow and Masontown. Men being brought in to replace striking miners at Dellslow the latter part of the second week of August were put to work at Bretz instead. While some houses are vacant at several of the operations along the line of the Morgantown & Kingwood Ry. because of the strike, these are being filled rather rapidly by incoming miners.

Coal Is Assembled by Motor Truck And Shipped by Railroad

Farmers Mine Coal and Haul It to a Central Dump, from Which It Is Loaded into Railroad Cars by Steam Shovel

By Donald J. Baker
Wilkinsburg, Pa.

ONE of the most novel coal-mining projects in western Pennsylvania is located about fourteen miles east of Pittsburgh beside the William Penn Highway and near the town of Bessemer. The operation is in reality a country-bank clearing station.

This portion of Allegheny County is primarily a farming country, but the Upper Freeport coal bed is easily accessible, and most of the farmers have opened small country banks on their properties. Of course, no railroad ever ran a spur to these mines. The coal produced heretofore has been sold exclusively for domestic use. As this demand was irregular, the mines were worked only intermittently. Now all the country banks within six miles of Bessemer are working regularly.

Nearly a year ago one of the officials of an organization known as the Central Supply Co. conceived the idea of buying the output of each bank and gathering it at a central point for shipment. This was rather a novel idea and not a bad one from a financial point of view. After the coal had been collected it could be placed in railroad cars by steam shovel and shipped.

A spot was chosen in a field where it was believed that 75,000 tons of coal could be stored if need be and in a location that is central with respect to the outlying banks. It also is easily accessible to motor trucks on the one hand and railroad cars on the other.

The output of the small mines is purchased by the Central Supply Co. as soon as it is delivered at the storage pile. Thus it is left to the farmer to decide how he can best and most cheaply get his product to the place where he can sell it. That he should choose the truck as the transporting medium was to be expected, for the roads in this district are good and the mines are for the most part within easy reach of the roads.

About thirty mines are having their product delivered to this storage pile near Bessemer; each is utilizing at least one truck. These trucks are of every make and design and vary from a known capacity of two tons up to an unknown capacity that must approach eight tons, as sideboards are used on the boxes. The coal is weighed at the storage pile before dumping. Each truck has a known tare and it is not necessary to weigh it separately at each trip.

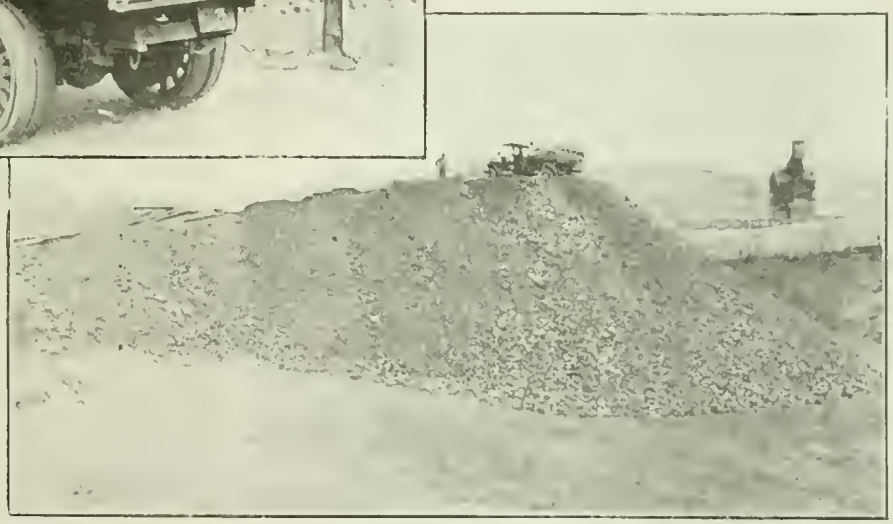
As can be imagined, there is a steady stream of trucks moving to and from the storage pile. About six hundred tons are delivered daily, which gives each mine an average production of about twenty tons a day.

The two most interesting features of this unique operation are the original idea that made such an enterprise possible and the fact that trucks are being used to transport the coal. In this case the trucks are not supplanting the railroad cars, but they nevertheless are performing a difficult task in an efficient manner. While most of the farmers own their own trucks, some are rented by the day from owners in the Pittsburg suburban area.

Much has been said against the "country bank," because it holds railroad cars unnecessarily long on sidings. That cannot be charged against the small mines delivering coal at Bessemer. The cars should not be, and probably are not, kept any longer than the cars at the average tipple-equipped mine.

Country Bank Clearing Station

A steady procession of trucks from two-ton capacity to over eight tons moves to the Bessemer storage pile from "coal banks" on the surrounding farms.



Storage Pile Near Bessemer, Pa.

At this pile about 600 tons are received daily and loaded by steam shovel into railroad cars. About 75,000 tons of coal could be stored on the plot.

Discrediting the Consulting Economist in Wage Controversies—I

Theories and Statistical Compilations of the Wily Mr. Lauck Nullified by False Deductions and Manipulation in the Effort to Bring About Prearranged Results—Records Culled to Prove Contentions

ONE of the most salutary results of the investigations of the President's Anthracite Commission was the discrediting of the so-called "consulting economist," as represented in the person of W. Jett Lauck, who served in that capacity for the United Mine Workers of America in the presentation of their case and arguments before the commission. Lauck had appeared in a similar capacity in other labor controversies, notably in the arbitration of the street-railway strike in Boston, in the matter of the railway brotherhoods before the Railway Labor Board, and in the interest of the bituminous coal miners before the Bituminous Coal Commission. In these hearings, as in the case before the Anthracite Commission, he presented a large amount of printed matter in support of his theory that wage adjustments should be based primarily upon family budgets and what he is pleased to call a "living wage."

Operator's Statisticians Figure Too

It does not appear that the tribunals before which these cases were heard or the opposing parties in the controversies undertook to question the soundness of Lauck's theories or the statistical compilations which he submitted in support of them. It was left to the members of the committee of anthracite operators who opposed Mr. Lauck before the Anthracite Commission and who themselves are no tyros in the realm of statistics and economics to meet and set at naught the entire case which, at great expense to the miners, he had prepared for them.

In making his carefully-prepared attack Mr. Lauck has all the confidence and assurance of one who feels he has his adversary completely at his mercy, but when all of the permissible exhibits had been presented and they had been subjected to the critical analysis of the operators' representatives, and Mr. Lauck himself had been subjected to the fire of cross-examination conducted by S. D. Warriner, his assurance began to give way. It must be admitted that Mr. Lauck did not capitulate willingly or all at once. He is clever, if cleverness consists in shifty and indirect answers to direct questions, but in the end the main exhibits on which the miners' case had been largely built up were by Mr. Lauck's own admissions thoroughly discredited. The "consulting economist," who had received thousands of dollars' worth of free advertising in the daily papers, thanks to a highly organized and efficient publicity department maintained by the Bureau of Applied Economics, was shown to be not an economist at all but a mere juggler of figures who, given the desired answer, would manipulate the figures to get the result.

One of the elaborately prepared statements submitted as Exhibit No. 3 attempted to show that employment in the anthracite mines was more irregular than in the bituminous field, though in order to arrive at this conclusion it was necessary to carry the statistics of labor employment in the anthracite mines back to 1881, a period of forty years, whereas comparison with bituminous mines could be made for only thirty years. Moreover, even then comparison was made with the bituminous mines of Pennsylvania only, not with those of the United States as a whole, and particularly not with the Central Competitive Field, which has suffered more than any other part of the country from irregularity of employment and from enforced idleness.

Made Carefully-Selected Comparisons

It was plainly evident to a man "with half an eye" that statistics of employment in the Pennsylvania bituminous mines were taken for comparison because, owing to the markets in the Northwest, in Canada, in New England, and at the Atlantic seaboard, coupled with the greater number of local outlets for the product in the iron and steel mills of Pittsburgh and Johnstown and the other industries of the State, steadier employment is obtainable in the bituminous coal mines of Pennsylvania than in other sections of the country, and particularly in the Central Competitive Field, which was the storm center in the latter part of 1919. The house of cards built by Mr. Lauck on the foundation of the bituminous mines of Pennsylvania alone, however, crumbled before the evidence submitted by the operators, which showed that for the last twenty years there had been a steady improvement in the regularity of operation and in the opportunity for employment in the anthracite mines and and that the anthracite workers had now, and would continue, to have, advantage not only over the Central Competitive Field and the United States as a whole but over the Pennsylvania bituminous field, which Lauck had selected as his base of comparison. The reasons assigned by Mr. Lauck for using the Pennsylvania bituminous fields for the purpose of comparison were so palpably insincere that the members of the commission might have been justified in resenting it as a reflection upon their intelligence.

Exhibit No. 4 Revealed as a Double Deal

Another of the "fakes" which Mr. Lauck attempted to perpetrate on the commission was contained in a pamphlet introduced as Exhibit No. 4, which purported to show that wage earners in the anthracite region were more poorly paid than their fellow workers in the bituminous mines. In the preparation of the evidence in support of this contention, however, Mr. Lauck, unfortunately for him and for his clients, used two different methods of computation, one for the anthracite mine workers and the other for the bituminous. This was a fatal mistake, for it was readily discovered, and it was shown that had either method been applied alike to both industries it would have revealed that the employees in the anthracite mines were substantially better paid

than were those in the bituminous mines. By employing two different methods of computation in order to obtain the desired results the "consulting economist" figured that the average yearly earnings of the workers in the Pennsylvania bituminous mines in 1919 amounted to $1,337 and that those of the anthracite workers amounted to $1,126, and to accomplish this result he was compelled to consider that the miners put in full working time during the six weeks of November and December when they were out on strike.

Mr. Lauck's Weirdest Abracadabra

Had he used the same method in computing the bituminous earnings as he used in computing the anthracite earnings the results would have shown $980 as the average for the bituminous miners, instead of $1,337, the faked result, giving an advantage of $357, or 36 per cent. Had the same method been applied in computing the anthracite earnings as was applied to bituminous it would have been shown that the anthracite mine workers averaged $1,501 instead of $1,126. The actual average earnings of anthracite-mine workers, as shown by the certified statements taken from the payrolls, were $1,509.

Probably the most flagrant attempt at deception in the way of statistical presentation, however, was that contained in a pamphlet submitted as Exhibit No. 12, which purported to demonstrate that since 1915 the earnings of the anthracite-mine workers had progressively decreased as compared with the cost of living, and that they were worse off in 1919 and at the present time than they were in 1914. In the introduction to Exhibit No. 3, which has already been discussed, Mr. Lauck asserted the axiomatic truth that "in the coal mining industry the degree of regularity of operation is today as important a factor as is the level of hourly rates. . . . The health of the family depends upon annual earnings, which are the product of the hourly rate by the number of hours of actual employment." As practically all of the coal, either anthracite or bituminous, produced in the United States is mined on the contract basis, Mr. Lauck might preferably have used the term "unit rates" instead of "hourly rates"; but the same principle applies.

Uncertain Memory Adds Complications

Mr. Lauck, however, evidently forgot in preparing his Exhibit No. 12 that he had subscribed to this principle in another exhibit, for in making his computations of earnings to compare with the increasing cost of living he limited his calculations to a consideration only of the unit rate, and omitted entirely the equally "important factor in earnings," regularity of employment. The main interest in the exhibit centered on a chart which purported to show that with 1914 as the basis equalling 100, the index number of the cost of living in 1919 was approximately 190 while that of the contract miner's earnings based on the rate alone was a little less than 150. The falsity of this presentation was promptly and effectively exposed by the other side, in superposing upon the same chart the actual earnings not only of the contract miners but of all anthracite-mine workers. This addition to the chart showed that the highest index number for the cost of living in 1918 was 170, while the earnings of the contract miners was 193 and that of all employees was 220, while in 1919, with the index number of cost of living at 189, that of contract miners was 211 and all employees 234. (See *Coal Age*, Aug. 12, page 354.)

Half truths are ever more to be condemned than direct misstatement, and yet Mr. Lauck in the preparation of this exhibit reproduced from a Government report a table showing the increases of rates in the anthracite region for a series of years but omitted to reproduce a companion table giving similar information in regard to the bituminous region. It is true that in this exhibit Mr. Lauck was discussing anthracite earnings as compared with the cost of living, not with earnings in the bituminous fields, but it is worthy of note that when he was making comparisons between anthracite and bituminous earnings in other exhibits this table managed to escape his notice. Had it been used the whole fabric of his structure of comparisons of earnings in the two industries would have fallen to the ground. In fact every exhibit prepared and submitted by Mr. Lauck on behalf of the mine workers which purported to show the earnings of the anthracite mine workers, whether by unit, by the week, by the month, or by the year, whether in comparison with the earnings of bituminous coal miners, of wage earners in other industries, or in comparison with the cost of living, was shown conclusively to have been predicated on false premises, calculated by faulty methods and to have produced incorrect and contradictory results.

Did His Best Lacking a Basis of Fact

Although Mr. Lauck had confidently asserted, in the presentation of his exhibits, that they were the results of careful studies and that the deductions to be drawn from them were trustworthy, he subsequently admitted that the statistics were fragmentary, the best that the Bureau of Applied Economics should obtain with the funds and facilitates at its command, that the exhibits were neither statistically nor mathematically correct, and that the earnings computed were purely hypothetical. He admitted, further, that such figures as were presented were only supposed to be indicative and that the operators had the real facts. The most damaging admission the "consulting economist" was compelled to make, however, was that the title to one pamphlet, introduced as Exhibit No. 5, was not intended to indicate the contents. "That is simply a title," said Mr. Lauck when confronted with the accusation that the tables and text did not show what the title called for, namely "Average Full-Time Weekly Earnings in the Anthracite-Coal Mines of Pennsylvania." At another time, in order to justify himself for using a certain disputed factor in making determinations as to anthracite earnings in 1919, he asserted that the source of his information was confidential. This statement was nothing less than a deliberate perversion of fact. There was nothing confidential about the authority for the figures, and Mr. Lauck knew it, for the official correspondence correcting the error in the disputed factor had been submitted to him. As the correction, however, vitiated practically every statistical exhibit the "consulting economist" had presented, it seemed necessary for him to hide behind this somewhat questionable defence.

Finally, when by cross-examination of Mr. Lauck and through the replies to his exhibits which the operators submitted the unreliability of his entire presentation had been conclusively demonstrated, he asserted that he really placed no confidence in the figures themselves, but what he and the miners' representatives wanted was a minimum wage of $6 a day for common labor and that present differentials for positions requiring greater skill and experience be maintained. The fact that such a

wage schedule would add not less than $2.40 a ton to the cost of producing the domestic sizes of anthracite, and that over $100,000,000 would be added to the payrolls did not ruffle the smug composure of Mr. Lauck. Nor was he the least discomfited by the fact that employees of the Federal Government had appealed to Congress asking that $3 a day be established as the minimum wage.

Six dollars a day was the least that the common laborer in the anthracite region could possibly live on. That was evidently the amount he had been retained to secure, and he was not going to ask, for conscience sake, any questions as to the methods employed in obtaining the result. It is worthy of note that the only exception taken to the operators' exhibits controverting Mr. Lauck's statements was that their compilations of earnings by the anthracite-mine workers should be verified through examination of the books by the commission's properly designated accountants, a demand that was at once acceded to by the operators. The cross-examination by Mr. Lauck of Mr. Warriner, who presented the operators' case, was limited to the operators' formal reply to the opening statement of the miners. This was confined entirely to a brief history of the case leading up to the appointment of the commission and the operators' responses to the eighteen original demands. No attempt was made to discredit any of the other exhibits presented on behalf of the operators, and Mr. Lauck did not even attempt to answer them in the closing argument which he prepared for Mr. Murray to read. The "consulting economist" as an advocate of the living wage and as a distributor of misinformation will be considered in another article.

Movement of Coal and Coke by Fourteen Leading Railroads During April 1919 and 1920

Classes and Railroads	Originating on Line 1919	Originating on Line 1920	Received from Connections 1919	Received from Connections 1920	Total 1919	Total 1920
For Revenue Only						
Anthracite	Short Tons	Short Tons	Short Tons	Short Tons	Short Tons	Short Tons
Baltimore & Ohio			136,113	147,366	136,113	147,366
Buffalo, Rochester & Pittsburgh			11,309	18,092	11,309	18,092
Buffalo & Susquehanna			90	133	90	133
Chesapeake & Ohio	197	1,802	1,905	130	2,102	1,932
Erie	600,352	387,240	183,632	143,922	783,684	531,162
Pittsburg, Shawmut & Northern			1,733	964	1,733	964
Virginian	19	3		50	19	53
Western Maryland			26,764	21,405	26,764	21,405
Totals	600,868	389,045	360,946	332,032	961,814	721,107
Bituminous						
Baltimore & Ohio	2,193,946	2,546,690	581,307	991,905	2,775,253	3,538,595
Buffalo, Rochester & Pittsburgh	293,753	760,358	19,983	26,045	313,736	786,403
Buffalo & Susquehanna	83,525	156,598	332		83,857	156,598
Chesapeake & Ohio	1,586,039	1,967,823	156,784	181,585	1,742,823	2,149,408
Erie	20,998	29,664	458,558	711,238	479,556	740,902
Huntingdon & Broad Top Mountain	48,584	59,201	290	15,509	48,874	74,710
New York Central (Buffalo and East)	466,466	811,214			466,466	811,214
Norfolk & Western	1,575,965	1,295,631	186,120	202,809	1,762,085	1,498,440
Pittsburgh & Lake Erie	425,561	155,822	457,911	224,565	884,472	380,087
Pittsburg & Shawmut	138,428	194,584			138,428	194,584
Pittsburg, Shawmut & Northern	27,718	58,131	26,274	13,442	53,992	71,573
Virginian	253,748	507,457	21,983	51,507	281,731	558,964
Western Maryland	225,018	404,050	449,747	420,896	674,765	824,946
Totals	7,343,749	8,947,223	2,362,289	2,839,201	9,708,038	11,786,424
For Company Fuel						
Anthracite						
Baltimore & Ohio			171	355	171	355
Buffalo, Rochester & Pittsburgh				238		238
Erie	15,069	10,749		305	15,069	11,054
Totals	15,069	10,749	171	898	15,240	11,647
Bituminous						
Baltimore & Ohio	430,689	277,458	23,227	2,353	453,916	279,811
Buffalo, Rochester & Pittsburgh	40,980	56,878		57	40,980	56,935
Buffalo & Susquehanna	2,426	8,442			2,426	8,442
Chesapeake & Ohio	140,357	187,086			140,357	187,086
Erie	127,829	113,980	91,800	167,543	219,629	281,523
Huntingdon & Broad Top Mountain	1,286	2,125			1,286	2,125
New York Central (Buffalo and East)	138,071	138,806			138,071	138,806
Norfolk & Western	163,934	205,055	35,625	48,855	199,559	253,910
Pittsburgh & Lake Erie	19,940	7,980	25,059	12,030	44,999	20,010
Pittsburg & Shawmut	2,569	3,325			2,569	3,325
Pittsburg, Shawmut & Northern	3,656	4,806			3,656	4,806
Virginian	20,144	38,115	99	491	20,243	38,606
Western Maryland	33,651	46,389	4,088	5,073	37,739	51,462
Totals	1,125,532	1,090,445	179,898	236,402	1,305,430	1,326,847
Coke (in Terms of Coal)						
Baltimore & Ohio	71,165	114,896	44,597	71,272	115,762	186,168
Buffalo, Rochester & Pittsburgh	18,177	17,920	11,923	25,227	30,100	43,147
Buffalo & Susquehanna	3,431	22,832			23,431	22,832
Chesapeake & Ohio	30,689	49,278	616	6,866	31,305	56,144
Erie	4,175	8,153	15,577	35,370	19,750	43,523
Huntingdon & Broad Top Mountain	7,797	5,340		1,672	7,797	7,012
Norfolk & Western	3,793	94,918	2,886	12,125	83,679	107,043
Pittsburgh & Lake Erie	24,163	9,396	334,935	151,579	359,101	160,975
Western Maryland	3,416	4,819	29,574	10,352	32,990	15,171
Totals	203,807	327,552	440,108	314,463	703,915	642,015

NOTE — No report was received from the Pennsylvania R.R.

Discussion by Readers

Edited by
James T. Beard

Get Acquainted with Your Men If You Would Succeed

SUCCESS is the ultimate desire of every boss, but few accomplish what they set out to attain owing to a wrong conception of what is essential to success in the management of men. I was impressed with the idea suggested in the letter of C. W. Atkins, *Coal Age*, July 15, p. 135, that mutual confidence is the key to successful operation.

In the past the spirit and attitude of the boss toward the workmen in his charge have been in the majority of cases, an indifference that not infrequently developed in him an antagonism, as though there was nothing in common between them. The changes taking place in society have been so rapid in recent years that one feels that the average foreman or superintendent has not been able to keep up with the procession.

Formerly the boss in a mine was the whole thing. Regardless of his personality, he was respected and obeyed by reason of his position and authority. It is not so today. Unless a boss is a person of some character, he fails to command the respect of the men in his charge and has little influence over them, beyond the authority that attaches to his office.

Genial Personality of a Manager Wins Favor on Every Hand

An instance comes to my mind, in this connection, regarding the powerful influence of a young man who was appointed manager of a large colliery. His coming into the district was the cause of a change in the spirit of the entire region. He was a likeable fellow, his personality shone in his face and spoke in his every act, so that men were drawn towards him as particles of iron are attracted to a magnet.

When this man came to take charge he brought no one with him but his family; he had no cousins, uncles or brothers-in-law; and no changes were made in the working force by reason of his coming. Indeed, many were not aware that a new man had taken charge of the operations at the mine.

His spirit spread to the neighboring mines. He boosted the operators and was welcomed by them when he visited their places to learn their methods and exchange experiences. It was not long before there was a complete understanding throughout the district regarding scales and the general procedure of business.

At his own mines, this new manager came to know every man above and below ground. He called them familiarly by name and showed a particular willingness to listen to any grievances they might have, whether real or imagined. This was quite a change from the conditions that had existed under the previous manager, who knew most of the men by their number only, just as a convict is known.

It will cause no surprise that this frank habit of "getting acquainted" with his men quickly developed a responsive feeling among them for the new manager. It became the desire of everyone to deal fairly and justly with the company. There was hardly a man that would not rather leave the operation than be guilty of an underhand trick on the manager.

To express it in a few words, the drawing card in this man's personality was his easy manner of getting acquainted with his men. Everyone stood on an equal footing before him. There was no partiality and few thought of him as a manager; but everyone regarded him as a friend. *Getting acquainted* was the key to his success.

G. E. Daugherty.

Pikeville, Ky.

Congeniality Wins

ALTHOUGH my experience has not been similar to that described in the letter of John E. Ambrose, *Coal Age*, July 15, p. 134, I quite agree with him that promotion often goes where it has not been earned. It must be admitted that mistakes are frequently made in selecting the right man for a place. However, we must assume that the intention of the one making the selection is generally to get results, and that is where a person is often misunderstood and his motive criticized.

The most important matter in building up an organization of any kind is to produce harmony throughout the rank and file of the workers. This is, indeed, absolutely necessary if success is to crown the undertaking. The fellow of easy approach, congenial disposition and possessing the knack of getting along with people will generally be selected before a more able and experienced man, but who is differently constituted. In fact, a congenial fellow cannot be kept down; he will rise in spite of obstacles in his path.

Change Wrought in a Foreman

Several instances that furnish good illustrations of this truth come to my mind, but I will cite but one of these. While employed as an assistant boss and working under a very ambitious foreman, who was a real worker, coming early and staying late, I had a good opportunity of studying this particular phase in the promotion of men.

As just stated my friend, the foreman, was a hard worker, but he had the failing that he could not get along with anyone, particularly his superiors in office. He would curl up like an onion peel on a hot griddle whenever things did not turn out to suit him; or when he was given orders different from his own idea of what should be done. At such times he was anything but courteous to his superintendent and the other officials.

In time it happened that the superintendent was promoted to the position of general superintendent and later made manager. A new man was brought into the company and appointed superintendent, which naturally soured my good friend, the foreman, who thought he should have received the appointment as superintendent. However, he soon forgot his troubles and settled down to working as hard as ever.

His meditation undoubtedly gave him a different viewpoint, and it was now noticeable that he was daily becoming more agreeable, though the training caused him effort. By perseverance, which was a feature of his makeup, he became congenial and respectful of the opinions of others.

The sequel to this story is that, in a few years, this man rose to the position of general manager, in another division of the company. The congeniality of disposition that he adopted was the stepping stone by which he emerged from his former self.

It goes without saying that congeniality of disposition will overcome many obstacles in one's path for promotion. While I do not favor the idea of a company going outside of its organization to fill an important position, that cannot always be avoided if results are to be attained.

SUPERINTENDENT.

————, Ky.

What Constitutes a Skilled Practical Miner?

FROM the beginning of time, skill has been the only milestone in the recording of man's progress. There has always been a natural division of labor into two classes designated as "skilled" and "unskilled labor." Much has been written and many opinions expressed; but, in the coal-mining industry, the question of what constitutes skilled labor is still an open one that has yet to be clearly defined.

In our study and observation of nature, we often wonder at the universal harmony and perfect interlocking of the infinite variety of its parts, throughout the entire domain of earth and sky. In strong contrast with this harmony is the continual divergence of thought and opinion among men—man being the noblest work of God. Never was this lack of harmony more in evidence than now in the present unrest in the industrial world.

In attempting to answer the question of what constitutes a skilled practical coal miner, our thoughts go back to the days when the miner did not have the aid of modern machinery to assist him in his work. In mining the coal, his success depended on a close study of its nature and texture or hardness. He was familiar with the clevages and cleats or joints of the coal and other characteristics, which enabled him to take the best advantage of these in prosecuting his work.

Improved Methods Have Supplanted the Knowledge and Skill of Miners

A man's knowledge of these conditions and his skill in applying that knowledge then marked him as a practical miner; but, today, the question of what constitutes skill in coal mining is a debatable one. There are thousands of men now employed in our mines whose only practical skill lies in their use of a shovel to load the coal, but who lack the knowledge of the conditions just mentioned that would render their work more skillful. In spite of this fact such men are pronounced by our mining laws to be qualified miners.

It would seem that it is no longer necessary to draw a hard-and-fast line between skilled and unskilled miners. Each year sees the adoption of improved methods of operation, by which the efforts and efficiency of mine workers are handled largely through the office of the mine superintendent; and, today, the success of the operation hinges very largely on the practical experience and judgment displayed in that office.

This is not to say that there are no practical and experienced men still working in the mines, or that any large number of these cannot be classed as skilled miners. It only emphasizes the fact that there is, at present, a prevailing tendency to classify all mine workers on an equal basis. As a result, the man who knows the conditions and can intelligently perform his work has the same rating as the common laborer who hardly knows a piece of coal from a chunk of slate. In this indiscriminate manner all mine workers are classed as coal miners.

Coal Mining Today and Yesterday

The mining of coal today is a vastly different proposition from what it was in former years when men went to work with a conscious need of using their best thoughts and efforts to lighten their toil and increase the result of their labor. Now, the greatest skill of the miner is shown in his ability to protect himself from the increasing dangers of his occupation, while at the same time producing his share of the coal. Judging from the numerous and frequent accidents that occur in our mines, this skill is sadly wanting in a majority of mine workers.

Carelessness has been considered a great source of mine accidents; but we must regard as of equal importance the lack of proper skill on the part of the worker. Without this skill a man is unfit to be employed in the mine, or to work where there is much danger. This might, however, discriminate against a large class of workers who fail to have the same high regard for either their own safety or that of others. It will be interesting to learn the views of many as to what constitutes a skilled practical miner, today.

Staunton, Ill. W. M. CHAMBERS.

Old and Tried Men Get the Best Places

OFTEN it happens that, as suggested in the inquiry that appeared in *Coal Age*, July 29, p. 239, much dissatisfaction is aroused among miners in respect to the places given to them. In other words, a satisfactory distribution of men in a mine is frequently a difficult problem for the mine foreman to solve.

Perhaps my experience will interest some readers. Our proposition concerns the operation of two mines. In one of these the coal is low and hard and the mine is leased on the basis of a yearly minimum royalty. The other mine, which is owned outright by the company, is working a higher and softer coal.

It is my custom, always, to put a new man in the low coal and, should I need more men in the other mine, they are taken from the low coal and put to work in the higher coal. When transferring a man in this manner, however, I insist that he shall finish his place in the low coal first.

Again, I have men who would rather work alone and I give these the choice of doing so in the low coal or working with a butty if they are given a place in the high coal. I have proved that this method helps to hold men who are working the higher coal, as they realize that if they should leave and ever want to come back, it is low coal for them.

Also, I try to keep my best men in good places, but that is not difficult, as a good miner seldom desires to give up a good place. In respect to haulage, which is another item for consideration, I try to bunch my men so as to provide a full trip regularly in each section of

the mine. Of course, this cannot always be done, as it is well known a foreman cannot have everything he wants. If that was the case there would be no growling.

Karthaus, Pa. G. H. LEWIS.

Pass on a Good Idea

AFTER reading the response by "Mac," *Coal Age*, July 22, p. 178, which was drawn out by my previous letter, I may be permitted a further word.

It has always seemed to me that the readers of *Coal Age*, at least a large majority of them, enter into the discussion of these matters that are of interest to all with no desire for what I would term "destructive criticism." On the other hand, their purpose seems to be to gain further information on some special point by drawing out the views of others. Almost invariably, the replies to letters are made with this idea in mind and the discussion becomes a help instead of a hindrance to a brother mining man.

An old and true saying asserts that, Experience gained at the cost of labor and study is valuable. In line with this thought, I would add that the man who has mastered any difficult problem can be a great help to a brother who is up against a similar problem, if he will pass on to others his experience and the knowledge he has gained.

Exchange of Experiences Among Practical Men Is Always a Benefit

There is no question but that the handing around of these experiences is a mutual benefit and is always appreciated by those who are face to face with hard problems. Expense, labor and time are thus saved and progress is made in the prosecution of the work in hand. I trust and believe that it was in this way my previous remarks were regarded by Mac. I fully agree with his idea that there are many instances where good cap-pieces, 12 to 18 in. long are much to be preferred to securing the roof over airways and traveling roads with double timber in the form of booms supported on legs.

In post timbering, particularly at the working face, the best results are always attained when the posts are staggered. That, however, is not practicable on an air-course or traveling road where the posts must be set in line in order to afford a straight passageway free from obstructions of timber. This is particularly desirable should it become necessary to use such passageways, in case of an accident. ANDREW O. BAIN.

McKeesport, Pa.

Indefinite Mining Laws

REFERRING to the argument mentioned in the inquiry regarding the use of open lights on the return air from places generating gas, *Coal Age*, July 15, p. 136, let me say that the section of the Pennsylvania law quoted (Art. 10, Sec. 3) is a typical example of the indefiniteness, not to say meaningless expressions, often found in the laws controlling the mining of coal in different states.

Notwithstanding this aspect of the law and the evident need of revision, it stands to reason that open lights should be prohibited by the fireboss in charge of the section of the mine referred to in this inquiry, where five rooms are described as turned off the return airway on a pair of headings generating considerable gas at the faces of the headings. It is clear that this gas will sweep the working faces of the five rooms where it is liable to be ignited by the open lamps of the men working there.

Let me suggest here that if the circulation was so arranged that this pair of headings would be on the last of the air, or better on a split by themselves, the use of open lights might be permitted in those rooms. But, even then, there would always be the possibility of a serious accident resulting in the rooms and possibly affecting the entire mine.

Mining Laws Though Faulty Must Be Obeyed If Discipline Is to Be Maintained

While it is readily admitted that our mining laws are not perfect but are faulty in many respects, it is our duty to see that they are not violated, as far as this is reasonable and practicable. It is the only way to insure a reduction of accidents in the mines. Where a section of the law appears indefinite or its meaning is uncertain, it is a good plan to appeal to *Coal Age* and its practical readers, as was done in this instance, to get their views and opinions. I agree with the conclusion expressed in the reply to this inquiry that open lights are prohibited in these five rooms, in the meaning of the law.

However, a foreman will use his judgment, at times, and take advantage of the uncertain meaning of a section of the law. It has occurred in my own experience that a pair of headings that were being driven would generate sufficient gas to require the use of a safety lamp when examining the condition at the face, after firing a blast, or on the occasior of a temporary disarrangement of the circulation. Perhaps, the brattice would be broken down or a canvas tucked to one side, which permitted the short-circuiting of the air. Such a condition would not, in my judgment, require the continuous use of safety lamps, but a good foreman will take every precaution to avoid accident.

Practice of Blasting with Black Powder Still Prevails in the Anthracite Mines

When working the bottom Dunmore vein in what is now called the "new shaft" at Olyphant, Pa., it may seem strange to say that, while everyone was given a safety lamp, most of the blasting was done with black powder and squibs. The pratice is not yet prohibited by the Anthracite Mine Law. Every miner knows that a flash of fire always follows an explosion of black powder, and I want to ask what is the difference between permitting such a practice of blasting coal in a gaseous mine and the use of open lights in a current charged with gas.

Many of the mining laws of the different states were enacted several years ago and since that time great progress has been made in introducing into the mines improved methods and modern equipment. Yet, our mining laws, as in the beginning, are now and, shall we say, ever shall be. Can we not make an effort toward their improvement. Some of the amendments that have been made recall the story told of the village school teacher who wrote: "The cat was seen to run" instead of "The black cat was seen to run." When her attention was called to this omission, she explained that the color of the cat was not of importance but the fact that she was seen to *run*. Let us strive for amendments that amend when revising our laws to increase safety in the mine.

Plains, Pa. RICHARD BOWEN.

Inquiries of General Interest

Answered by

James T. Beard

Theoretical Head of Air Due to Fan

REFERRING to the inquiry in regard to the pressure resulting from the action of a centrifugal fan, *Coal Age*, July 15, p. 136, I am interested to know what is the correct expression for the head-of-air column due to a fan having a tip speed (u), measured in feet per second.

In the reply given to the inquiry, there appears the usual formula $h = u^2 g$, which means that the head-of-air column due to the fan is twice the theoretical head due to the velocity of the blade tips. Though it is stated in the text that this head is "one-half the head due to the velocity of the blade tips of the fan," that is evidently a misstatement.

While the theoretical head due to a fan, as first given by Murgue, corresponds to that given in *Coal Age*, I observe that the B. F. Sturtevant Co., in their book entitled "Mechanical Draft," p. 201, use the value for the theoretical head due to the velocity of the air, which is one-half that given by Murgue and commonly used. It would be interesting to know which of these values is correct.

L. G. JENKINS.

Jeddo, Pa.

The velocity of air, water, or any fluid medium, produced by a given head of the same medium, is determined by the well known formula $v = \sqrt{2\ g\ h}$, which gives by transposition the expression for the head corresponding to a given velocity, $h = v^2/2g$, the head being expressed in feet and the velocity and force of gravity in feet per second. The flow in this case is opposed by no resistance.

But, since action and reaction are equal, it is evident that a flow taking place against a resistance will develop twice the pressure; or, more correctly speaking, will require twice the head to produce the same velocity, which is the condition pertaining to the action of a fan.

The Sturtevant authority states, page 200, "If . . . the fan be allowed to discharge the air through a short and properly shaped outlet, the pressure necessarily will, with an efficient fan, be substantially that required to produce the velocity." This, however, does not represent the condition in fan practice where the flow of the air is opposed by the resistance of the mine. The mine resistance increases the pressure and the pressure head an amount that approaches twice the head due to the velocity of the flowing air. The greater the efficiency of the fan, the nearer this head approaches *twice* that due to the velocity.

Bearing these facts in mind, it is clear that the expression of Murgue is the true base for estimating the efficiency of the fan in practice, expressing as it does the flow against a resistance. For example, in general mining practice, a fan having a tip speed of 6,000 ft. per min. (100 ft. per sec.) when circulating air against a properly proportioned potential will develop a 3¾-in. water gage in the fan drift. The theoretical water gage due to this tip speed, assuming the density of the air is 0.0766 lb. per cu.ft., is calculated thus:

$$w.\ g. = \frac{w}{5.2}\left(\frac{v^2}{g}\right) = \frac{0.0766}{5.2}\left(\frac{100^2}{32.16}\right) = 4.58\ in.$$

The efficiency of this fan is, therefore, (3.75/4.58) 100 = 82 per cent, nearly. It is clear that had the efficiency been based on the theoretical head due to the velocity of the air, the result would be twice this amount or, say 162 per cent, which would be absurd. Therefore, the theoretical head due to the action of the fan is *twice* that due to the velocity of its blade tips.

Weights and Measures of Ohio Coal

WILL *Coal Age* kindly give me some information on the following questions pertaining to the cubical contents of Ohio coal before and after it is mined:

1. What is the average weight or specific gravity of Ohio coal in No. 6 and No. 8 seams? 2. What is the legal weight of a bushel of coal in Ohio; and how many bushels in a short ton (2,000 lb.)? 3. What is a fair estimate of the cubic contents of loose coal broken to any size? 4. How many short tons of this coal will fill a bin 12 x 12 x 15 ft.? 5. What is the estimated tonnage of coal underlying an acre, for each inch or foot in the thickness of the seam? 6. How many cubic inches in the standard bushel used in measuring coal? I shall much apreciate reliable information on these points.

Steubenville, Ohio. Sales Manager.

In reply to the foregoing questions, we offer the following:

1. The average specific gravity of Ohio coal, No. 6 and No. 8 seams, may be taken with close approximation as 1.3, which makes the weight of one cubic foot of this coal in place 62.5 × 1.3 = 81.5 lb.

2. The legal weight of a bushel of coal in Ohio is 80 lb., which gives 2,000 ÷ 80 = 25 bushels per short ton.

3. A fair estimation of the cubic contents of loose coal, mine run, is to allow 40 cu.ft. per short ton, for bituminous coal; or 40 cu.ft. per long ton (2,240 lb.) for anthracite coal. The size to which the coal is broken slightly modifies this estimate, the smaller sizes being somewhat heavier than the larger sizes. For example, broken coal that passes over a 3-in. screen and through 6-in. bars, will average 41.5 cu.ft. per ton; while chestnut grade, passing over a ¾-in. mesh and through a 1¾-in mesh, will average 39 cu.ft. per ton.

4. The cubic contents of a 12 x 12 x 15-ft. bin is 2,160 cu.ft. This bin would hold, approximately, 2,160 ÷ 40 = 54 tons of mine run coal; or, say 52 tons of broken coal; or 55⅜ tons of chestnut grade.

5. The Ohio coal should average 1,800 short tons per foot-acre; or 150 tons, per inch-acre; there being 43,560 sq.ft. in an acre. This estimate assumes a fairly level seam. For an inclined seam, divide these estimated amounts by the cosine of the angle of inclination of the seam.

6. The capacity of a standard bushel, in the United States, is 2,150.4 cu.in., which is known as the "Winchester bushel."

Examination Questions

Answered by

James T. Beard

Mine Foremen's Examination Held at Pittsburg, Kan., July 17, 1920

(Selected Questions)

Ques.—What is the purpose of stoppings and what materials would you use in their construction in mines?

Ans.—The purpose of a stopping, built between the intake and return in a pair of headings, is to conduct the air from the face of the heading and prevent the current from being short-circuited at the breakthrough or crosscut closed by the stopping. Stoppings are also used to seal off abandoned places.

A cheaper form of stopping is made by building a double wall of slate in the opening and filling the space between the two walls with dust or dirt from the road and other refuse. Permanent stoppings should be built of brick laid in cement, or made of concrete. While these are more expensive to build they will generally be found cheaper in the end.

Ques.—We have an air current of 84,615 cu.ft. per min. entering the mine, under a 2-in. water gage. What is the horsepower on the air?

Ans.—The horsepower on the air, in this case, is $(84{,}615 \times 2 \times 5.2) \div 33{,}000 = 26.67$ hp.

Ques.—What kind of haulage would you recommend to replace animal haulage where the mine has been extensively developed and why?

Ans.—The form of mechanical haulage to adopt to replace animal haulage will depend on the equipment of the mine. Where a mine is equipped with compressed air the use of compressed-air locomotives will generally be preferred. On the other hand, if a mine is electrically equipped electric locomotives will mostly be chosen. Locomotive haulage is preferable where the seam is fairly level or the grades are not steep. In an inclined seam or where there are numerous sharp grades, some form of rope haulage will often be better adapted. Engine plane haulage is best adapted to hauling up a steel slope.

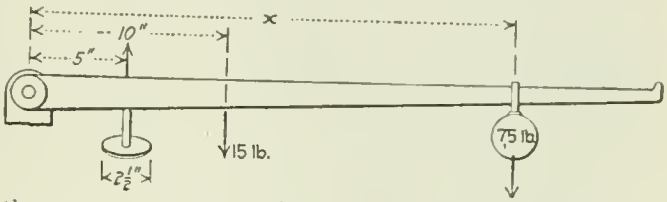
Ques.—State fully how you would proceed if an explosion occurred in a mine of which you had charge and the fan was totally destroyed, and there were men to be rescued.

Ans.—There should always be kept on hand at a mine two or more sets of a good type of breathing apparatus, and a properly trained rescue corps should be available. Without such apparatus it would be highly dangerous to enter the mine after an explosion unless some means of restoring the circulation could be employed. In a shaft mine it may be possible to hang a firebasket in the air shaft provided the mine is not generating gas. No attempt should be made to enter the mine or advance ahead of the air unless breathing apparatus is worn. The rescuers should be in charge of a competent leader who is fully acquainted with the mine.

In the meantime, men should be set to work to repair the damage done to the fan, in a temporary manner, for the purpose of restoring the circulation by that means. Word should be sent to adjoining collieries or districts for aid and physicians should be summoned to be in readiness to give help to any that are succored from the mine or overcome in the attempt at rescue.

Ques.—The distance from the fulcrum of a safety valve to the valve stem is five inches; the diameter of the valve seat is 2½ in. If the weight of the lever is 16 lb. and the distance from the fulcrum to its center of gravity is ten inches, how far should the ball, whose weight is 75 lb., be set from the fulcrum, in order that the valve will blow off at a steam pressure of 90 lb. per sq.in.?

Ans.—Referring to the accompanying figure, showing these several dimensions, and calling the distance from the fulcrum to the center of the ball x, the moment of



the steam pressure acting to lift the valve is equal to the sum of the moments of the weight of the lever and that of the ball, respectively. The sectional area of the valve seat is $0.7854(2\frac{1}{2})^2 = 4.91$ sq.in., nearly. At the moment when the valve should blow off, the boiler pressure being then 90 lb. per sq.in., the total pressure on the valve is $90 \times 4.91 =$ say 442 lb., and the moment of this pressure is $442 \times 5 = 2{,}210$ in.-lb. The moment of the weight of the lever is $15 \times 10 = 150$ in.-lb. Likewise, the moment of the weight of the ball is $75 \times x = 75x$ in.-lb. Therefore,

$$75x + 150 = 2{,}210$$

$$x = \frac{2{,}210 - 150}{75} = 27.46 \text{ in.}$$

Ques.—Give the reasons for putting a cap-piece on a prop and state what should be the size of caps and props to give the best results.

Ans.—Cap-pieces are used on top of posts, in mine timbering, for several purposes. A good cap serves to distribute the pressure over a large area of the roof and gives a better support to a frail roof. A good cap-piece of soft pine yields under the pressure of the roof and binds the top of the post together, thereby preventing the crushing of the timber and increasing the life of the post. Again, the condition of the prop over a post is an indication of the weighting of the roof. Finally, a post can be more readily set when it is wedged in position by a good cap-piece.

The width of the cap should not be less than the diameter of the top of the post and its length from 11 to 18 in. The best results are obtained, in post timbering, when the diameter of the small end of the post, in inches, is equal to its length in feet, which gives to the post an equal resistance to bending and crushing.

Foreign Markets and Export News

Progress in Low-Temperature Carbonization of Coal

Further developments in the low-temperature carbonization of coal are taking place in the United Kingdom, Consul Hamilton C. Claiborne, London, reports, and a number of important industrial concerns have entered into contracts to secure the products of this process. It is understood that three plants are to be operated in the execution of existing contracts, which contemplate the combustion of bituminous coal by low-temperature methods in order to conserve the potentially rich constituents, such as motor spirit or gasoline substitute, fuel oil, sulphate of ammonia, and gas. Among the industries which have recently made agreements to utilize the byproducts of the process are an electric power company, a large municipality, a firm of steel manufacturers, and a general manufacturing firm.

The exponents of low-temperature carbonization estimate that 1,000,000 tons of coal will be consumed annually under existing contracts and that plants for the exploitation of the process will supply, in addition to 7,000 million cubic feet of gas, the products shown in the accompanying table.

It is understood that the process has been patented in this country and abroad. Although it appears that any important industry normally consuming large supplies of bituminous coal may utilize the process, the greatest development in its future exploitation will be through the erection of large plants in the colliery districts, where the constituents can be economically extracted and distributed by private contract or public sale.

PRODUCTS YIELDED BY LOW-TEMPERATURE CARBONIZATION OF COAL

Products	Use	Approximate Output per Annum
		Gallons
Motor spirit	Motor cars, aeroplanes	3,000,000
Fuel oil	Suitable for Navy and ship's fuel	16,000,000
		Tons
Smokeless fuel	Domestic fuel	700,000
Sulphate of ammonia	Fertilizers and high explosives	9,000

Coal Exported by New Zealand During the Year 1919

Coal exported by New Zealand during 1919, according to a report by Consul General Alfred W. Winslow, Auckland, amounted to 138,174 tons, valued at $980,029, compared with 182,603 tons, valued at $1,105,805 in 1918, and 302,908 tons, valued at $1,373,146, in 1914.

Imports of coal in 1919 amounted to 391,434 tons, valued at $1,859,081, compared with 255,332 tons, valued at $984,529, in 1918, and 518,070 tons, valued at $2,718,252 in 1914.

Europe Gets First Shipment of British Columbia Coal

The first British Columbia coal to be shipped to Europe left Vancouver Island on or about July 28. It consisted of 4,500 tons of the product of the Canadian Collieries (D) Ltd., and is being carried by the motor ship Pacific of the Johnson Line to Sweden.

J. M. Savage, general manager of the Canadian Collieries, states that many inquiries are being received from Europe as to the possibility of securing coal from the Pacific Northwest. The present prices there are said to be comparatively low and, as the shortage on the Continent is acute, purchasers are driven to all possible sources of supply. The development of this new trade between British Columbia and Europe will be watched.

Prussian Coal Output Expands

For the first quarter of 1920, according to the *Colliery Guardian*, the output of coal in Prussia amounted to 29,060,157 tons (27,942,385 tons in 1919) from 288 (291) collieries, an increase of 1,117,772 tons. The distribution totalled 28,892,643 tons (27,563,376 tons), an increase of 1,329,267 tons. The number of persons engaged increased from 644,446 to 664,035. The brown coal output, from 330 (305) mines amounted to 20,425,821 tons (17,154,513 tons), an increase of 3,271,308 tons; and the distribution to 20,405,536 tons (17,147,124 tons), an increase of 3,261,412 tons. The number of persons engaged increased by 34,797 to 123,693.

Wages Adjusted in South Wales and Monmouthshire

The Conciliation Board, the *Colliery Guardian* states, has issued joint instructions to the colliery companies of South Wales and Monmouthshire as to payment for overtime and week-end work. Any overtime work from the commencement of the Sunday night shift to the termination of the Saturday morning shift will be after the working of a seven hours' period by underground men and 7¾ hours by surfacemen, and eight hours (including meal-time) for continuous shift men. Payment will be made on the following terms:

Underground: 7 hr. for 1⅓ turns, 5 hr. 15 min. for 1 turn; 3 hr. 56 min. for ¾ turn, 2 hr. 37 min. for ½ turn, 1 hr. 19 min. or under for ¼ turn.

For day wage men other than continuous shift men, such as pumpmen and hitchers, overtime shall be paid in multiples of a quarter of a turn.

Surfacemen (excluding meal-times): 7 hr. 45 min. for 1⅓ turns, 5 hr. 50 min. for 1 turn, 4 hr. 22 min. for ¾ turn, 2 hr. 55 min. for ½ turn, 1 hr. 27 min. for ¼ turn.

Week-end work will be reckoned from the completion of a morning shift on Saturday until the commencement of the night shift on Sunday, and will be paid at the rate of time and a half, or 7¾ hours surfacemen, and 7 hours for underground men. Saturday afternoon shift, previously considered an ordinary shift, will in future be an overtime shift; and where it has been hitherto a qualifying shift for the purpose of the bonus turn, it will continue to be so.

Export Cargo Coal Shipments from United Kingdom Ports

(GROSS TONS)

District	June		First Six Months	
	1919	1920	1919	1920
Bristol channel ports	1,793,104	1,153,589	11,081,798	8,761,594
Northwestern ports	4,836	784	65,471	3,325
North eastern ports	1,098,803	596,348	5,951,972	4,334,127
Humber ports	81,532	4,918	276,155	324,753
Other ports on east coast	13,531	14,964	24,822	64,446
Other English ports	70		182	187
Ports on east coast of Scotland	193,809	146,961	793,443	864,758
Ports on west coast of Scotland	72,817	13,044	369,211	78,343
Grand total	3,342	1,930,608	18,563,054	14,431,533

Bulletin of Coal-Production Costs During May Issued

Federal Trade Commission Report Indicates a Variation of Only 5c. from April in Average Sales Realization, Cost and Margin — Limited Number of Operators Represented Makes Comparisons Unreliable

DETAILED statistics of coal-production costs during May, 1920, issued by the Federal Trade Commission cover returns from 680 operators producing about 20 per cent of the estimated total bituminous coal mined in the seventy-four mining districts of the United States during that month. They are compiled directly from the operators' reports without critical analysis or revision by the commission, making public immediately the best available information.

The summaries published in the May bulletin include cost of labor, cost of supplies and general expense (or overhead) involved in mining the coal, bringing it to the surface, preparing it for market and placing it on railroad cars for shipment. The total of these three costs is the f.o.b. mine cost shown by the commission. All costs and sales realizations shown are based on tons of 2,000 pounds.

Because of the failure of so many of the operators to report their May costs and sales realizations, the commission has some doubt as to the representative character of the figures presented. In some districts the tonnage of reporting operators is a small proportion of the total produced in those districts.

Costs, Realizations and Margins Shown

In Table I are shown for the principal producing regions of the United States the reported costs, sales realizations and margins of the 680 operators from whom complete reports for May, 1920, have thus far been received. With these costs are also shown the costs (revised by the commission), sales realizations and margins of the 2,482 operators from whom reports were received for the entire twelve months of 1918. The 680 operators had a production of 8,011,967 tons of commercial coal during May, 1920, and the 2,482 operators produced 497,416,437 tons of commercial coal during 1918 (an average of 41,451,370 tons monthly).

The average sales realization for the 680 operators was $3.31. By regions the sales realizations ranged from $3.04 per ton in the Central Competitive "Interstate" region, which produced 33 per cent of the total tonnage of the 680 operators, to $3.70 per ton in the Southwestern "Interstate" region, which produced 6 per cent of the total. Next highest in sales realization was the Eastern adjacent region (Central Pennsylvania, West Virginia, Maryland and Virginia), which had a sales realization of $3.63. The average labor cost for the United States was $2.07, and, by regions ranged from $1.91 per ton in the Central Competitive "Interstate" region to $2.78 per ton in the Southwestern "Interstate" region.

The total average for supplies was 31c. and for general expense 39c., thus giving a total f.o.b. mine cost for the 680 operators of $2.77 per ton. Margins ranged from 13c. per ton in the Southwestern "Interstate" region to 91c. per ton in the Eastern adjacent region. The average margin for the 680 operators in all the regions taken together was 54c. per ton. Their total average sales realization, cost, and margin did not vary more than 5c. per ton from the average figures shown for 812 operators in April, which is an important fact if the same relation holds for the non-reporting operators.

While figures are given in Table I for 2,482 operators in 1918, comparisons between these figures and those for the 680 operators reporting in May, 1920, should be made with much caution because of the difference in number of operators covered and difference between revised and reported costs and margins.

Table II shows the sales realizations and reported costs of 491 indentical operators for May, 1920, and the first quarter of 1920, with sales realizations and revised costs of the same operators for the year 1918. To facilitate comparisons of reported and revised costs and changes in margins, the actual amounts or revision found for these operators in 1918 have been shown in connection with the 1918 revised costs. While comparisons in the table are accurate for the 491 operators, it should be borne in mind that this is a relatively small proportion of the total number and may not be representative of the trend in the industry at large.

These 491 operators mined 101,388,478 tons during the year 1918 (averaging 8,449,040 tons monthly); 23,869,697 tons during the first quarter of 1920 (averaging 7,956,566 tons monthly), and 6,638,516 tons during May, 1920. In the first quarter of 1920 they receded 6 per cent from their average 1918 monthly production, and in May produced 21 per cent less than the corresponding month of 1918.

Operators Increase Sales Realization

As compared with the year 1918, the average sales realization of the 491 identical operators in Table II was 19c. higher in the first quarter of 1920 and 71c. higher in May, 1920. Their reported cost, however, was 29c. higher in the first quarter and 66c. higher in May. As a result their average margin, which was 57c. per ton (on the basis of reported costs it was 51c. per ton) in 1918, fell (on the basis of reported costs) to 41c. in the first quarter of 1920, but went up to 56c. (on the same basis) in May.

The absolute amount in dollars of the reported margin of the 491 operators (based on sales tonnage, not production tonnage) was less in May, 1920, by 15 per cent than their average monthly margin in 1918, though it must be considered that the amount of investment may have been appreciably different at the two periods and that the 491 operators may not be the representative of non-reporting operators in respect to margin. Subject to the same caution, the absolute reported margin, in dollars, of 59 of these operators who in the twelve districts reported May margins averaging, by districts, $1 per ton or more, was greater in May, 1920, by $238,154, or 88 per cent, than they reported as their average monthly margin in 1918.

The relative change in the situation between May, 1920, and the first quarter of 1920 is shown in Table III, where figures for 635 operators are given. The table also shows the average number of days worked in May,

TABLE I MAY, 1920, SALES REALIZATION AND REPORTED COSTS OF 680 OPERATORS AND THE YEAR 1918 SALES REALIZATION AND REVISED COSTS OF 2,482 OPERATORS, BY GENERAL COMPETITIVE REGIONS

General Competitive Regions	May, 1920 No. of Operators	Sales Realization per Ton	Reported Costs per Ton: Labor	Supplies	General Expense	Total F.O.B. Mine	Margin per Ton[1]	Year, 1918 No. of Operators	Sales Realization per Ton	Revised Cost per Ton: Labor	Supplies	General Expense	Total F.O.B. Mine	Margin per Ton[1]
Central Competitive "Interstate"[2]	211	$3 04	$1 91	$0 26	$0 33	$2 50	$0 54	765	$2 45	$1 39	$0 [illegible]	[illegible]	[illegible]	$0.55
Eastern Adjacent[3]	188	3 63	1 96	32	44	2 72	91	966	2 81	1 45	.28	.32	2.05	.76
Western Adjacent[4]	42	3 06	2 03	29	35	2 67	39	138	2 75	1 75	26	.26	2.27	.48
Southern Appalachian[5]	77	3 55	2 30	41	43	3 14	41	288	2 81	1 61	29	36	2.26	.55
Southwestern "Interstate"[6]	97	3 70	2 78	34	45	3 57	13	171	3 13	2 15	25	34	2.74	.39
Rocky Mountain[7]	65	3 18	2 09	31	40	2 80	38	154	2 73	1 63	26	.30	2.19	.54
United States	680	$3 31	$2.07	$0.31	$0.39	$2 77	$0 54	2,482	$2 65	$1 49	$0 26	$0 29	$2.04	$0.61

[1] Margin is not the same as profit.
[2] Includes all of Illinois, Indiana, Ohio and the Southwest District of Pennsylvania.
[3] Includes all of Maryland, West Virginia, Virginia and the Central District of Pennsylvania.
[4] Includes all of Michigan, Iowa and District No. 1 of Kentucky.
[5] Includes all of Alabama, Tennessee and Districts Nos. 2, 3 and 4 of Kentucky.
[6] Includes all of Missouri, Kansas, Arkansas, Oklahoma and Texas.
[7] Includes all of Colorado, New Mexico, North Dakota, Montana, Wyoming, Utah, and Washington.

TABLE II SALES REALIZATION AND REPORTED COST PER TON FOR 491 IDENTICAL OPERATORS, BY GENERAL COMPETITIVE REGIONS

General Competitive Regions	Year, 1918: Number of Operators	Average Monthly Production, Tons	Sales Realization	Revised f.o.b. Mine Cost	Margin[1]	Excess of Reported Cost Over Revised Cost	First Quarter, 1920: Average Monthly Production, Tons	Sales Realization	Reported f.o.b. Mine Cost	Margin[1]	Decrease of Production Compared with Monthly Average 1918		Increase of First Quarter, 1920, Reported Cost Over 1918 Reported Cost		May, 1920: Production, Tons	Sales Realization	Reported f.o.b. Mine Cost	Margin[1]	Decrease of Production Compared with Monthly Average in 1918		Increase of May 1920, Reported Cost over 1918 Reported Cost	
Central Competitive "Interstate"	150	3,033,385	$2.38	$1 84	$0.54	$0.03	2,779,933	$2 43	$2 10	$0 33	8%	$0 23	12%	2,116,565	$3 00	$2 46	$0 54	30%	$0 59	32%		
Eastern Adjacent	134	1,969,542	2 67	1 92	75	.09	1,811,077	2 78	2 32	46	8	31	15	1,644,167	3 54	2 71	83	17	70	35		
Western Adjacent	36	545,005	2 53	2 01	.52	03	515,408	2 68	2.30	38	6	26	13	469,920	3 04	2 63	41	14	59	29		
Southern Appalachian	47	516,193	2 66	2 07	59	09	478,689	2.86	2 61	25	7	45	21	463,760	3 63	2 92	71	10	76	35		
Southwestern "Interstate"	71	529,655	3 01	2 65	36	06	512,142	3 41	3 10	31	3	39	14	431,842	3 61	3 52	09	8	81	30		
Rocky Mountain	53	1,855,260	2 50	2 11	48	04	1,859,317	2 98	2 46	52		31	14	1,512,262	3 19	2 80	39	18	65	30		
United States	491	8,449,040	$2 56	$1 99	$0 57	$0 06	7,956,566	$2 75	$2 34	$0 41	6	$0 29	14	6,638,516	$3 27	$2 71	$0 56	21	$0 66	32		

[1] "Margin" is not the same as profit

TABLE III MAY, 1920, SALES REALIZATION AND REPORTED F.O.B. MINE COST FOR 635 IDENTICAL OPERATORS, BY GENERAL COMPETITIVE REGIONS

General Competitive Regions	May, 1920: No. of Operators	Production, Tons	Average Days Worked	Sales Realization	Reported f.o.b. Mine Cost	Margin[1]	First Quarter, 1920: Production, Tons	Average Days Worked	Sales Realization	Reported f.o.b. Mine Cost	Margin[1]	Increase of Reported Cost in May Over That in First Quarter	
Central Competitive "Interstate"	198	2,535,066	15	$3 03	$2 49	$0 54	9,867,564	54	$2 44	$2 12	$0 32	$0.37	17%
Eastern Adjacent	173	1,781,720	16	3 61	2 73	.88	5,853,608	52	2 78	2 34	.44	.39	17
Western Adjacent	39	475,126	17	3 04	2 64	40	1,561,974	55	2 67	2 31	36	.33	14
Southern Appalachian	70	669,908	18	3 56	3 10	46	1,980,806	53	2 83	2 73	10	.37	14
Southwestern "Interstate"	93	520,499	18	3 69	3 56	13	1,814,354	57	3 45	3 15	30	.41	13
Rocky Mountain	62	1,570,960	19	3 18	2 80	38	5,775,240	66	2 97	2 46	51	.34	14
United States	635	7,553,279	17	$3.30	$2 75	$0.55	26,853,645	55	$2 75	$2 37	$0 38	$0 38	16

[1] "Margin" is not the same as profit

1920, which was seventeen, as compared with the monthly average for the first quarter, which was eighteen days. May was slightly better than April, for which month, as shown in the April bulletin, 767 operators averaged sixteen days.

The increase of 38c. per ton in the average reported May cost of the 635 operators, with the increase of 55c. in their sales realization, resulted in a 17c. increase in margin for May, 1920, as compared with the first quarter.

The increase of 38c. per ton, or 16 per cent, in total reported cost of these operators in May was chiefly due to the additional wage increase which became effective April 1, and the decrease in their production from an average of 8,851,182 tons per month in the first quarter to 7,553,279 tons in May, a decline of 16 per cent.

In the first quarter and in May costs of the 491 operators shown in Table II increased in a rough proportion to the extent of changes in tonnage. In May the increased cost attributable to the 27-per cent wage advance on April 1, 1920, is most nearly measured, as a maximum, by the figures for the group of forty-seven operators whose production tonnage did not change appreciably (group "Decrease 0-05" and "Increase 0-05"). This group had an increase in total f.o.b. mine cost (labor, supplies and general expense) of 51c. per ton, or 23 per cent, over 1918. In both cases increase in labor cost is by far the most important, though increases in cost of supplies and in general expense also had some effect. A similar calculation in the April bulletin for a somewhat larger number of operators indicated an increase of 47c. per ton, or 23 per cent, in costs due to the wage advance, which tallies fairly closely with the foregoing figures and tends to confirm their representative character.

Wholesale Price of Coal Rose Nearly 2½ Per Cent in July

While Wholesale Food Prices Throughout the Country Dropped 4 Per Cent, Retail Figures Increased 1 Per Cent

A FURTHER decline in the general level of wholesale prices in the United States in July is shown by information collected in representative markets by the Bureau of Labor Statistics of the U. S. Department of Labor. Measured by changes in the bureau's weighted index number, in which each commodity has an influence commensurate with its importance in the country's markets, the decline from the June level was a little more than 2½ per cent.

Farm products, food and clothing showed considerable price recessions from the preceding month. The decrease for farm products was 2.9 per cent. for food it was nearly 4 per cent, and for clothing it was practically 5½ per cent. Smaller decreases were recorded for lumber and building materials, chemicals and drugs, and miscellaneous commodities. On the other hand, fuel and lighting materials continued upward with an increase of nearly 2½ per cent. Metals and metal products registered a slight increase, while the group of house-furnishing goods showed no change in the general price level.

Despite the drop in wholesale prices, however, the average family expenditure increased 1 per cent in thirty-two cities, among them New York, Chicago, Cleveland, Buffalo and Pittsburgh, and 2 per cent in Boston, Baltimore, Washington, Milwaukee, New Orleans and elsewhere. For the whole country prices increased in July over June for 29 out of 43 food articles the average man has to buy.

Indiana Operators Begin Delivery of Coal To State Institutions

COAL-MINE operators of Indiana who through the Indiana Bituminous Coal Operators' Association agreed several days ago to accept contracts to sell coal to state institutions at prices ranging from $2.95 to $3.50 a ton at the mines have begun delivery of coal to some institutions, and contracts with individual companies are being signed, says Maurice C. Shelton, secretary of the state joint purchasing committee.

A committee of the association composed of Jonas Waffle, C. G. Hall and Homer B. Talley has allotted the coal demands of the state institutions to the members of the association. A total of 200,225 tons is to be supplied by companies in from 900 to 12,000-ton quantities. The allotments have been made among thirty-eight mining companies and the Knox County Operators' Association and the Southern Indiana Coal Trade Bureau. The association and bureau will divide their allotments among the members.

The committee of operators assigned 3,000 tons to the LeNoir Coal Co. for delivery in the Indiana Village for Epileptics at Newcastle, although this company is not a member of the operators' association. Members of the family of Governor Goodrich hold an interest in the mine, although Governor Goodrich has said he owns no stock in the mine. It is understood, however, that he will use his influence to have his company refuse to sign a state contract until after Jan. 1, when his term of office expires. In this event, the other operators would provide coal for this institution until Jan. 1, and the LeNoir company would make up to the other companies the coal the supplied the Village for Epileptics, it is said.

Approximately two-thirds of the institutions' needs is for fourth vein mine-run at $3.20 a ton, one-sixth will be screenings at $2.95 and one-sixth prepared sizes at prices ranging from $3.35 to $3.50 per ton. The committee of the operators' association has notified each company of its allotment. "The allotments were made on a percentage basis," the letter said, "arrived at by taking the daily tonnage capacity of the various mines involved and applying same to the total tonnage to be furnished. The division of the tonnage would seem to be an equitable one and we would ask that each member company make a special effort to carry out this arrangement, as we feel that each man is on his honor to make good our pledge to the joint purchasing committee of the state."

Coal Handling Methods at Curtis Bay To Be Improved

MEMBERS of the New England Coal Commission were in Washington last week complaining that deliveries through Baltimore were unsatisfactory. They had no complaint to offer as to the movement of coal from Hampton Roads. As a result there has been a thorough investigation of the Baltimore situation, which disclosed that dumpings at Curtis Bay had been abnormally low. The efficiency of the work both at ship side and in the yards at Curtis Bay was condemned. Steps have been taken which are expected practically to double the amount of coal handled at Curtis Bay. The opinion also is expressed that there has been too great laxity in the issuance of permits, as an accumulation of no less than 10,000 cars had taken place on the Baltimore & Ohio, the Western Maryland and the Pittsburgh and Lake Erie railroads.

Mine Superintendents to Study Handling Methods at Hampton Roads

SUPERINTENDENTS of the fifteen mines of the White Oak Coal Co. were entertained by the officials of the company at a luncheon in Washington Aug. 20. D. J. Parker, in charge of the mine-rescue work of the Bureau of Mines; E. J. McVann, secretary of the the Smokeless Coal Operators' Association; S. A. Scott, general manager of the White Oak Coal Co., and C. B. Edwards, the manager of sales of the same company, were speakers at the luncheon.

The party proceeded from Washington to Norfolk, with the idea of acquiring a detailed knowledge of coal handling procedure at Hampton Roads.

Indiana Production Increases 50,000 Tons

PRODUCTION of coal at 190 mines in Indiana during the week ended Aug. 14 is reported as 525,421 net tons, as compared with 475,000 tons produced by 188 mines the week preceding. These mines operated 69.24 per cent of the full time, with car shortage responsible for 22.23 per cent of time lost. Of the remaining causes of lost time mine disability was responsible for 4.02 per cent and labor trouble for 4.51 per cent.

Shipments of Coal Through Panama Canal Total 65,261 Tons in June

DURING June 65,261 tons of coal passed through the Panama Canal. Practically all of the coal originated at Hampton Roads, and it was destined for the most part to Chilean ports. One cargo went to San Francisco and one to Honolulu.

Survey Geologist Inspects Pocono Coals

M. R. CAMPBELL, acting administrative geologist of the U. S. Geological Survey, has returned to his office in Washington after an examination of Pocono coals near Blacksburg, Va.

Operator Brings Suit to Test Law Creating Indiana Coal Commission

THE constitutionality of the Fuel and Food Commission Act passed by the special session of the State Legislature in Indiana recently is attacked in a suit filed in the Federal Court Aug. 17 by the American Coal Mining Co., of Brazil, Ind., asking that the commission be enjoined from enforcing the act. The bill was designed to fix prices, wholesale and retail, on coal and assesses a license fee on all operators and wholesale and retail coal dealers.

The complaint names as defendants the Fuel and Food Commission recently created, Governor James P. Goodrich, Otto L. Klauss, State Auditor, and Jesse E. Eschbach, chief examiner of the State Board of Accounts, as members of the commission and individuals.

Hearing on the complaint probably will be held in the Federal Court Sept. 6 and 7 before Judge Francis E. Baker, of Chicago, of the Circuit Court of Appeals, in the absence of Judge A. B. Anderson, of the Indiana district.

The complaint avers that the act is in violation of both the Constitution of the United States and the Constitution of the State of Indiana and asks a temporary injunction pending final hearing.

James W. Noel, counsel for the commission, said that the state will contend that the act is valid under the police power of the state, and will fight any action to prevent its operation. The principle on which the regulation is based, he said, is not new or socialistic, but one that has been recognized for centuries. The only question involved, he said, is whether the industry is "affected with a public interest."

The complaint alleges that before the passage of the act any emergency that existed was not due to causes within the control of persons engaged in the coal industry, but to lack of railway cars, the depletion of reserve stocks of coal, the miners' and switchmen's strike and embargoes necessitated by the latter. Statistics are given to show that of the coal mined in Indiana in 1917, 44⅝ per cent was consumed in the state, 27¼ per cent was shipped to points outside the state and 28⅛ per cent was used by the railroads. During the same period approximately 43 per cent of the coal consumed in Indiana was produced in other states.

If a sufficient number of coal cars is supplied in the commercial mines of Indiana, the bill avers, and they are permitted to work without interruption, they will provide sufficient coal to meet every demand of the state during the winter of 1920-21. The bill declares that the Coal Commission Act does not provide a remedy for the causes of complaint arising prior to the time of the passage of the act and that the powers of the commission are not of a nature calculated to remove the causes of the lack of supply, and if forced will result in further aggravating and increasing the difficulty of supplying consumers.

The bill contends that section 7 of the act is unconstitutional in that it deprives the plaintiff of its liberty and property without due process of law, as the required license fee of $25 is in excess of the cost of issuing the license. Sections 8 and 9 are alleged to be in violation of Article 14 of the Federal Constitution in that they deprive the plaintiff of his liberty to contract for the sale of his property. Section 9 also is held to be invalid for the reason that it impairs the obligation of contracts entered into by the plaintiff with customers in other states. The section is further held to be invalid because it conflicts with the section of the Federal Constitution giving Congress the power to regulate commerce among the states.

The complaint alleges that section 20 of the act is invalid because in empowering the commission to fix priorities it gives it authority to appropriate, seize and allocate the property of the plaintiff. Jesse Eschbach, when notified of the filing of the suit by U. S. Marshal Mark Storen, declared that he would continue to enforce the provisions of the act until restrained by court order.

He announced that Howard S Young, of the law firm of Fesler, Elam, Young and Carter, had been employed to assist James W. Noel, counsel for the commission, and Attorney General Eli Stansbury, in defending the case. Attorneys for the plaintiff are Charles Martindale and the firm of Whitcomb and Dowden of Indianapolis and the law firm, Cooper, Royse, Bogart and Gambill, of Terre Haute, Ind.

From the array of legal talent employed on both sides of the case the coal operators and the state both are preparing for one of the most spirited legal battles ever waged in an Indiana court. In the fight on the side of the operators are the wholesalers and retailers, both classes of which are assessed the license fee and are governed similarly to the operators under the operation of the act.

The law went into effect immediately after its passage by the Legislature and signature by the Governor, and from the first it was almost certain that the coal industry of Indiana would fight it. While officials of the commission assert that they intend proceeding with its enforcement just the same as if no suit had been filed, little activity has characterized the commission's work since the law went into effect. At the present time most of its activities have hinged about conferences in which a "fair price for coal" has been the main issue.

Capital Moves to Avert Coal Shortage

THE Commissioners of the District of Columbia have appointed a committee to see what steps can be taken to avert a shortage of coal in the District of Columbia next winter. In addition to investigating delays on contracts and on spot purchases, the committee also is scrutinizing prices. At present anthracite is selling $13.50 to $16 a ton and bituminous coal at $10 a ton.

Increase of 39 Per Cent in Miners' Earnings, Labor Data Show

Statistics of Department of Labor Indicate That Men Were Working More Steadily in July Than a Year Ago

DATA collected by the Bureau of Labor Statistics, Department of Labor, from sixty-eight coal operators in the United States show a decrease of 4.7 per cent in the number of employees on their payrolls in July, 1920, compared with July, 1919, and an increase of 31.7 in the amount of payrolls in July, 1920, compared with the same month a year ago. These sixty-eight operators had 19,889 men on payroll in July, 1920, compared with 20,877 in July, 1919. The amount of money paid to the men was $1,422,881 in July, 1920, and $1,080,317 the same month of 1919. These figures are for one pay period of two weeks in July, and not for the entire month.

Actual Earnings Show Steadier Work

If the total amount that was disbursed for payroll be divided by the number of men on the payroll, it will be found that in the half pay period of July, 1920, the average pay per man was $71.50, and in the half pay period of the corresponding month in 1919, $51.70. The increase per man in pay was about 39 per cent. Inasmuch as the wage advance, that is the advance in rate of pay, in that period has been only 27 per cent, it is obvious that the men have been working more steadily this year than last year, which fact, of course, is brought out by the statistics of production.

The number of operations included in these figures is so small, however, that it is not fair to draw any conclusion regarding the earnings of coal mine labor from the data. Figures also are presented from eighty-six coal operators for June and July, 1920. These figures show for the eighty-six operators, 23,734 men on payroll in July compared with 23,960 men on payroll in June, a decrease for July over June of nine-tenths of 1 per cent. The amount of money represented by the payroll was $1,726,874 in July, a decrease of 3.6 per cent compared with $1,790,996 in June.

Interesting Data of Other Industries

Similar statistics for thirteen manufacturing industries in addition to coal mining are contained in the report of the Bureau of Labor Statistics. Comparing the figures of July, 1920, with those of identical establishments for July, 1919, it appears that in eight industries there was an increase in the number of persons employed, while in six there was a decrease. The largest increase, 32.8 per cent, is shown in men's ready-made clothing, while paper making and cigar manufacturing show increases of 15.6 per cent and 9.9 per cent respectively. Decreases of 55.5 per cent in woolens and 6.1 per cent in boots and shoes are shown. Thirteen of the fourteen industries show an increase in the total amount of the payroll for July, 1920, as compared with July, 1919, and one shows a decrease. The most important percentage increase, 70.3, is in men's ready-made clothing. A decrease of 43.6 per cent is shown in the woolen industry.

Comparing June and July of this year, the figures show that in three industries there was an increase in the number of persons on the payroll in July as compared with June, and in eleven industries a decrease. The greatest decrease, 55.3 per cent, was in the woolen industry. In comparing July with June one industry shows an increase in the amount of money paid to employees, while thirteen show a decrease.

Coal Consumed by Electric Power Plants. By States, During May

ELECTRIC power produced in the United States during May,* 1920, according to statistics issued by the U. S. Geological Survey, required the combustion of coal in net tons indicated in the following table:

Alabama	15,282	New York	143,441
Arizona	656	North Carolina	18,156
Arkansas	6,536	North Dakota	11,663
California	0	Ohio	324,462
Colorado	30,573	Oklahoma	9,433
Connecticut	52,691	Oregon	217
Delaware	10,263	Pennsylvania	444,231
District of Columbia	20,640	Rhode Island	22,859
Florida	1,445	South Carolina	9,475
Georgia	9,407	South Dakota	5,542
Idaho	0	Tennessee	23,288
Illinois	340,491	Texas	18,862
Indiana	159,030	Utah	10
Iowa	74,622	Vermont	153
Kansas	39,166	Virginia	32,958
Kentucky	38,270	Washington	3,819
Louisiana	10,883	West Virginia	101,416
Maine	317	Wisconsin	65,533
Maryland	22,512	Wyoming	10,775
Massachusetts	114,171		
Michigan	149,586	Total	2,840,771
Minnesota	24,366		
Mississippi	10,048	Total April	2,932,093
Missouri	92,995	Total March	3,265,039
Montana	3,821	Total February	3,275,641
Nebraska	35,985	Total January	3,619,069
Nevada	225		
New Hampshire	2,883		
New Jersey	122,206		
New Mexico	4,808		

* Table for January, February, March and April was printed in *Coal Age* July 29, page 253

The average daily production of electricity in kilowatt-hours for the first five months of 1920 was as follows: January, 124,700,000; February, 119,800,000; March, 120,800,000; April, 119,300,000; May, 114,600,000.

The proportion of each monthly total produced by water power is 33, 33, 38, 41 and 42 per cent, respectively, an increase in the amount of kilowatt-hours produced by water power in May of about 27 per cent over the amount produced by water power in January and February. This increase is due largely to the increase in stream flow.

New Rates to Add $200,000,000 to Coal Freight Charges

NO LESS than $200,000,000 will be added to the amount which must be paid in freight charges for coal transported under the new schedule of railroad rates. An estimate to the foregoing effect has been made by a traffic expert, at the request of the National Coal Association. The details of the estimate are not available at this time.

Fire at Scranton Mine Breaker Causes $200.000 Damage

A FIRE at the Briggs breaker of the Scranton Coal Co., a New York, Ontario & Western R.R. interest, in West Scranton, Pa., Saturday, Aug. 21, caused $200,000 damage. The mine and breaker employed 1,000 men and boys, producing 1,200 tons of coal a day. None of the workmen had entered the mine before the fire started.

Labor Flows to and from Hard-Coal Fields

AS THE outcome of the strike at the mines of the Pennsylvania Coal Co. about the contract system many mine workers are leaving the anthracite region and some may never come back. The agents of the salt mines are finding the idle men good prospects for recruits. Some have gone to Buffalo, N. Y., and Detroit, Mich. These men probably will be lost to the anthracite region. Not so the men who are obtaining work on the roads at Hunlock's Creek, Nicholson, Bernice, New Milford and Port Jervis. Their new work is hard, the sun hot and the work seasonal. These men will be back as soon as the strike is settled.

However, wages are good in the anthracite mines and will be better yet after the adjustment. Furthermore, ett Lauck to the contrary notwithstanding, work is and will be steady. These considerations are bringing farmers to the mines. Harvesting is over and if they can get by the examining board they will go to mining. A number presented themselves at Hazleton Aug. 2.

Central Pennsylvania Mine Workers Ask Increase of 50 Per Cent

AS THE result of the action of the special convention of District No. 2, United Mine Workers of America, which was held at Du Bois, Pa., Aug. 19 and 20, 60,000 coal miners of central Pennsylvania will demand 50-per cent increase per ton in mining rates on coal three feet six inches thick or over, an additional 25c. a ton on every six inches under that thickness, and a 50-per cent increase for day workers. The convention adjourned after a two-day consideration of wages paid in the district.

Wagon mines are reported to be now paying $10 a day for day labor and $2 a ton for mining coal. Men in these wagon mines are said to be making from $30 to $50 a day.

A policy committee to take up the question of increased wages for the 60,000 miners of District 2, United Mine Workers of America, was chosen at the opening session of the convention.

Election of the committee followed discussion of the prices charged consumers by the operators, and the tonnage rate generally prevalent in the district. Figures showing the excessive prices secured by many operators were presented by delegates from the districts where such practices are in vogue by operators.

The policy committee, which formulated the demand to be made of the operators, has become the scale committee and will ask the operators' association to meet and discuss the new demands.

In the event that the operators refuse to meet with the committee, the convention will reconvene to consider methods for securing the desired increases. Another session will have to be held, in any event, to act upon the report of any agreement that may be made by the scale committee.

Following adoption of the recommendation of the policy committee, the delegates unanimously adopted a resolution endorsing the candidacies of all the Labor Party candidates and instructed their executive officers to render necessary financial support for the candidacies of William Welch, of Nanty Glo, Labor Party candidate of the Nineteenth Congressional district; Patrick McDermott and U. Ed. Swartzentruber, legislative candidates in Cambria County.

The entire proceedings of the convention were harmonious, delegates taking unanimous action on practically every motion or resolution before them for consideration.

Labor Conditions Are Still Unsettled in West Virginia

THE pot is still boiling in the West Virginia coal fields. After several hearings behind closed doors E. H. Peters, president of sub-district 4 of district 17 of the United Mine Workers, has been relieved of his office. As nearly as can be learned, the charge preferred against him was insubordination.

Although progress is reported concerning the spreading of the strike in Morgantown & Kingwood territory, it is nevertheless admitted that gains in operation are being made by some of the companies affected. It is stated that the mines at Bretz and Masontown are being operated continuously, although the first-named place is being picketed. It also is admitted that workmen at the Penn-Mary mines, as well as those in the employ of the Connellsville Basin Coal & Coke Co., are receiving higher wages than the union scale calls for in many instances.

Trouble brewing for some time at Mohawk, near the McDowell-Mingo County line in West Virginia, broke on Aug. 21 when fire was opened on the coal plant at Mohawk. This fire was returned by deputy sheriffs and for a time bullets flew fairly thick. However, no casualties are reported. Further difficulty is feared as the time draws near when cold weather will make it necessary for striking miners to abandon tent colonies.

On Sunday afternoon, Aug. 22, Ed Scott, a miner of Kayford, Kanawha County, W. Va., was shot and severely wounded at a meeting of miners at Whitesville, Boone County. Little importance strike-wise is attached to this shooting, it appearing that Scott entertained strong enmity toward officials of the United Mine Workers, of which organization he was a member and ex-officer. Some witnesses of the shooting say that Scott was wounded while in the act of drawing a gun.

It is stated that there is less likelihood of a demand being made for an increase of wages in the New River Field than in district 17 following the separate agreement reached concerning wages in the Illinois field. Changes in the New River contract are contingent upon similar changes in the Central Competitive Field, and unless all the districts embraced in this latter field procure an increase in wages, it is considered doubtful that this question will be brought up in the New River region or the contract now in force be abrogated. Should such abrogation be resorted to it is believed that difficulty might be experienced in the future in securing any contract at all.

It is reported that coal operators and miners in Illinois on Aug. 26 agreed upon an increase of $1.50 per day affecting 40,000 mine workers. The old schedule for tonnage workers remains in force, the new rate applying only to daymen, hoisting engineers, drivers and the like.

The operators state that fines imposed for remaining out on an unauthorized strike will not be remitted. Many of the daymen struck recently in violation of contracts and without the sanction of national officers.

The biennial meeting of the miners of the 5th district of Ohio will be held at Bellevue in October. It is expected that there will be an attendance of 20,000 men at this meeting.

News from the Capital

By Paul Wooton

Easier Coal Prices Not Attributed to Department of Justice Threats

THE tendency of the Department of Justice to take to itself the credit for the softening of coal prices is regarded very generally as being entirely unwarranted. One prominent man connected with the industry declared that "the department's threats have had the same influence on coal prices that my activities in the coal industry have had on the price of silver."

New England and Lake Movement Considered Satisfactory

REPORTS to the Commission on Car Service of the American Railroad Association indicate that the New England and Lake programs are being carried out in a highly satisfactory manner. There has been some shortage of boats at Hampton Roads and at Philadelphia but steps have been taken to meet that difficulty. The all-rail movement to New England is exceeding even the more optimistic estimates.

Important Railway Project Would Affect Movement of Coal to Tidewater

PLANS of an important railroad development were revealed unexpectedy at the hearing conducted by the Federal Power Commission last week on the Great Falls project. The commission had before it the recommendation of the Corps of Engineers providing for the building of dams which would close the entire Potomac basin at a point a few miles above Washington. The project was objected to strenuously on the ground that it would close the "best possible route from the coal fields to tidewater." The scheme, as revealed at the hearing, is to fill in the Chesapeake and Ohio Canal and use it as the right of way over which the Western Maryland, the Norfolk & Western and the Cumberland Valley railroads can find a low-level route from the coal fields to Chesapeake Bay by way of Washington.

Operators Expect Service Order No. 14 to Help Labor Situation

OPINION in Washington differs as to the value and advisability of the service order of the Interstate Commerce Commission restricting the use of open-top cars at wagon mines. Representatives of operators express the opinion that this is the most important step taken to increase production since the open-top car priority order. This opinion is based on their belief that many more cars will now become available at the larger mines and that this will prevent the demoralization of labor. It is asserted that the earnings of miners at the wagon mines frequently exceed $30 a day and have gone as high as $50 a day.

On the other hand, it is pointed out that the principal railroads have been carrying out the practice all summer prescribed in the Interstate Commerce Commission's recent order. The wagon-mine rule in car distribution is practically the same as that applied by the Fuel Administration and the Railroad Administration during the war. When there has been any shortage of shipments, the railroads themselves have continued the practice since.

Information given to the Interstate Commerce Commission is that more than 700 wagon mines are in operation in central Pennsylvania alone.

North Carolina Industries Insist That They Need More Coal

A COMMITTEE headed by R. H. Sykes, of Durham, N. C., representing industries in that section, went to Washington last week to appeal to the Interstate Commerce Commission for a better fuel supply. The committee contends that the New England and other priority orders have interfered unduly with their ability to secure the coal.

Legislative Committee to Protect Coal Interests at Washington

PLANS are being worked out for a legislative committee, which will sit in Washington during sessions of Congress, to work in the interest of all activities of the coal trade from production to final disposition of the product. The plan is in its incipiency, but it is the intention to have the committee ready to function with the reassembling of Congress, as legislation of great importance to the coal trade will be proposed at the next session of Congress.

Rail-Rate Increase Relieves Treasury in Payment of Guarantee to Roads

DURING the six months of the Government guarantee to the railroads some $567,000,000 was paid out to the carriers. With the increased rates in effect, however, taxes derived from payments of railway charges will be increased by $55,000,000. Thus the Treasury will be relieved of a heavy disbursement and will have a substantial increase in its income.

Cushing Plans Nation-Wide Warning Against Nationalization of Coal Industry

CONVINCED that the welfare of the country would be endangered by having half of its industries slave and half free, George H. Cushing, managing director of the Wholesale Coal Association, has arranged an itinerary for a nation-wide speaking tour. He declares that the coal industry is rapidly getting into the public-utility class. This will mean that earnings will be held at six per cent or some other arbitrary maximum. The hazard in mining coal is so great, he believes, that such a program will cause a rapid decline in the industry, thereby making it necessary for the Government to embark in the coal-mining business. Unless the public can be educated in time, he sees no escape from nationalization.

Rail Movement to New England Gains

RAIL movement to New England recovered again during the week ended Aug. 21. Cars forwarded through the five gateways of Harlem River, Maybrook, Albany, Rotterdam and Mechanicsville, as reported to the Geological Survey by the American Railroad Association, totaled 5,369 cars. This was an increase of 509 cars over the preceding week and exceeded by 1,597 cars the movement during the corresponding week of 1919.

Wagon Mines Denied Open-Top Cars By Service Order 14

WAGON mines without private sidings and unless provided with loading platform or tipple from which coal may be dumped in the railroad car from an elevation are practically prohibited from use of open-top cars by Service Order No. 14, issued on Aug. 25 by the Interstate Commerce Commission. This action by the Federal Government supplements that of the Pennsylvania Public Service Commission of several weeks ago, so that wagon mines now are largely eliminated in both intra- and interstate shipments. Of course these orders have no effect on the production and shipment of coal by the small mines when the use is local and the entire delivery is made by wagon or truck.

It is pointed out that the Interstate Commerce Commission adopted this policy toward wagon mines because of their wasteful use of transportation and cars, but, furthermore, the wagon mine, being almost entirely a producer of spot coal, is undesirable because of the effect such operations have on labor and prices.

The text of Service Order No. 14 follows:

It appearing in the opinion of the commission that an emergency exists which requires immediate action because of the shortage of equipment and congestion of traffic which continue to exist upon the lines of each and all common carriers by railroad within the United States;

It further appearing that the practice of loading coal into open-top cars at wagon mines results in undue delay and wasteful use of equipment, and aggravates the existing shortage of equipment and congestion of traffic, when such wagon mines are not in a position to load cars upon private tracks, and have no tipple or other arrangement which permits coal to be dumped into the car from an elevation, and that such wagon mines can be reasonably served by the use of closed-top cars and the regulation hereinafter prescribed will promote the service in the interest of the public and the commerce of the people, and is reasonable and just;

It further appearing that the existing rules, regulations and practices of said common carriers as to the supply and distribution of open-top cars to wagon mines adversely affect car conservation and the ability of said carriers properly and completely to serve the public in the transportation of coal, so far as they conflict with the regulation hereinafter prescribed,

It is ordered that from and after the date of the service of this order, and until April 1, 1921, the common carriers hereinbefore described be, and they are hereby, authorized and directed to establish and observe the following rule, and shall be governed thereby in the supply and distribution of open-top cars to wagon mines:

"Upon any day when a common carrier by railroad is unable to supply any mine upon its line with the required open-top cars, open-top cars shall not be furnished or supplied by it to wagon mines which are not in a position to load such cars upon private tracks and from a tipple or other arrangement which permits the coal to be dumped from an elevation into the car, until all other mines have been fully supplied with open-top cars. Open-top cars furnished and supplied wagon mines upon private tracks and so equipped with a tipple or other arrangement for dumping coal from an elevation into a car must be counted against such wagon mines under uniform mine ratings and car-distribution rules, the same as are applied to established tipple mines."

It is further ordered that all rules, regulations and practices of the said carriers with respect to car service be, and they are hereby, suspended and superseded in so far only as they conflict with the provisions of this order.

And it is further ordered that copies of this order be served upon the carriers hereinbefore described, and that notice of this order be given to the general public by depositing a copy hereof in the office of the secretary of the commission in Washington, D. C.

Daymen Return to Work in Indiana, but Diggers May Demand Raise

COAL miners in Indiana, who had been idle since Aug. 19 because of the wage controversy between daymen and operators, began returning to work Aug. 26 following an agreement reached at a joint conference in Terre Haute. Under the terms of agreement the day and monthly men receive a substantial increase, the new schedule to be effective from Aug. 16. All local unions of district 11, United Mine Workers of America, which comprises all the Hoosier bituminous field with the exception of the block-coal mines around Brazil, which are in district 8, were informed of the action by Edward Stewart, the district head, in a telegram as follows:

"Joint committee has agreed on 25-per cent increase for all inside day labor on present wages received and $1.50 per day for all outside labor and monthly men, effective Aug. 16."

The agreement in detail is as follows:

(1) That the day wages now being paid to inside men and boys be increased 25 per cent.

(2) That all monthly men and outside daymen's wages be increased $1.50 a day.

(3) That any extra time paid daymen and monthly men directly or indirectly for any reason shall continue to be paid.

(4) That the revised schedule of wages shall be effective as of Aug. 16.

It was estimated that about half the miners were working Aug. 25. The telegram sent out did not reach all the locals in time to issue a call for the return to work on that day. This was the case at Bicknell, where the fourteen mines remained closed.

The action of the daymen in refusing to work followed the failure of the joint scale committee representing the Central Competitive Field to reach a decision at its session at Cleveland.

The wage matter was then referred to the various districts for decision, this being the first time in several years that the sub-organization has been called on to settle such a matter.

Despite the agreement reached the unrest in the Indiana field has not been settled completely, according to men prominent in the union. They say that the diggers will demand a 10-per cent increase and that the field will soon face another tie-up. Some of the diggers say that until the operators reduce the price of coal at the mines by the restoration of a contract selling basis, eliminating the open market, they will persist in their demand for their part of the "booty."

Wholesalers Adopt Resolution To End Resale Abuse

Committee Appointed Will Formulate Dealers' Business Policy, Fix Margin of Profit and Adjust Grievances of Bituminous Consumers

WHOLESALERS and jobbers representing the New York, Philadelphia and Baltimore coal trade, in a meeting in New York City on Aug. 24, formed a special committee, with George M. Dexter as chairman, John W. Whiteley, vice-chairman and Charles S. Allen as secretary, to formulate and announce policies which should govern the wholesale coal trade in the conduct of its business in the present emergency.

A letter from the Attorney General to the committee, stating that the Department of Justice will look with favor upon efforts by dealers to eliminate the employment of repeated resales, was first considered. A resolution was adopted to the effect that members of the wholesale coal trade refrain from the purchase or sale of coal which has passed through the hands of more than one other wholesaler. The following is the text of the pledge which the wholesalers are asked to sign:

> We, the undersigned, engaged in the wholesale bituminous-coal business, hereby agree each with the other, that from the date hereof to and including the 31st day of March, 1921, there shall not be more than two wholesale houses connected with the sale and delivery of the coal from the mine to the consumer, or the retailer, for retail purposes. A sales agent, for the purpose of this agreement, is to be regarded as a wholesaler.
>
> The wholesale house purchasing coal from another wholesale house shall require, and the seller shall give, a written statement, certifying that the coal was not purchased from another wholsesale house.

One of the most important matters considered and passed on was the question of the middleman's margin. The recommendation of the committee is that with the exception of export shipments the maximum margin of gross profit to be taken by any wholesale house on any spot transaction shall be 10 per cent of the invoice price at the place of sale. The committee has announced that it also is of the opinion that the unsettled and panicky state of mind of many consumers of bituminous coal is due to the failure of contractors to meet their obligations and that many of these grievances can best be settled by a full discussion of specific controversies before a disinterested tribunal, and the committee has offered to act as that tribunal. Consumers of bituminous coal are invited to present (Mr. Allen, the secretary, has offices at 90 West St.) any grievances they may have, for the committee has constituted itself a committee on correction of abuses in the trade and purposes to investigate and apply a proper remedy where necessary.

That the excessive demand for coal has resulted in considerable duplication of orders, the committee considers as obvious, therefore consumers are invited to communicate with the committee, which is authorized to employ investigators for the purpose of ascertaining all of the facts in each case in order that the committee may give assistance where action is needed and not where consumers have an undue proportion of coal in storage. Members of the coal trade, consumers and the public generally are invited to inform the committee of instances where consumers are overstocked in order that coal may be diverted to more needy users.

The priority orders of the Interstate Commerce Commission are declared to have served their purposes, and the committee recommends that so far as these orders affect the Eastern market, especially the New England order, No. 11, they be discontinued.

The committee will meet again on Thursday, Sept. 2. The following members of the committee attended the meeting on Aug. 24:

George M. Dexter, John W. Whiteley, M. F. Burns, representing the New York wholesale trade; Harlow C. Voorhees and F. M. Ramsay, representing the Philadelphia wholesale trade, and Benjamin H. Read, representing the Baltimore wholesale trade; Gibbs L. Baker, general counsel, and Charles S. Allen, secretary of the Wholesale Coal Trade Association of New York, Inc.

U. S. Chamber of Commerce Seeks to Force Carrying Out of Contracts

MOST cancellations of orders are largely due either directly or indirectly to chaotic conditions arising from war times, according to a report on a survey of the manufacturing field made by the Chamber of Commerce of the United States. The percentage reporting that customers have canceled orders because of failure to recognize the sacredness of contract, and the legal force and responsibility of an order received and accepted in good faith was comparatively small.

There is danger, however, the report declares, that unless a definite stand is taken against any tendency to regard cancellation of orders as unimportant, and unless there is cultivation of a general feeling that an order is to be considered more than a mere memorandum, this evil may assume serious proportions.

The investigation of cancellations was made by the Fabricated Production Department of the National Chamber in response to complaints from members that production was being interfered with to such an extent that plants that had sufficient orders to run for months, were curtailing their efforts or shutting down even though production of their product is below normal and stocks in the hands of wholesalers and retailers are light.

Railway Executives and Traffic League Men Act on Demurrage Charge

COMMITTEES representing the Association of Railway Executives and the National Industrial Traffic League held a meeting in New York City on Thursday, Aug. 26, to take action regarding Special Permission No. 50,231 issued by the Interstate Commerce Commission on July 31, which provides for a storage charge of $10 per day on coal cars. This joint meeting was preceded by a meeting of the committee on Demurrage of the League, held on Wednesday, Aug. 25, in the rooms of the Merchants' Association, Woolworth Building.

The meeting on Thursday was held in the offices of Daniel Willard, president of the Baltimore & Ohio Railroad Co., and while no official announcement was made as to the outcome it was learned that committees representing both the league and the railway executives had been appointed to consider the order and to make any recommendations to the Interstate Commerce Commission thought necessary.

President Approves Majority Decision of Anthracite Coal Commission Despite Strike Threat

Consideration Men and Outside and Inside Company Employees and Monthly Men to Receive 17-Per Cent Increase—Miners' Laborers and Consideration Miners' Laborers to Get Same Wages as Company Laborers—Contract to Last Two Years—Miners Get 20-Per Cent Advance

As a direct reply to the declaration of the insurgent convention of mine workers, held Aug. 28 in Wilkes-Barre, Pa., that the employees of the anthracite operations would strike Sept. 1 if the majority report of the Anthracite Coal Commission was approved by the President of the United States, Woodrow Wilson on Aug. 30 accepted that report and declined to have printed the report of Neal J. Ferry, the representative of the mine workers on that commission, on the ground that it sought to incorporate the entire evidence and argument of the mine workers as presented to the commission. The President declared the publication of such evidence at governmental expense was unusual and not in accord with customary juridical practice. However, nothing would prevent the mine workers from publishing their argument at their own expense.

Award Adds $85,000,000 to Miners' Pay

The President declares, however, that the commission exceeded its authority in making the $18,000,000 of back pay which it awarded spread over a long period of time, urging, doubtless with justice, that it did not form part of the matters submitted. The payments were to begin Sept. 30. The amount of the award will add about $85,000,000 a year to the earnings of the mine workers.

The Anthracite Coal Commission made two reports to the President as to its findings—a majority and a minority report. The award of the majority, consisting of Dr. W. O. Thompson and W. L. Connell, has already been published, but the minority report is still unknown. The miners are given an increase of 17 per cent in wages, dating back to April 1, and practically all their other demands were denied, with the exception that a partial recognition of the union is granted, that the contract system of mining is to be referred to the Anthracite Board of Conciliation, and that certain classes of long-hour men are placed on an eight-hour basis.

On Saturday night, Aug. 28, after a stormy session lasting till late in the night, a meeting representing one hundred locals in the Wyoming Valley and called by the insurgent leaders, and not by the regular union officials, sent a protest to President Wilson, urging the acceptance of the minority report of the commission and "wishing an answer on or before Sept. 1, 1920; otherwise all men will refrain from work."

Miners Long on Demands But Not on Honor

It would seem as if the mine workers have no sense of honor, for no sooner have they made an agreement than they proceed to break it when they find the keeping of it seems likely to be to their disadvantage. During the sessions of the commission threats of a strike if the decision was not as favorable as desired were made by Thomas Kennedy, the rest of the mine workers' leaders appearing to be in agreement, for they remained silent.

For the last two months there has been much unrest in the anthracite-coal field, strike after strike has been declared and practically all the companies have had trouble of this nature. The worst of these strikes has been the one against the Pennsylvania Coal Co., which has already lasted for about two months, tying up its mines almost completely. This strike was called so that the coal commission might feel compelled to decide against the continuance of the contract system, a plan of operation which the mine workers in their demands sought to have abolished. The Hudson Coal Co. has had a couple of small strikes in the same period. Others have suspended the operations of the Lehigh Valley Coal Co., the Susquehanna Collieries Co. and other companies.

The idea of selecting a representative from the labor side and one from the operators' side in these controversies seems to be radically wrong, as immediately an opening is made for a further dispute. It is almost certain that with this arrangement there will be a majority and minority report made. When the minority report is filed by the miners' representative the whole body of the labor involved feels that this is the report that should be adopted, no matter what the majority may decide. Why not have the three men who are appointed persons who are not directly interested in the issue? In our law courts the plaintiff and the defendant are without representation on the bench. Why, then, should the parties involved in these disputes have their partisans on the commission? But if it is thought necessary to appoint such representatives on the commission why not let them act as advisers to that body and not as commissioners?

Powers of the Commission Are Limited

What good is a commission that cannot enforce its demands? If the commission reaches a decision what is there to prevent the miners from refusing to abide by its decision, except their agreement, which is valueless? At law, if the court gives a decision it has the authority to enforce it.

It is to be hoped that the conservative leaders of the United Mine Workers will control the situation, although they have been unable to do so in regard to the Pennsylvania Coal Co. strike. There is no doubt that there are a number of the leaders who have the high sense of honor necessary to stand directly behind the award of the Anthracite Coal Commission although it does not meet their approval.

If a strike should be called in the anthracite-coal fields after the decision of the commission is made official, it then means the doom of collective bargaining

and a possible fight to a finish between the miners and the operators.

The award under Demand 2 is as follows:

(A) The contract rates at each colliery shall be increased 65 per cent over and above the contract rates at each colliery, effective April, 1916, as established under the agreement of May 5, 1916.

(B) The hourly rates of outside and inside company men receiving $1.54½ or more per day under the agreement of May 5, 1916, shall be increased 17 per cent, said increase to be applied to the total rate now in effect, namely, the base rate established under the agreement of May 5, 1916, plus the war allowance granted under the supplemental agreement of Nov. 15, 1918; it being understood that the new rate so established shall be not less than 52½c. per hour for those employed upon the basic eight-hour day. In the case of company men employed upon the shift basis, the shift rate shall be increased 17 per cent, said increase to be applied to the rate now in effect, it being understood that the new rate so established shall be not less than $4.20 per shift.

Raise of 4c. an Hour to Low-Pay Men

(C) The hourly rates of outside and inside employees receiving less than $1.54½ per day under the agreement of May 5, 1916, shall be increased 4c. per hour over the rates now in effect, namely, the base rate established under the agreement of May 5, 1916, plus the war allowance granted under the supplemental agreement of Nov. 15, 1918.

(D) The rates paid consideration miners shall be increased 17 per cent, said increase to be applied to the total rate now in effect, namely, the base rates established under the agreement of May 5, 1916, plus the war allowance granted under the supplemental agreement of Nov. 15, 1918.

(E) The rates paid contract miners' laborers and consideration miners' laborers shall be increased above the rates established under the agreement of May 5, 1916, to the same amount per day as the increase to company laborers, at the respective collieries, under the provisions of clause B hereof, it being understood that in the case of contract miners' laborers the miner is to assume and pay so much of said increase as shall be represented by the application of 65 per cent to the rate per basic shift, as established under the agreement of May 5, 1916, and the difference between said amount and the total increase to the contract miners' laborer shall be assumed and paid by the operator.

(F) Monthly men coming under the agreement of May 5, 1916, shall be paid an increase of 17 per cent, said increase to be applied to the total rate now in effect, namely, the base. rate established under the agreement of May 5, 1916, plus $54 per calendar month in the case of outside employees, and the base rate under said agreement plus $60 per calendar month in the case of inside employees.

(G) The increases herein provided shall become effective April 1, 1920 [and the amount due for the period April 1 to Aug. 31, 1920, shall be paid as follows: The amount due for April with the pay for the first half of September, and the amount due for each of the succeeding four months with the pay for each semi-monthly pay period thereafter.]

The bracketed provision is stricken out as being *ultra vires*.

Other decisions are that the back pay of all employees who have died since April 1, 1920, be paid to the legal representative of each of the employees in question and that the contract be for two years. The commission denies the demand that individual contracts and agreements be prohibited, holding the right of contract cannot be denied, but provides for the Board of Conciliation reviewing such contract upon complaint of any employee. The demand for a uniform wage scale is referred to the Board of Conciliation to act as a commission to make a study of and report to the next joint conference, or sooner if practicable.

Varied Collection of Demands Denied

The following demands were denied, namely: That shovel crews operating for coal companies be paid not less than the prices paid by contractors to shovel men; that time and half shall be paid for overtime and double time for Sunday; that the "closed shop" and "check-off" be granted; that all deadwork shall be paid for on a consideration basis and that where more than one miner is employed all the men shall receive the same rates; that payment be made for all sheet iron, props, timber, firepoling and cribbing; that where miners are prevented from working on account of lack of supplies they shall be accorded the opportunity of making a shift at some other work (this demand was withdrawn by Commissioner Ferry); that in the settlement of grievances the aggrieved parties shall have the right to demand settlement upon the basis of equity; that payment be made for refuse of all kinds in mining up to 10 ft. wide at a uniform rate of 17c. per inch; that payment be made on a consideration basis and dockage be eliminated; that on all reel motors one motorman and two brakemen be employed and that when motormen as engineers are repairing motors or engines their assistants be employed to help in the work; that where contract miners are employed doing company work the company shall furnish them with the necessary tools, and failing to do so shall compensate the miner for the use of the tools; that the company shall furnish tools to company men; that check-weighmen and check docking bosses be allowed to serve on committees.

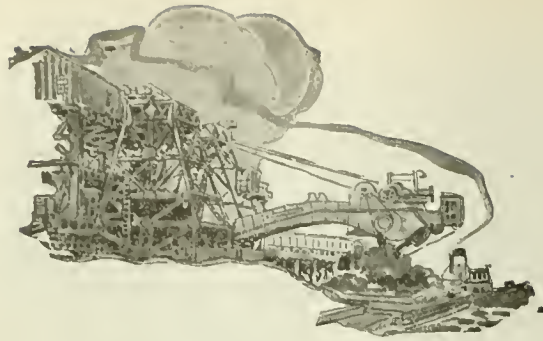
The demands granted outside of those in Demand No. 2 include recognition of the union as a party to the contract and payment for tools lost as a result of squeezes, water or fire.

Lake Coal Movement Gaining

CUMULATIVE Lake movement from the beginning of navigation to Aug. 21 stands at 9,731,000 tons as against 15,727,000 and 15,505,000 tons to the end of the corresponding weeks of 1918 and 1919. The year 1920 is therefore six million tons behind 1918 and five and three-quarter million behind 1919.

Shipments from the mines to Lake destinations under Service Order No. 10 during the week of Aug. 21 were 2,230 cars short of the quota of 23,580 cars. On Aug. 21 the cumulative movement was 10,742 cars in arrears, or, in other words, it was about 2.7 days behind.

Shipments on both Monday and Tuesday, Aug. 23 and 24, exceeded the quota and reduced the cumulative arrears to 10,172 cars. So heavy has been the movement under Order No. 10 that difficulty is now reported in unloading promptly all the cars shipped to the Lakes. On Wednesday, Aug. 25, according to reports furnished the American Railroad Association, there were on hand at lower Lake ports 10,404 cars of coal.



Production and the Market

Weekly Review

Production Declines — Car Situation Is Practically Unchanged — Prices Distinctly Lower — Lake Dumpings Are Heaviest of Season—New England Movement Heavy—Anthracite Labor Disaffection Grows.

THERE was a sharp decline in the production of bituminous coal for the week ended Aug. 21 Figures of the Geological Survey estimate the tonnage at 10,981,000, a decrease of 833,000 tons, or 7.1 per cent, when compared with the preceding week. A fresh outbreak of the daymen's strike in Indiana caused the decline, as the end of the week saw 80 per cent of the mines in that state closed. Anthracite production also decreased sharply, output for the week amounting to 1,595,000 net tons, as compared with 1,801,000 tons for the second week of August. Beehive coke output was 423,000 net tons, an increase of 1 per cent.

The Midwest reports firm prices, which are attributed to buying activity in the erstwhile strike zone. Elsewhere a much improved showing has been made in stock accumulations, resulting in a lessening of demand and lowering of price. Late improvements in car supply and movements also have tended to reduce prices.

The retail and anthracite shortages continue. The President has approved the majority report of the Anthracite Wage Commission, which awards 17 to 20 per cent increase in pay. An ultimatum sent him by 300 delegates of locals in District 1 demanding that the minority report be approved, under threat of strike, has been accepted as a challenge.

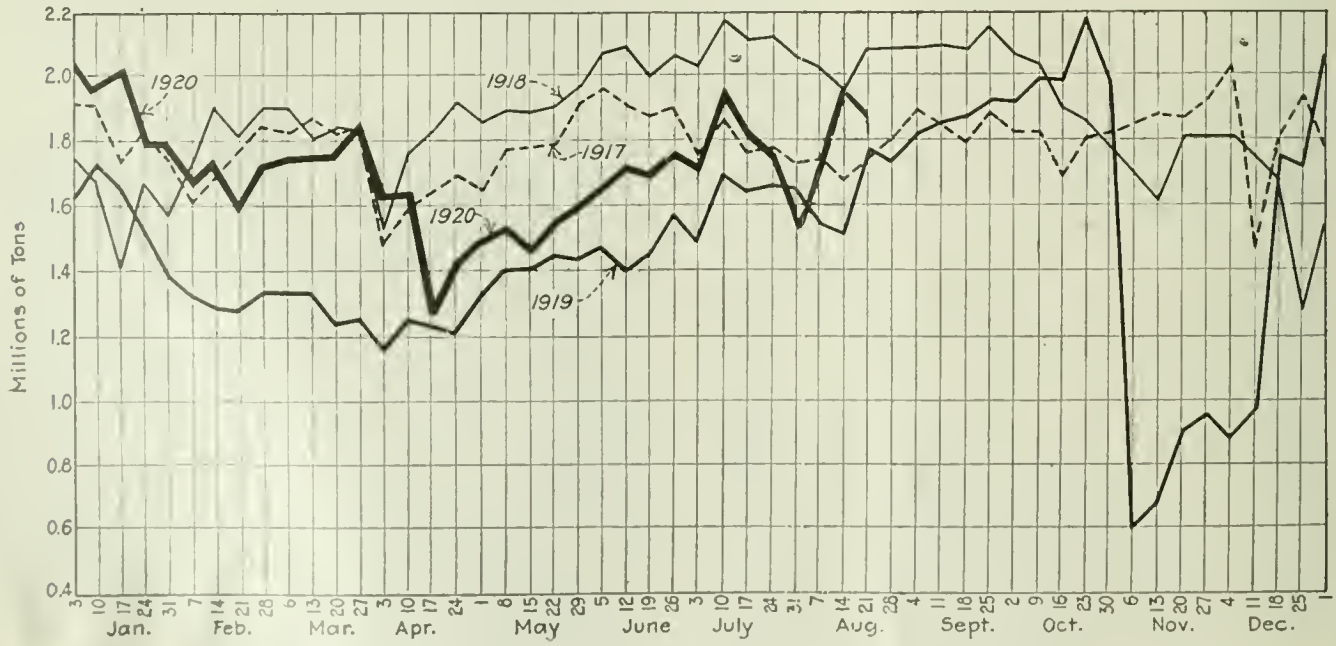
Rail movement to New England has recovered, 5,369 cars having been forwarded in the third week of August, while tide shipments to New England are again on the increase. Congestion at Baltimore and Philadelphia piers slowed up loadings to some extent.

Preliminary figures for week ended Aug. 28 show Lake dumpings of 1,262,868 tons as compared with 1,090,000 tons for the preceding week. This exceeds the corresponding week in 1919 by some 560,000 tons.

Lake Coal Dumped Week Ended Aug. 28
(Net Tons)

	Cargo	Fuel	Total
1919.....	671,042	30,867	701,909
1920.....	1,220,231	42,637	1,262,868

Average Daily Production of Bituminous Coal*



*From weekly report of Geological Survey.

Reports From the Market Centers

New England

BOSTON

Prices Recede — Tide Receipts Heavy While All-Rail Tonnage Declines—Demand Is Much Lighter — Anthracite Demand Very Strong — Retail Prices Are Advanced.

Bituminous—The extent to which the market has fallen off can be measured from day to day by quotations on spot coal. Pool 11 grades were offered at $9.50 as compared with $10.75 a week earlier. The only traffic restriction now in effect is an embargo against coal moving via West Albany for B. & M. and N. Y. N. H. & H. destinations. Prices down to $7 at the mines have been rumored on coal for shipment via Tidewater but such offers seem to meet with little or no response.

There is almost an entire lack of buying interest, and even the railroads are taking the market very easily. There have been a great many curtailments in manufacturing and very few large plants have less than 75@90 days stock of fuel on hand. In most cases these consumers have contract coal due them all-rail at prices that readily account for their indifference to current prices.

There is not quite the same rush of coal through the Hudson River gateways but the movement continues very heavy and is not likely to decline much farther during the next 60 days. A considerable tonnage is coming through in assigned cars but receipts are not expected to drop off materially even when Order 9 expires. The latter has helped break the spot market, but there is doubt here whether it has really increased the flow of coal. In most cases it has allowed operators to make special trades at prices well below the spot level, but still above contract figures, and contract deliveries have suffered severely.

Hampton Roads dispatch is excellent. The volume moving coastwise was enough improved to allow distributors to make 100 per cent deliveries on contract the latter part of August.

Current quotations on bituminous at wholesale range about as follows:

	Clearfields	Cambrias and Somersets
F.o.b. mines, net tons	$9.00@$10.00	$9.75@$11 00
Fo.b. Philadelphia, gross tons	12.00@ 13.75	13.10@ 14.60
F.o.b. New York, gross tons	12.50@ 14 25	13.50@ 15.25

Anthracite—The same insistent demand for domestic sizes continues. New York shipments have been fairly constant but at Philadelphia the service has been handicapped by the undue volume of bituminous sent to piers. For the time being, anthracite has been crowded out and clearances for New England have been very light.

The Boston retail dealers advanced prices on Aug. 26 from $14.50@$16 per net ton. This is the first advance since April 1 and is not wholly due to the recent railroad advance. It covers the increased miners' wages in May and also the usual monthly advances that have been made effectively since then.

Tidewater

NEW YORK

Situation Helped by Resumption of Towing — Supplies Are Short but No Fear of Shortage—New Prices, Due to Increased Freight Rates, Not Yet Announced — Steam Coal Situation Is Strong.

Anthracite—Even with more coal coming into this territory from the lower ports the retail yards hold small stocks and the first of the fall season finds the dealers with many unfilled orders on their books. Dealers are anxious to have their orders filled so they will be better prepared to take care of the rush which comes with cold weather.

With towing from Port Reading almost normal, and the other ports, with the exception of one of the upper ports, handling heavy tonnages, the situation is greatly improved.

The increased freight rates make the rate to New York Tidewater from the mining regions $2.61 for domestic coals and $2.47 for pea and smaller sizes, an increase of 76c and 72c respectively.

There is a steady demand for anthracite, with the two larger sizes the strongest. Retail dealers have not yet made any announcement regarding changes in price because of the new freight rate.

The independents are still able to market their product without difficulty. There is no easing up in the steam coal situation. Demand is strong and offerings firm. Barley continues to be the easiest of the three sizes. The lack of bituminous tends to stimulate the call for buckwheat.

Independent buckwheat is being quoted as high as $5.75, f.o.b. mines; rice $3.75@$4.25 and barley from $2.25 @$2.75. A quotation of $5 alongside for a cargo of barley was heard the latter part of the week.

Quotations during August for company coals, per gross tons, at the mine and f.o.b. New York Tidewater, lower ports are as follows:

	Mine	Tidewater
Broken	$7.50@$7.65	$10.11@$10.26
Egg	7.50@ 7.65	10.11@ 10.26
Stove	7.75@ 8.00	10.36@ 10.61
Chestnut	7.80@ 8.00	10.41@ 10.61
Pea	6.05@ 6.45	8.52@ 8.92
Buckwheat	4.00@ 4.10	6.47@ 6.57
Rice	3.00@ 3.50	5.47@ 5.97
Barley	2.25@ 2.50	4.72@ 4.97
Boiler	2.50	4.97

Bituminous—The market shows evidence of further softening. Prices are easier and an improved car supply has increased shipments. Towing difficulties having been removed, water transportation rates within harbor limits have become normal, namely about 50c.

Quotations on the different coals varied as much as $1 per ton. Pool 10 was quoted from $9@$10 at the mines, and around $16.50 alongside. Pool 11 around $16 alongside, while the quotations on Pools 9 and 71 ranged from $17@$17.25 alongside. For Pool 11 mine quotations ranged from $8.50@$9. Pool 18 at the piers for New England shipment was quoted around $14. Pool 34 gas coal was in demand with quotations ranging from $14.25@$15.25.

PHILADELPHIA

Freight Rate Increase Added to Anthracite Prices — Stocks Are Still Inadequate — Embargoes Curtail Receipts

Anthracite—With the increase in freight rates which became effective on Aug. 26 retailers began to announce adjusted price schedules to cover. On egg, stove and nut the increase amounted to 80c@$1.

It cannot be said there is any uniformity as to retail figures, as many of the dealers have constantly been making adjustments to meet their increasing overhead. The bulk of the company tonnage that is being moved is sold at about the following figures: Egg $14.55; stove, nut $14.80; pea $12.

The Philadelphia & Reading dealers are still extremely short of all sizes, an embargo still being in force to central city dealers. Probably the trade on the Port Richmond branch is in the worst condition, as this line is loaded down with shipments of all kinds going to Tide.

Bituminous—The very slow but gradually settling down of prices began three weeks ago and is still going on. Recently Pennsylvania steam coals were to be had at prices from $10.75@ $11 at mines for Pool 10 coal. Pool 11 ran from $10@$10.75 at mines, with Pool 9 at $11.75 as a top-notch figure.

Practically all sales are being made for shipment from the mines, as there is very little coal that can be transferred, especially in view of the regulations covering this feature. The rail movement is far from satisfactory, although the Penn. R.R. is making a good showing in this respect. Latest report from the B. & O. R.R. is that conditions have improved, with removal of embargo restrictions.

That sellers are once more offering coal from pools is another indication

that the market is approaching some form of old time regularity. The grades are once more re-grouping themselves, even though it be slightly. Ordinarily Fairmont gas rules below the Pennsylvania coals, but for a while recently they topped the market. However, this week there was a decided lowering in prices, with offerings of Fairmont at $9@$9.50 at mines. At the same time Pennsylvania gas coals were running from $10.75@$11.25 at mines.

The car suppply is improving slowly. In some of the important industrial lines business is still far from being satisfactory and if it were not for these concerns taking in much coal for storage, there would be a greater tonnage for the open market.

BALTIMORE

Bituminous Market Is Weaker—Export Loadings Are Heavy — Bunker Costs Drop—Conditions at Tide Are Clearing—Anthracite Retail Prices Advance About $1.75.

Bituminous—The soft coal market here has weakened, especially on the Baltimore & Ohio R.R. Connections for line delivery. The Department of Justice has claimed that this break is due to talk of prosecutions, but coal men point to the start of break before the move was made and the fact that a better run of cars, curbing of speculation in repeated turn-over of coal by railroad shipment orders, and the increasing production as the true causes.

Coal is selling at the mines at $9.50 @$10 a net ton for best fuels on the B. & O. R.R. Similar coals on the Pennsylvania R.R. delivery connections are selling on a mine basis of $11@$13. A few sales to the trade of Pool 10 coals at $9.25 or thereabouts have been noted, but this is the low of the present market. The only sales at lower figures are of the Service Order 11 coal, which is a government-order obligation, and over which there is much controversy. Some of the purchasing agents for New England concerns are offering only a price which would mean less than $6 per net ton at the mines, and relying on the fact that considerable priority coal is now under way to force such sales in the near future. The present market conditions are due in part to the fact that consumers are showing no eagerness to take more than immediate needs at the ruling prices. Bunker coal costs have dropped somewhat, and sales of No. 11 coal have been made down to $16, No. 9 at $17, gross at the piers. The fact that shippers must now designate vessels before coal is allowed to move from mines has cut out the speculative turn-over of the market, and there is little excitement in the buying at Tide.

Congestion at the piers is being relieved, and at present there are only about 2,000 cars on reserve here at tide, with about 30 ships waiting astream for about 150,000 tons of coal. About 400 cars a day are being dumped from B. & O. and Western Maryland cars at the B. & O. piers here, and the export movement continues heavy. For the first 25 days of August the export cargo loading reached about 420,000 tons, with about 40,000 tons additional taken by the same ships in bunkers. This is far in excess of July figures.

Anthracite—Retail prices have been advanced, the raise being about $1.75 a ton. The change has placed stove and chestnut on the same price basis, the idea being to increase sales of chestnut as the principal demand has been for stove and this has been hard to get. The new schedule is as follows: Hard white ash, No. 1, broken and No. 2, egg, $15.50; No. 3, stove and No. 4, chestnut, $15.75; pea coal, $13 and Buckwheat, $10. Sunbury, No. 2, $15.50; No. 3 and No. 4, $15.75. Lykens Valley, No. 2, $16.50; No. 3 and No. 4, $16.75.

Lake

CLEVELAND

Labor Troubles Lower Production—Industrial Stocks Gain, but Retail Trade Is Short—Prices Are Firm—Pomerene Protests Order 10.

Bituminous—The deadlock reached between operators and union heads at the recent Cleveland conference had an unfavorable effect upon mine labor. Incipient and intermittent strikes and general dissatisfaction prevail in the coal regions. No general strike is anticipated, but production is expected to decrease unless some settlement is reached soon. Under the plan for state conferences, the Ohio union has announced its intention to invite Ohio operators into conference. The operators have intimated that they would negotiate on the matter of inequalities in wages.

Mine operation dropped to 68 per cent for the week ended Aug. 21. Although consumers in Cleveland and surrounding cities are still protesting Order 10, operators say that industrial users are getting more coal under this order than before, due to the fact that industries use the resultant slack from Lake coal.

Lake Trade—The 1,000,000-ton mark for Lake shipments was reached last week. At the rate coal is being sent forward the loss in shipments on Sept. 1 will be less than 5,000,000 tons, as compared with last season.

Retail prices delivered in Cleveland are: Anthracite — egg and grate, $13.75; chestnut and stove, $14; Pocahontas—shoveled lump, $12; mine-run, $11. Domestic bituminous—West Virginia splint, $11; No. 8, $10.50; Millfield lump, $13.50; Cannell lump, $14.50. Steam coal—No. 6 and No. 8 slack, $10.50@$11; No. 6 and No. 8 mine-run, $13@$13.50; No. 8 3-in. lump, $10.50@$11.

BUFFALO

Prices Decline Slowly — Demand Is Light — Consumers' Stocks Are Gaining—Anthracite Shortage Continues—Prices Are Firm.

Bituminous—The slow decline in prices goes on. Shippers are looking for an early though gradual decline. They are now quoting about $9.50 mine price, which is a decline of about $2.50 from the highest figures. There is nothing like uniformity in prices. A great part of the coal is moving at $4, mine price, while there are still reports of sales at $12.

Cars are not plentiful, but it is agreed now that the labor situation is the most serious of anything in the trade. The mines that obtained labor by offering big wages have reaped a harvest, but they have beaten the trade in a still worse way by increasing the cost of mining.

The real demand for coal is light. Consumers apparently have a supply and are not eager to pay as much for their present needs as they paid for their stocks. A matter of 70c. has been added to the cost of coal by the new freight rates. Buyers seem to look for a decline in the mine price soon that will at least neutralize this increase.

Anthracite—The complaint of shortage continues. However, the amount already stored for city trade here is large and any real shortage can be made up in a short time, as always is done when the Lakes close. The Lake shipments are still short. Reports show that cargoes go out as fast as coal is received, so that it is hard to estimate the actual supply.

The standard price will have to be called low, but there are people still buying independent anthracite, some of which brings a premium of $5 and even more.

Lake—Shipments by Lake for the week were 89,400 net tons, of which 47,200 tons cleared for Milwaukee, 19,000 tons for Chicago, 14,200 tons for Duluth and Superior, 6,000 tons for Sheboygan and 3,000 tons for Racine.

Coke—The prices have declined, along with bituminous coal, jobbers now quoting only $18.50 for 72-hour Connellsville foundry and $14.50 for off-grades. A little domestic size is offered here at $10.50, f.o.b. Buffalo, as it has to compete with anthracite. To the commercial price must be added hereafter $3.64 freight, which includes the recent 40 per cent increase.

Inland West

ST. LOUIS

Car Shortage Growing Acute — Scattered Labor Troubles Continue — General Shortage Begins To Assume Serious Proportions in Territory West of River—Domestic Situation Is Growing Serious—No Immediate Relief in Sight.

The steam situation in St. Louis proper is fairly good, but stocks are on a day to day basis, with the exception of a few big plants and public utilities.

In the country the steam condition is a serious proposition. Many public utility plants are trying to secure wood and are giving limited service, and manufacturing plants as well as metal mines are idle. There is nothing to in-

dicate that the situation will get better under present prevailing conditions.

Domestic coal in St. Louis has been taken care of to the extent of 80 per cent in the apartments and about 40 per cent among other householders.

Coal continues to move to Canada, Detroit and points East from the Standard field at prices ranging from $6.50@$8. The greater portion of this coal is for steam purposes.

One reason for the shortage of equipment at the mines in the Illinois field is that the cars are sent to points so far away that when empty they are sent to other and nearer fields. Shortage beyond description is likely to occur in the Middlewest unless the Interstate Commerce Commission orders the return of empties.

In the Standard field the mines work from 1 to 2 days a week on commercial and are getting as high as 5 and 6 days on railroad fuel, with the result that the miners are leaving the commercial mines and going to railroad operations. Standard coal for the St. Louis market is selling at from $3.50@$4.50. Prices of $7 and $8 are asked on all sizes.

The Mt. Olive field is getting about 4 days working time with a heavy railroad tonnage. The price on the Mt. Olive coal ranges from $3.50@$4 and is going to contracts and old customers.

A little Carterville continues to move in and the price ranges from $4.50@$5 when shipped by the larger operators. The independents are getting as high as $7@$8.

In the Duquoin field mine contracts and old orders are being side-tracked and prices of $7@$8 are asked on all sizes, with working time about 3 days per week.

In the Carterville field the Burlington and Chicago and Eastern Illinois railroads have the most equipment. The Illinois Central and Missouri Pacific roads are in bad shape and the Missouri Pacific R.R. continues to be short of railroad fuel.

Labor troubles are at a minimum in this district, but at a scattered point or two in the Standard and one large mine in the Mt. Olive field are idle over the wage question of the day-men.

Retail prices are: Carterville $9, Mt. Olive $7@$7.50, Standard $6.25@$7, for all sizes.

The St. Louis Emergency Fuel Committee met with the retailers of East St. Louis, St. Louis and St. Louis County and completed a survey of the coal shortage in the city. It is likely that the intention of sending a committee to Washington may result in bringing about restrictions on equipment that will afford the St. Louis territory some relief.

COLUMBUS

Better Car Supply in All Districts—Lake Trade Is Rather Active—Outlook Is Much Improved — Prices Continue Strong.

Production in all districts has improved under the influence of a better car supply. On the Hocking Valley Ry. the supply early in the week was almost 100 per cent. On the Toledo & Ohio Central R.R. the supply was better, although not up to that on the Hocking. The result was a run of approximately 75 to 80 per cent. Eastern Ohio is credited with about 65 per cent supply which is a marked improvement. Cambridge and Crooksville had about 70 to 75 per cent supply while Pomeroy had a run of 80 per cent.

After supplying the priorities dealers have been getting some tonnage and the same is true of steam users: But the supply is still inadequate to the need and prevents the storing of any reserve stocks. However, only a few factories have been compelled to close for want of fuel.

Retailers are delivering a larger amount of fuel. Prices are still strong at the higher levels which have prevailed for some time although there is slight weakness noted in certain sections. A fair amount of West Virginia grades is arriving and Hocking and Pomeroy Bend are called upon to supply the major portion for domestic use. Hocking lump sells from $8.50@$10.000 and West Virginia splints from $9.50@$11. Pocahontas when obtainable retails from $10.50@$11.50.

The advanced freight rates are expected to have some influence on prices, but it is still too early to see just what the effect will be. An increase of 40 cents from the Hocking Valley will undoubtedly be reflected upon the price, as will be the increase of 66 cents from the Kanawha field.

The Lake trade is rather active and a larger tonnage is moving to the Northwest. During the week ending Aug. 21 the H. V. docks at Toledo loaded 203,036 tons, which is the largest week of the season. These docks have loaded 750,328 tons since the opening of navigation.

Prices paid at the mines for the principal coals used in central Ohio are:

Hocking lump	$5 50@$8 00
Hocking mine-run	5.50@ 8.00
Hocking screenings	5 00@ 7.75
West Virginia splints, lump	6 50@ 9.00
West Virginia splints, mine-run	6.25@ 8.75
West Virginia splints, screenings	6.25@ 8.75
Pomeroy lump	7.00@ 9.00
Pomeroy mine-run	6 50@ 8.50
Pomeroy screenings	6 50@ 8.50
Pocahontas lump	8.00@ 9 50

CINCINNATI

Prices Have Advanced — Stocks Are Ample — Progress Made in Car Supply — Coal Men Ordered To Produce Books by Kentucky Judge.

Coal companies receiving their fuel by boat have not increased prices, since the new freight rates do not affect shipments. Net increase in the coal freight rate from the West Virginia mines to Cincinnati is 61c. per ton and on anthracite is $1.73 per ton.

Cincinnati continues to have an ample supply of coal on hand. There are no complaints from industries and public utilities and the householders continue to store fuel away for the winter.

Operators feel optimistic over the progress made in supplying cars to the mines. The situation, while it still can be a great deal more improved, should come around in fine shape.

There is no feeling of apprehension in this section of a coal shortage next winter. There continues a healthy demand for all kinds of coal, with a shortage reported in smokeless lump for household purposes.

Coal men this past week have been watching with interest the action of United States Judge Cochran at Covington, Ky., who has ordered Kentucky operators and dealers to produce their books before the grand jury which is investigating alleged charges of profiteering.

Retail prices were advanced during the week. Smokeless run-of-mine was 50c.@$1 higher, at $9 and $10. Bituminous lump, formerly quoted at $8.50@$9.25, was put up to $8.50@$9.50 a ton. Smokeless lump and egg was $10@$10.50 a ton, against $9.50@$10.50. Coke was 50c.@$1 higher, at $14@$14.50 a ton.

CHICAGO

Market Is Unsettled—Strong Demand Maintains Prices—Transportation System Is Much Improved.

The Chicago coal market is very spotty indeed. Some of the Franklin County operators have raised prices to their trade. One firm is selling Franklin County prepared coal through its regular channels on the basis of $5.50 f.o.b. mines. This is about a dollar higher than price asked by other Franklin County operators. Southern Illinois open-market prices are very much higher.

There has been a decided change for the better in the freight traffic situation. A decided improvement has also been noticed in the time in transit of coal from the mines through to destination. There has been a very noticeable decrease in the number of cars coming to Chicago to be reconsigned and this naturally has some effect on the speeding up of the transportation situation.

Eastern coals are coming into the Chicago market in greater volumes than expected, although to get eastern coal it is up to local purchasers to meet export offers. Pocahontas coals are selling at retail from 12@$15, while anthracite is bringing anywhere from $15.50@$23 per ton.

The public is still buying heavily and with the supply limited as it is, the present high costs probably will be maintained.

DETROIT

Responsibility for High Prices Is Attributed to Competition of Industrial Consumers — Investigation of Alleged Unreasonable Charges Is in Prospect—Retail Situation Is Worse.

Bituminous—Replying to statements of retail dealers and jobbers placing blame for high coal prices on the producers, representatives of the latter in Detroit make a direct denial, claiming that various manufacturers have been

hogging the market. When they have satisfied themselves, possibly the retailer will have a chance to come in and buy coal to take care of the householder. The retailer has been up against it because of this bidding in the open market which big firms could afford to do.

In accordance with instructions from Washington, the United States District Attorney in Detroit has instituted an investigation of conditions, which is expected to take in the operations of "scalpers" who are reported to be buying the available output of various mines, reselling the coal at a considerable advance.

There is not very much coal moving into Detroit at present. Shipments are little more than adequate to supply the needs of industrial consumers for present use and retail dealers have been able to get very little stock.

Anthracite—While a small amount of anthracite is reported coming to some of the local dealers, the quantity is so small as to give no basis for confidence for the winter supply. Most of the retailers have been able to supply only a small proportion of their customers, and those not yet able to get coal view the outlook with much apprehension.

Lake Trade—Shipments of coal over the Lake routes are steadily increasing. Dumpings are nearly up to scheduled rate provided for in recent priority order.

MIDWEST REVIEW

Mines Resuming Operations Satisfactorily—Prices Have Wide Range—Demand Is Strong.

The difficulties with mine labor in the Middlewest have been settled, temporarily at least. Early last week, the men began going back to work; both in Illinois and Indiana. On Aug. 25, practically all of the larger mines were working.

The day men in the Illinois and Indiana mines will receive $1.50 per day increase bringing the scale up to $7.50 for 8 hours' work. This increase eliminates the differential between the earnings of the coal diggers and the day men in the thick-vein fields of the two states, and gives the day men greater pay than the coal digger in the thin-vein sections of Illinois. This is obviously unjust and there is a commission now at work composed of both miners and operators who will investigate the situation and make a report very shortly.

The demand for coal in the Middlewest is now just as heavy as it ever has been and the market prices on all grades are reported very erratic.

It is expected that the market will soon become more settled and more uniform prices will prevail.

The increase in freight rates, which became effective a few days ago, had but little actual bearing on the market. Practically all operators and wholesalers have as much business booked as they can possibly take care of, so those buyers rushing into the market at the last minute, in the hope of purchasing coal and getting it shipped before the increase in freight, were unable to place many orders.

If the car supply continues good, the market should ease up to more reasonable levels, but if the car supply continues tight, there will be no let-up in the demand and no reduction in the present current prices. Prices f.o.b. mines are as follows:

Franklin County and Southern Illinois prepared coals, from $4.75@$8.50.

Springfield District, from $6.25@$8.50.

Northern Illinois thin vein coal, from $5.75@$7.50.

Clinton Fourth Vein, from Indiana, from $4.50@$8.

Indiana Fifth Vein, from $4.25@$7.25.

South

LOUISVILLE

Priority Coal Declines—Spot Market Strong—Car Supply Not Materially Improved—Retail Situation Is Serious—Eastern Kentucky Operators and Jobbers Indicted.

Although Attorney General Palmer is being credited for slumps in Eastern and Northern market prices, leading coal men of the Louisville district claim that the slumps are due to better production, and drop in export demand.

There has not been much slump in prices south of the Ohio River, but as a result of increased rail rates to Tidewater, increased ocean rates and high prices in the fields, export demand has dropped.

Coal on priority for public utilities has dropped to $6@$7 a ton at the mine. Such mines are assured a full car supply, and can operate at a lower cost, this adding to costs of operators without assigned cars. This has resulted in open market buyers bidding against each other for coal, with the result that the spot market on gas coal has been around $11@$12.

Up to Aug. 21 car supply on the Louisville & Nashville R.R. in Eastern Kentucky was a fraction under 33 per cent, and on the Southern R.R. 20 to 25 per cent. Strikes in Eastern Kentucky have not been at all general, and have not affected prices or production as a whole, as operating mines have been in position to take all cars of mines closed by strikes.

Quotations for Eastern Kentucky mine run show gas coal to be selling at around $10@$11 a ton; non-gas and steam, $9.50@$10.50.

Operators claim that in view of car shortage and holding of cars necessary in making prepared sizes there is not much prospect of Kentucky mines screening domestic in the Eastern section of the state this fall.

Retailers are reporting heavy orders to be filled as coal is supplied, on basis of market price at time of delivery. One retailer stated that it would take months to fill orders now on hand unless a full supply of coal is available. Late orders are being taken subject to delivery after earlier orders are filled, but under agreement that in event of actual need all orders will be scaled down to one load at a time, regardless of amount of order. Retailers have been unable to place orders to much more than take care of steam customers.

Many jobbers and operators in Eastern Kentucky have been ordered to produce their books and records to the Federal grand jury at Covington, Ky. The list under indictment includes many in the Harlan, Hazard, and Bell County districts.

BIRMINGHAM

Market Shows Great Strength, but Coal Supply Has Not Materially Improved — Car Shortage More Acute — Labor Conditions Approach Normal.

Car supply was miserably poor on the Southern Ry., only 25 per cent supply being furnished. The Louisville & Nashville R.R., has had plenty of cars for coal carrying and mines have received 100 per cent supply. The Frisco has probably supplied 70 per cent of the cars needed in the fields it serves.

The railroads, as well as other classes of consumers, are very short on fuel supply and some coal is being confiscated. Deliveries are slow and irregular, but industries and utilities are managing to keep going without serious difficulty. Perhaps 90 per cent of the coal mined is being applied against contracts and orders which have been on hand for some time. The spot market is high at $8@$8.50 per net ton mines, most of such coal coming from small mines and wagon operations.

The inquiry for bunker and export coal is very strong and Alabama operators have a heavy tonnage of this business booked already. Due to transportation conditions and the poor facilities for unloading cars and barges at southern ports the progress being made in filling such orders is not altogether satisfactory and it is not expedient to take on further business at this time.

Much more coal is being produced in actual running time than a week ago where strikes have been hindering the output for some time. As a whole, production in the district is nearing normal tonnage obtainable under existing transportation conditions.

West

SAN FRANCISCO

Retail Coal Is Increased — Wholesale Quotations Are Unchanged.

The San Francisco Retail Coal Dealers' Association has announced an increase in the price of coal from $16.50 a ton to $18@$18.50. The increase is due to the new freight rate schedule, amounting to $1.50 a ton, and a raise in the price of coal at the mine of 50c., according to the announcement.

Bituminous coal, f.o.b. Utah and Wyoming mines, is still quoted at $5.

News From the Coal Fields

Northern Appalachian

CONNELLSVILLE

Car Supplies Are Unchanged—Market Prices Are Stiff — Production Rate Is Maintained.

Car supplies have shown practically no variations in the past two week. Furnacemen report that while time of coke in transit has been reduced it is still well above normal, and this would suggest that if the railroads get to moving cars at normal rates the cars now available will permit of heavier placements.

The spot coke market has shown remarkable stiffness. The improved car supply together with the reported withdrawal of some furnace interests, formerly insistent buyers, has not softened the market to any extent. Spot furnace coke was quotable at $18@$18.50, at its highest, with a leaning toward the $18.50, while the lowest price since made on really standard grade seems to be $17.50. At the present time the market is quotable a little stronger. Some coke has been secured recently at $17.50, but $18 is perhaps a more representative figure. An easier market tone is predicted by the fact that quality complaints are beginning to be heard. A critical market usually is the forerunner of a reduction in price.

As to foundry coke, there are slightly heavier offerings, and prices are unchanged, the only noticeable difference being that one can pick up slightly better quality at given prices. We quote spot coke at $17.50@$18 for furnace and at $19@$19.50 for foundry, per net ton at ovens.

The *Courier* reports coke production in the Connellsville and Lower Connellsville region in the week ended Aug. 21 at 219,060 tons, a decrease of 380 tons, compared with preceding week.

UNIONTOWN

Unexpected Car Shortage Maintains Price Levels — Poor Transportation Facilities Jam Yards — Buyers Await Adjustment — Labor Is Difficult To Handle.

An unexpected shortage in car supply has held prices up to the prevailing high quotations of the past two weeks. Due to the inability of shippers to furnish quotations for consignments originating late in the week, little fluctuation was recorded in the $8.50 coal and $18 coke figures.

From complaints over poor quality of coke and coal, consumers have passed to downright refusal to accept shipments. This necessarily indicates a market tone that can only be followed by falling prices. Nevertheless, there is yet no discernible tendency to weaken the figures at which offerings are made.

Removal of the $10 demurrage exacted on shipments not lifted after 48 hours has apparently had no effect on the situation, nor has the continued embargo on pier shipments. Wagon mine operations also can be disregarded in considering the situation.

As was expected, yards became crammed with loads, due to the extraordinary effort made to start consignments before the increased freight rates became effective. Youngwood carried more cars through the week than for many days and similar conditions were reported from Rainey. Car supply opened strong but fell off sharply after the big mid-week shipments had originated.

As present wholesalers are apparently awaiting an adjustment and producers are bending all effort to maintenance of their organizations. Labor is becoming more difficult to command and if a fair drop in price will stabilize the market for the fall and winter little opposition would be voiced on the part of the vendors of fuel supplies.

PITTSBURGH

Labor Troubles Feared—Car Supplies Increase — Market Is Easier — Shipments to Lakes Heavy.

Pittsburgh district coal operators continue to entertain fears of labor troubles and so far as this district is concerned the difficulty of the situation is increased by the advance given to daymen in Illinois and Indiana. It has been the common theory that any concessions made in other districts would produce unrest here. While some operators are in favor of compromise, many feel that it would be impolitic and against the public interest to grant any wage advances at this time.

Car supplies have continued to increase, but a serious shortage is still reported. The last two weeks reported upon showed 15 to 16 per cent labor shortage at river mines, with no transportation disability, while rail mines showed 38 to 40 per cent car shortage. Sufficient additions to car supplies would uncover a labor shortage at rail mines and it is only a guess whether the shortage would be greater or less than has been exhibited at the river mines.

With the Pennsylvania R.R. the situation has so improved that the road has discontinued its "entire production" order with respect to Lake shipments, and is back to the old system of rating cars for different points. Insufficient Lake transportation rather than inability to move coal to the Lakes may yet cause a shortage in the Northwest.

It is reported now that some steel plants have been rejecting shipments on account of quality, indicating that they are not as hard pressed as formerly.

Offerings of coal in the open market are heavier, partly by reason of greater production and also due to embargoes but there has been little additional decline. The embargo on the Philadelphia & Reading R.R. has shut out a great deal of gas coal from the East, although the Baltimore & Ohio R.R. is still taking some. The mine market is quotable at about $9 on an average, Pittsburgh district, with little distinction between steam, gas and by-product.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

BITUMINOUS COAL

	1920		1920(a)	
	Week	Calendar Year to Date	Week	Calendar Year to Date
Aug. 7b	10,432,000	313,172,000	9,359,000	267,503,000
Daily average	1,739,000	1,678,000	1,560,000	1,434,000
Aug. 14b	11,814,000	324,986,000	9,092,000	276,595,000
Daily average	1,969,000	1,687,000	1,515,000	1,436,000
Aug. 21c	10,981,000	335,967,000	10,675,000	287,270,000
Daily average	1,830,000	1,692,000	1,779,000	1,446,000

ANTHRACITE

	1920		1919(a)	
	Week	Calendar Year to Date	Week	Calendar Year to Date
Aug. 7	1,756,000	52,317,000	1,870,000	49,177,000
Aug. 14	1,801,000	54,117,000	1,640,000	50,817,000
Aug. 21	1,595,000	55,712,000	1,862,000	52,678,000

BEEHIVE COKE

United States Total

Week Ended				
Aug. 21c	Aug. 14b	Aug. 23	1920	1919(a)
1920	1920	1919	to Date	to Date
423,000	418,000	415,000	13,634,000	12,381,000

(a) Less one day's production during New Year's week to equalize number of days covered for the two years. (b) Revised from last report. (c) Subject to revision.

FAIRMONT

Production Declines — Heavy Priority Shipments Cause Congestion, Lake and Tide — Restricted Distribution Areas Soften Price.

Less coal was produced during the third week of August than during either of the two preceding weeks. Total loadings during the period ending Aug. 21 approximated 5,100 cars. The shortage of cars which developed closed down 172 mines on the Monongah division of the Baltimore & Ohio R.R. at various times during the week and was undoubtedly due to growing congestion both at Tidewater and the Lakes.

The week was opened with a smaller supply of empties than at the beginning of the previous week and there was a decrease in supply each day. Not only a car shortage but a tendency among miners not to work quite so hard was a factor in reducing production.

The heavy flow of coal to the Lakes made it almost inevitable, in the opinion of coal operators, that it would be necessary to call a halt on Lake shipments until roads could unload the coal awaiting shipment by boats. While the shipments were continued up to the end of the week an embargo was looked for at almost any time. There was an embargo to Tidewater except for coal destined to New England. It was difficult to handle coal eastward owing to slow dumping at Curtis Bay, too free an issuance of permits and from other causes. The exporting of coal from northern West Virginia mines was practically at a standstill.

With many market outlets cut off, producers saw a softening of prices, although at the end of the week Lake delivery quotations strengthened somewhat. There continued to be, as in the previous week, heavy shipments of fuel for railroad consumption.

NORTHERN PAN HANDLE

Car Supply Improves — Lake Quota Leaves Practically No Free Coal — Prices Are Slightly Off.

Railroads serving the Northern Pan Handle region maintained a much better car supply during the week ending Aug. 21. However, owing to the fact that the Pennsylvania R.R. was behind with its quota, practically all coal loaded on that line was taken for Lakes.

The large Lake tonnage required under Order 10 left little coal available for purely commercial use and consequently made it difficult for mines to fully take care of all contract requirements. The rail movement was reported as satisfactory.

While production was slightly on the up-grade in the Northern Pan Handle, such was not the case in the eastern Ohio field, where only about 68 per cent car supply was afforded the mines, a decrease as compared with the previous week.

While price tendencies generally were downward yet there was no decided break in prices in the Northern Pan Handle so far as could be learned.

Middle Appalachian

KANAWHA

Production Slumps Further — Heavy Tide Shipments—Lake Quota Is Met—Prices Are Lower.

Production decreased further in the period ending Aug. 21, there being in consequence a reversion to transportation conditions obtaining during the greater part of July. There was a variation during the week of 50 per cent in the car supply, from a daily production of 24,000 tons for the first few days of the week on the Chesapeake & Ohio R.R., the output dropped to 12,000 tons on Thursday. On the Kanawha & Michigan R.R. the supply was equally poor, slumping to about 21 per cent by the end of the week.

It was an open week in the district for Tidewater shipments. This had a tendency to cut down western shipments and especially the movement to the Lakes, tonnage destined on Order 10 having met the requirements.

Prices were on a somewhat lower level than in preceding weeks, especially for export. The figure offered for this delivery was $14 a ton. By the 23rd an embargo had cut off export shipments once again.

POCAHONTAS AND TUG RIVER

Car Supply Continues Good—Labor's Indolence Causes Loss of Time—Prices Are Lower—Navy Is Requisitioning Coal.

In the weekly period ended Aug. 21 production underwent little variation, in territory supplied by the Norfolk & Western R.R. Although the loss from lack of cars was somewhat larger than it had been during the first part of August, maximum production was impossible because of the usual periods of idleness before and after pay-days, fereign holidays, etc.

If anything, prices were somewhat lower than during the preceding weeks. Aside from Lake shipments, there was not a very heavy tonnage being moved to the West.

Losses entailed by failure of miners to work full time were responsible for the failure of the mines in the Pocahontas field to speed up production.

Production is about at a maximum insofar as the car supply is concerned, although the losses from a car shortage during the last half of the month were slightly larger than in the first half. The morale of the men at the present time is said to be excellent, labor losses having their source in the usual causes. Much of the output of the Pocahontas region was still consigned to Tidewater and Inland East points, a large tonnage being required for New England, bunkerage and public utilities. The Navy is also requisitioning coal on its own terms. There was not, therefore, a very large tonnage available for foreign shipment.

Coal loading in the Tug River field declined slightly as compared with the previous week. Despite this fact railway officials were claiming practically 100 per cent car supply. Such a shortage of cars as did develop was due to congestion at the Lakes and at points in the East.

NEW RIVER AND THE GULF

Production Rate Maintained — East Gets Majority of Tonnage—Navy Commandeering Coal—Spot Quotations Are Lower.

Production in the Winding Gulf region was just about on par with the second week of the month, Virginian Railway mines outdistancing those on the Chesapeake & Ohio R.R. owing to larger car supply. The Virginian afforded a 70 per cent car supply while the C. & O. maintained about a 60 per cent run.

All Winding Gulf shipments were eastward, a part of the production going to New England, with a fairly large tonnage for bunkerage and export. However, rather a large tonnage was being commandeered by the Navy.

Production in the New River field for the week ended Aug. 21 was not so heavy as during the preceding week. Output for the week amounted to about 132,000 tons. Both Lake and New England shipments were perceptibly less. Aside from Lake shipments, small as they were, the West was securing little New River fuel. New River coal was required for bunkerage and New England in such large amounts as to limit tonnage available for export. The tonnage commandeered by the Navy also cut a hole in the quantity available for spot market.

For such free coal as there was, a price of about $14 a ton was being offered, a slight reduction from prices that prevailed during the preceding week.

VIRGINIA

Production Decreases Slightly—Labor Conditions Are Good but Cars Scarce—New England Gets Heavy Tonnage —Prices Are Firm.

Production slumped 8,000 tons in the southwestern Virginia fields for the third week of August. The total amount of coal produced was 180,600 tons, of which 31,000 tons were converted into coke, there being no cars to load that tonnage. Priorities absorbed such production as there was to a great extent, curtailing the volume of free coal available. Less coal was being shipped for export as a result of this, New England securing the tonnage which might otherwise have been exported.

Labor conditions were excellent, miners showing a disposition to work with a greater degree of regularity than had been the case during preceding weeks.

There was little or no softening of prices in the Virginia field. Quotations at the mines for export coal were $14 a ton. Approximately $10 a ton was the current quotation for coal for inland shipment.

NORTHEAST KENTUCKY

Production Declines Further—Tide Is Embargoed—Lake Shipments Continue —Prices Are Softer.

There was a continued loss in output of Northeast Kentucky mines for the period ended Aug. 21. Output amounted to 102,530 tons at the mines on the line of the Chesapeake & Ohio R.R., a 42 per cent production. A shortage of cars was mainly responsible for the loss.

A wreck on the line supplying Big Sandy mines knocked those operations out of two days' placements. Production for the corresponding week of 1919 was 64,769 tons, representing at that time approximately 60 per cent of full time capacity.

Throughout the week mines were embargoed on Tidewater shipments. Due to the slump in the car supply, shipments to the Lakes were correspondingly decreased. Producers felt that they were being discriminated against as to Tidewater shipments, as there was no ban on coal from the C. & O. R.R. districts in southern West Virginia to Tidewater.

Prices were hardly as firm as they had been during the early part of the month. Nevertheless, there was a heavy demand for coal of all kinds.

LOGAN AND THACKER

Thacker Production Gains — More Mines Resume Operations, Despite Strikers' Intimidating Tactics — Car Shortage Reduces Logan Output.

Thacker district gained in production during the third week of August notwithstanding strike and the violence in which strikers have been indulging. Logan mines lost ground because of a diminishing car supply.

At the end of the week in the Williamson field there were about 42 companies operating their mines despite the utmost endeavor of the United Mine Workers to keep such mines in idleness through a resort to intimidation. About 30 companies are still in idleness. Production was increased slightly in the Williamson field but the month may be ended with a decrease in production, owing to the fact that the Borderland mines were forced to suspend operations when the power house was recently blown up by strikers.

The week's production in Logan field was about 190,000 tons, a reduction of 30,000 tons, due to car shortage, as compared with the previous week, bringthe output under 50 per cent.

Eastern shipments were much larger, though about the only coal allowed to go to Tidewater was that destined for New England. Lake tonnage was much reduced in volume, as compared with the first half of the month, due probably to larger Eastern shipments and to curtailment of transportation facilities.

The limited car supply made it impossible to supply contract customers after meeting priority requirements.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Car Supply Is Better but Inadequate Facilities Curtail Production—Railroad Plans Development.

While Southeastern Kentucky coal operators are receiving a car supply which seldom provides for a run of more than two days each week, it has been stated that the supply of coal cars is almost up to normal, the apparent scarcity being accounted for by the wider distribution of cars at this time.

Many new mines have been established along the Louisville & Nashville and feeding lines, tonnage having grown beyond facilities of the railroads. On the Cumberland & Manchester R.R., an extension to Clay County, over twenty mining operations have been installed the past two years, while dozens of new plants have been built in Harlan and Bell Counties.

To better handle the Southeastern Kentucky coal tonnage the L. & N. R.R. is preparing to build another line around Emanuel, Knox County, this to be a part of the double track extending from Paige, Harlan County, to Corbin. At Emanuel a heavy grade slows up traffic. The new line will avoid this grade.

WESTERN KENTUCKY

Strikes Were Shortlived and Miners Have Generally Returned—Production Is Good, but Demand Is Exceeding Output — Interest Shown in Export Prospects.

It is reported by Western Kentucky operators that the strike situation is clearing and that men who were on strike have returned to work in almost all cases.

Production for the field is increasing as a result of a much better car supply. The strikes in the Indiana and Illinois fields resulted in an almost full car supply in Western Kentucky for a time. Last week the average car supply was around 52 per cent. On Aug. 23, the Louisville & Nashville, R.R. supplied 100 per cent and the Illinois Central 60 per cent, the latter line having fewer cars due to resumptions in Indiana and Illinois.

Demand is exceeding production as a result of a good movement northward while there is a continued steady movement to Nashville, Memphis and the South.

In addition to this demand there are several rumors of export movements from West Kentucky fields, principally through New Orleans. It is well known that some coal is moving through New Orleans, presumably for Cuba, while there are also reports of movement through Mobile for Cuba and South America.

While reports are being received concerning some Western Kentucky coal selling up to $8.50@$9 a ton, averages would show that on spot coal prepared sizes are $5@$5.50 a ton; on mine-run and screenings, $4@$4.50 a ton, at mines.

Railroads have been buying freely. The Kentucky Railroad Commission has decided not to make any fight on increased freight rates, the new increase in interstate rates to be allowed to apply on intrastate rates.

Western

OKLAHOMA

Retail Stocks Are Practically Exhausted—Car Shortage Is Blamed.

Retail coal dealers in Oklahoma City declare that within a month the local supply will be entirely exhausted, and that it will be practically impossible to get further supply. It is declared probable that the winter may find dealers without a ton of coal in storage and few coal bins of the consumers with sufficient fuel for the winter's needs. The advanced freight rates are expected to add fully $1 a ton to the retail price.

Inability on the part of dealers to get coal on account of the car shortage and uncertainty of transportation is chiefly blamed for the lack of fuel.

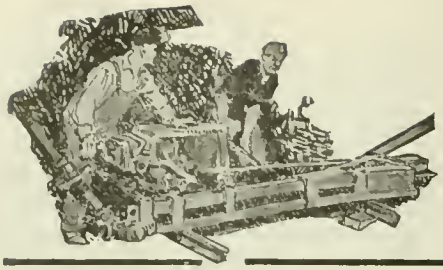
Canada

BRITISH COLUMBIA

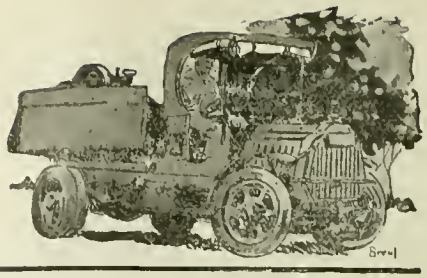
Province of Alberta Properties Are To Change Hands — Blue Diamond Coal Mines, Ltd., and Canadian Coal Fields, Ltd., Are Taken Over — Extensive Developments Planned.

At Victoria it is reported that important mining properties in the Province of Alberta are to pass into the hands of the McIntyre and Temiskaming mining companies of the Porcupine and Cobalt district, Ontario, respectively. The Ontario companies are purchasing the Blue Diamond Coal Mines, Ltd., of Brule, Alberta, a concern with an acreage of some six square miles and producing 500 tons of steam and domestic coal a day, and have optioned the Canadian Coal Fields, Ltd., whose holdings cover a large tract of coal land lying along the Hay River some thirty miles from the Blue Diamond. The Blue Diamond is capitalized at $1,500,000 and the Canadian Coal Fields, Ltd., at $10,000,000. The option on the latter is understood to be for 15 years. Engineers already are planning for considerable further development of the Blue Diamond mines, it being the intention to install the mine plant and equipment necessary to permit a production of 2,000 tons a day.

The sellers of the Blue Diamond are McKenzie, Mann & Co. This concern is also a holder in the optioned property.



Mine and Company News



ALABAMA

Birmingham—The Department of the Interior has selected the University of Alabama, Tuscaloosa, as the location for the new experimental station of the Bureau of Mines to serve the southern mineral districts, provision for which was made at the last session of Congress. The initial appropriation is $25,000, and it is understood that the station will be built and equipped as soon as the details can be arranged.

IDAHO

Grangeville—The Grangeville Coal & Development Co., at this place has been incorporated, with a capitalization of $500,000. Directors of the company are: T. B. Neal, Frank F. Duff, Jacob G. Elmers, A. Doornbos and N. B. Geary, all of Grangeville. The corporation is formed to develop coal properties.

ILLINOIS

Benton—The Orchard mine in Williamson County, which was closed by state mine inspectors until better ventilation was provided is again hoisting coal.

Carterville—Calmes & Hague, retail coal dealers and jobbers, have purchased a slope mine in Williamson County, and have perfected plans for greatly increasing its capacity. The name of the new firm is the Black Gem Coal Corporation, and the main offices of the company will be in Baton Rouge, La. The new owners have been experiencing some difficulty in securing coal for their trade and decided that the best solution would be to own their own mine. The property, which embraces about 400 acres of unworked coal land, is in the vicinity of Carterville.

Moundsville—Before the end of August the Consolidated Fuel Co., of Pittsburgh, expects to begin producing coal at its New Francis No. 1 mine at Captina, W. Va., where the company has sunk three shafts.

INDIANA

Newport—The Newport Coal Company has been organized with a capital of $500,000 to operate a coal mine. Directors are Leon P. Littlejohn, Barton S. Aikman and Carl F. Kempf.

Shelburn—The Six Veins Coal Company was recently capitalized at $200,000. The organizers and directors are Alonzo C. Owens, Paul Stratton and Joseph S. Schroeder.

Evansville—The Ayrshire Coal Co. is sinking a new shaft for a coal mine in Pike County. When completed the mine will be one of the largest producers in the State. The shaft is almost completed and the machinery is being placed.

OHIO

Cincinnati—C. B. Boyd, traffic manager of Harlan, Hazard and Southern Appalachian coal operators' associations, in a statement issued today declared that the supply of coal cars to mines in eastern Kentucky is nowhere near 100 per cent of requirements. His organizations are composed of 250 coal operators producing approximately 15,000,000 tons of coal annually. Mr. Boyd said that an erroneous impression had been created by a recent statement published quoting officials of the Louisville & Nashville R.R. as saying that the coal-car supply is now normal.

Furthermore he declared that the only mines at which there is a 100 per cent supply of cars are mines which have exclusive contracts to furnish coal to railroads.

Pomeroy—The work of developing the 1,700 acres under lease by the newly organized Pomeroy & Hocking Coal Co., is going forward at a rather rapid pace. Grading for a spur from the Kanawha & Michigan R.R. is going on and the track will be laid during the fall Mine development and tipple construction is going forward. The capitalization is $250,000 and Fred Essex is at the head of the company. The product will be sold through the Essex Coal Co., of Columbus.

PENNSYLVANIA

Greensburg—One thousand two hundred and ninety-one acres of coal, underlying land in Allegheny and Lower Burrell townships, have been sold by Mr. and Mrs. William Doolittle, of Edgeworth, and others to the Ben Franklin Coal Co, of Freeport, for $110,000. Various tracts are included in the sale, 709 acres being in Allegheny Township and 582 in Lower Burrell.

COAL MINING DEVELOPMENTS, STANDARD OIL CO. (INDIANA), AT CARLINVILLE, ILL.; R. W. HUNT & CO., ENGR., CHICAGO, ILL.

Somerset—Recent deals in Somerset County coal land include the merset County coal land include the following:

One hundred acres, east side Somerset and Cambria branch of the Baltimore & Ohio, known as the Charles R. Sanner property, to John E. Custer, Hooversville, for $21,000. The coal is "Sanner coal" known as Moshannon vein, being three feet in thickness, dipping toward Cox's creek.

Dr. C. J. Hamminger of Rockwood purchased the 120-acre tract along Cox's creek from A. G. Newman for $11,000. A track is now under course of construction by the Rockwood Coal Co.

Springdale—A coal handling system said to be the largest at any central station in the United States is now in operation at the West Penn Power Co.'s new $6,000,000 electric power plant at Springdale (10 miles from Pittsburgh). Operating at capacity, it will elevate, screen, pick, crush, weigh and convey to the bunkers of the boiler room, 500 tons of coal an hour.

The system, exclusive of the foundations, cost approximately $250,000 or about 4 per cent of the cost of the entire plant.

Coal mined at the company's mine across the Allegheny River at Logan's Ferry is to be brought into the shaft at the tipple through a tunnel in the coal 100 ft. under the stream. Rotary dumps at the foot of the shaft will deliver the coal from the mine cars to pockets; from here tandem skip hoists elevate it to the tipple where it is prepared.

The apparatus for handling the coal above the ground was built by Heyl & Patterson, Inc., of Pittsburgh, the hoist by the Ottumwa Iron Works, the "skips" by the Connellsville Machine & Manufacturing Co. and the rotary dumps by the car Dumper & Equipment Co., of Chicago. The system was designed by West Penn engineers.

Operating Conditions at Coal Mines in Indiana, July, 1920

PREPARED BY JONAS WAEELL, SECRETARY INDIANA COAL TRADE BUREAU

Railroads on Which Mines Are Located	District	No. of Mines	Tons Produced	Full Time Capacity (Tons)	Tons Lost and Causes Therefor — Total All Causes	Car Shortage	Labor Trouble	Mine Disability
Big Four	Terre Haute	6	64,110	120,597	56,487	28,431	25,903	2,153
B. & O. S. W.	Vincennes	2	29,596	51,386	21,790	7,749	8,117	5,924
	Clinton	25	175,431	338,342	162,911	85,551	70,710	6,650
C. & E. I.[1]	[2] Sullivan	16	162,427	287,772	125,345	71,865	45,205	8,275
	Total	41	337,858	626,114	288,256	157,416	115,915	14,925
C. I. & W.	Dana	1	8,988	10,168	1,180		1,180	
Cent. Ind.	Brazil	1	4,128	4,738	610		610	
	Clinton	14	211,276	338,703	127,427	37,887	85,923	3,617
C. T. H. & S. E.[3]	Linton	26	239,747	404,118	164,371	61,775	80,985	21,610
	Total	40	451,023	742,821	291,798	99,662	166,909	25,227
E. & I.	Clay City, Petersburg	11	90,947	190,380	99,433	51,459	36,195	11,779
E. & E.	Evansville	2	10,216	11,413	1,197	8	1,042	147
E. S. & N.	Evansville	4	22,752	28,008	5,256	1,523	3,434	299
Ill. Cent.	Linton	6	57,828	109,820	51,992	35,885	14,101	2,006
Monon[4]	Linton	21	167,459	305,985	139,516	4,806	110,116	24,594
	[5] Main Line	20	134,271	318,432	184,161	109,054	64,127	10,980
P. C. C. & St. L.	[6] Vincennes	21	215,420	730,339	514,919	266,858	188,671	59,390
	Total	41	349,691	1,048,771	699,080	375,912	252,798	70,370
	Ayrshire	7	64,663	114,348	49,685	31,974	13,781	3,930
Southern	Boonville	8	57,524	74,656	17,132	1,834	14,676	622
	Total	15	122,187	189,004	66,817	33,808	28,457	4,552
Totals		191	1,716,793	3,440,205	1,723,412	796,659	764,777	161,976
Totals for months ending June 30, 1920		191	2,173,036	3,601,630	1,428,594	979,283	214,983	234,327

(1) Two mines served by two railroads. (2) Includes all mines South of Terre Haute. (3) One mine served by two railroads. (4) Four mines served by two railroads. (5) Includes all mines on St. Louis and Michigan Divisions. (6) Includes all mines on Vincennes Division and Dugger Branch.

VIRGINIA

Roanoke—The Virginia Coal & Coke Co., recently organized with a capital of $10,000,000, will develop about 70,000 acres of coal lands in Leslie, Letcher, Pike and Perry counties, Ky. In addition to the establishment of new mining communities, a railroad line will be constructed. John B. Newton is at the head of the company.

Lynchburg—The Pinnacle Block Coal Co., recently incorporated with a capital of $1,000,000, is planning for the development of large coal properties in this section. The company is headed by H. P. Adams, president; A. W. Horton is secretary.

WASHINGTON

Seattle—The Pacific Coast Coal Co., with headquarters at this place, has bought the John Campion and Jones Brothers' coal properties in the Cedar Mountain district and also acquired the adjoining Laloli farm. The Pacific company is planning the expenditure of half a million dollars during the next 12 months to make the re-opened mine one of the largest shippers in the Northwest.

The purchase of the Campion property brought out the fact that the faulted seam, on what used to be known as the Colman mine, had been located by mining engineers 1200 ft. back from the point where mining operations had been abandoned.

The new mine is located six miles above Renton on the Columbia & Puget Sound, only 18 miles distant from Seattle.

Coal in the Cedar Mountain mine is of a grade closely approaching that at Black Diamond, and is expected to prove desirable for domestic and steam use.

WEST VIRGINIA

Huntington—Preliminary work has been started on the 18-mile extension of the Norfolk & Western Ry. from Lenora up Pigeon Creek to Rockhouse in Mingo County, and it is now announced by the United Thacker Coal Co., owning virtually all the coal land which will be reached by the extension, that it will be completed and ready for operation by July, 1921. It is estimated that it will cost between $2,000,000 and $3,000,000 to construct the extension. Much of the coal territory which will be tapped by the Pigeon Creek branch was leased to Huntington capitalists and others on the strength of the building of the extension. The Kountz interests of New York control the United Thacker Coal Co.

Morgantown—Early development of about 13,000 acres of coal land—known as the Cochran property—in three different tracts is being negotiated for by the Valley Camp Coal Co., in which James A. Paisley, of Cleveland, is largely interested. The present owner of the coal is M. M. Cochran of Uniontown, Pa. It is estimated that the purchase price will be in the neighborhood of $6,640,000 as it is understood that the coal will be sold at the price of $500 an acre. The coal lands in the Cochran group are in three different locations; one tract of 2,456 acres being between Dent and Scott's Run; another of 5,000 acres between Scott's Run and Robinson's Run and another of 6,600 acres near Cassville. The Robinson's Run territory is to be developed by Mr. Paisley and associates through the Monongah & Northwestern R.R. recently organized.

Charleston—Figures compiled show that mines in the Pocahontas region of West Virginia produced only about 50 per cent of capacity during the first half of 1920 because of a car shortage. The mines produced only 7,145,238 tons, compared with 13,000,000-ton rating. Lack of cars curtailed output to the extent of 43 per cent. The combined loss from labor shortage and mine disability was only about 3 per cent.

Huntington—The Interstate Coal & Dock Co., of Wisconsin, which has had a rapid growth in the last few years, recently figured in a deal reaching $500,000 when it acquired all the plants, assets and properties of the Maxine Coal Co. The Maxine company was organized about three years ago, and controls about 1,400 acres in Boone County, W. Va. The Interstate company recently acquired the holdings of other companies in the high-volatile regions of West Virginia and plans, it is said, to shortly consolidate all of its holdings in southern West Virginia under one management. The output of the various mines now owned by this company is shipped largely to the Lakes and the Northwest.

The Interstate Coal and Dock Co. is an extensive dock operator at the Head-of-the-Lakes.

Recent Patents

Cut-Out Switch for Mine Trolleys. John Racosky, Jerome, Pa., 1,343,475. June 15, 1920. Filed April 28, 1917. Serial No. 165,169. Renewed March 13, 1920. Serial No. 365,626.

Coal Chute. John E. Hyatt and Hans J. Moen, Stevens Point, Wis., 1,343,675 June 15, 1920. Filed Dec. 14, 1916. Serial No. 137,000.

Mining Machine (Chain Guard). Charles E. Davis, Chicago, Ill., assignor to Goodman Manufacturing Co., Chicago, Ill., 1,344,201. June 22, 1920. Original application filed Oct. 6, 1910. Serial No. 585 549. Divided and this application filed April 15, 1912. Serial No. 690,697. Renewed Nov. 12, 1919. Serial No. 337,625.

Coke-Oven-Door Mechanism. Louis Wilputte, New Rochelle, N. Y., assignor of two-thirds to Alice A. Wilputte, New Rochelle, N. Y., 1,344,218. June 22, 1920. Filed Oct. 16, 1918. Serial No. 258,332.

Coaling Barge. Frederick A. Sweet, Salt Lake City, Utah, and George G. Jamieson, Oaklad, Cal., 1,344,459. June 22, 1920. Filed Nov. 1, 1919. Serial No. 334,988.

Coating Device. Stewart H. Buchanan, Beaumont, Texas 1,344,481. June 22, 1920. Filed Sept. 22, 1919. Serial No. 325,437.

Miner's Lamp. Anthony Coyne and Lee Hash, Fork Ridge, Tenn., 1,344,867. June 29, 1920. Filed April 19, 1917. Serial No. 163,149.

Carrier for Surveying Instruments. Cornelius G. Hastings, Glendale, Cal., 1,344,947. June 29 1920. Filed Feb. 4, 1918. Serial No. 215,308. Renewed Nov. 17, 1919. Serial No. 338,662.

Automatic Mine-Door Operating Mechanism. William Crooks, Aldrich, Ala., 1,345,074. June 29, 1920. Filed July 17, 1919. Serial No. 311,633.

Underfeed Stoker Furnace. Joseph H. Roach, Brookline, Pa., 1,346,465. July 13, 1920. Filed March 22, 1919. Serial No. 284,284.

Coal-Mining Machine. Seward N. Mighell, Chicago, Ill., 1,346,966. July 20, 1920. Filed July 10, 1916. Serial No. 108,351.

Miner's Cap. Martin T. McDonough, Wheeling, W. Va., 1,347,046. July 20, 1920. Filed Jan. 16, 1920. Serial No. 351,752.

Valve for Coke Ovens. William E. Roberts, New York, N. Y., assignor, by mesne assignments to Foundation Oven Corporation, New York, N. Y., 1,347,056. July 20, 1920. Filed March 17, 1919. Serial No. 283,106.

Industrial News

New York, N. Y.—The Uehling Instrument Co., 71 Broadway, New York City, will exhibit their fuel saving devices at the Chemical Show, Grand Central Palace, New York, Sept. 20-25, and the National Association of Stationary Engineers' Convention, Milwaukee, Wis., Sept. 13-17.

The principal products to be displayed will be the new "Style U" CO_2 recording equipment. This instrument keeps tab continuously on the largest item of waste in the boiler room, namely the heat discharged up the chimney, thus enabling the operators to make adjustments that will reduce this loss to the minimum. A gage on the front of each boiler serves as a working guide for the firemen and a recorder in the office of the engineer or superintendent simultaneously makes a permanent record of the performance of each boiler furnace. Other boiler-room instruments, including Uehling pyrometers and draft gages, will also be exhibited.

Easton, Pa.—The Pennsylvania Pump & Compressor Co. announces the opening of additional sales offices as follow: Buffalo, 788 Potomac Ave., J. B. Laird, Mgr.; Cleveland, 232 St. Clair Ave., N. E., L. J. Wakefield; St. Louis, 1956 Broadway, Carby Supply Co.; Minneapolis, 423 Fifth Ave., South, L. E. Pallard Co.; Omaha, 604 First Natl. Bk. Bldg., L. E. Pallard Co.

New York, N. Y.—The National Industrial Conference Board announces its new location, 10 East 39th Street. Business executives, economists and others interested in the Board's work will find there much valuabl information on industrial and economic subjects.

New York, N. Y.—The Iron Trade Products Co. has opened a branch office, Suite 1714, Cortlandt Bldg., 30 Church St. Frank M. Welsh is in charge as District Sales Manager.

Traffic News

Supreme Court of Tenn., Decision—Case of Roth Coal Co., Knoxville, vs. L. & N. R. R. Co. The court holds that market value at destination is measure of railroad liability for confiscation or loss of coal in transit.

Illinois Intrastate Rates.—Interstate Commerce Commission has assigned for hearing before Commissioner McChord Sept. 8, at Chicago, the matter of the order issued by the public utilities commission of Illinois, Aug. 10, on intrastate freight and passenger rates.

Commerce Commission is expected to take an early and definite stand on question of intrastate rates. So far nine states have unreservedly approved and allowed increases in rates as reflected in new tariffs filed by railroads, and seven have either postponed action on the question or have granted freight increases but not passenger increases.

The Ohio Utilities Commission has amended the advanced freight tariffs filed, under the provisions of the freight increase. The railroads, in an effort to maintain the old 40c. differential between Ohio and Kanawha district of West Virginia really made an advance of 52 per cent in the freight rates from various Ohio points. This was rescinded and under the new rate the freight from the Hocking Valley to Columbus will be $1.40 and to the Lakes the increase will be from $1.50 to $2.26 for commercial coal and from $1.27 to $1.69 on Lake coal. The charge for loading Lake coal will be increased from 6 to 8½c. according to recent announcement.

Personals

Richard Rather, managing director of Richard Bather & Co., Ltd., 6 Castle St., Livernool, England, who is associated with the Knickerbocker Corporation, 29-31 Liberty St., New York, has been making a short trip through the coal fields.

William Reed, of Denbo, Washington County, Pa., superintendent of the Reliance Coke Co. plant at that place, has been promoted to the position of assistant general manager of the company with headquarters at Pittsburgh, Pa. **David Boyer**, of Denbo, yard foreman at the same plant, has been appointed superintendent to succeed Mr. Reed.

C. H. Todd has resigned his position as sales manager of the Boone Coal Sales Co. and will represent the Fort Dearborn Coal Co. at the Cincinnati office.

C. R. Thomas has taken the position of sales manager with the Boone Coal Sales Co., of Cincinnati, made vacant by the resignation of C. H. Todd.

Oscar Cartlidge is now connected with the Raleigh Wyoming Coal Co., Charleston, W. Va., as assistant to the vice-president and general manager, Carl Scholz. The company is developing two large mines in this vicinity.

Robert M. Medill, formerly with the J. K. Deering interests and the Peabody Coal Co., has been appointed by Governor Lowden of Illinois as state director of the Department of Mines and Minerals in Illinois. He succeeds the late Joseph Thompson, who died several weeks ago at the home of one of his sons in Ward, Ill. Mr. Medill recently resigned the superintendency of the Kathleen mine of the Union Colliery Co., of St. Louis, located at Dowell. He is the son of Duncan Bell-Medill, general superintendent of the J. K. Deering Coal Co., of Clinton, Ind.

M. H. Detweiler, formerly chief engineer of the Kathleen mine of the Union Colliery Co. near Duquoin, Ill., has been promoted to succeed R. M. Medill, the former superintendent of the plant. Through a regretable error, a personal was published in the Aug. 5, 1920, issue of Coal Age in which the wrong initials were given in referring to Mr. Detweiler.

Trade Catalogs

Metal Melting Pots. The Cutler-Hammer Mfg. Co., Milwaukee, Wis. Publication 826. Pp. 2; 8½ x 11 in.; illustrated. Description of method of operation and maintaining temperature at desired point.

R. F. Adjustable Speed Motors. General Electric Co., Schenectady, N. Y. Bulletin 41,021 A. Pp. 8; 8 x 10½ in.; illustrated. A second edition of Bulletin 41,021 A, superseding Bulletin 41,021 and describing latest design of R F Form A, d.c. adjustable speed motors rated from 2-3 to 50 intermittent hp.

Deflection Potentiometer. General Electric Co., Schenectady, N. Y. Bulletin 46,112. Pp. 2; 8 x 10½ in.; illustrated. A second edition describing design for giving accuracy between precision potentiometer and laboratory standard instrument.

Battery Charging Equipment. Cutler-Hammer Manufacturing Co., Milwaukee, Wis. Publication 830. Pp. 24; 8½ x 11 in.; illustrated. Describes C-H equipment for charging all electric vehicles, including trucks, mine-battery locomotives, etc.

Announcement. The George J. Hagan Co., Pitsburgh, Pa. Folder. Pp. 4; 8½ x 11 in.; illustrated. An announcement regarding the company's new Liquid Fuel Department.

Yarway Blow-Off Valves. The Yarnall-Waring Co., Chestnut Hill, Philadelphia, Pa. Bulletin B 410. Pp. 16; 6 x 9 in.; illustrated. Descriptive of the company's Yarway seatless and double tightening blow-off valves. Copy sent on request.

Publications Received

Illinois State Geological Survey. Department Registration and Education. Bulletin 36. Illustrated; pp. 188; 7 x 10 in. Year book for 1916 also Administrative Report and economic and geological papers.

Indicators for Carbon Dioxide and Oxygen in Air and Flue Gas. By L. H. Milligan, D. O. Crites and W. S. Wilson. Department of the Interior, Bureau of Mines. Technical Paper 238. Illustrated; pp. 23; 6 x 9 in.

Coming Meetings

American Mining Congress will hold its annual meeting at Denver, Col., Nov. 15. Secretary, J. F. Callbreath, Munsey Building, Washington, D. C.

New York State Coal Merchants' Association will hold its annual meeting Sept. 9, 10 and 11 at Richfield Springs, N. Y. Treasurer, G. W. F. Woodside, Albany, N. Y.

The Rocky Mountain Coal Mining Institute, in conjunction with the Colorado Metal Mining Association, the local chapters of the American Mining Congress and the American Institute of Mining & Metallurgical Engineers, and the International First Aid Meet will hold its annual meeting Sept. 9, 10 and 11 at Denver, Col. Secretary, F. W. Whiteside, Denver, Col.

National Safety Council will hold its 1920 congress on Sept. 27 to Oct. 1, inclusive, at Milwaukee, Wis. General Manager, C. W. Price, Chicago, Ill.

Oklahoma Coal Operators' Association will hold its annual meeting Sept. 14, at McAlester, Okla. Secretary, F. F. LaGrave McAlester, Okla.

The Sixth National Exposition of Chemical Industries will be held in the Grand Central Palace, New York City, Sept. 20-25. The Fuel Economy Division has been added this year.

COAL AGE

The Weekly Journal of the Coal and Coke Industries

Volume 18 NEW YORK, THURSDAY, SEPT. 9, 1920 Number 11

Base Permanent Wage on Fleeting Profit

BITUMINOUS wages are being advanced so that the mine workers can get some part of the profit to be derived from spot-coal prices. This is profit sharing only if, after prices recede so that profits are normal, the wage is pared to suit. The public may condone prices that yield large profits if they are subject to the fluctuations in supply and demand, but if high prices mean wages for some that are out of balance with those paid in other industries and those wages are supported at these unequal levels by the operations of a labor trust the public cannot look on with indifference, for the unusual gains of the industry at any one period will not right themselves but will be perpetuated by the union for years to come. That the union is prepared for every wage revision that is predicated on high prices but is not ready for any correction that is based on a decline is evidenced by the fact that it does not advocate profit sharing or sliding scales but demands wage increases that rise with the tide but are so anchored and moored by a contract that they will not recede with it.

Our Method and Theirs

ONE can hardly conceive of a country where men are shot for refusing to work, yet in Russia the Bolshevists have that cheerful way of coercing the unwilling worker who will not labor for the barest kind of a living and for the longest of hours. Freedom to desist from work—freedom to strike—is forbidden.

Here in America we have a condition just about as bad. We do not view it with much heat, for we have become accustomed to it. In this land, in the year of grace 1920, if a man wants to work and his fellow workers do not want him so to do he is likely to be shot for his obstinacy. We little realize how complacent and indifferent we are. Because labor violence has become so general we are now inured to its frequency.

As we read romances and the history of the Middle Ages we wonder how men lived through all with life so full of menace from battle, murder and sudden death. But it is easily explained. Look at the Kentucky-West Virginia border, where any man may be murdered if he takes up his dinner-pail and goes to work at the coal mines. A few men along the Tug River, urged on by agitators of an organization centered in Indianapolis, have decided that there must be no work till the labor trust, with headquarters in that Middle West city, gives permission, and men are murdered who violate that mandate.

A lawlessness less in degree is found at the mines of the Pennsylvania Coal Co. and in the streets of New York. Till we get a little more sensitive to the heinousness of the offense of assaulting a worker and a little more resistful to the organizations whose strikes cause such violence we shall continue to have trouble of that character. We coax and condone violence and its unhealthy growth springs up till it destroys our cherished institutions.

A Judgment of Solomon

SANITY has indeed marked the decision of the Anthracite Coal Commission. The public must congratulate Dr. W. O. Thompson, the chairman of that body, on having preserved the rights of the public free from spoliation. The mine workers get a slightly larger increase in wage than was offered them by Secretary of Labor Wilson, but the difference is unimportant.

Bituminous-mine workers demanded from the coal commission by which their case was adjudicated that a higher wage than normal should be paid them so as to offset the irregular work which they unfortunately too often had to sustain. The anthracite-mine workers tried hard to show by fallacious arguments that the anthracite miner worked as irregularly as the bituminous miner and, therefore, was entitled to an equal wage. To that end they laid special stress on the irregularity of employment in earlier decades. Fortunately the commission, recognizing the perpetual shortage of anthracite coal and the uninterrupted shipping facilities it enjoyed, discountenanced the attempt that was made to prove that the record of steady running since 1916 was merely a temporary symptom and not a broad, underlying and reliable condition on which a wage rate could be safely based.

If the commission had accompanied its decision by a too ready acquiescence in the demands of the miners for a restriction of the anthracite industry, its rationality in the matter of wage would not have been without countervailing disadvantages. Fortunately it leaves the industry entirely unhampered. The miners sought to have subcontracting forbidden. The commission on the other hand, declares for freedom of contract but requires that on the complaint of any employee affected such contracts be made subject to revision by the Anthracite Conciliation Board.

Nothing is more dangerous than to produce a condition by which the introduction of machinery is hampered. It is well understood that the object of the union in seeking the abolition of subcontracting was not to abolish the underpayment of the employees of the subcontractor, for their wage was assured them, but to do away with the use of machinery and methods which were employed under that system.

Progress in mechanical devices will help the anthracite operator at least to meet, if not to more than meet, the greater cost with which mining is accomplished and to make up for the lack of miners from which the anthracite region suffers and seems likely to suffer so long as the Gallagher Law continues in its restriction of the labor field. It would be extremely dangerous to put any obstacles as to machinery or methods in the way of economical production. The interest of the

public is clearly at stake in any attempt to freeze the industry permanently into its present condition of development.

The miners have insisted that no contract shall be made on a tonnage basis where machinery or a new system has been introduced. Consequently the work must be paid by the day and close supervision of the subcontract system is needed in order that the relatively isolated labors of the day workers may be performed with the necessary dispatch.

Public interest in the award centers first on whether the miners will accept the decision to continue at work, thus assuring a supply of fuel for homes this winter, and second on what effect the award will have on the price of coal. The change, if any, will be in the mine price. By agreement reached in April the recent award is to be retroactive to April 1. By the end of last April most, if not all, of the producing companies foresaw that as the advance in wages was to be retroactive it would be necessary to advance the price of coal $1 per gross ton on domestic sizes, in order to correspond with the 20-per cent increase they had offered the miners.

The award of the commission provides increases ranging from 17 to 25 per cent, which are believed to approximate the average increase of 20 per cent offered by the operators last spring. There should, therefore, be no advance in the mine price of domestic sizes as a result of this award. The price of coal to the consumer, however, will be higher in September than in August by the amount of the freight advance, but no one should complain that the operator has raised the price of his coal until he is certain that the increase is larger than justly chargeable to the raise in freight rates.

Again We Function Badly

STRANGE indeed seems Herbert C. Hoover's superior knowledge of the coal business. He appears to believe that the operations of coal production and distribution form "the worst functioning industry in the country," as he expressed it at the banquet of the American Institute of Mining and Metallurgical Engineers recently held at Minneapolis. It is true that the coal industry is indeed functioning badly, but equally so are divers operations, mining and other.

The miners in the coal regions are not working steadily, and they do not work any more continuously in the copper industry, where there is demand for little more than half-time operation. They do not work more regularly in the open iron pits of the Mesabi region, which the speaker, Mr. Hoover, visited with the members of the institute on the day following. The open pits close during the winter season.

For three months ore is not loaded by the big steam shovels, because the ore from trip-pits is under suitable storage in the depths of those open workings and it is not well to load it into cars only to unload it again a few miles away when it could be loaded direct for shipment to the Lakes during the summer season and thus save one handling. Note that this is the precise reason which makes the coal mines shut down rather than store coal.

As for the gold mines would anyone say that they function well with the present low price of that commodity? As has been remarked before editorially, the trouble with the coal fields is statistics. We know the defects of the coal industry while those of other fields than ours are less generously known and published.

But it will be said that the coal which the public wants is not produced. That is due to lack of transportation, and here there is no desire to enter into controversy with the railroads. It may be conceded that they may be, and even are, able to haul all the coal the consumer wants if the demand is distributed. Unfortunately the load is not so spread over the whole year. Dilatoriness on the part of consumers, strikes of mine workers and of switchmen have disturbed conditions, and a large tonnage is required to make up for these dislocations.

The same kind of irregularity in demand and discontinuance of operation from strikes occurs in the immaculate copper industry, but its demands for transportation are light compared with those of coal, and so the railroad service is able to meet any of the unequal demands of the copper producers. But, as between coal and copper mines, that does not put the burden of inadequacy on the coal mines. The onus for meeting demand when it occurs is on the railroads. They must meet the peaks of coal mining as readily as they surmount the high spots in copper production or the attempt to put the blame on the coal industry and save the copper industry will not be successful.

In fact one of the first duties of the engineer who seeks to get at basal facts is not to berate the coal shipper, who is almost always there with the goods, but to help the carrier that cannot transport them. The railroad inadequacy is the greatest of our problems. If it had not been for the inability of the railroads to meet peaks of transportation demand, there would not be such an excess of coal mines, so many fly-by-night companies, such an excess of mine labor and such outrageous prices demanded by certain individual operators. The work of mining would be performed with less men, needing less pay, having less irregular habits and less disposed to strike. The principle of "largest matters first" should make us seek to tackle the railroad question when entering on the coal problem.

We have had a dose of socialism in the too rigid control of railroads. Mr. Hoover would give us a draft of the same medicine to cure the coal conditions thereby resulting. Next we will have to have another dose of socialism to cure the situation brought on by socialistic control of coal. Indeed we may recur to a Byzantine regulation of all industries and industrial workers.

Let us purge ourselves of the follies of excessive railroad control and many other false steps will then be avoided. With due respect to Mr. Hoover's judgment it may be said that every rightly-conducted industry has a little excess of equipment, every piece of steel should have a factor of safety, every man should have a certain degree of reserve strength. We cannot go on with equanimity having everything fitted as scientifically as "the one-horse shay." Socialism has tried to fix the earnings of the railroads by that parlous rule. It has sought to keep the railroads efficient by regulation of traffic instead of giving that factor of safety which will permit of the unforeseen. The transportation system of the United States demands a peakless load. It cannot be conceived. We must slow down industry as a whole to take care of the peaks or build up the railroad business so that it can sustain them, or we may do both concurrently, but we can never arrive, especially if labor continues its unrest, at a waveless existence without troughs of low production and crests of feverish activity.

Railway Men Get $23,000,000 Back Pay

The Pennsylvania Railroad began on Aug. 28 distributing to employees the bulk of the back pay ordered in the decision of the U. S. Railway Labor Board of July 26. Approximately $23,000,000 will be distributed to the 275,000 to 280,000 workers.

Excess of U. S. Exports Shows Slight Gain

Exports from the United States during July, according to *Bradstreet's*, increased 3.6 per cent over June, while imports fell off 2.9 per cent, making the excess of exports $117,000,000, which next to that of June is smallest since late in 1914.

Commerce Commission Suspends Railway Currency Rule

Pending investigation the Interstate Commerce Commission on Aug. 31 suspended rules of certain Southwestern railroads requiring payment of freight charges in American currency on through shipments to Canada. Some doubt was expressed as to the right of the carriers to impose such a rule on traffic moving in Canadian territory and the commission postponed the effective date of the regulations from Aug. 31 until Dec. 29. Application of the requirement to traffic between points in the United States was not affected by the suspension.

Head of Trade Commission Is to Retire

W. B. Colver, chairman of the Federal Trade Commission, has notified President Wilson that he does not wish his name considered for reappointment to the commission at the expiration of his term on Sept. 25. In his letter to the President, Mr. Colver said he desired to engage in private business.

President to Name New Shipping Board Soon

That President Wilson will soon name the members of the new Shipping Board created by the Merchant Marine Act is the belief in official circles. It is thought that the new board will consist of a business man, a banker, a shipbuilder, a lawyer, a railroad man, a ship operator and a naval officer. Requirement that the appointments be geographically distributed is thought to be delaying the naming of the board. Two of the seven commissioners come from the Atlantic Coast, two from the Pacific Coast, one from a Gulf state, one from the interior, and one from the Great Lakes section. The act also requires that not more than four members of the board shall be of the same political party.

Industrial Board Moves Office to New York

In order to be nearer the heart of the manufacturing center the National Industrial Conference Board, composed of twenty-nine national organizations of manufacturers and representing industries employing a total of 7,000,000 or 8,000,000 workers, has moved its headquarters from Boston to New York City. General offices have been opened at 10 East Thirty-ninth Street and the board has taken along the greater part of its research staff, said to be one of the largest for this work in the country.

NEWS BRIEFS

Terse Items Chronicling Events of Interest to the Industry

Nearly 5,000 Ships Pass Through Panama Canal in Six Years

The Panama Canal completed six years of operation at the close of business on Aug. 14, 1920, having been opened to commerce on Aug. 15, 1914. During the six years the total number of commercial ships making the transit was 10,573. Their aggregate net tonnage, according to the rules of measurement of the Panama Canal, was 34,540,266. The cargo they carried totaled 40,313,629 tons of 2,240 pounds. This traffic was made up of 4,934 ships, of 16,145,434 net tons, carrying 16,576,778 tons of cargo from the Atlantic to the Pacific, and 5,639 ships of 18,394,832 net tons, with 23,736,851 tons of cargo from Pacific to Atlantic.

Lackawanna Coal Plan Denied

Reports are current that the Delaware, Lackawanna & Western Railroad Co. is working on a plan for the disposition of its coal properties in Lackawanna and Luzerne counties, Pennsylvania. Details of the program have not yet been made public, and the report from Philadelphia Sept. 1 that a plan was drawing to a focus which involved organizing a segregated coal company with a capital of $42,277,000 was denied by W. S. Jenney, vice-president and general counsel of the road. Mr. Jenney would not discuss the plans of the company in regard to the coal companies, but it is expected in well-informed circles that an announcement will be made by the end of the month.

P. R. R. Fights Bribery in Freight-Car Allotment

The Pennsylvania Railroad is waging a campaign to break up a practice of some shippers paying bribes to railroad employees to obtain more than their pro rata allotment of freight cars. In some instances, the company states, the suggestion of offering inducements originated with the shipper, while in others the employees solicited the bribes. In all instances where guilt has been proved employees have been discharged.

Swagar Sherley Resigns from Railroad Administration

Swagar Sherley, of Louisville, Ky., director of finance of the railroad Administration, resigned Sept. 1. Secretary Payne announces Mr. Sherley, it is understood, will return to the practice of law. D. C. Porteous, assistant director of finance, has been designated acting director.

France Seeks New Methods of Fuel Conservation

As the provisions of the Spa conference agreement assure to France from all sources slightly less than 80 per cent of her needs in coal French authorities are seeking new ideas for conserving coal and other fuel.

N. Y. Central Accelerates Freight-Car Service

Initial figures on the special effort of the railroads to speed freight cars to an average of at least thirty miles a day, announced Aug. 31 by the New York Central Lines, show a substantial gain, both for 1920 over 1919 and for July over June this year. Eight railroads of the New York Central system show for July, 1920, an average daily movement per car of 26.8 miles, as against 25.9 miles the preceding month; an average of 25.7 miles for July, 1919, and 25.8 miles for July, 1918. In 1919 the average daily mileage of freight cars was, for all roads, 23.1 and the total ton mileage in round figures 395 billions.

Lieutenant-Colonel James P. Barney

Director of Purchases, Quartermaster Corps, U. S. Army

COAL purchases for the army now are made under the direction of Lieutenant-Colonel James P. Barney, who recently was assigned to that work by the Quartermaster-General. While Colonel Barney's entire career has been a military one, he has had long experience in the procurement of supplies for the army. After his return from France, a little more than a year ago, until his appointment as director of purchases for the Quartermaster Corps he was in charge of such confiscation of coal as had been made by the army. Colonel Barney, as he puts it, had the good fortune to participate in a large number of important engagements in the World War. He has received a long list of decorations, which include several from the French and English governments.

Colonel Barney began his military experience with the Virginia National Guard. He was adjutant of the Third Regiment of Engineers of Virginia. As a young man he entered the regular army and had risen to the rank of major when ordered to France. He was promoted to a lieutenant-colonelcy soon after his arrival overseas and was assigned to the Sixth British Army. After having distinguished himself with the British he was made assistant chief of staff of the Fourth Division. Later he was assistant chief of staff of the Ninety-second Division and of the Eighty-second Division. Late in 1918 he became assistant chief of staff of the Third Army.

LAKE BANCROFT AT ISHPEMING, MICH., CLEVELAND-CLIFFS IRON CO. OFFICES AND SHAFT MINES
The shaft houses are shown as they appeared before they were rebuilt in concrete.

Engineers Visit Copper and Iron Ranges

Mining Men Note Backfilling System, New Method of Tempering Bits to Reduce Breakage, Pump with Almost a Half-Mile Lift, Shaft and Bath Houses, All Suggesting Applications for Coal-Mine Operation

By R. Dawson Hall

LEAVING New York about thirty-five strong the party of members of the American Institute of Mining and Metallurgical Engineers on its way to the annual field excursion continually increased in numbers by additions from every section of the country till between 600 and 700 were in the party. There were about a hundred on the "Tionesta" when it left Buffalo on Aug. 20 and about 150 when on Aug. 23 it arrived at Houghton about three hours late, having been delayed by rough weather and a contrary wind that made the outflow from Lakes Superior and Huron through the St. Marys, the St. Clair and Detroit Rivers respectively larger than usual and the current proportionately more rapid.

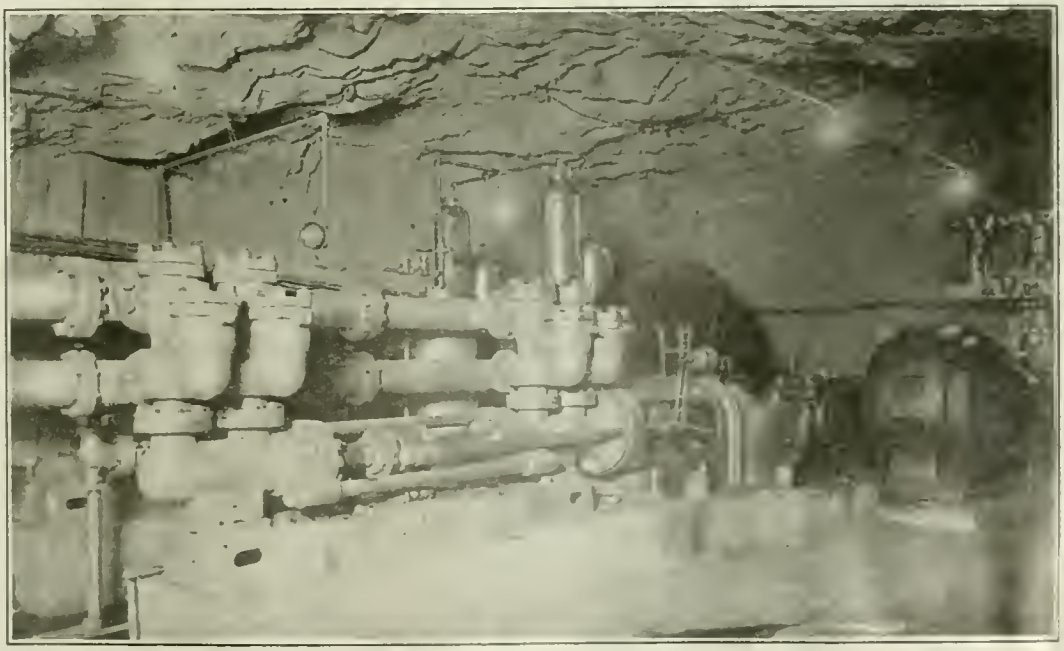
When at length the vessel did steam into Houghton past the empty coal docks it was met by a din of whistles louder than Houghton has heard since Armistice Day. It was too late for the arrivals by boat to make a trip that afternoon and early enough to partially spoil the trip of those who, coming by train, had arrived early. However, there was time for a dance at the Onigaming Yacht Club, and never had the floor of that country house been more densely thronged by dancers and bystanders.

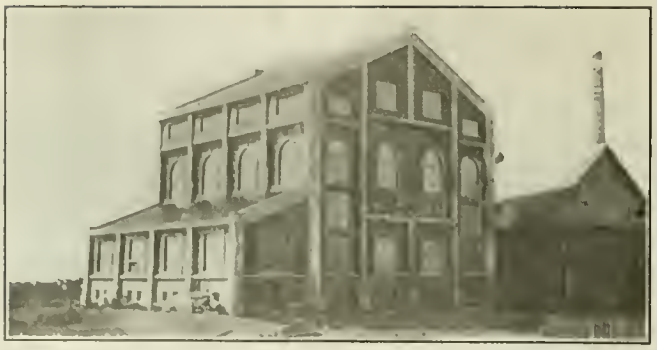
In the iron and copper country, engineers, whether engaged in coal mining or in the production of other forms of mineral than coal, will find many suggestions of value, therefore from the time when the institute landed at Houghton, Mich., till Hibbing had been visited and the party was en route to Duluth points of similarity and variation from methods in use at the mines of the visitors were constantly making themselves manifest.

Before leaving the boat a choice of nine several trips had been offered to the visitors. One was a geological trip and another a visit to the Champion mine; other visits were to the Calumet and Hecla mine, the Mohawk operation, the Michigan and Quincy smelters, the Quincy

Pump at Athens Mine

This pump, which is operated electrically, raises water at one lift 2,500 ft. and has a capacity of 500 gal. per min.



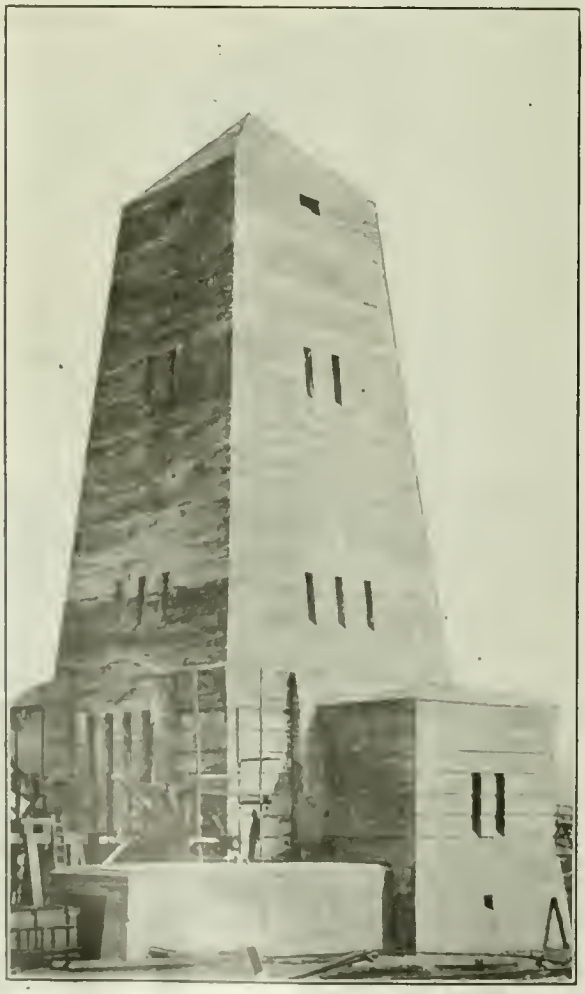


HOIST HOUSE, NO. 2 SHAFT, QUINCY MINING CO.
This building, at Hancock, Mich., is 76 x 95 ft. and constructed entirely of reinforced concrete. The walls are brick-veneer, and the concrete roof is covered with green tile. All windows are glazed with horizontal ribbed glass and are mechanically operated for ventilating purposes.

surface plant and that of the Calumet and Hecla mine, the Calumet and Hecla mills and reclamation plant and a general tour of the copper country.

Mine in Which All Spaces Are Backfilled

Your correspondent took the trip to the Champion mine, a plant at which the "poor rock" (that which does not contain a sufficient proportion of copper) is rejected and backfilled. At this time when backfilling for



REINFORCED CONCRETE SHAFT HOUSE "A" OF CLEVELAND CLIFFS IRON CO., ISHPEMING, MICH.
This replaces one of the shaft houses shown in the headpiece of this article. The other building has been replaced by a structure of the same character.

anthracite mines is so much agitated it is interesting to note what is being done in this direction in the copper country. The levels are driven narrow and comparatively low and are then widened and made high, the copper-bearing rock being loaded out and the poor rock filled in on either side much in the manner of a heading with gobs on both sides, though the gob in this case is the "poor rock" from the lode itself. As the lode pitches at an angle of 72 deg., however, the gobs on the sides do not reach to the roof, for as to roof there is none except that temporarily afforded by that ore which has so far not been removed.

Good Material Dropped Down Rock Chutes

The gobs are built by skilled "wallers," Italians for the most part. They do excellent work. The walls they build are 4 ft. through and bound together either with long through stones or wood ties. When the walls are built to about a clearance of 6 ft. logs are laid across them as a roof for the roadway of the level.

At about 50 ft. centers chute holes in the rock walls are left for passage of the ore. However, since the rock wall, unless tied, lacks stability, on either side is set a wood tie-piece to hold the wall together. The chutes are made of rock because wood rapidly cuts out when rocks are dropped down on it through the chute, or "mill hole" as it is commonly termed.

We have now reached the level of the top of the wall. Rock is taken down from the extension of the lode upward. "Poor rock"—that is, rock not worth saving—is dumped on top of the logs and also over and back of the wall till the whole 28 ft. between hanging and foot wall is leveled up except at the chutes or mill holes. These are carried back on a steep grade.

Stone is built up around the bottom of the chute, first in rectangular form, gradually turning later to a rough circle 3 ft. in diameter. Down this the good rock is dropped. At present it is the endeavor to select such rock as will give 35 lb. of copper to the ton. All that will not assist in maintaining that average, which is 1.75 per cent, is discarded and used for backfilling. Careful sampling shows how nearly that desideratum is sustained.

Among the operations of the Lake Superior copper region the Champion mine is peculiar in that all the lode is shot down. None is rejected in place even if it appear poor. After the material is shot down the broken rock is inspected and the best of it loaded out, the rest being used for backfilling. In this manner lifts are taken and backfilling performed until the continuous excavation reaches within about 25 ft. of the level above.

Eventually Remove Pillar Between Levels

It will be understood that there are no pillars left at any time. The opening is roughly 28 ft. wide, which is the width of the lode, and some thousands of feet long. The slab of ore-bearing rock between the long chamber described and the level above is known as the "pillar," though it is really the roof of the chamber. The side walls, of course, are the hanging and the foot walls, which on a slope of 72 deg. are somewhat loosely thus described, so nearly do they approach the vertical.

The management of the Champion mine expects to extract the ore which has been left between the long chamber described and the level above, and it has done so in many cases, but it is not done until the level

Briar Hill Shaft

Penn Iron Mining Co.'s mine at Vulcan, Mich. Note the temporary stocking trestles and the upright open headframe, so different from some others seen on the same trip.

above is ready for abandonment. Meanwhile the long chamber stands open, unprotected by timber unless unusual weight appears. In such a case props are placed on the top of the broken rock.

The endeavor is to have the backfilling up so high that the short props may be used to afford the necessary support. They are removed when the next lift is shot down. The props then fall with the rock and are subject to little injury. Only a little while ago it was the custom to bring the tailings from the concentrator, drop them down a deep shaft ("raise") to the long chamber I have described, which metal men term a "stope."

These tailings resembled wet sand and contained about 8 lb. of copper to the ton—0.4 per cent. They were allowed to fill the shaft completely. At times, when the miners were not working, a quantity of the tailings was dropped into a box, compressed air was turned on and the box evacuated. The sand was driven all over the store and the floor of the fill was thus raised to any desired level.

Sand Must Be Coarse and Moved at Low Cost

A ruling of the Railroad Administration that the subsidiary railroad of the Copper Range Corporation must raise the rate on the tailings four or five times what it had been before put the method out of business, however, as it made that form of backfilling unusually expensive. Furthermore, just at that time re-treatment of the tailings was commenced. The sand was ground finer and more copper was procured from it. As a result of the regrinding what might formerly have been described as wet sand became wet slime, almost wet mud, and ill-adapted to the pneumatic method of distribution. The better plan was to make a more discriminating selection of ore and fill up the stopes with "poor rock" of somewhat better character than that used before.

The backfilling now provided is not a sand or ash filling such as has been proposed, and adopted, in parts of anthracite collieries. It proceeds on the principle that enough rock can be obtained to fill the stopes completely. Rock when blown down fills more space than rock *in situ*, and, as William Griffith and Eli T. Connor have shown, it is only necessary to blow down a little roof rock to completely fill the space of the excavated coal. Thick and clean seams could not be worked on this plan. Thin and very dirty seams might be. Perhaps the Champion mine offers a suggestion for anthracite operating concerns. There is no hauling of sand, no system of shafting to the surface, no disposing of volumes of water and no wear and tear of flushing pipes. The refuse of the measures supports the measures. The rejects of today fill the voids of yesterday.

No Guesses Allowed in Tempering Steel

Another interesting feature at the Champion mine was the handling and treatment of rock-drill steel. Percussive rock drills are not found in large quantities about the coal mines, though they are bound to come into rapidly increasing use. However, regardless of the fact that the percussive drill is not so generally operated in coal as in metal mines the work at the Champion mine is of value as suggesting a new way of dealing with all forms of tool steel around the mines, whether for percussive tools or revolving drills, whether for hand or machine use. Manufacturing industries long ago found the value of such investigations into the tempering of steel, its preheating for forge work and its annealing.

The Copper Range Corporation found it hard to procure competent blacksmiths. Moreover it believed that better pyrometric tests could be devised for treating steel than could be furnished by the eye of the blacksmith, no matter how skillful. Accordingly it provided an oil-heated furnace in place of the former coke furnace, and in this drills after being sharpened are heated for tempering.

This furnace is kept at a temperature of 1,450 to 1,500 deg. Fahr., the heat being indicated by a Taylor signalling pyrometer. If the temperature is too great a red light manifests that fact; if it is too low a green light appears. The attendant can then correct the condition which makes for an improper temper. In fact the pyrometer is ranged to work lights in the office and to signal to the officials whether the right tempering heat is being maintained.

The drills are quenched in water at a temperature between 80 and 100 deg. Fahr. Chloride baths at a temperature regulated by a pyrometer were tried as media for tempering. The bits were quenched in tempering oil, in a 10 per cent solution of salt and in water

without any admixture of salt or other solvent, and the experiments seemed to prove that nothing was to be gained by an additional treatment after the hardening process.

In order to automatically arrange that the temperature of the bit would be approximately that of the furnace into which it was placed the drills were held on a conveyor which moved the bit through the furnace while the rest of the drill remained, of course, on the outside. This conveyor moved slowly and intermittently and by the time the drill points were at the right temperature the drills were in place for removal.

They had received the right intensity of heat and the correct time exposure, and they should be at the right temperature. That this was or was not the case was told by a test of the drill made by causing the bit to approach a hanging horseshoe magnet. The correct tempering temperature is one at which steel completely loses its magnetic qualities. If the magnet is attracted toward the bit, the latter is not hot enough and needs to pass more slowly through the furnace.

Duration of Preheating Closely Regulated

As a result of these precautions the blacksmith is assured that the temperature to which the steel has been exposed is right, for this much the pyrometer clearly evidences. Therefore if the magnet is attracted the time must be the element at fault. The conveyor delivers a drill every thirty-five seconds, but if the speed is too great it can quite easily be regulated. Those who desire further information regarding this subject should read the excellent paper presented at the Houghton session of this institute on "Handling and Treatment of Rock-Drill Steel at Copper Range Mines," by H. T. Mercer and A. C. Paulson, chief engineer of the Copper Range Corporation, and assistant master mechanic of the Champion Copper Co., respectively, both of Painesdale, Mich.

Should Anneal Bit and Test Pyrometer

The reader will wonder why the heating of the drill bits for sharpening was not regulated with equal care. They are still heated in a furnace fired with coke, although one using oil with pyrometer control will be installed in the near future. The bits are heated to about 1,900 deg. Fahr., the degree of heat being judged by the color.

There are matters which the Mercer-Paulson paper leaves unsolved. No investigation has been made as to the advantage of a double heating process, one for the annealing of strains in forging to which some breakage may be due and one for the tempering of the steel. Not only ought the steel to be hardened, but in all probability strains set up in the sharpening process should be removed.

The Copper Range Corporation, if the absence of statement is to be relied upon, does not check its pyrometer with frequency by the use of a standard couple. If this surmise is correct it is fair to assume that the regulation of temperature is not as perfect as might be wished.

Furthermore, the heat of the presharpening furnace might well be tested, as the temperature given is one that might cause superficial decarburization. The facts given in the paper would have more value to the public and the company if the analysis of steel used in the experiments had been determined.

If there were room something might be said about the big bathhouse and the signalling system, both of which have a story of interest to mining men, the latter especially suited for engineers who are located in a section of the country where shafts serve several levels. R. H. Bacon, former assistant electrical engineer of the Copper Range Corporation and now with the *Electrical World*, has described this signalling system at length with some others in use at other copper mines on pages 361-364 in the issue of Aug. 21 of the *Engineering and Mining Journal.*

Quincy Mine Has Biggest of All Hoists

Some of the members of the institute instead of going to Painesdale or elsewhere visited the Quincy Mining Co.'s plant. The hoist now being installed at that mine is a triple expansion Nordberg steam machine. It is said to be capable of hoisting in one stage from a depth of approximately 13,000 ft. The size of the drum—30 x 30 ft.—gives a rough index of the immensity of this unequaled hoisting unit, which so far has been turned over but once. It still lacks much of complete installation. It is housed in a fine hoist building, an illustration of which can be found in this article.

At noon the visitors after a rapid drive northward along the outcrop of the copper lode assembled at Eagle Harbor, near the tip of the Keweenaw peninsula, and there partook of sundry viands, principal among which were some of the celebrated Cornish patties so much favored by the "Cousin Jacks" of the Lake Superior mining regions. Herbert C. Hoover, the president of the institute, made an address on the work of engineers in France. Following this a Cornish wrestling match of barefooted men created much interest. The Cornishman wrestles clad in a strong shirt of sacking which hangs loosely over the upper part of his body. It serves him no useful purpose but is eagerly seized by his opponent as a hand grip wherewith to encompass his downfall or to squeeze the wind out of his body.

The party returned to Houghton through some thirty miles of interesting country. A technical session was held at the Michigan College of Mines, and this again was followed by a dance. Time was short, however, so the latter event was far less well attended than was the dance at the Onigaming Yacht Club the night before.

Hoover Reveals the Real Bolshevism

At this meeting also Mr. Hoover spoke, this time on Bolshevism, showing how the Bolshevists by establishing differential wages, by recognizing ownership of agricultural land and by forcing men to labor long hours under penalty of death and without option to strike, had violated some of their choicest labor creeds. He declared that about 800,000 men in Russia supported Bolshevism with almost religious fanaticism, but the rest were indifferent or hostile, and he added that the workmen got twenty-five votes, the farmer one vote and the rest no votes at all. The Bolshevist commissars themselves declare that only 19 per cent of the railroad cars are fit for use. As a result starvation is close at hand.

At 11 p.m. the visitors bade good-by to the copper country, some leaving for Marquette and Ishpeming in the Marquette iron country and some for Vulcan, Norway and Iron Mountain on the Menominee Range.

Your correspondent went to Marquette and Ishpeming, arriving early in the morning. The first visit was to the Pioneer Furnace and Chemical Plant. The charcoal used for this furnace is made here and from

Wash House

This building, located at the Negaunee mine, is one replica of the standard type of building adopted by Cleveland-Cliffs Co.

it is derived alcohol, methyl acetone, acetate of lime, acetic acid, formaldehyde, flotation oils, insulating pitch, sodium acetate, sulphuric acid, iron liquor, methyl acetate, special solvents, hexamethylenamine and pure creosote. After this the party automobiled through Presque Isle past the large reinforced-concrete Lake Superior & Ishpeming R.R. dock, and then on to the Cliff mines of the Cleveland-Cliffs Iron Co. at Ishpeming.

Merits of Shaft Houses and Headframes

At the Cliff plant are located two shaft houses which have long been landmarks in that district. Because of the severity of the climate it has been regarded by some as advisable in this region to house shaft headframes or to make headframe and shaft house a common structure. A similar disposition has been noted in Europe. Even the oil derricks in Russia are closed in by nailing plank between the outer posts. The custom is general also in building the heapsteads at mining plants in England. In most cases in America this plan has not been followed. It tends to prevent the access of air to the shaft. It adds to the expense of installation. The building is apt to be in the way. In case of an explosion the certainty that it would be demolished would be a factor which could not be overlooked. A headframe might and probably would escape, but a shaft house would resist the expulsion of air and its destruction would be inevitable. The claim is made, however, that the reinforced-concrete shaft house is constructed at less cost than would be a solid steel headframe of equal strength and capacity.

Even in the Marquette range doubt exists as to the value of a shaft house. The headframe is often left bare and alongside of it is erected the bin or storage pocket for dumped ore. An excellent description of the Cliff shaft houses is contained in an article presented to the institute at Houghton at the techinal session referred to. They are of precisely the same design; 33 ft. square inside with solid vertical walls for 31 ft. which taper till they are 21 ft. square at the eaves at a height of 88 ft. 9 in. above the ground level. Above this is a pyramidal roof, making the total height 96 ft. 9 in. above the footings. Except where additional sheds have been built outside there are fourteen windows on each side and there are three doors. The three floors above the ground are reached by ladderways.

The shaft house was built while the shaft was in operation, and arrangements had to be made so as not to interfere unduly with the construction work of the shaft house that was being replaced. The beams for the floors were designed for a safe load of 200 lb. per square foot and the floors themselves are made of 3-in. plank.

Work on the new shaft houses was started on July 21, 1919, both houses being built at the same time. The A shaft house was completed on Dec. 6, and required 725 cu.yd. of concrete; the B shaft house was completed on Dec. 11 and required 1,014 cu.yd. of concrete. The work of tearing down the inside forms at both shaft houses was commenced soon after. A total of 132 working days was required for the work; 55 working days were expended in pouring concrete and 77 working days in building forms and reinforcing. The maximum amount of concrete poured in any day was 52 cubic yards.

How Cold-Weather Difficulties Were Met

The shaft houses were built and poured in sections, varying from 6 ft. to 16 ft. in height. While the forms at one shaft were being filled those at the other were being extended. On the entire job, hoisting in the shafts was interfered with only once; that was for four hours on Saturday night when it was necessary to stop the skip while the beams in the A shaft were being poured.

At first the pouring of concrete was done on both the day and the night shifts, in order to reduce to a minimum the number of lines in the walls. When cold weather set in, the height of the pour was reduced

SHAFT "A" AS IT APPEARED IN 1911

Note that the building is covered with steel plates nailed to a wooden structure. In front may be seen a five-fingered chute gate.

to such an amount as could be successfully completed on the day shift; also, each mixer was provided with a Hauck kerosene blower, which delivered a hot flame into the aggregate as it was being mixed, so that the concrete was delivered into the forms at a temperature of about 80 deg. F. The extremely cold weather that existed throughout the last three weeks of the work necessitated further precautions against freezing. Steam radiators were installed on the inside near the top of each shaft house; the outside forms were packed with straw between studdles; and a second line of boards was put on. In addition to this, tarpaulins were hung on the outside. When the thermometer was at zero the concrete twenty-four hours after pouring was warm to the touch.

The crew employed consisted of fifteen carpenters, including one boss carpenter; nine reinforcing men, divided into three gangs of three men each, and two puffer men; twenty-four other men were used but only when pouring was being done. A blacksmith and helper were used part of the time for cutting and bending bars. The job was carried to completion without a serious accident, only a few minor cuts and bruises being sustained.

Grass and Gardens as in a Private Estate

The Cliff shaft houses are in the town of Ishpeming, and the Cleveland-Cliffs Iron Co. wanted them to be objects not only of utility but of beauty. To this end they subjected the plans made by their engineers to an architect who transformed them from their original likeness of a truncated tetragonal prism superposed on a cube into the comely shapes they now bear. The garden features are characteristic of the plants of the company. No such greensward and flowering plants appear around the mines in the Mesabi iron region or in the Lake Superior copper region and there are few, if any, coal mines with such carefully-kept environment.

Some disorder there must be where ore has to be stocked, but there are coal mines where there is no stocking and where some semblance of the beauty of the Cleveland-Cliffs yards might be imitated if interest in the matter were shown. At first the men employed used no care to keep the yards free from paper and discarded comestibles, but the diligence of the company finally resulted in converting the men to a sense of order. Even the timber yards now are orderly and, of the ore piles and rock dumps it can at least be said that they are laid out in an orderly way, while the trestles are erected with uniformity and neatness. The grass and flowers grow neatly round even the washhouses, or "dry houses" as the iron men prefer to term them. Everything is neat and permanent in appearance and that fact seems to be duly appreciated by the men employed.

Greatest Single Stage Lift in the World

After inspecting the Cliff shaft house the party motored to the Wawonowin Golf Club House, where a buffet lunch was served. Some went golfing in the afternoon but more visited Athens and Negaunee mines, both Cleveland-Cliffs Iron Co. properties. The Athens shaft, which is vertical, was sunk between 1913 and 1917 and its depth is 2,489 ft. It is of concrete construction throughout. The first 1,100 ft. is circular and 17 ft. in diameter and the rest 10 ft. 10 in. by 14 ft. 10 in. It was found desirable to change the shape and so expedite the work. As has been American experience a rectangular shaft is found saving of labor and economical of space and to be recommended where no great pressures have to be withstood.

A trip to the pumphouse in the lowest level of the mine was made in a cage deftly lined inside with brattice cloth so as to protect the clothes of the visitors. Having descended the 2,400 ft. the institute members left the cage and crawled through a manhole to see the pumproom. The manhole was constructed so that it could be closed with a cover like that used for a similar purpose in a boiler. It is intended to resist the pressure of a head of water of over 100 ft. The water enters the pumproom through a pipe and can be shut off with a valve. With the manhole cover in place and the valve closed the water can rise in the mine shaft till it reaches the next level 100 ft. above and no water will enter the pumproom. Should the pumps fail of their office it will be possible to close the approaches to the pumproom and repair the pumps unless the delay in making repairs is so long that water invades the level above. To provide for that eventuality, a "raise" or blind shaft reaching from the pumproom to the next level furnishes a way of escape.

The water is raised 2,400 ft. in a single lift by two Prescott horizontal duplex plunger pumps. They each have a capacity of 500 gal. per min. and are driven by 400-hp. three-phase 60-cycle motors. It is the deepest direct-lift pumping installation in the world. The pumps at present operate only about three hours in every day as the most prolific source of water is the shaft and that is sealed off satisfactorily. The Athens mine will be mined from the bottom up instead of from the top down. The more remote ore will be removed first. When the shaft was being driven no drifting was being done. It is expected that a material saving in timber will result from a reversal of the usual method of operation. The shaft does not go down in the ore but in the footwall of the deposit.

At Negaunee a visit also was made to a bath or "dry" house. After leaving the mine the miners take showers and hang their clothes in long lines on A-shaped racks. Within these racks are radiators which speedily dry out the clothes. The men keep their home apparel in lockers which are placed against the walls of the dry house.

Wholesalers Protest Withdrawal of Ships From Coal Trade

WITHDRAWAL by the Shipping Board of all vessels from coal traffic has caused so much difficulty to the coal trade that the Wholesale Coal Trade Association of New York, though its secretary, Charles S. Allen, has arranged a meeting of those interested in the subject, with a view to perfecting plans to make proper representations that will result in rescinding the order.

This situation is aggravated by the action of another branch of the Government proposing to lay additional penalties for delay to coal at tidewater, so that while one department refuses to supply the means for moving coal another places a penalty for delay.

Discussion of the subject, Mr. Allen announced, would take place at the Whitehall Club, 17 Battery Place, New York City, Friday, Sept. 3, at 3 p.m.

After Quarter Century Simple Chain Haul Is Still Doing Efficient Work

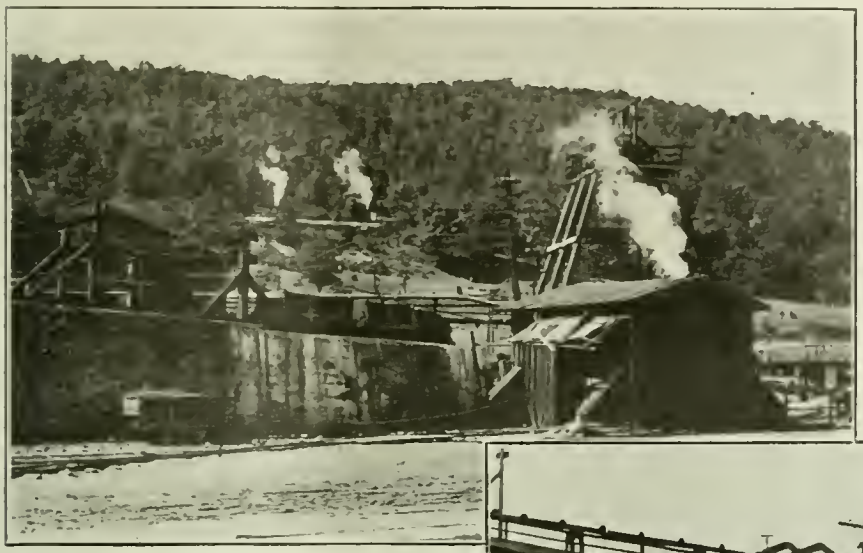
At the Maltby Colliery the Work of Decaging Loads, Caging Empties and Transferring Both Over One Thousand Feet Is Performed by Three Men and a Chain Haul — No Device Has Been Found That Could Supplant the Chain Haul with Profit

By D. C. Ashmead,
Wilkes-Barre, Pa.

BECAUSE a system of mining or haulage is highly modern it does not necessarily follow that it is also highly efficient. Certain conditions may exist under which it may be as advantageous to use old apparatus as to employ any known modern type. In such an instance it would be the height of folly to discard the old equipment to substitute new.

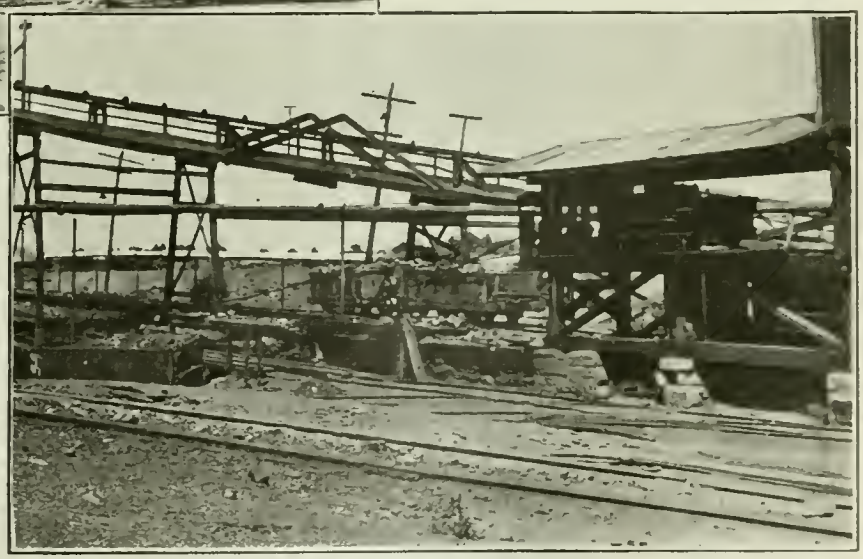
Sometimes it is advisable to scrap a piece of ancient but perfectly good equipment and install a new and more modern device, even though no saving whatsoever is made in unit cost. Such a procedure would be justified by either an increase in output or by greater reliability. If some such advantage cannot be gained, however, the displacement of the old equipment merely on account of its age is bad engineering.

At the Maltby Colliery of the Lehigh Valley Coal Co. a condition similar to that outlined in the first paragraph exists. At this colliery a chain haulage system transfers the mine cars from a shaft to the breaker through a distance of about 1,000 ft. The cars are raised from the mine to the surface on cages and after discharge therefrom run slightly downgrade to a kickback a distance of 70 ft. from the shaft. From the kickback they proceed by gravity 180 ft. to the chain haulage system.



Car on Its Way to Breaker

The chain has just been placed in the grip on the car. In the background may be seen empties which, having been released from the chain, are proceeding on their way to the shaft.



Loads Approach the Chain Haul

The counterbalanced tension carriage of this tail sheave can be plainly seen. Before reaching this sheave the chain passes over guide pulleys raising it high enough to disengage it from the forks on the cars.

Over-Chain Haulage Transfers Coal Cars

This haulage is of the over-chain type and when the cars come to the haul a man lifts the chain into a hook on the top of the mine car. When attached to the chain

Tramway at Maltby Colliery

A fork on each car engages a link on the chain, the link being dropped edgewise into place. At either end of the haul the link is lifted out of this fork as the chain rises to the bull wheel, tail sheave or guide pulley.

by this means the cars are drawn to the opposite end of the haulage road, where the chain is automatically disengaged from the hook by simply lifting it a sufficient height so that it will not engage with the hook. From the end of the chain haul the cars gravitate to the foot of the car haul, which lifts them into the breaker.

When the cars have been emptied and returned they are attached to the chain haul by hand and drawn back to the shaft end of the system. As the cars approach the shaft they are taken up a slight grade. Here, again, the chain is raised to a sufficient height to release its engagment with the hook. By the time this occurs the cars are at a sufficient height above the shaft so that they move by gravity to the point from which they may be loaded upon the cage.

Haul Has a Capacity of 800 Cars a Day

This chain haul is given by a vertical steam engine and the man who engages the chain from the hook on the loaded cars also acts as engine driver. The capacity of this haul is 800 cars per eight-hour day. These cars hold 79 cu.ft. each.

The chain itself is made of $\frac{5}{8}$-in. iron with links 4 in. long and $2\frac{1}{2}$ in. wide. The manufacturer is required to furnish the coal company a test bar from each 500 ft. of chain. These bars must be selected at random. The material used in making the chain is Norway iron and must have a minimum tensile strength of 48,000 lb. per square inch and a maximum strength of 52,000 lb., while the elongation of an 8-in. test piece must be less than 30 per cent. The elastic limit must be 50 per cent of the breaking strength. The chain is hand-welded.

In actual use only two men are required to operate this haulage system, one upon either end. Because of the manner in which the cars are delivered to the shaft, however, a third man is required at this point to properly place them upon the cages.

Court House Where Shady Cars Are Tried

This haulage system has been in operation for the last twenty-five years, and it would seem that if any other method could be found to do the work cheaper it would have been installed. The Lehigh Valley Coal Co. has considered numerous other means of moving its mine cars but is satisfied that as yet it has not found any that would do the work as cheaply as it is accomplished by the present method. Other means have been proposed that would do it at equal cost, but the expense of the new installation and the loss arising from the scrapping of the old equipment would more than counterbalance any savings that might be made in operation.

Because this system of haulage is as cheap as any yet proposed, it does not signify that the universal introduction of this type of transportation is advocated. The important point to be considered is that before any change in methods of mining or haulage is made, a careful investigation should be undertaken, and all advantages and disadvantages carefully considered.

Coal Miner Completes Forty-Year Record Of Faithful Work

MICHAEL HANAHUE, of 91 Elizabeth St., Pittston, Pa., has mined coal at one shaft continuously for more than forty years. It is estimated that this man has worked an average of six hours loading an average of four tons of coal per day for 200 working days during each year of this time. The coal loaded is thus $200 \times 4 \times 40 = 32{,}000$ tons. This would fill 640 railroad cars of 50 tons each. The total number of hours worked inside the mine would be $200 \times 6 \times 40 = 48{,}000$ hours.

He has resided in the same dwelling house during all this period. This is situated about one mile from the shaft. He says that he has never ridden to or from the mine during the entire forty years. This shows that he has walked $200 \times 2 \times 40 = 16{,}000$ miles or two-thirds of the distance around the world, in going to and from the mine alone.

The coal company that employed this man would be glad to know if any *Coal Age* reader has a better producer than old Michael.

We are glad to say that this man was retired on a pension in 1918.

New York Wholesalers to Combat Excessive Freight Increases

MANY of the new freight rates on coal show increases which it is believed are in excess of those authorized by the Interstate Commerce Commission, the excuse offered being that they are made to maintain the proper differential between the producing fields. The Wholesale Coal Trade Association of New York has initiated an investigation of the matter and purposes taking it up with the commission.

Miniature Mine Locomotive, Weighing Under A Ton, Gathers Coal from Low Places

Room Tracks Are Usually Poorly Laid—This Locomotive, Lighter Than a Mine Car, Can Travel Over Such Tracks and if Derailed Is Easily Replaced—Slightly Over Two Feet High, It Pulls as Much as Four Mules

By Donald J. Baker
Wilkinsburg, Pa.

WEIGHING only 1,800 lb., and standing just 26-in. high, an electric mine locomotive is being constructed to supplant animal haulage in thick bed mines. It is termed the "mechanical mule." Though designed for thick coal its low construction makes it suitable for thin seams and for working in places into which animals cannot be taken. In such low coal the locomotive will undoubtedly find a wide field of application. The practice has heretofore been for the miners to push their cars by hand from the working face to the room neck, where they formed into trips for transportation by locomotives of standard design.

Conclusive evidence that the application of electricity to underground transportation has not yet reached a stage that would warrant its supplanting mules and horses is furnished by the 1919 Report of the State Department of Mines of the Bituminous Coal Districts of Pennsylvania. This report states that thousands of animals were used in these regions alone. The main reason for such a wide use of animal haulage in these days of time-, labor- and money-saving machines is readily apparent. Heretofore it has been impossible to use heavy tractor equipment on roadways constructed of light material and hastily laid.

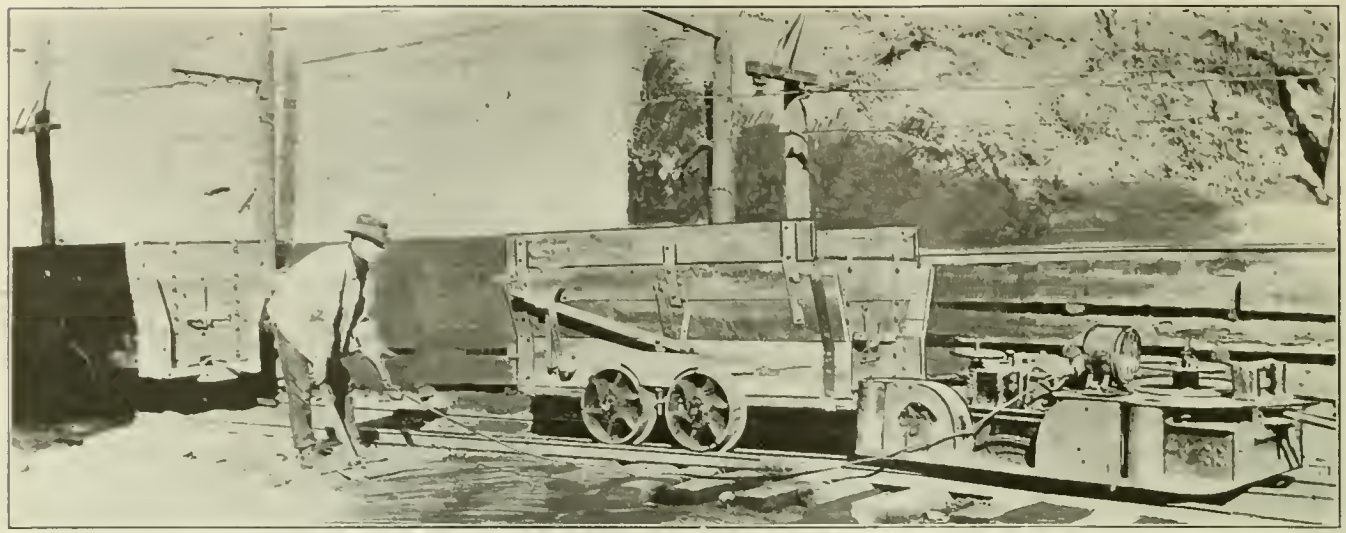
Miner Lays Irregular Track in His Room

Most miners are paid for extending the tracks within their working places at a contract rate. This work, which is seldom accomplished by men skilled in the art of track laying, is frequently done without the aid of adequate tools. As a result the track is by no means well laid. In putting the equipment into place the miner aims to turn out only a job of such perfection as will permit him to move his loaded cars from the face with a minimum number of derailments.

There are several reasons why it is now common practice to employ nothing but the lightest of track material in the actively working areas of a mine. Not only is the first cost of such equipment lower but, by reason of its lightness, the miner can handle it with greater dispatch than he can heavier material. Another factor that dictates the use of light track material within the rooms is that the men who lay it—the miners themselves—being quite inexperienced, are unable to com-

"Mechanical Mule" Pulling Loaded Mine Car

The control cable has been attached to the side of the loaded car and is being operated by the man on the right. The cable in the forepart of the illustration is delivering current to the machine from the trolley wire on the room heading.



"DRIVER" MAY RUN AHEAD AND THROW A SWITCH AND STILL HAVE HIS LOCOMOTIVE UNDER ENTIRE CONTROL

This remote-control feature makes the locomotive obey the master's will just as the mule at a distance will—sometimes—obey his master's voice. The title "mechanical mule" seems badly chosen, because this draft animal reaches up only a little above the bumpers. It is lower than the lowest of cars and can travel up a bad track without injury to either itself or the roadway.

plete a job with the degree of finesse to be desired. It is impossible to operate heavy locomotives with any degree of efficiency over tracks that will barely support a single loaded mine car. Consequently in the past the miners have pushed and the mules have pulled the cars to conveniently located sidings where they might be available to locomotives operating on heavier track equipment.

Light-Weight Locomotive for Light Track

The mechanical mule, with a weight less than that of the smallest loaded mine car, has been devised to operate on poorly-laid track. The principle of operation involved is simple: A locomotive that weighs less than a loaded mine car can certainly traverse any roadway—no matter how poorly constructed—that the car itself is able to travel over.

The normal tractive effort of the machine is three times that of the average mule. This effort may be increased from 50 to 70 per cent when necessary. By means of a wheel control on the rear end of the machine the drawbar of a loaded mine car may be elevated so as to allow the bumper of the car to rest on the rear end of the locomotive. This transfers some of the weight of the mine car to the mechanical mule. In this manner the machine is made to hug the rails closer and consequently is in a position to furnish greater tractive effort than would be possible if the weight of the machine itself alone were utilized.

Can Be Controlled at Distance of 30 Ft.

The locomotive is operated by a magnetic blow-out type of controller. Push buttons at the end of a 30-ft. length of cable permit the machine to be operated from that distance—that is, without the driver being seated on the frame. This appears to be an advantageous type of construction, as the machine may be controlled in extremely low passageways.

The brake may be operated either electrically or manually, depending upon how the machine itself is driven. This is automatically accomplished by the push-button control. When the locomotive is in operation the brake is off, but as soon as power is released from the driving mechanism the brake is set.

The remote-control and automatically-operated brake features that have been incorporated in the design allow the machine to be handled in much the same way as an ordinary mule. It is thus possible for the operator to leave his machine for such purposes as throwing switches, coupling cars, spragging wheels, setting brakes, opening and closing trap doors, etc., while still maintaining control of the locomotive.

The advantages of the mechanical over the ordinary mule are many. First, by reason of the diminutive height of the machine, it may be used in low-bed mines without taking down top, as is often necessary to make clearance for live stock. Second, the machine consumes energy only when performing work. Third, it will not only pull cars but will push them as well and hold them in position on grades without the car brakes being set or sprags applied. Fourth, this locomotive will start operation immediately upon pressing the control button, whereas the average mule after it has been commanded to start will take from six to twenty seconds in squaring itself away to make a move. In connection with this feature it can be seen that balking has been eliminated.

Mechanical Mule Does Four Animals' Work

Lastly, the tractive effort of the average mule is about 200 lb. A good day's work for such an animal would be represented by the hauling of two mine cars, each containing two tons of coal, for a distance of fifteen miles on a level track or thirty coal-car miles. The draw-bar pull of the mechanical mule when attached to a car holding two tons of coal may be made approximately 800 lb. A day's work might be represented by the hauling of two cars of coal for a distance of 67½ miles over the same track, or 135 coal-car miles. Contrasting these two figures of operation it can be seen that the mechanical mule has about four times the work capacity of the average animal.

The machine, which is the invention of J. F. Joy and is manufactured by the Joy Machine Co., of Pittsburgh, Pa., may be operated in more restricted space than an ordinary mule and because of its extreme lightness in weight it may be placed upon the track when derailed with less effort than that expended in replacing an average mine car.

Coal Quality—A Factor in Export Trade*

Such American Coals as Are Most Readily Available for Export Are the Best Fuels that the Country Produces—If Exports Are To Be Fostered Steps Must Be Taken to Assure the Purchaser of the Quality of the Fuel He Buys

By J. D. Davis†
Pittsburgh, Pa.

OF AMERICAN coal those in the Central and Appalachian regions are readily available for export. In these regions are mined the best of all types of coal from bituminous to anthracite. The accompanying map[1] shows these regions as well as the ports from which the coals are likely to be shipped.

Referring to the map, fuels mined in West Virginia and indicated by the numeral 1 are known as New River and Pocahontas coals. These are quite similar to the English Cardiff coal and rank high as steaming fuels.

From proximate analyses and the use of the calorimeter the chemical properties of delivered New River and Pocahontas coals have been determined to be as follows:

	Per Cent	
	Maximum	Minimum
Moisture	2 5	1 5
Ash	8 0	3 5
Volatile Matter	21 0	17 0
Sulphur	1 0	0 5
Heating value (B t u)	15 102	14 508

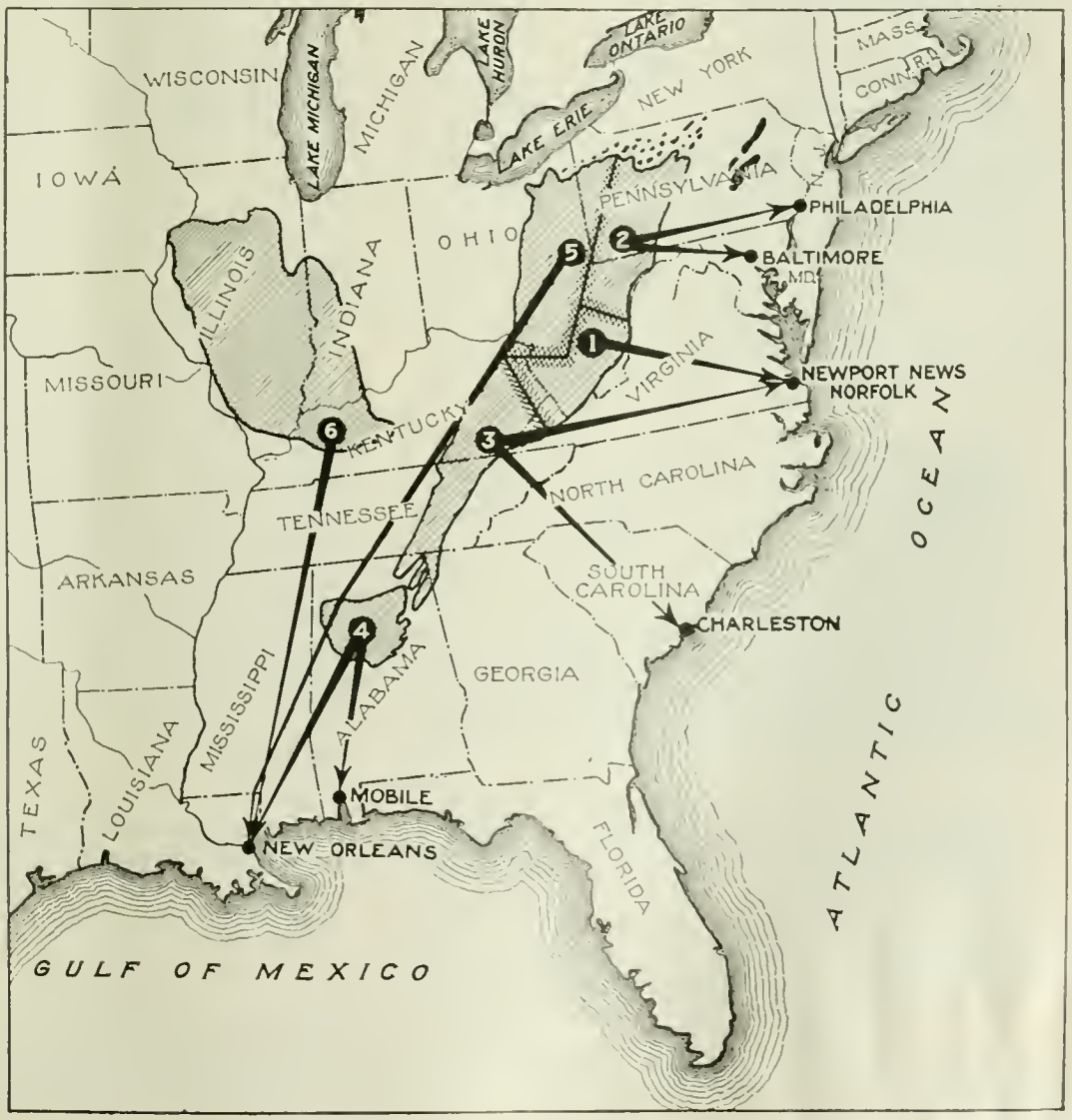
These coals are rather soft and friable, and for this reason they do not stand shipment well; nevertheless with the proper stoker equipment or proper facilities for hand-firing they give excellent results and possess the added advantage of being almost smokeless. They are largely used by the United States Navy for bunkering purposes and can be employed in the manufacture of an excellent metallurgical coke. The softening temperature of the ash from coals from these fields is approximately 2,410 deg. F. for the Pocahontas, and 2,550 to 2,800 deg. F. for the New River coals.[2]

*Published by permission of the director, Bureau of Mines.
†Chemist, Bureau of Mines Experimental Station.
[1]Manning, Van H., "United States Coals Available for Export Trade": Bulletin 76, Bureau of Mines, 1916.

[2]Selvig, W. A., "Fusibility of West Virginia Coal Ash," *Coal Age*, Vol. 15, No. 1, page 12.

Coal Fields and Ports

A map[1] of the fields having coal available for transmarine export, showing the ports to which the fields are normally tributary. The areas are divided according to the quality of coal produced and the ports to which it goes rather than according to geological considerations of field continuity. The best coals are those which lie readily convenient to the Atlantic Coast and to the great centers of our population.



LIMITS IN ANALYSIS AND ASH-SOFTENING TEMPERATURES OF COALS FROM VARIOUS EUROPEAN PRODUCTION AREAS

District or Region	Moisture, Per Cent Maximum	Moisture, Per Cent Minimum	Ash, Per Cent Maximum	Ash, Per Cent Minimum	Volatile Matter, Per Cent Maximum	Volatile Matter, Per Cent Minimum	Heating Value, B.t.u. Maximum	Heating Value, B.t.u. Minimum	Temp. of Ash, Softening, Max. Deg. F.	Temp. of Ash, Softening, Min. Deg. F.
German Westphalia, (Sarre)	13 7	1.6	17.7	4.2	42 9	30 8	13,300	11,000	3,060	2,430
German Westphalia (Ruhr)	10 0	1.0	12.8	4.4	35.4	14 1	14,000	11,850	3,060	2,280
English Coal (Chiefly Cardiff)	9 0*	0.7	8.8	4.5	37.8*	12.4	14 400	12,150*	3,110	2,460
French Coals	7.5	1.0	19.6	11.2	35.6	16.9	.....	.....	2,910	2,460

*Yorkshire nut, ashes soften at as low as 2,280 deg. F.

The region indicated by the numeral 2 on the map produces coal of two classes—steam and gas. The composition and heat value of the steam coals are as follows:

	Per Cent Maximum	Per Cent Minimum
Moisture	2.50	2.50
Ash	10.00	6 00
Volatile matter	20.00	19 00
Sulphur	1.25	1 25
Heating value (B.t.u.)	14,670	14,000

These coals are somewhat harder than those just described and do not crumble so readily on handling. The fusibility of their ash varies rather widely, lying between the limits of 2,100 and 3,000 deg. F.

Fuel in Region 2 Makes Good Coke

The gas fuels from this region make excellent metallurgical coke and are largely used in this country for that purpose. The composition and heat value of this class may be given as follows:

	Per Cent Maximum	Per Cent Minimum
Moisture	2.50	2.50
Ash	10 00	6.00
Volatile matter	37 00	28.00
Sulphur	1.25	0 70
Heating value (B.t.u.)	14,600	13,500

These coals are for the most part hard and have a brilliant luster. The fusibility of the ash varies from 2,370 to 2,910 deg. F.[2]

Coals from region 3 are of the so-called bituminous class and vary quite a little in composition. They are hard and should give little trouble from excessive degradation in handling. Their composition and heat values are as follows, by proximate analysis and calorimeter:

	Per Cent Maximum	Per Cent Minimum
Moisture	2 5	2.5
Ash	10.0	8 5
Volatile matter	37 0	34 0
Sulphur	0 9	0 5
Heating value (B.t.u.)	14,580	13,680

The fusibility of ashes from these coals varies from 2,100 to 2,910 deg. F.

Coals of Regions 4 and 5 Are Similar

Coals from region 4 are well suited for gas making and are extensively used in this country for the manufacture of metallurgical coke. The average composition and heat value may be stated as follows:

	Per Cent Maximum	Per Cent Minimum
Moisture	3 0	2.0
Ash	10 0	5 0
Volatile matter	36 0	33 0
Sulphur	1 1	0 8
Heating value (B.t.u.)	14 360	13,590

Ashes from these coals fuse between limits of 2,140 and 2,860 deg. F.[4]

Coals of region 5 are quite similar to those of region 4, while those from region 6 are of a later formation, somewhat higher in volatile matter and moisture and lower in heating value. They are used mostly for domestic purposes and steam production.

Russia's Resources Meagerly Developed

The most important European coal regions include the Westphalian areas in Germany, the Welsh fields in Britain and the Pas de Calais district in France. The coal deposits of Holland and Belgium may be considered as an extension of the latter fields. The beds in both Belgium and Holland are thin and much broken by faults, making mining difficult and expensive. In neither country is the output sufficient for home consumption although both export some fuel. The Upper Silesian field is important in that the coal is easily mined and the beds are thick (as much as 60 ft. in some cases), but the coal is of rather low grade and lignitic in character. The same may be said of the coal districts of Austria-Hungary There is quite a little coal in Russia, but as yet the development of that country's resources has been small. At the top of the page will be found some analyses[5] of coals actually exported from the fields just mentioned.

The following may be given as fairly representative of the quality of the best coals of the fields referred to above:

District or Region	Moisture, Per Cent	Ash, Per Cent	Volatile Matter, Per Cent	Heating Value, B.t.u.
Sarre Fat Coals	1 7	5 1	36 9	13,850
Ruhr Steam Coals	4 2	6 0	17 2	13,500
English Cardiff	1 0	7 0	15 0	14,050
French Coals (Steam)	5 4	11 5	26.9	12,140

Coal Cost at Mine Lower in This Country

Although labor is cheaper in Europe than in America, the cost of coal at the mine is normally less in this country. This is brought about by the fact that mining operations are generally more difficult in Europe because of deeper workings, faulted beds, gaseous conditions and quicksands; furthermore there are the legal requirements in Europe that the thin beds as well as the thick ones must be worked.[6] In this country as a rule only the thicker and more easily workable beds are mined. The comparative cost of coal (before the war) at the mine in England, Germany and the United States may be given as follows:

	Per Metric Ton
United States	$1 00 to $1 50
England	2 00 to 3 00
Germany	1 60 to 2 25

The comparative cost at port, f.o.b. ship, of coals of the three countries was normally about as follows:

	Per Metric Ton
United States	$2 85 to $3 47
England	3 05 to 5.40
Germany	3 00 to 4 80

[2]Selvig, W. A., and Fieldner, A. C., "Fusibility of Ash from Pennsylvania Coals," *Coal Age*, Vol. 15, No. 25, p. 1086.
[4]Selvig, W. A., Brown, O. C., and Fieldner, A. C., "Fusibility of Coal Ash from Eastern Coal."
[5]Naville, G., and Hohn, E., "Quarante-Sixième rapport annuel, Société suisse de Propriétaires de chaudières à vapeur," 1914, page 58.
[6]Rice, George S., "Mining Costs and Selling Prices of Coal in the United States and Europe with Special Reference to Export Trade," paper presented before the Second Pan-American Congress, Washington, Dec. 27, 1915-Jan. 8, 1916.

England has the advantage of the shortest haul by rail to port and Germany has perhaps a slight advantage over the United States in that respect. However, Germany has exported largely by rail alone. Obviously the United States is under an enormous handicap as an exporter to Europe in that the freight charges by water necessarily must be considerably higher than those for European producers owing to the much longer haul. In spite of this disadvantage (and freights are undoubtedly higher now than they will be in normal times) the United States exported to Europe during the last year four or five million tons of bituminous coal, whereas before the war exports to that continent amounted to almost nothing. This was accomplished, too, with war-time prices prevailing in the United States. As a result of the war, industry in Europe has become so disorganized and war demands have made such inroads on fuel reserves that it seems probable that there will long remain a demand for American coal on that side of the water.

English Coal Cheaper But Scarce

In the autumn of 1919 English coals were selling at Rotterdam, a large port of entry for American goods, at $23 per ton, while American coals were selling simultaneously at $29.50 per ton. This shows a decided advantage for the English coal, but there was little of this fuel on the market. At the same time American coals were selling f.o.b. Genoa at $33 per ton.

In order to maintain our export business with Europe several things must be done. First, a highly important question must be decided. This is: Should we as Americans make an effort to establish and hold a coal-export business with Europe? Should we not, rather, discourage such export, particularly since this business will take the best of our coal out of the country? Should we not take the position that it is better to conserve our fuel resources by retaining this fuel for the upbuilding of our own industries? I believe that this latter is the proper view to take. This question aside, however, we should endeavor to bring our selling standards up to those obtaining in Europe. This should be done for our own consumers' benefit quite as much as for the reputation of American coals across the seas.

American coals have the reputation abroad of being good fuels and of not being so well prepared as competing European coals; furthermore, the purchaser has no assurance that the coal he buys from an American pool is of the quality guaranteed. This is because the pool classification is inadequate. Coals shipped to a given pool are roughly similar, but may vary appreciably in fuel value, whereas, in order to conform to European standards, accurate knowledge should be available not only as the quality of every ton sold out of a given pool but also covering the mine or mines from which it came.

Government Inspection Not Expensive

This may be brought about most effectively and with the least expense by frequent government inspection and analysis of coal as it is loaded at the mine. Every dealer would then be able by certifying the mine to assure the purchaser that the coal he has for sale is of a certain quality, for every consumer, be he European or American, would then have only to look up the coal in a government inspection report in order to secure a clear idea of the quality of the fuel. The expense of such government inspection would not be so great as might at first appear. The knowledge acquired would prove to be of great benefit, particularly to the small consumer. The large consumer long ago found that it pays to inspect and analyze the coal he buys, and regularly maintains a corps of inspectors and a laboratory for that purpose.

Need Low Freights to Hold European Trade

Such a system of inspection will naturally bring about better preparation of coal through the medium of competition; furthermore, it will discourage the wasteful consumption of coals for purposes to which they are ill-suited. For example, in the past enormous quantities of good byproduct coal have been used for making steam and for domestic heating, when much better fuel for the purpose could have been obtained. Government inspection should make it at once evident what sort of fuel to use for a given purpose and where most readily to obtain it with the assurance that it is actually of the quality desired.

In order to hold an export coal business with Europe freight rates must be brought considerably lower than they are now; even with the advantage of somewhat better grades of coal, cheaper mining conditions and greater resources we will hardly be able to compete unless return imports from Europe can be made to bear a considerable portion of the freight charges. Just now imports are not of sufficient importance to bring this about.

The European demand for American goods has kept the balance of trade on this side. It is conceivable that conditions will change in the future, so that the trade will be more evenly balanced. Just now all kinds of American goods find sale in Europe regardless of high cost and high freight rates. This is the case with coal: Europe has not, under existing conditions a sufficient coal supply and must needs look to America for fuel even if the price is high.

Omaha Chamber of Commerce Assails Reconsignment Order

THE Interstate Commerce Commission's reconsignment order is assailed in a formal complaint filed by the Omaha Chamber of Commerce against the principal Western carriers. It asks that the Interstate Commerce Commission investigate the practice of reconsignment of coal and coke west of the Mississippi River and require the defendant carriers to withdraw their reconsignment rules applying to open-top cars. It also asks that reparation be made for damages occasioned by the order permitting only one reconsignment. It is alleged that there has been no undue delay or holding west of the river of cars awaiting reconsignment.

It is stated that irreparable damage will be suffered by wholesalers, retailers and consumers if the reconsignment rule is allowed to remain effective, and that there will be greater delay to equipment under the new rules than would be the case if the ordinary procedure were followed. The order is declared to be contrary to sound economic policy, and immediate relief at the hands of the commission is asked.

The American Wholesale Coal Association has announced its intention to intervene in the case and it is expected that the National Coal Association will take similar steps.

How Electrical Apparatus Was Restored After Being Deeply Submerged

A Mine Flood Covered the Locomotives of the Sayre Colliery Under a Head of About 30 Ft.—Apparatus Thus Drowned Was Dried in a Temporary Oven and Put Back Into Service, Saving Both Time and Money

By E. J. Gealy
Kingston, Pa.

DURING the flood season, last spring, few were the anthracite-coal mines that did not suffer from water. A mine that did not have some section of its workings shut down because of flooding was extremely fortunate. The few that were thus favored enjoyed this condition not because they had no water but because they were able to take care of the sudden increase in influx.

One cause for so many mines suffering during the last flood season was the lack of pumping capacity and materials which resulted from the war and the impossibility of getting early shipments. The coal industry, like many others, has found it hard to obtain material ever since the war began. Pump repairs, castings, packing, piping and all other material necessary for pump maintenance were lacking.

Electrical Parts Deeply Submerged

When spring came the stage seemed to be all set for flooding. The ground was loose and porous, many caves were wide open, the rain and thaw came suddenly and with full force, and little warning was given.

Sayre Colliery is situated on the side of a mountain in Northumberland County, near Mt. Carmel, Pa., and is owned by the Lehigh Valley Coal Co. The location of the coal in this territory is such that the mine is at the foot of a large watershed.

In about two days Sayre, one of the finest collieries in the whole region so far as upkeep, maintenance and picturesqueness are concerned, was "drowned-out." The water rose in the shaft 30 ft., flooding the mine together with all its equipment, pumps included. At this height the pumps, aided by bailing buckets, battled with the water for three days without any gain being made.

At the end of about seven days the water had been lowered sufficiently to make a portion of the electrical appartus accessible. Some of the first equipment to be brought out were the motor casings, armature, field coils and controllers of the Westinghouse and Jeffrey trolley locomotives that were a part of the equipment of the colliery.

Heavy Flood Made Venture Uncertain

While the water was being lowered a drying oven was improvised outside the mine near the boiler house, for the purpose of drying out the rescued equipment. Considering that the flood had risen till the various pieces of apparatus were under a heavy water pressure much doubt was entertained as to the possible success of the drying-out venture.

The oven was made by placing on a concrete floor six 2½-in. iron pipes, about 14 ft. long, side by side and about 2 in. apart, joining them all together and connecting the unit thus formed to the boiler plant, which furnished steam at about 120 lb. pressure. Over the pipes a platform was built and over all was arched a long piece of No. 8 gage sheet iron. This light metal arch was then covered with a 1-in. coating of asbestos, and all crevices were filled. On one end of the oven was fastened a permanent back of wood which also was plastered over with asbestos. On the other end was placed a large wooden door. In the accompanying illustration is shown the completed oven and some of the motor parts.

All electrical material when brought out of the mines was found to be covered with a muddy deposit. This was first thoroughly wiped off. Next the equipment was taken apart piece by piece—armatures, field coils, brush rigging, bearings, etc. The all-metal parts were cleaned, oiled and set aside, while those portions included in the make-up of the electrical circuit were placed in the oven.

OVEN FOR DRYING ELECTRICAL APPARATUS

On a concrete floor were laid six 2½-in. iron pipes 14 ft. long in which passed steam at 120 lb. pressure. Over the pipes a platform was built which was arched with a long piece of sheet iron which in turn was coated with asbestos. A wooden back and door completed the oven. From the electrical parts placed in this oven the water, despite its penetration, was completely removed.

After the oven was completely sealed the steam was turned on and the temperature gradually raised and watched through holes by means of thermometers suspended inside the oven. Finally the temperature was brought to about 225 deg. F. After baking the desistance of the coils and armatures was tested by means of a voltmeter. If any short-circuits or grounds were located, that particular piece of apparatus was put back into the oven and retreated.

The locomotive armatures were the most tedious pieces to dry out, because of their construction and of the extreme necessity that the job be efficiently done. Some idea of the effect the pressure of the water had upon them can be gained from the fact that about one-half pint of water was taken out of the commutator shell of one armature. The only way this water could have worked its way in was by forcing itself through the mica insulation of the "V" rings of the computator. Another armature was so completely soaked that it took between seventy-five and eighty hours of continuous heat application to dry it out.

Volume of Water Nullified Acids Effect

It might be interesting to note that little or no damage appeared to be done by the acid which mine water nearly always contains. This may be because the great volume of surface water thoroughly diluted whatever acid the mine water may have contained, and furthermore that the mean temperature of the water was about 45 deg. F.

Due to this method of carefully drying, all the electrical equipment was saved. In the list of apparatus treated were Jeffrey type 74 and 85 armatures, Westinghouse type 75 armatures, field coils, fan motors, track drills and controllers. All of these were again put into operation within eleven days from the time the first motor was brought out to be reconditioned. Several months have now passed, and not one of the armatures or field coils has failed.

The amount of the saving thus made cannot be calculated. Some idea of the achievement can be gained, however, from the fact that there were in all three locomotives caught in the flood none of which could be replaced for less than $5,000, and then because of slow deliveries only after about a three months' wait. This figure alone more than warranted the experiment, to say nothing of the loss in output in tons of coal which would have resulted if new locomotives had been purchased, or even if the equipment reclaimed had been rewound and reinsulated.

Wholesale Investigation of Profiteering Charges in Eastern Kentucky

BETWEEN 500 and 1,000 subpœnas for coal operators in eastern Kentucky, according to a dispatch from Covington, Ky., Friday, Aug. 27, were being sent out that day by U. S. Attorney Thomas B. Slattery. The coal men were to be called Aug. 30 before the special Federal Grand Jury which is investigating complaints of alleged coal profiteering. The operators, it was stated, were ordered to bring their books and various records to the investigating body for perusal. U. S. Marshal Henry M. Cox and twelve deputies were serving papers on operators near Barbourville, Pineville, Middlesboro, Harlan, Hazard and McRoberts.

Drill to Lighten Work of Boring Coal, Slate and Shale

Bores a Two-Inch Hole Six Feet in Four Minutes in Hardest Anthracite — Anthracite Drill Weighs Forty Pounds, Soft-Coal Drill, Thirty Two

ANTHRACITE mining is a matter of drilling, charging, shooting and loading, the operation of drilling sharing with loading the onus of being the hardest part of the work. Anything that will lessen the laboriousness of this part of the operation will make the work of the laborer lighter and more pleasant and do much to keep him steadily on the job.

In the accompanying illustration is shown a one-man drill attached to the end of a feed bar. It is designed for the drilling of anthracite, slate, shale and other comparatively soft materials. For drilling bituminous coal it is as a rule not necessary to use the driving bar and the feed-bar attachment. Where the height of the bed varies a modification of this machine can be used, one that is built for mounting on an upright post or column.

It is not practical at all times to use an upright post. In some parts of the mines the height may be 4 ft. and in other parts 8 ft., so that by using the standard, or driving, bar and the feed-bar attachment the operator is enabled to drill holes in any part of the face and at any angle. This particular type of machine, which is known as Model O. M. of the Spry one-man electric drill and is manufactured by the Howells Mining Drill Co., of Plymouth, Pa., weighs about 40 lb. and can be operated successfully by one man.

A machine lighter than this is made for bituminous mines. This weighs approximately 32 lb. and is used in the same manner as a breast drill with one long auger. Both machines are manufactured for either direct or alternating current and are wound for any voltage.

After five years of experimental work it has been

DRILL FOR COAL, SLATE AND SHALE

Fortunately much of the material within the mines can be drilled by a machine so light that it can be operated without a drill post. A 32-lb. outfit is heavy enough to meet the needs when drilling bituminous coal.

possible to produce a machine that will stand up under the most strenuous conditions. The motors are light and compact and require little care. The back gears run in thick oil or grease, so that the wear is small. The machine is equipped with a fan attachment that keeps the motor cool.

In view of the scarcity of labor it is believed that the Spry one-man drill will supply a long-felt need. It requires only about 1 h.p. to operate either model, and the cost of upkeep is nominal. Such machines will drill in four minutes a 2-in. hole 6 ft. deep in the hardest kind of anthracite. This time includes that consumed in the changing of augers.

Augers can be supplied with or without detachable cutters. An auger with an inserted tool-steel cutter has been developed. When the cutting edges become dull, the miner can remove the small cutters and carry them from the mine in his pocket.

The same company manufactures a larger electric coal and rock drill. This machine has a rating of from 3 to 4 h.p. and is made for either alternating or direct current. These heavier-type machines are all mounted on columns or crossbars and are capable of drilling anything that a steel auger will penetrate. Where the material is quite hard, the machines are equipped with a back- or compound-gear attachment. The larger drills have been on the market for the last twelve years and are being shipped to every country in the world. Aside from its electric machines this firm also manufactures a compressed-air drill, as well as forty-two different types of hand-boring machines for rock and coal.

A Puzzle in the Oxidation of Coal

Coal Residue Mixed with Its Pyridine Extract and the Same Coal in Natural State Oxidize More Readily Than Either Coal Residue or Pyridine Extract

M. GODCHOT in the *Comptes-rendus de l'Académie des Sciences* says that a sample of coal which he tested showed the following composition: Volatile matter, 37.4 per cent; fixed carbon, 58.6 per cent; ash 4 per cent. Excluding ash, the chemical composition was as follows: Carbon, 83.59 per cent; hydrogen, 5.78 per cent; oxygen plus nitrogen, 10.67 per cent. When left in a heated container regulated to 212 deg. F., the coal gradually oxidized and after a month of this treatment the increase in weight was 3.15 per cent.

When treated with boiling pyridine by Wahl's method the original coal gave an extract in the form of a brown amorphous powder, 100 grams of coal giving 22.63 grams of extract which on analysis had the following composition: Carbon, 83.45 per cent; hydrogen, 5.84 per cent; oxygen plus nitrogen, 10.51 per cent. The coal after the extract was removed no longer caked but by adding the "extract" so as to reconstitute the original coal, the latter when heated gave an agglomerate coke equal to that obtained from the natural coal.

M. Godchot also took a quantity of coal from which the "extract" had been removed and some of the extract itself and left them for a month in a heated container kept constantly at 212 deg. F. At the end of this period the coal minus the extract—the coal residue—had increased in weight 1.99 per cent, while the extract had gained in weight 1.22 per cent.

The same test was made on coal reconstituted by mixing the coal residue with its own extract in suitable proportions. The gain in weight after heating for a month in a container heated to 212 deg. F. was 3.20 per cent, which is more than either the residue or the extract had gained under like treatment. The three oxidized products, derived respectively from reconstituted coal, coal residue, and coal extract, colored brown in the presence of potassium.

In conclusion M. Godchot says that it is difficult to believe that the phenomenon of oxidation arises from the action of bacteria in the coal, for if such existed the pyridine, being an antiseptic, would destroy them. Probably the pyridine splits up the coal into two parts, both of them oxidizable separately but not in equal degree. When the parts are joined together in the natural coal or in the coal as reconstituted by mixing the residue and extract together in their proper proportions one of the parts may act as a conveyor of oxygen to the other, for the natural and the reconstituted coal oxidize more rapidly and in greater proportion than either of the two parts taken separately. To show this clearly the following gains in percentage may be repeated: Natural coal, 3.15 per cent; reconstituted coal, 3.20 per cent; coal residue, 1.99 per cent; coal extract, 1.22 per cent.

Navy Begins Intensive Development of Alaska Coal Fields

UNDER the immediate direction of Commander Otto C. Dowling the navy has begun intensive development of the Chickaloon coal field in Alaska. An appropriation of $1,000,000 is available for the work. Commander Dowling has requested that the department furnish him with a geologist and twenty-five experienced miners with which to augment his present force. He also has ordered additional machinery.

An administration building, a large bunk house, a dispensary, a mine-rescue house and cottages for miners who are married are being constructed in connection with the navy's development work. In addition to securing supplies of coal from the Matanuska field the navy also expects to get some coal from the Eska mine, where a washing plant is being constructed.

Commander P. W. Foote is in immediate charge of the Washington end of the work. He expects to see private interests open coal properties in the vicinity of the navy mine.

An important feature of the Alaskan work will be the installation of facilities at either Anchorage or Seward for handling coal at ship-side. No decision has been reached as to which place will be chosen for the erection of coal-handling facilities. Anchorage is only seventy-five miles from the Chickaloon mine but there is trouble with ice from November until April. Seward is 188 miles from the mine and while it is practically on the coast, a serious objection would have to be overcome because of the great depth of the harbor. It is difficult to find anchorage and wharf construction would be very expensive.

The engineering portion of the navy's coal mining operations in Alaska is being conducted by Sumner Smith, formerly mine inspector for Alaska for the Bureau of Mines.

Discussion by Readers

Edited by
James T. Beard

Was the Mine Law Deficient?

AFTER reading the report of the sad accident caused by the explosion of gas in the Union Collieries mine, near Unity, Pa., *Coal Age*, July 29, p. 250, the thought has been impressed on my mind that every accident has its lesson.

It appears from the account given that considerable precaution was taken to avoid an accident when the company was notified by the power company, which supplied electrical power to the mine, that the electricity would be shut off from noon Saturday until over Sunday to enable necessary repairs to be made. On the receipt of this notice the men were withdrawn from the mine.

The evening of Sunday, power was again furnished the mine and the ventilating fan started. A little later, the night foreman, firebosses, timbermen and pumpmen, nine in all, entered the mine to see that the air currents were circulating properly; but the usual night force of 200 men were not permitted to enter. Just here I would ask, Was it in compliance with the law forbidding men to enter a mine for work after a brief cessation of activities and before the mine had been examined and pronounced safe?

Explosion Follows Turning on the Power

The men had been below but a short time when the night foreman phoned the lampman on the surface to turn on the power, so that they could operate the pump, stating that the circulation had been established and the mine was in working condition. Whatever took place when the power was turned on cannot be told, as every man in the mine was killed by the force of the explosion that followed. Seemingly, the law does not cover this point by forbidding the turning on of the power after a cessation of work and before the mine has been thoroughly examined and pronounced safe.

One can imagine that this disaster might have been avoided by providing a separate power line for operating the main pumps at the shaft bottom, which would have enabled the power to have been turned on the pumps without affecting the inside of the mine. But it can be said in truth that few operators would consider this precaution to be necessary. However, a simple means could be taken to avoid accident, without adding materially to the expense, by installing a switch at the shaft bottom whereby the power could be cut off from the mine at any time desired.

Again referring to the requirements of the mine law, the occurrence of this disaster suggests that a section of the law might read as follows:

> The fan shall run continuously throughout 24 hr. of the day, except that, for the making of necessary repairs, the operation may be suspended after all the men have been withdrawn from the mine. In case of such suspension, the fan shall again be operated continuously for at least four hours previous to the time when men may be permitted to enter the mine or the power is turned on for any purpose whatsoever. At the expiration of four hours of continuous operation of the fan after suspension, the mine shall be examined by the fireboss in the regular way. He shall make a thorough inspection for gas in all working places, traveling roads, passageways, pumprooms and other pints where gas may have accumulated, giving particular attention to places where electrical equipment has been installed.

As previously stated, every disaster has for us its lesson, which should be carefully heeded in the interest of greater safety in mining. It would be interesting to learn what others think as to whether or not the law was violated when these nine men who were killed went into the mine before it had been examined by the fireboss and pronounced safe.

G. E. Daugherty.
Pikeville, Ky.

Surplus of Labor in Mines a Myth

EVIDENTLY the letter of W. M. Chambers, entitled "Are the Miners Un-American?" *Coal Age*, July 8, p. 72, was written from the viewpoint of the United Mine Workers. The letter appears to confute the claim made by a previous writer that the demands of the miners, last November, were un-American. It will be remembered that these demands, made by the leaders of the miners, were for a 60 per cent increase in wages and a six-hour day.

Few people are to be found who will question the loyalty of the miners during or since the war. In truth, a large majority of the miners were surprised when they learned for the first time of the exorbitant and unreasonable demands made by their leaders and which precipitated the strike at that time.

The burden of Mr. Chamber's argument seems to be that his assumed "surplus of labor in the mines" is evidence that a six-hour day for the miner is all that is needed to mine the required amount of coal and supply every demand of the market. It is, of course, true that the question of production is not one of *shortage* of labor in the mines, but of car supply for loading and transporting the coal to market. But this fact does not furnish any support to the argument that there is a surplus of labor. That claim is a myth.

Increased Production of Coal Demands Use of All Available Labor

None will deny that, with the exception of a brief period of business anxiety immediately following the war, the supply of coal has never equaled the demand. At the present time this lack is causing much distress throughout the country, and the shortage of coal is becoming more and more acute as winter approaches. Factories and mills have been closed down for lack of coal, which has had the effect of increasing the cost not only of coal but of all necessities and boosting the already high cost of living.

There are those who will blame this condition largely to the profiteer; but let me say that the way to stop profiteering is to throw off our coats and go to work and produce in a truly American way. Production and pro-

duction alone will be able to do what Congress has so long failed to accomplish in the way of restoring normal conditions. It would not be American to establish a six-hour day and, to that extent, limit our ability to produce not only for the markets of this country but for the world.

Who would attempt to claim that it is un-American to expand our industries so that our production may supply both the needs of our country and those of foreign markets? Can we expect to do this with a six-hour day, which would hardly be sufficient to meet the growing demands of our own industries at home, to say nothing of sending our products abroad and stimulating our export trade?

Regarding the claim of Mr. Chambers that "in all our large coal mines, the miner is compelled to stay underground practically from nine to eleven hours, "I have heard of but few cases where the miners were held underground more than eight hours and, in a large majority of cases, their work is completed in six hours. In some of the largest coal mines in the East, the miners can be seen coming home at any time from twelve to three o'clock, and their earnings compare favorably with those of workers in other trades and industries.

Let us at least wait until we have had a good car supply for a period of several months or a year, and see if we are then overstocked with coal or the business of the country is demoralized as it is at the present time. It will be time enough then to consider the question of a six-hour day in the mines as an American institution.

W. H. NOONE.

Thomas, W. Va.

Poor Car Supply Blamed For Miners' Demands

WELL worth reading is the letter of W. M. Chambers, *Coal Age*, July 8, p. 72. To the average outsider, as Mr. Chambers says has been charged, the recent demands of the miners may seem to indicate that, as a class, they are "un-American." However, those more familiar with the present situation in the coal industry and with conditions as they exist underground will lay a large portion of the blame for the miners' demands at the door of the operators.

An experience of more than twenty years, in the coal mines of Great Britain and this country, has convinced me that one feature in particular is largely responsible for the dissatisfaction of miners. I refer to what may be styled the overcrowding of the mines, by opening up a larger number of working places than can be supplied with an adequate number of mine cars for the day's loading. The natural result of this tendency on the part of mine operators is that, owing to the inadequacy of the supply of mine cars, each miner produces little more than 25 per cent of his capacity.

Speaking from a familiarity with conditions in the anthracite region, I can say without hesitancy that there are scores of places in our mines today where the miners are only supplied with half the number of cars they could easily load. And, yet, more chambers are being opened up at these collieries, and forty miners are employed in a section where twenty could load all the cars that are available. This condition of affairs is, in my opinion, the chief cause of the present demands of the miners more than the high cost of living.

While the statement made by Mr. Chambers to the effect that the miner is compelled to stay underground from nine to eleven hours does not hold true in the anthracite mines, it is still a fact that the grievances I have mentioned are equally bad. The amount of work a miner can do, or his earning capacity, cannot be judged by the number of hours he spends in the mine. Given the needed number of cars, some miners will load in five hours what other miners would fail to load by working overtime. Therefore, it is the conditions under which he is compelled to work and the facilities afforded him that develop dissatisfaction.

Another important feature affecting the situation is the general practice in respect to underground haulage. The tendency toward concentration, in the transportation of coal underground, is carried to the extreme in many of our large collieries. While the plan has undoubted advantages, it cannot be denied that much delay is caused by the necessity of one branch of the system having to wait on another branch, which may be held up for a time by a third. As a result, numbers of miners at the working face are thrown idle for lack of cars to load.

Congestion in Haulage Causes Delay

In a way it seems to me that conditions in underground haulage are very similar to the conditions in railroad haulage on the surface. Much of the delay, in the distribution of railroad cars at the mines, can be attributed to the congestion of traffic owing to an inadequate track system. If this is true on the surface, it is likewise true underground.

The attempt to open too many places on a single road; or the working of too large a number of men in a section of a mine that is reached by a single haulage road leads to congestion and consequent delay in the distribution of cars and the haulage of coal to and from that section. The effect is to demoralize the entire output of the mine, as one driver must wait for another and one motorman for another, while the miners load less than half the number of cars that they might.

Starting at the foot of a shaft, in a mine where these conditions prevail, one finds the footman "waiting for a trip." Proceeding into the mine, the trip is found held up by a cross-entry driver who has failed to make connection because of delays in getting empty cars. In other words, the entire system is blocked because of lack of track facilities.

The Real Cause of Miners' Complaints

It is no wonder that two o'clock finds a number of the miners on their way home with the complaint that they have waited long enough for cars to load. The next day it is much the same and payday finds the miner short of his monthly stipend and dissatisfied, because he knows he could earn more if given the opportunity to work.

Being familiar with the habits of miners and their mode of living, I can say that it is not so much their complaint of the number of days worked, but the amount earned each day they are in the mine. My belief is that the remedy for this situation is in the hands of the operators, who should make every effort to give their miners an adequate supply of cars to load each day they are in the mine, if that is only three days a week. Let us not send men into the mine six days in the week to do the work that a good miner can do in three days if given a prompt and adequate supply of cars to load.

It is true, as stated by Mr. Chambers, that England has given her miners a seven-hour day, from "bank to bank." Thirty years ago my father and thousands of other miners worked but a six-hour shift in the mines of Durham County, in the north of England. But, believe me, it was hard work for those six hours, and each man stayed at the face until relieved by his buddy. Compared with that the present working day of the miners is as pink tea to black coffee, and many *Coal Age* readers will verify this statement.

In closing permit me to say a word regarding the unequal rating of daymen. In my opinion, a good dayman must be a more skilled worker than the miner himself. Indeed, the life of the miner depends largely on the skill of daymen. The safety of the working places and the sanitary condition of the mine depend on the work of daymen.

Justice to this class of workers requires that they should be equally well paid with the miner, who as a general rule is useless outside of his working place. On the other hand, a competent dayman will be found taking the place of a miner or performing the work of the fireboss, bratticeman, trackman, motorman, runner, driver, engineer, etc.

Let us hope that the present Commission of Anthracite Workers, now in Scranton, will not make the serious blunder of which the Bituminous Commission was guilty.

RICHARD BOWEN.

Plains, Pa.

Loopholes in Mine Laws Are the Frequent Causes of Accidents

SOME mine laws appear to be drawn with a loophole. This may be done for the convenience of a certain class of operators, or it may come from the lack of acquaintance of the lawmakers with mining conditions. It was such a construction, I assume, that gave rise to the argument regarding the real meaning of Sec. 3, Art. 10, of the Bituminous Mine Law of Pennsylvania, as set forth in *Coal Age*, July 15, p. 136.

The argument was in regard to whether the five rooms turned off the return airway of a pair of headings, as shown in the figure on page 136, would comply with the law if worked with open lights when gas was being generated at the faces of these headings.

As I read this section of the law, safety lamps are not required to be used in the five rooms mentioned. In my opinion, the meaning of the law is that when gas is generated only in active entries and not in the rooms it is assumed that the air current is diffusing the gas as fast as it is liberated at the faces of the headings; and the conclusion of the law framers was that an explosive mixture could only occur therefore at the face of said entries.

One observes in the figure (p. 136) that the air is split on the main intake entry and a separate current is carried to the face of this pair of headings. That being the case, it is fair to assume that the air returning through the rooms cannot carry a large percentage of gas, provided the quantity of air circulating in this split is sufficient for the diffusion of the gas generated and there is no interruption of the circulation.

However, the use of locked safety lamps at the faces of the headings and open lights in the rooms would involve the harmful practice of "mixed lights." A man from any of these rooms might have occasion to visit the face of one of the headings and he would probably carry his open light on his head. Now, it is clear that an explosive atmosphere must exist, for a short distance at least, back from the face in each heading, and it is easy to imagine the danger that the presence of an open light would incur.

Again, to allow open lights in the rooms when safety lamps are required in the headings would be to encourage men to take chances. In view of these facts and other similar instances that might be mentioned, one is forced to the unhappy conclusion that the framing of mine laws, which should always be in charge of those who are practically familar with conditions as they exist in mines, is too frequently the work of men who are not mining men and therefore not competent to draw up a section that will provide for the safety of men working under such conditions. Thus, the attempt to safeguard the work in mines may and often does create a new danger that is not suspected.

Safety Lamps Should Be Used Exclusively If Required at All.

My opinion is that if gas is generated in such quantities as to warrant the use of locked safety lamps in any portion of a mine, safety lamps should be used exclusively throughout the mine, except perchance, drivers and motormen working on the main intake might be permitted to use open lights.

My understanding of "active entries" is such entries as are being pushed ahead for the development of a certain section of a mine where another section is about to be abandoned. Of course, such entries are liable to encounter gas, which makes the use of safety lamps a necessity; and the meaning of the law is, I assume, that the quantity of gas generated will determine whether open lights can be used in the rooms on the return.

Men Will Take Chances

There was a time, when working in France and driving an entry in the solid for the purpose of opening that section on the longwall system, we were given safety lamps, and a safety zone was established for a distance of 100 ft. back from the face of the entry. At that point a board was placed on which was a notice "Keep out with an open light." An extra safety lamp was hung on the board for the use of anyone who wanted to go to the face. He would exchange his open light for the safety, before proceeding. But, as I stated, men would take chances and even the boss would occasionally come to the face with an open light on his head, a safety lamp hanging from his belt and a lighted pipe in his mouth.

Sound judgment will admit that any increase of gas at the face due to striking a feeder or pocket, or the occurrence of a squeeze coming from another section of the mine, would endanger the lives of men working in the rooms with open lights. I know of an instance where a pocket of gas existed under pressure, behind a slip in the strata. When this point was reached by the drills at the head of the entry, thousands of cubic feet of gas were thrown into the current, causing a very dangerous mixture.

When we reflect on these possibilities we wonder that there are so many loopholes in our mining laws that are, at times, safety measures in disguise. Let the fireboss who made this inquiry take nothing for granted; but visit the faces of the rooms, each day, with a reliable safety lamp and observe the condition of the air in those rooms with respect to gas and dust.

Peru, Ill. GASTON F. LIBIEZ.

Inquiries of General Interest

Answered by

James T. Beard

Static Pressure Due to a Fan

UPON reading the reply to the question asking for the theoretical water gage due to the action of a centrifugal fan, *Coal Age*, July 15, p. 136, I wondered if the result obtained was correct for the water gage when the fan was running in a closed space, as stated in that inquiry. The fan is described as being theoretically perfect, 12½ ft. in diameter and running at a speed of 85 r.p.m. "in a closed space."

There is no doubt that the method given in the reply to the inquiry is correct for ascertaining the theoretical water gage of a fan running under normal conditions. However, I understand the expression "running in a closed space" to mean that both the inlet and the outlet to the fan are closed.

In that case the whole mass of the air in the enclosed space will be revolved at the same speed as the fan and the pressure produced will be that due to the centrifugal force developed by reason of the weight of the air and its revolution about the center of the fan.

Now, I estimate the weight of the air in the fan, assuming its density is 0.0766 lb. per cu.ft., thus,

$$W = 0.0766(0.7854 \times 12.5^2) = 9.4\ lb.$$

The radius of the fan or half its diameter is $R = 6.25$ ft.; and the speed of turning, $N = 85$ r.p.m. Then, substituting these values in the usual formula for centrifugal force, I obtain for the total force developed in the fan,

$$F = 0.00034WRN^2 = 0.00034 \times 9.4 \times 6.25 \times 85^2 = 144.32\ lb.$$

In calculating the weight of air within the fan, I have assumed a width of one foot, which makes the total surface at the circumference against which the air presses $3.1416 \times 12.5 = 39.27$ sq.ft. Then, dividing the total force developed by the area pressed gives for the unit pressure $144.32 \div 39.27 = 3.67$ lb. per sq.ft., or a water gage of $3.67 \div 5.2 = 0.71$ in.

It seems to me that this would be the static gage developed by the fan running in a closed space.

Coalhurst, Alberta, Can. INQUIRER.

The correspondent makes at least three errors in his calculation of the static gage of a fan running in a closed space. In the first place the meaning of "running in a closed space," when speaking of a fan, is that the discharge opening is entirely closed. It does not refer to the closing of the inlet opening; although if it were possible to completely close the discharge opening the question of closing the inlet or leaving it open would be of little importance.

Again it is wrong, in estimating the weight of air revolved in the fan, to base the calculation on the entire volume of the fan from center to circumference. The calculation should include only the air contained between the blades of the fan. Also, in calculating the centrifugal force developed, the length of the radius is the distance from the center of the fan to the center of gravity of the revolved air, which in this case is about 5 ft., assuming the blades are 30 in. in depth measured radially. Making these corrections would reduce the water gage, estimated by this method, to less than ⅜ in. which is absurd.

This question was asked in an Illinois Mine Managers' examination held at Springfield, Dec. 10, 1900, and will be found answered in Mines and Minerals, Vol. 21, p. 379, the only change being made in the diameter of the fan and its speed. As there explained, while it is possible to estimate the approximate static gage of a fan when the actual gage and the velocity of the air are known, by multiplying the ratio of the gage to the velocity in feet per second, by twice the acceleration due to gravity, a like estimation of the static gage can only be made by basing the calculation on the head of air due to the velocity of the blade tips, as was done in the reply to this inquiry in *Coal Age*. The result there ascertained is the theoretical water gage due to the fan running in a closed space.

Safety in Electric Firing

FROM the large number of fatal accidents that have occurred as a result of premature explosions in electric blasting it would seem that some means should be adopted that would render these occurrences practically impossible. In this connection, an idea has occurred to me that seems both simple and certain of proving effective in absolutely preventing the accidental premature explosion of an electric fuse.

My plan is to create a short-circuit of any possible current that would otherwise reach and explode the

fuse, by soldering lightly the two lead wires at a point a short distance from the ends of the two wires, say three or four inches. This will leave a sufficient length of the wires to connect them with the firing cable. If this is done, should the firing cable by any accident come in contact with and receive current from a live wire, the current could not reach the fuse owing to the short-circuit provided by soldering together the lead wires, in the manner indicated in my sketch.

When the hole has been charged and tamped, the lead wires connected with the cable and all is ready the operator pulls the two wires apart, breaking the solder, and proceeds to retire from the place and fire the shot. It seems to me that this plan would confine the danger period to a very brief interval between the breaking of the wires apart and the retirement of the operator to a safe distance where his battery is located.

So. Brownsville, Pa. R. H. SISLEY.

The idea presented by this correspondent is worthy of discussion and we doubt not will receive the attention it deserves from those who have had experience in electric shotfiring in mines.

Examination Questions

Answered by

James T. Beard

Miscellaneous Questions

(Answered by Request.)

Ques.—An air current of 91,850 cu.ft. per min. is passing through a mine under a 4-in. water gage. If the equivalent orifice of the mine is now reduced to 10 sq.ft. what will be the quantity and water gage?

Ans.—The present equivalent orifice of the mine is

$$A = 0.0004 \frac{Q}{\sqrt{i}} = 0.0004 \frac{91{,}850}{\sqrt{4}} = 18.37 \text{ sq.ft.}$$

Assuming a constant power on the air, the cube of the quantity varies as the square of the orifice of the mine. In other words, the cube of the quantity ratio is equal to the square of the orifice ratio; thus,

$$\left(\frac{Q_2}{Q_1}\right)^3 = \left(\frac{A_2}{A_1}\right)^2$$

$$Q_2 = 91{,}850 \sqrt[3]{\left(\frac{10}{18.37}\right)^2} = 61{,}236 \text{ cu.ft. per min.}$$

The water gage varies inversely as the quantity

$$w.g. = 4 \times \frac{91{,}850}{61{,}236} = 6 \text{ in.}$$

Ques.—A mine passes 200,000 cu.ft. of air per min. through its workings. In winter the air enters at an average temperature of 32 deg. F. What effect, if any, will this have on the workings? Approximately, what amount of moisture will this current of air carry out of the mine in 24 hr., and from where will this moisture come?

Ans.—The question does not state the degree of saturation of the air going into or passing out of the mine. But, assuming complete saturation in both instances, a current of 100,000 cu.ft. per min. passing into the mine, at a temperature of 32 deg. F., will carry with it a weight of moisture

$$\frac{100{,}000\ (0.6235 \times 0.0891)}{0.37\ (460 + 32)} = 30.51 \text{ lb. per min.}$$

The weight of moisture in the air passing out of the mine at a temperature of, say 65 deg. F. is

$$100{,}000 \frac{460 + 65}{460 + 32} \times \frac{0.6235 \times 0.3033}{0.37\ (460 + 65)} = 103.88 \text{ lb. per min.}$$

Subtracting the weight of moisture in the intake from that in the return current gives 73.37 lb. of moisture absorbed in the mine. As the return current is rarely wholly saturated the weight of moisture extracted from the mine may be roughly estimated as 70 lb. per min., or 70 × 60 × 24 = 100,800 lb., say 50 tons.

Ques.—What volume of air at 60 deg. F. and 30 in. barometric pressure will be consumed in the complete combustion of 100 lb. of coal giving the following analysis: Fixed carbon, 74 per cent; hydrogen, 5 per cent; oxygen, 9 per cent; nitrogen, 2 per cent; ash, 9 per cent; sulphur, 1 per cent?

Ans.—In burning this weight of coal, there are oxidized: Carbon, 74 lb.; hydrogen, 5 lb.; and sulphur, 1 lb. Except for the nine pounds of oxygen in the coal, the required weight of oxygen is taken from the air consumed. Assuming complete combustion, each pound of carbon takes up $2\frac{2}{3}$ lb. of oxygen; a pound of hydrogen absorbs 8 lb. of oxygen, and a pound of sulphur 1 lb. of oxygen. The total weight of oxygen taken from the air is, therefore, $74 \times 2\frac{2}{3} + 5 \times 8 + 1 - 9 = 229\frac{1}{3}$ lb. But, since oxygen forms 23 per cent, by weight, of air, the weight of air consumed, in this case, is $229\frac{1}{3} \div 0.23 = 997+$ lb.

The volume of one pound of air at 60 deg. F., barometer 30 in. is

$$V = \frac{460 + 60}{1.3273 \times 30} = 13.06 \text{ cu.ft.}$$

which makes the volume of air consumed in burning 100 lb. of this coal, under the given conditions 997 × 13.06 = 13,020.8 cu.ft.

Ques.—The quantity of air entering a mine is 100,000 cu.ft. per min. Estimating the effective power of the furnace as 40 hp., what would be the height of water gage in inches?

Ans.—In this case, the estimated power on the air is 40 × 33,000 = 1,320,000 ft.-lb. per min. The unit pressure producing the circulation is found by dividing this effective power by the quantity of air passing per minute; thus, p = 1,320,000 ÷ 100,000 = 13.2 lb. per sq.ft. The corresponding water gage is 13.2 ÷ 5.2 = 2.54 in.

Ques.—How would you ventilate the workings of a slope mine that generates large quantities of explosive gas and in which the coal dips 6 per cent, in order to keep the gobs free from gas?

Ans.—As far as practicable, this mine should be worked on the retreating system and ventilated by carrying the air directly to the head of each air split and returning it through the rooms to the main return air-course. Assuming the rooms are driven to the rise, each lift should be ventilated by a separate split of air carried by the air-course to the head of the gangway and then made to return through the rooms so as to sweep each working face and pass out through the gob if this section is worked advancing. If the work is retreating the safest plan is to drive the cross-headings three abreast, or to make the intake air-course the haulage road, and carry the return air from the pillar workings and gob section into the main return.

Ques.—If a cross-heading driven due north has a dip of four feet in that distance and the coal seam pitches due west one foot in six feet, how far east or west of the face of the cross-heading is the line of strike that passes through the mouth of the cross-heading where it is turned off the main entry?

Ans.—The pitch of the seam being one in six, due west, a rise of four feet will require a distance of 4 × 6 = 24 ft. Therefore, the line of strike passing through the mouth of the cross-heading where it is turned off the main entry is 24 ft. west of the face of the heading.

Reported Tidewater Movement of Coal During July and August

COMPLETE figures on the destination of coal handled over tidewater piers during the month of July are now available, furnished the Geological Survey by the Tidewater Bituminous Coal Statistical Bureau. The total quantity dumped at tide was 4,915,000 net tons, an increase over June, hitherto the maximum month, of 216,000 tons. The effect of Service Order No. 6, which was in force throughout the month, is seen in the shipments to New England, which were 1,006,000 net tons, as against 772,000 in June, an increase of 234,000 tons, or 30 per cent. The increase in the New England movement was most marked at New York and Baltimore. At Philadelphia the New England tonnage decreased. Coal for local use and for coastwise destinations other than New England ("inside Capes" and "other tonnage") increased about 10 per cent.

Because of the larger tonnage dumped during the month these increases for New England and local account were possible without a material reduction in bunker coal (832,000 tons as against 850,000 in June) and with only a slight cut in exports. The total exports were 2,081,000 net tons, or within 94,000 tons of the June exports, which had set a new record.

TIDEWATER BITUMINOUS COAL SHIPMENTS FOR JULY, 1920 BY PORTS

(In Net Tons)

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Total Dumped
Coastwise						
New England..	282,000	56,000	101,000	567,000		1,006,000
Exports		174,000	407,000	1,426,000	74,000	2,081,000
Bunker	356,000	47,000	97,000	324,000	8,000	832,000
Inside Capes.		168,000	94,000	25,000	....	287,000
Other tonnage....	665,000		9,000	33,000	2,000	709,000
Totals	1,303,000	445,000	708,000	2,375,000	84,000	4,915,000

The amended New England order (Service Order No. 11) did not go into effect until Aug. 2. Destination of coal dumped at tide during the second and third weeks of operation of the order are shown in the following table. Dumpings of cargo coal for New England account during the first three weeks' operation of the order were 648,000 tons, or at the rate of about 950,000 tons per month. Total dumpings over tidewater piers for all purposes were very heavy—3,645,000 for the three weeks, or at the rate of over 5,300,000 per month. Exports appear to have continued in greater volume than ever.

TIDEWATER BITUMINOUS COAL SHIPMENTS FOR SECOND AND THIRD WEEKS OF AUGUST, 1920 (a)

(In Net Tons)

Aug. 8-14	New York	Philadelphia	Baltimore	Hampton Roads	Charleston b	Total Dumped
Coastwise to New England	65,000	11,000	16,000	92,000	See	184,000
Exports		70,000	152,000	357,000	Below	579,000
Bunker	82,000	14,000	18,000	70,000		184,000
Inside Capes		53,000	26,000	3,000		82,000
Other tonnage	176,000			4,000		180,000
Totals	323,000	148,000	212,000	526,000		1,209,000
Aug. 15-21						
Coastwise to New England	75,000	8,000	24,000	101,000		208,000
Exports		74,000	125,000	314,000	35,000	568,000
Bunker	98,000	9,000	16,000	69,000	3,000	195,000
Inside Capes		33,000	20,000	6,000		59,000
Other tonnage	172,000			32,000	1,000	205,000
Totals	345,000	144,000	185,000	522,000	39,000 b	1,235,000

(a) As reported to the Geological Survey by the Tidewater Bituminous Coal Statistical Bureau. (b) Includes total Aug. 1-19.

These figures, however, represent coal handled at the piers, not coal shipped from the mines. According to statements furnished the Geological Survey by the American Railroad Association, loadings at the mines under Service Order No. 11 may be summarized as follows:

	Cars
Short at end of first week (Aug. 7)	1,588
Short at end of second week (Aug. 15)	1,977
Short at end of third week (Aug. 21)	2,226

As the initial assessment under the order was 923 cars per day, the cumulative movement at the end of the third week was 13 per cent behind. Considerable quantities of this coal consigned to New England have not been dumped for lack of vessels at the ports. On Aug. 26, for example, the coal on hand at Hampton Roads for New England account was reported to the American Railroad Association as 88,469 net tons, while the capacity of vessels available for loading this coal were only 7,952 tons.*

*Editor's Note—The lack of boats at Hampton Roads last week is reported to have been due to fog conditions at sea and to have been a temporary shortage.

Squeezed by Profiteers, Shipping Board Asks Priority for Bunker Coal

FOR the last two months or more the U. S. Shipping Board has been forced to pay such prices for bunker coal as to stir it to the most pronounced activity in an effort to relieve the situation. It is said that on a few occasions full advantage had been taken of urgent necessities on the part of the Shipping Board vessels and that very fancy prices were exacted. As a result the Shipping Board has asked for a priority order for its bunker coal. The matter was the subject of a conference between Shipping Board officials and members of the Interstate Commerce Commission, but no conclusions have been announced.

It is understood that the White House has been fully acquainted with some of the Shipping Board's experiences. Some are of the opinion that this is the straw which is likely to break the camel's back. It has been known for some time that the White House has been judging the coal situation more from the matter of price than from the standpoint of efficiency of distribution. It can be stated on good authority that the probability of Government regulation of the coal industry has not passed.

Palmer Orders Prosecution of Coal Dealers Boosting Prices by Resale Schemes

CONTINUING the efforts of the U. S. Department of Justice to put an end to profiteering in bituminous coal, Attorney-General Palmer on Monday, Aug. 23, issued instructions to all U. S. District Attorneys to investigate all cases where prices to the consumer had been enhanced through repeated resales or conspiracies to increase the price of coal.

The letter of instructions sent to prosecuting officers by the Attorney-General reads:

In connection with previous instructions to investigate and institute prosecutions in cases where unreasonably high prices have been exacted in the sale of bituminous coal, you are instructed to investigate cases where the price to the consumer has been enhanced through repeated resales by dealers successively buying and selling the same coal, and to institute prosecutions against such dealers, where the facts warrant, for engaging in an "unfair or deceptive or wasteful practice or device" or a "conspiracy, combination, agreement, or arrangement" to enhance the price of coal by such practice or device, in violation of Section 4 of the Lever Act, as amended by the act of Oct. 22, 1919.

The Ordeal of a Consulting Economist Who Is Not a Statistician*

Household Budgets and Living Costs as Wage Basis and Hazards of Anthracite Mining Land Even the Voluble Mr. Lauck in a Tight Fix — When $6 a Day Was Set as Minimum Subsistence for Common Mine Labor, Government Employees Asked $8

IT HAS been shown in the first of this series of articles that W. Jett Lauck, consulting economist for the United Mine Workers before the Anthracite Coal Commission, signally failed in his attempt to demonstrate, through computations "neither statistically nor mathematically correct," that the earnings of the anthracite-mine workers had not kept pace with the increased cost of living and were not on a par with those of bituminous-coal miners or of wage earners in other occupations requiring similar skill and experience. The other lines of attack engineered by Mr. Lauck made scarcely more impression than did his exhibits of wage earnings, irregularity of employment, etc., which were discussed in the previous article. These, according to the evidence permitted to be offered at the hearings, were directed mainly from two angles: (1) the application of household budgets and living costs to the adjustment of wage scales, and (2) the occupational hazard of anthracite mining.

Operators Refuse Closed-Shop Demand

As was clearly brought out by S. D. Warriner in his closing argument before the commission, on all but two of the questions in dispute before the commission, which were embodied in eighteen demands, agreement had practically been reached in the joint and separate conferences with the Secretary of Labor. One of the exceptions was demand No. 2, which asked that "the present wages of the anthracite-mine workers be increased to correspond to the increases granted the bituminous-mine workers by the Presidential Coal Commission." The other was the demand (No. 6) for the closed shop in the anthracite region. In the conferences with the Secretary the latter had been put in the form of a demand for the abolition of clause IX of the award of the Anthracite-Coal Strike Commission. This clause reads: "That no person shall be refused employment, or in any way discriminated against, on account of membership or non-membership in any labor organization; and that there shall be no discrimination against, or interference with, any employee who is not a member of any labor organization by members of such organization."

The reply of the operators to this demand at the time the committee was meeting with the Secretary left no doubt as to its interpretation. They said: "We definitely decline to enter into any contract which alters the principles of the award of the Anthracite-Coal Strike Commission or the decisions of the Board of Conciliation, and especially that part of the award which provides for the open shop and the right to protection of all employees against discrimination on account of membership or non-membership in a labor organization." The present discussion, however, has to do with the first of the two demands which precipitated the final breaking off in negotiations, namely Demand No. 2, quoted above.

Lauck Presents Numerous Documents

It developed during the hearings that Mr. Lauck and his colleagues concluded they had not asked for enough when the demand was made for "increases to correspond with the increases granted the bituminous-mine workers," for the operators had shown conclusively that the yearly earnings of the anthracite miners were equal to, if not in excess of, those of the bituminous-mine workers even after the increases granted by the President's commission had been applied, the steadier employment offered by the anthracite industry giving the workers in that region a decided advantage over the bituminous-mine workers.

As Mr. Lauck's case, so carefully built up, showing the unfavorable comparison of the anthracite miners with workers in other industries, and particularly with the bituminous-coal-mine workers, had been disproven, he and his associates found it necessary to withdraw from that line of attack and to concentrate their efforts on an appeal to the commission to render its decision upon the theory of a living wage as developed from budgetary studies of family expenses. Some of the documents submitted in support of this contention were pamphlets on "Changes in the Cost of Living and Prices, 1914-1920"; "Sanction for a Living Wage," "Budgetary Standards of Living," "Cost of Living in Coal Towns," "What Should Be a Living Wage," "The Practicability of a Living Wage," and "Food Prices in Scranton and Other Cities."

It is not necessary to consider in detail these or the other exhibits which were submitted in order to substantiate the theory that a living wage, not the capacity or industry of the worker or the value of his services to his employer, should be the chief factor in the construction of a wage scale.

Budgetary Studies Support Wage Demand

In making demands for a "living wage" based on the budgetary "studies" the answer was twofold in character: (1) $2,200 was the amount of income necessary to maintain the average mine worker's family according to the American standard of living, and (2) the minimum wage rate for a common laborer in order to keep him on a bare subsistence level was $6 for an eight-hour day, i. e., nearly as much per hour as common labor outside the anthracite regions was paid per day in pre-war times. Consequently all of the budgetary "studies" were made to equal or to exceed $2,200 as the income necessary to support an average family of five persons—father, mother, and three children under sixteen years of age.

*This is the second of a series of articles on the consulting economist in wage controversies. The first article of the series appeared in *Coal Age* last week, page 492.

In responding to the demand for a "living wage" the contention of the operators was that while there was no disagreement as to the general principle that any industry should pay its employees sufficient wages to enable them, with proper economy and thrift, to live comfortably and to save something besides, no practical method of applying the theory to every-day life had been or could be devised. Like many other beautiful theories for the amelioration of the laboring classes, it was impossible of practical application. Moreover, it was held by the operators that they were paying, and since the strike of 1902 had paid, living wages to their employees, a truth which they asserted was substantiated by the general prosperity of the region in which anthracite mining was the dominant industry; by comparison of rates of wages and earnings of mine workers with those of other industries; by the deposits in savings banks, which in four years had shown an increase of over $52,000,000, or 48 per cent; by the investments in Liberty Loans; by the patronage given to amusements, by the time taken from employment for recreation, and by the comfort in which all the mine workers were able to live.

Economist Convicted Out of His Book

The entire insincerity of Mr. Lauck's contention for a subsistence wage of $2,200 a year was exposed, and he was given the most uncomfortable period in his experience before the Anthracite Commission when Mr. Warriner in his cross-examination of the consulting economist read from his own (Mr. Lauck's) book published in 1917 (not included among the many exhibits on this subject filed with the commission) that $800 yearly income might be considered a living wage. His only defense was that this book was written in 1915 and had pursued him through ten arbitrations, but he was compelled to admit that if the cost of living had increased, as he claimed, 100 per cent to 1920, the income necessary this year to maintain the same standard would be $1,600 or $1,700.

That was a simple problem in multiplication, but Mr. Lauck's proficiency as a mathematician was put to a severe test when he was confronted with a problem involving the application of the rule of three. He could not, or at least would not, see the answer to the question propounded to him by Mr. Warriner, that if the cost of living in the large cities, holding 50 per cent of the population, had increased 110 per cent from 1914 to 1920, and for the country as a whole had increased 100 per cent, then it naturally followed that for the smaller cities and rural districts containing the other 50 per cent of the population the cost of living had increased 90 per cent. The problem was too much for him and he had to confess that he was not a statistician but an economist. These figures would not juggle in a manner satisfactory to Mr. Lauck. In brief it may be stated that the figures upon which Mr. Lauck had predicated his demand for "a living wage" of $2,200 a year were shown to have been as misleading as his statistics of employment and of earnings in the anthracite region, and were completely discredited.

Bituminous Scale Allows for Idle Days

In support of the demand for a minimum wage rate of $6 a day for common labor it was stated that the $1 a day increase awarded to day labor in the bituminous mines by the President's commission had established $6 a day as the minimum rate for bituminous-mine workers. This statement also was shown not to have been in accordance with the facts. Moreover, even if the statement had been true, it is well known that the increases granted the bituminous miners, which, as Commissioner Colver, of the Federal Trade Commission, said, made "a wage so high as to seem unheard of," were due to the large number of idle days for which the miners were not to blame.

The intention was to make it appear to the public that the anthracite operators wished to penalize their employees for taking advantage of the opportunity for employment offered them by reducing the unit rate of payment, as compared with bituminous-mine workers, whereas the unit rate for the latter had been advanced because of lack of opportunity to earn a livelihood. At the same time that Mr. Lauck and his associates were holding that $6 a day was a minimum wage on which common labor could subsist, employees of the U. S. Government were circulating an appeal to Congress that $3 should be established as a minimum wage for Government employees.

In what was designated as Miners' Exhibit No. 26, entitled "Occupation Hazard of Anthracite Miners," Mr. Lauck essayed the role of expert and authority on vital statistics as applied to mining in general and to anthracite mining in particular. The pamphlet submitted as Exhibit No. 26 consisted of fragmentary and *ex parte* quotations from various unrelated official reports and other authorities. In selecting the material to be included in the pamphlet care was taken to exclude such accepted expert opinions on the hygienic aspects of coal mining as those of Sir Thomas Oliver and Dr. Frank Shufflebotham of England, nor was any evidence or opinion from physicians practicing in the anthracite region presented. On the other hand, certain pulmonary diseases incident to metal mining were made to appear as affecting workers in the anthracite mines, whereas anthracite-mine workers are peculiarly free from tubercular diseases such as arise from inhaling the siliceous dust in metal mines.

Incomplete Accident Statistics Presented

In a table of accident statistics the records were brought down only to 1916, and the years 1917 and 1918, which showed a pronounced decrease in the fatalities from accidents in the anthracite region, were excluded, although the statistics were available. No reference was made to the steps taken by the anthracite operators in recent years to reduce the liability to accident among their employees. The attention of Dr. Frederick L. Hoffman, the highest authority in the United States, if not in the world, on mortality and vital statistics, was called to Mr. Lauck's exhibit, and the reply of the operators to this exhibit was prepared by him. He clearly showed that in this sphere of activity, Mr. Lauck and his collaborator in the preparation of the pamphlet, Henry J. Harris, were little less than mountebanks seeking cheap notoriety, which the daily papers, particularly those in the anthracite region, seemed willing to accord them freely.

The third and concluding article of this series will deal with the exhibits which the commission declined to permit to be offered as evidence, but which, notwithstanding the action of the commission, Mr. Lauck felt free to give to the public through the daily press. It is no exaggeration to state that more mendacious statements than those contained in these exhibits never were foisted upon a gullible press and public.

Civil Engineers to Vote on Proposal to Join Federated Societies

AT ITS annual convention in Portland, Ore., Aug. 10, the American Society of Civil Engineers adopted resolutions which provided "that the Board of Direction of the American Society of Civil Engineers be directed to submit at once the question of the American Society of Civil Engineers becoming a charter member of the Federated American Engineering Societies to referendum vote to the corporate membership of the American Society of Civil Engineers, as recommended by the Joint Conference Committee, said ballot to be accompanied by a copy of the constitution and by-laws of said Federation," and "that the Board of Direction of the American Society of Civil Engineers be further instructed in event of a favorable vote on said referendum to proceed at once to take such steps as may be necessary for the American Society of Civil Engineers to become affiliated with said Federation."

Army to Get 100,000 Tons of Bituminous 400,000 Tons of Anthracite Needed

LIEUT.-COL. JAMES P. BARNEY, of the U. S. Quartermaster Department, has just completed a trip through the bituminous coal districts of the East, Middle West and South in quest of coal for army needs. He considers this trip a success, as he was able to contract for about 100,000 tons of the army's emergency requirements of 175,000 tons for immediate delivery. This coal was purchased at the mines at a reasonable price under existing conditions. The exact price is not divulged.

As the result of a general reorganization of the Quartermaster Corps, Lieutenant-Colonel Barney has been placed in direct charge of all the coal requirements of the army as chief of the purchasing division. He became identified with this special line of work when he was appointed in charge of coal confiscation under the Quartermaster General by the Secretary of War, in September, 1919. Under the new organization plans the purchase of fuel for the U. S. Army is decentralized and divided into six departments with separate headquarters, as follows: Northwestern Department, at Boston, Mass.; Eastern Department, at New York City; Southeastern Department, at Charleston, S. C.; Central Department, at Chicago; Southern Department, at San Antonio, Tex.; Western Department, at San Francisco, Cal.

A purchasing agent is to be in charge of the army's requirement at each of the above headquarters and all purchases, after the present emergency is past, are to be in their hands, the Washington headquarters to have administrative charge and to care for special emergencies and for liaison between the field offices. J. A. Lay is assistant to the chief of the purchasing division in charge of all coal matters.

In Colonel Barney's opinion there is only one important cause of coal shortage and high coal prices remaining, namely, that the diggers are receiving such high daily pay that "they can afford to work two or three days a week and ride around in their Fords or Packards the rest of the week." The report that there is from 80 per cent to 100 per cent of the car requirements at the mines being supplied by practically all railroads was confirmed by Colonel Barney's observations at the coal centers which he visited.

Colonel Barney's trip was made for the special purpose of making emergency purchases of coal for army posts, especially hospitals, but it is planned to have additional purchases made through the six departments mentioned above. The 100,000 tons which has been obtained is only a small percentage of the 1,600,000 tons which is the minimum estimate of the army requirements at the present time. The purchasing division of the Quartermaster Department is now negotiating with E. W. Parker, of Philadelphia, in an effort to make arrangements for the purchase of 400,000 tons of anthracite coal from a number of leading anthracite producers. This coal is wanted for army posts throughout the East. The first assignments will be made to the army hospitals.

Toms Creek No. 2 Team Wins Second Virginia First-Aid Meet

THE second annual Virginia Statewide First-Aid Meet, held in the town hall at Norton Aug. 14, under the auspices of the Virginia Coal Operators' Association, the U. S. Bureau of Mines and the American Red Cross, was a complete success. The large building was jammed with interested observers of the twenty-seven teams that were contesting, all of whom did good work. The Norton Concert Band furnished music for the occasion. Much regret was expressed that the heavy rains prevented the meet being held in the open, as a baseball game between Norton and Stonega had been arranged as the final supplementary attraction.

The judging in the contest was on a high plane—the problem was printed on the top of each score card and a correct outline of the proper method of doing the problem was printed on the back of it for the guidance of the judges. Each judge was instructed to inform the captain of the team which he was judging of the amount of his discounts and the reason for the same. The captain then had the option of referring the matter to a commission of first-aid men, whose decision was final. The plan produced good results. The first fifteen teams received prizes. Toms Creek No. 2 team, of the Virginia Iron, Coal & Coke Co., won first prize with a score of 100 per cent.

First prize comprised the Virginia Coal Operators' annual cup, six National Safety Council medals and a variety of household articles and sporting goods. The remaining fourteen sets of prizes included silverware, cameras, cigars, razors, tools, food products, furniture and wearing apparel. There also were a number of special prizes awarded as the result of a drawing by lot numbers.

STANDING OF THE TEAMS

	Teams	Companies	Mines	Per-centage
1	Toms Creek No. 2	Virginia Iron, Coal & Coke Co	Toms Creek	100
2	Stonega No. 1	Stonega Coke & Coal Co	Stonega	99¾
3	Pardee	Blackwood Coke & Coal Co	Pardee	99¾
4	Wilder	Clinchfield Coal Corporation	Wilder	99¾
5	Clinchfield	Clinchfield Coal Corporation	Clinchfield	99¾
6	Roda No. 1	Stonega Coke & Coal Co	Roda	98¾
7	Moss	Clinchfield Coal Corporation	Clincho	98¾
8	Toms Creek No. 1	Virginia Iron Coal & Coke Co	Toms Creek	98¾
9	Arno No. 1	Stonega Coke & Coal Co	Arno	97¾
10	Dante	Clinchfield Coal Corporation	Dante	97¾
11	Cranes Nest	Clinchfield Coal Corporation	Crane's Nest	97¾
12	Arno No. 2	Stonega Coke & Coal Co	Arno	97¾
13	Roaring Fork	Blackwood Coke & Coal Co	Roaring Fork	97
14	Keokee No. 1	Stonega Coke & Coal Co	Keokee	96¾
15	Imboden	Stonega Coke & Coal Co	Imboden	96¾

United Mine Workers to Start a Daily

SEEKING an organ that will represent the mine workers' contentions, the United Mine Workers are forming a stock corporation to start at Hazleton, Pa., a daily, to be known as the *Panther Valley News*. It will take over the plant of a weekly run under union auspices many years ago.

Difficulty in Kelly's Creek Plants Is Adjusted

SEVERAL plants of the Kelly's Creek Colliery Co. in the Kanawha field were closed down during the second week of August by a strike growing out of a difference of opinion as to the proper construction to be placed upon that part of the new wage contract applying to payment for dead work. When the miners demanded an increase in pay for removing slate which would have amounted to an increase of 65c. a ton, the company refused to accede to their demands and the miners went on strike. One of the officials of District 17 finally paid a visit to the Kelly's Creek mines and though meeting with much opposition, finally adjusted the matter.

More Trouble at Matewan

AS an outgrowth of the strike and labor trouble at Matewan, W. Va., in which 12 men were recently killed, A. E. Hatfield and Dr. Edward Simpkins were shot from ambush while seated in front of a hotel at Matewan on Saturday, Aug. 14. Only one shot was fired, the bullet piercing Hatfield's chest and lodging in Simpkins' jaw. Both men were taken to a hospital at Huntington, where Hatfield died Sunday morning.

Following the shooting, members of the state police arrested Fred Burgraf and preferred charges against him as being guilty of the shooting. Burgraf is already under indictment as one of fourteen persons charged with complicity in the riot at Matewan on May 19.

Attempt to "Shoot Up" Freeburn

ON Saturday and Sunday, Aug. 14 and 15, a renewal of the attempt to shoot up the Freeburn, Ky., plant of the Solvay Collieries Co. was made, the shots being fired from the West Virginia side of the river. Shots were poured upon the Freeburn plant on Sunday and firing was resumed after members of the West Virginia state police had arrested an unidentified man as belonging to the roving band of gunmen that has been terrorizing the men at work during a considerable period recently.

Pennyslvania organizers were largely in evidence at numerous meetings held by miners in the Williamson field on Sunday, Aug. 15.

At the end of the second week of August more men were at work and more companies were operating than at any time since the beginning of the strike. It is regarded as probable that the leaders of the strikers realized that they were losing ground.

As an indication of how conditions were improving in the strike zone it may be stated that on Aug. 14 eighteen different companies were operating whose plants had been closed down since the strike began and it was found possible to increase production at the rate of 100 cars a day. In other words miners not on strike felt that they would be protected and therefore were willing to return to work. Unless further violence is indulged in it is predicted that the strike will be at an end before Oct. 1 and that all except the most radical individuals and those who have instigated much trouble will be back to work. Already in some places men who have been on strike have applied for reinstatement.

The strike order originally issued was directed against seventy different mines, forty of which were closed down. Operations have now been resumed, however, at the plants of eighteen of the companies originally affected by the strike. On Aug. 14 there were still twenty-two mines idle, most of them lying off the main line of the Norfolk & Western Ry. A conservative estimate, it is said, places the number of miners who are really behind the strike at about 1,800 out of 6,000 employed.

Two Ousted From Union Other Men Strike

WHEN two men, formerly leaders in the One Big Union, were refused membership in the United Mine Workers of America, the other mine workers at the Coal Mine, near Fernie, B. C., refused to work. The two men had refused to affiliate with the United Mine Workers, and the right to join was then denied them. Coal Creek became idle Aug. 6. At Michel all the men rejoined the United Mine Workers and the mine was running on the date of the Coal Creek strike.

Too Bad for the Kansas Mine Worker!

FORMERLY attorney for the Kansas United Mine Workers, Jake (J. I.) Sheppard, of Fort Scott, is in full sympathy with them. "The fact is," says Sheppard, "the miners have been averaging this summer only two days a week in the Kansas fields." "Why then," asked an impertinent questioner, "if that is the case, did they refuse to work on Saturdays?" Sheppard had some sort of an answer ready: "Isn't a man who works as hard as the miners entitled to some sort of a holiday?"

Mine-Rescue Crews Rival Canadian Mounted Police in Picturesque Heroism

RESCUE crews of the Bureau of Mines promise to take first place in deeds of picturesque heroism. The outposts of organized civilization have been pushed so far forward in Canada as to rob the mounted police of much of their spectacular work. With the increasing amount of mine-rescue work being performed by the Bureau of Mines, ample material is being made for such accounts of human-interest performances as have interested the world in the Canadian police. An example is had in the performance of the Bureau of Mines crew at the recent explosion in a mine of the Union Collieries Co. at Renton, Pa. The incident as told by a man with long experience in mines but who is not connected with the Bureau of Mines is as follows:

"When we arrived at the mine they just had completed the repairs on the fan house and had rigged up a bucket and hand hoist preparatory to lowering three men to the bottom of the airshaft. We found that the so-called bucket was about large enough for a canary and its cage. It would have been absolutely unsafe to lower three men on this bucket. After George McCaa and Ed Denny, of the Bureau of Mines crew, looked the

situation over they suggested that only two make the first trip down. I will say frankly that, while I am usually willing to go anywhere anyone else will go in a mine, after I looked at the bucket and the condition of the airshaft I did not insist on being one of those to go down. I hoped I would not be selected for the first sacrifice, but McCaa and J. H. Zorn, another member of the bureau crew, insisted on making the first trip, while Denny and I should follow as reserves.

"McCaa examined the bucket and said, 'This bucket will not hold two. I will go down first alone. Zorn, you stay here with the others on the top.' In all my experience in mine disasters, I have never witnessed a finer example of courage or a more stirring sight than McCaa leaving the surface to descend 509 feet to the bottom of that shaft in a little bit of a bucket attached to a three-eighth inch wire rope. When he got down about twenty-five feet the bucket was spinning at twenty-five revolutions a minute. We stopped his descent, as we were afraid he would become dizzy. McCaa called up, asking that we pull the rope over to the side until he could catch hold of the guide. He made the rest of the descent hand over hand to prevent the twirling round of the bucket. He landed safely and began the work of restoring ventilation. This was done so successfully that not a man in the mine was overcome."

Would Give Houses of Idlers to Workers

THE Connellsville Basin Coal & Coke Co., against which a strike has been in effect since early in July in an effort to compel that company to officially recognize the United Mine Workers, brought eviction proceedings in fourteen different suits in Monongalia County in the first week of August. The company took such action in order to secure quarters for fully half a hundred men which it has employed to replace the striking miners who have so far refused to give up the company quarters they occupy. The eviction suits were therefore the outgrowth of the strike.

The justice who heard the cases dismissed the suits on the ground that the tenants of the houses had not had sufficient notice to vacate. It was the justice's opinion that the tenants should have two weeks' notice instead of merely seven days, as actually given, inasmuch as the deduction from their pay for rent had been made every two weeks.

Despite the strike the Connellsville Basin company has been able to obtain enough miners to man its mines and the same is true as to the Penn-Mary Coal Co. as well as other companies on the Morgantown & Kingwood Ry. against which a strike has been declared. It is becoming more apparent each week that the strike is doomed to be a failure.

However, the United Mine Workers are not giving up without a struggle. Threats and rumors of threats are being utilized by the mine workers to keep miners away from the mines and to keep them in the ranks of the strikers, that being, as is already known, the policy pursued in southern West Virginia also.

Public sentiment along the line of the Morgantown & Kingwood Ry. is favorable to the coal companies and not the striking miners, for the companies are paying better wages than the union scale calls for. In many quarters the strike is regarded as a covert attack on the Bethlehem Steel Corporation, which owns the Penn-Mary Coal Co. The miners, though receiving benefits from the United Mine Workers, are the principal losers.

Threats against miners who have remained at work reached a climax during the first week of August when Pat Blevan, a striking miner, formerly employed by the Connellsville Basin Coal & Coke Co., was arrested and given a hearing on Aug. 7, charged with threatening to kill Paul Utt, a loyal miner employed by the Penn-Mary Coal Co. at Richard, W. Va. Lewis Hamrick, another striking miner, also formerly employed by the Connellsville Basin company, was tried on Aug. 8 on a charge of commiting assault and battery on Utt.

Chemists to Discuss Fuel Problems

UNDER the chairmanship of A. C. Fieldner, supervising chemist, Bureau of Mines, Pittsburgh, a symposium on fuels is to be held at the American Chemical Society meeting in Chicago. This session will be under the auspices of the Division of Industrial and Engineering Chemistry on Thursday, Sept. 9, at 2 p.m. Coal men and other engineers interested will be welcome at this session, which will be held in the laboratories of the University of Chicago. The headquarters of the society are at the Congress Hotel, Chicago, for the entire period of the meeting, Sept. 6 to 10.

The following twelve papers will make up the program of the fuel symposium:

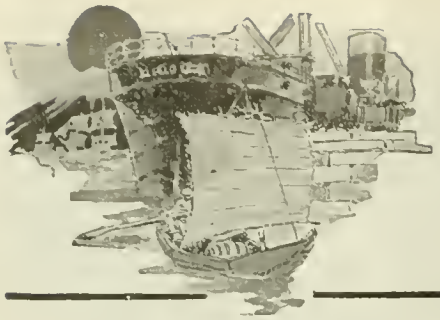
S. W. Parr—"Low-Temperature Carbonization." Edgar Stansfield—"Carbonization of Canadian Lignites." Henry Wreisinger—"Byproduct Coke, Anthracite, and Pennsylvania Coal as Fuel for Heating Houses." F. W. Sperr—"Byproduct Coking," G. A. Burrell and others—"The Charcoal Method of Gasoline Recovery." S. E. Sheppard—"Colloidal Fuels—Their Preparation and Properties." A. C. Fieldner and others—"Gasoline Losses Due to Incomplete Combustion in Motor Vehicles." J. B. Garner—"Enrichment of Artificial Gas with Natural Gas." Harry A. Curtis—"Commercial Realization of Low-Temperature Carbonization of Coal." H. C. Porter—"Fuel Conservation, Present and Future." Alfred B. Powell—"Some Factors Affecting the Sulphur Content of Coke and Gas in Carbonization of Coal." H. F. Yancey and others—"Distribution of the Forms of Sulphur in the Coal Bed."

Reported Coal-Mine Fatalities During May Decreased 13 Per Cent

FATALITIES in and about coal mines of the United States, according to reports received by the Bureau of Mines from the state mine inspectors of all states except Kentucky, totaled 148 during May, 1920, as compared with 170 in the same states in May, 1919. Thus the 1920 figures show a decrease of twenty-two fatalities, or about 13 per cent, from the record of the corresponding month of last year. Based upon an output of 46,686,273 tons in May, 1920, the fatality rate is 3.17 per million tons produced.

During the first five months of 1920 the number of lives lost was 803, a decrease of 47 from the record of the corresponding months of 1919. The production of coal for these five months was 247,737,273 tons, an increase of 39,432,273 tons over the first five months of the previous year. Thus the fatalities have decreased 5.5 per cent, while there has been an increase of nearly 19 per cent in production.

The average number of lives lost during May of each year from 1913 to 1919 has been 178. The production of coal has averaged 46,723,000 short tons, showing a fatality rate of 3.81 per million tons as representative of the month of May for the last seven years.



Foreign Markets and Export News

Coal Output of Nova Scotia Decreases Slightly

Consul Charles M. Freeman, Halifax, reports that the output of coal from Nova Scotia, in which is located the greatest coal area of the Dominion, for the year 1919, as compared with 1918, is given by the different corporations as follows:

Companies	1918 Tons	1919 Tons
Dominion Coal Co. (Ltd)	3,271,155	3,087,124
Nova Scotia Steel & Coal Co. (Ltd.)	502,818	552,044
Inverness Railway & Coal Co. (Ltd.)	204,495	138,387
Bras D'Or Coal Co. (Ltd.)	49,924	41,341
Port Hood Collieries (Ltd.)	2,521	20,176
Acadia Coal Mining Co. (Ltd)	281,893	419,089
International Coal Mining Co.	181,624	173,761
Cumberland Railway & Coal Co.	369,105	374,315
Maritime Coal, Railway & Power Co.	188,454	161,427
All others	751,677	237,093
Totals	5,803,666	5,204,757

In the coal mines of Nova Scotia over 13,000 men were employed during the year, while in the quarries 600 found employment. The product of the quarries consisted of 48,868 tons of crude gypsum, 353,379 tons of limestone, 7,450 tons of building stone, and 300 tons of grindstones.

The amount of coal shipped to the United States from the collieries of Cape Breton was 75,813 tons as compared with 269,080 in 1918 and with 486,000 in 1913—a decrease of nearly 200,000 tons as compared with 1918 and over 400,000 compared with 1913. The reasons for this decrease are the greater consumption of the steel plants, the lesser production caused by labor troubles, and the constantly increasing demand for bunker coal for steamships. During the past year, and for the first time on any extended scale, coal has been shipped from Cape Breton to the European markets. The Netherlands Government has contracted for a large quantity delivered on board at Sydney and Louisburg.

British Purchase American Coal To Supply Italian Trade

British coal exporters are serving their former Italian customers by the purchase of coal for Italian account in the American market, according to authoritative reports received by Government offices here from agents abroad.

The operations of the British dealers were described as follows:

A British firm having offices in the United States goes into the open market and buys coal. Up to this point he possesses no advantage over the American broker. The coal, however, is shipped in British bottoms and profits on the transaction are figured more on the basis of freight than on the resale of the coal at a higher price.

"The great advantage possessed by the British in this field," said the report, "is derived from their long experience in the game; they know all the ins and outs of the business. They hold their old customers through making easier terms—that is to say, the British sell on the old Welsh charter, under the provisions of which one-third of the freight is paid down when the contract is signed and the remainder paid when the ship reaches its destination."

Often from two to three months' credit is given the Italian customer, with a discount allowed if cash is paid on delivery, it was said. It is through these devices that the British are using our raw material to conserve their traditional grip on the Italian coal market.

With the recent development of our merchant marine up to the point where American bottoms are becoming adequate to take care of our entire seaborne trade, there is no reason in the world why American coal should be sold to Italy by British middlemen. As long as our American coal exporter demands cash against shipping documents and pays no attention to the question of transportation profits, he stands to lose in the long run as a competitor with the British for the Italian coal trade.

Belgium Gets Large Coke Supply

There is a more plentiful supply of coke in Belgium, according to the *Colliery Guardian*, arrivals by canal from the Ruhr having of late been ample for the needs of the furnaces now operating in the Liége district, and a surplus has been going to the Charleroi area. From July 1 to 15 9,105 tons of coke and 11,355 tons of coking coal were received from the Ruhr. The distribution of coal continues to be a pressing question in Belgium. There is some weakness in iron and steel prices at the moment, buyers holding off.

Holland To Get German Coal—Conditionally

The German Government officially announces that it will not repudiate the credit and coal agreement with the Netherlands, but that its ability to deliver the coal will depend upon the Allies' attitude.

New Prices Announced for German Coal

The following new selling prices for German coal have been officially announced:

Lower Silesian Coal Syndicate—Waldenburg coals: large, 284 mk. per ton; screened cubes, 284 mk.; screened peas, 270.5 mk.; screened through and through, 282.5 mk.; unscreened, 278.7 mk.; sludge, 98.4 mk. Neurode coals: Coke breeze, 120.5 mk.; briquets, 490 mk.

Rhenish Brown Coal Syndicate—Briquet waste, 43.1 mk.; dust, sludge and through and through, 39.2 mk.

Bavarian Right Rhine Coal Syndicate—Schwandorf coals: Through and through, 73.5 mk.; screened through and through, 91.2 mk.; briquets, 219 mk.; sludge, 98.4 mk. Neurode coals: tank coal, 103.9 mk. Schwidg-Schwarzenfeld coal: Through and through, screened, 106.8 mk.; briquet waste, 114.1 mk. Dettingen coal: Screened through and through, 93.1 mk.; briquets, 293.4 mk.; briquet waste, 207.4 mk.; settling-tank coal, 104 mk. Ibenhausen-Regensburg coal: Through and through coal, 115.1 mk.; screen, 142 mk.

New South Wales' 1919 Output Shows Slight Decrease

According to the annual report of the Department of Mines for 1919, the total quantity of coal mined in New South Wales in 1919 amounted to 8,631,554 tons, being a decrease in tonnage of 431,622 in comparison with the previous year. The collieries in the Northern district supplied an output of 5,629,253 tons, as compared with 5,966,926 tons in the previous year. The Southern district furnished an output of 1,826,574 tons, as against 1,984,578 tons in 1918. The production from the Western district amounted to 1,175,727 tons, as compared with 1,111,672 tons in the previous year.

The average prices of coal per ton in the three districts named were as follows, in 1919: Northern district, 13s. 5.81d.; Southern district, 11s. 9.64d. Western district, 9s. 4.19d.

The quantity of coke produced in 1919 amounted to 424,773 tons as compared with 608,492 tons.

News from the Capital

By Paul Wooton

Chicago Asks Coal Priority

A DELEGATION representing the Independent Coal Dealers' Association of Chicago called at the White House, Sept. 1, seeking a priority order to insure adequate coal supplies for that city, both for industrial and domestic use. The committee talked with Secretary Tumulty, saying that because of the general situation and the priority orders Chicago was short of coal and the city was threatened with a shortage for both domestic and industrial consumption. Mr. Tumulty advised his callers to confer with the Interstate Commerce Commission, promising to lay the case before that body for consideration.

Commerce Commission Gathers Data on Effect of Tidewater Movement on Prices

IN ACCORDANCE with a resolution of Senator Walsh, of Massachusetts, adopted during the closing hours of the last session of Congress, the Interstate Commerce Commission is making an investigation of the movement of bituminous coal and anthracite coal to tidewater and the effect of such movement on coal prices. The commission has sent a questionnaire to large coal consumers throughout the country asking them to furnish data as to the price paid for coal during the month of July, 1920 and 1919. They are asked to furnish information as to the amount of bituminous and anthracite coal purchased in net tons, both contract and spot, during this period and the average price per ton at the mines and the cost delivered. They are also asked to give the quantity of bituminous coal on hand July 31, 1920 and 1919.

Ohio Consumers Report Shortage Because Of Service Order 10

ARGUMENTS presented by representatives of Cleveland and Akron, Ohio, to support their application for a modification of Service Order No. 10 failed to impress the Interstate Commerce Commission. The Lake Order was blamed for the inability of domestic consumers in the Ohio cities to obtain supplies for winter storage. It was contended that Canada is being accorded much better treatment in the matter of coal supplies than are American cities and that certain coals suitable for domestic fuel and which are not desired in the Northwest are being forced into the Lake movement by Service Order No. 10.

Commissioner Potter, during the course of the hearing, stated that the question in his mind is whether or not it is within the power of the commission to grant an embargo such as the Lake order. There is a question, he said, as to whether Congress has the power to delegate any such power to the commission, but he agreed that this is no time to quibble over the extent of authority of the commission.

The Ohio witnesses could not present comprehensive figures to prove their contention that Canada is getting a disproportionate amount of coal. There seemed to be no objection to the policy of the commission to regard Canada as a part of the United States so far as coal distribution is concerned. They stated that it is not a question of allowing one to suffer and the other to have an ample supply of fuel but that each should suffer equally. It was contended that coal is being forced into Canada and the Northwest without a real methodical apportionment of the coal among all consumers.

It also was stated that Service Order No. 10 allows the Northwest to buy coal cheaper than it can be bought in Ohio. This was denied by J. E. McGee, who pointed out that $7 coal at the mine means $17 coal at Minneapolis.

Spring Valley Company Objects to Proposed Illinois Coal Rates

IN A brief filed with the Interstate Commerce Commission the Spring Valley Coal Co. takes exception to the report proposed by Attorney-examiner A. R. Mackley in a case involving Illinois coal rates. The brief says the examiner errs in the following particulars:

In ordering an increase only to a minimum of 85c. in the differential of 70c. per net ton heretofore observed from southern Illinois group over the Third Vein group to interstate differential territory. The proposed differential is said to be insufficient.

In stating that the carriers have justified the reasonableness of the intrastate rates on coal in Illinois from Aug. 8, 1919, to Feb. 29, 1920.

In failing to require an increased spread in the interstate rates as between northern Illinois mines and southern Illinois mines to destinations in the Chicago switching district to which the routes are interstate.

Advises Against Demanding Assigned Cars For Coal To Be Stored

THE demand by some public utilities for assigned cars for coal for storage purposes is being discouraged by George W. Elliott, their representative in Washington. He does not believe that it is wise to press such a demand until the requirements of the Northwest and New England shall have been met. Mr. Elliott is calling the attention of the Department of Justice to the cases where public utilities are forced to pay what they consider unfair prices for their coal.

Navy Raises Coal Prices To Meet Recent Wage Advance

THE Navy Department has advanced the prices of coal which it will purchase in West Virginia and Pennsylvania, in consideration of increases in cost of mining other than wages. Hereafter the department will pay $4 per gross ton, f.o.b. mine for West Virginia coal instead of $3.64 previously paid and $4.25 per ton for Pennsylvania coal instead of the former price of $3.90. The department considers the new prices will afford just compensation to the operators and will pay them under commandeering orders, having failed to get satisfactory bids.

Indiana Operators Taxed 1c. Per Ton to Defray Coal Commission Expenses

JESSE E. ESCHBACH, head of the Indiana Coal and Food Commission, is sending notices to coal operators of every class in Indiana informing them of the tax of 1c. a ton on all coal mined in Indiana. The tax for August is due in the office of Otto L. Klauss, Auditor of State, who is a member of the commission, by Sept. 10. The money so collected is to be used to defray the expenses of the commission.

Traffic Congestion, Due to Lack of Ships, Causes Suspension of Order No. 11

LACK of ships to handle the volume of coal being dumped at North Atlantic ports for shipment to New England, under Service Order No. 11, has caused such a congestion of coal cars at those ports that the Interstate Commerce Commision on Aug. 31 ordered a five-day suspension of the order, effective beginning Sept. 3.

The commission's action made available during the rest of the week about 500,000 tons of bituminous coal for distribution in the region along the Atlantic seaboard from Norfolk to New York City.

Another result of the suspension was to provide a considerable quantity of soft coal in the region that will be affected by the "outlaw" strike of the anthracite miners. The total movement of coal by water to New England since July 1 has been about 3,800,000 tons. The public utilities in New England are understood to have reserve supplies of coal on hand now that are sufficient to meet their requirements for two to four months.

A survey of the supply of coal in the New England States by the Geological Survey shows that the industries and factories of Maine have an average supply of six weeks and two days on hand. In New Hampshire the average supply is sufficient for five weeks and one day. In Vermont the supply aggregates the needs for eight weeks and six days. In Massachusetts the average supply is five weeks and two days. In Connecticut it is four weeks and two days and in Rhode Island six weeks and one day.

The investigation of the Geological Survey covers the coal supplies of 31,640 factories and manufacturing plants. The supply of the New England States is greater than in any other States with the exception of South Carolina, Louisiana, Wyoming and California.

The movement of coal into New England through the Hudson River gateways in the last eight weeks has approximated 6,000 cars a week. In some weeks the number has exceeded 7,000 cars.

The temporary rescinding of the order was issued in the form of an amendment, as follows:

It appearing that by reason of the operation of Service Order No. 11 of the commission, entered July 26, 1920, a large quantity of bituminous coal has been transported to the various North Atlantic ports enumerated in said order, which has not been transported by water to New England, and now remains and is held in railroad cars at such ports, and that undue delay to the rail equipment is caused by the continuing transportation of coal under Service Order No. 11 to such ports, and that sufficient water bottoms are not at such ports or expected to arrive, so that the coal in cars now at such ports can be discharged without undue delay:

It is ordered that the operation of said Service Order No. 11 be, and the same is hereby suspended, and that said order shall not be in force or effect for the period of five consecutive days from Sept. 2 to Sept. 6, 1920, both inclusive, and that thereafter said order shall be in force and effect unless otherwise ordered by the commission.

It is further ordered that copies hereof be served upon the carriers upon whom Service Order No. 11 was served, and that notice hereof be given to the general public by depositing a copy of this order in the office of the secretary of the commission at Washington, D. C.

Stocks of Bituminous Coal in Hands of Industrial Consumers

FINAL figures of the Geological Survey's canvass of stocks of coal, embodying supplies held by industrial plants, other than steel mills and byproduct coke ovens, expressed in terms of weeks' and days' supply, are presented herewith together with such comparable past data as are to be had. Because of the limited time available the inquiry was restricted to a list of representative consumers—the 2,589 plants reporting use about 40 per cent of the total fuel consumed by the group from which they were selected.

BITUMINOUS COAL ON HAND AT INDUSTRIAL PLANTS OTHER THAN IRON AND STEEL MILLS AND BYPRODUCT COKE OVENS

(Figures represent weeks and days at the rate of consumption at time of stock-taking.)

	July 15 1918 *a*	Oct. 1 1918 *a*	Nov. 11 1918 *a*	Jan. 1 1918 *a*	Apr. 1 1919 *b*	Mar. 1 1920 *c*	June 1 1920 *c*
Maine	17-3	23-0	23-5	22-3	12-2	5-6	6-2
New Hampshire	21-0	30-4	27-3	24-3	20-0	7-6	5-1
Vermont	20-0	26-0	26-2	20-5	13-4	8-2	8-6
Massachusetts	14-0	22-6	21-2	19-3	14-2	6-2	5-3
Connecticut	11-2	19-2	18-5	16-2	10-5	5-5	4-2
Rhode Island	12-0	20-1	19-4	16-6	13-4	6-4	6-1
New York	6-1	12-2	12-4	11-1	8-4	3-2	3-0
New Jersey	10-1	13-2	13-0	11 2	7-3	4-5	4-5
Pennsylvania	5-2	6-3	6-5	6-2	4-1	2-3	2-5
Maryland	5-6	7-2	7-4	6-3	2-6	2-6	2-3
Delaware	11-0	11-1	11-6	12-1	8-0	5-2	6-0
Dist. of Columbia	2-4	4-0	4-6	4-6	4-1	1-6	1-1
West Virginia	2-5	3-3	3-5	3-1	2-4	1-6	1-6
Ohio	7-1	8-3	8-2	7-1	4-1	2-3	2-3
Indiana	6-3	8-0	8-3	7-0	5-0	3-0	3-0
Illinois	5-0	7-2	7-6	6-6	4-1	2-5	2-1
Michigan Northern Peninsula	8-2	31-6	34-0	28-3	13-1	19-4	9-1
Michigan Southern Peninsula	...	14-4	12-6	11-0	5-5	2-0	2-6
Wisconsin	5-1	12-5	12-2	9-4	5-3	4-1	2-5
Minnesota	7-5	9-1	8-4	7-2	9-1	7-4	4-6
Iowa	4-5	5-2	5-5	5-4	4-1	2-1	2-1
North Dakota	3-2	2-2	2-1	3-1	1-6	2-1	1-6
South Dakota	5-0	5-2	13-0	12-5	5-4	8-5	4-2
Nebraska	4-6	6-3	4-6	3-0	2-0	2-6	2-4
Virginia	4-0	4-2	4-0	6-1	5-4	2-6	3-6
North Carolina	9-0	11-5	11-4	11-1	9-1	6-2	4-6
South Carolina	9-1	11-4	11-6	10-4	8-1	6-3	7-3
Georgia	8-3	10-2	10-3	9-0	7-1	7-1	4-6
Florida	3-3	9-5	11-4	7-1	5-3	2-5	2-6
Kentucky	4-0	5-4	6-3	5-3	3-1	2-3	2-3
Tennessee	5-3	7-1	6-1	5-5	4-3	3-5	2-6
Alabama	5-0	8-4	9-2	6-3	4-6	3-2	3-0
Mississippi	10-0	10-0	8-4	7-0	2-3	5-5	4-6
Missouri	4-4	5-7	6-6	5-5	4-1	3-1	2-3
Kansas	3-4	4-7	6-1	5-2	3-5	3-1	3-2
Oklahoma	12-0	10-6	12-2	9-6	12-5	8-4	9-2
Arkansas	11-0	7-6	7-3	5-1	4-5	4-0	3-3
Louisiana	5-3	8-3	9-5	8-6	4-0	7-6	10-0
Texas	4-0	3-3	2-6	2-4	0-6	1-5	1-0
Colorado	7 0	10-3	6-4	6-1	8-0	4-6	5-2
New Mexico	5-2	6-3	6-6	9-5	9-3	5-1	8-3
Arizona	7-0	5-6	7-1	9-2	10-6	7-2	7-4
Utah	5-0	11-0	6-4	6-5	6-3	5-0	3-4
Nevada	6-0	9-2	9-5	9-1	4-3	4-2	3-1
Wyoming	7-0	Large	Large	3-6	8-1	6-3	29-3
Montana	5-5	6-3	5-4	6-1	5-0	5-3	5-6
Idaho	?	Large	6-1	8-1	5-4	4-5	3-3
Washington	5-4	6-0	5-4	5-6	3-0	4-3	4-1
Oregon	8-0	7-5	6-3	5-5	9-0	4-6	3-1
California	....	22-6	21-5	21-3	26-1	13-6	15-0
Totals	6-6	10-1	10-1	9-1	6-5	3-6	3-3

(*a*) Based on compulsory weekly consumption and stock reports to the United States Fuel Administration. About 31,640 plants reported regularly.

(*b*) Based on reports from 2,347 representative consumers. Supply calculated on basis of average weekly consumption in January, February, and March, 1919.

(*c*) Based on reports from 2,589 representative consumers. Supply calculated on basis of average weekly consumption in March, April, and May, 1920.

Trade Board Review Reports Improvement in Movement of Coal

IN ITS review of general business and financial conditions during August the Federal Reserve Board says that there is still a shortage of coal in various parts of the country, not for immediate needs but as compared with the estimated demand of coming months. Congestion on the railroads is gradually yielding to special effort to relieve it and more progress has been made in moving coal than any other product; in fact, the coal movement has shown a steady gain since the recent orders of the Interstate Commerce Commission.

In the Cleveland district Lake trade coal shipments are improving and there is a steady gain in coal movement to be noted all around. The Philadelphia district reports that there has been no reduction in prices for spot coal and that the new freight rates are expected to add from 65 to 85c. a ton to the cost of anthracite to the retailer.

In the Atlanta district coal production shows a little improvement but strikes are still on in various fields. Coke production is below the demand and car shortage is still felt. Movement of bituminous coal to New England has been improved in order to relieve the shortage which threatened in that section. There was a large movement of cars during the late July and early August to the New England factory region, including both bituminous and anthracite. It is expected that distribution will improve steadily from this time forward.

Another Suit Attacks Constitutionality of Indiana Coal Commission Act

A SUIT attacking the constitutionality of the Special Food and Coal Commission Law enacted by special session of the Indiana Legislature, and seeking a temporary injunction to prevent operation of the act, was filed in Federal Court Aug. 26 by E. E. Heller & Co., coal retailers of Indianapolis. Governor James P. Goodrich, Jesse E. Eschbach and Otto L. Klauss, who are alleged to be "pretending to be members of and constituting the Special Food and Coal Commission of Indiana," are made defendants.

The suit is similar in form to one filed several days ago by the American Coal Mining Co., of Bicknell. It is understood that the Indiana Retail Coal Merchants' Association is back of the suit filed today, and it is also said that the Indiana Bituminous Coal Operators' Association is backing the suit filed by the American Coal Mining Co. Both suits attack the constitutionality of the act and ask temporary restraining orders and permanent injunctions to prevent operation of the act, if it is held void.

The operators' suit is to come before Judge Francis E. Baker, of the Circuit Court of Appeals, in the absence of Judge A. B. Anderson, of the District Court, about Sept. 7 or 8, for preliminary hearing. Local attorneys declare both cases to be "three-judge" cases, and say that litigation probably will be prolonged even before a restraining order can be issued. The preliminary hearings will be before Judge Baker, but he alone will be unable to issue a temporary injunction, legal authorities say. Judge Anderson is on vacation, and will not return until late in September. The cases may not be set for final hearing until after his return. In the meantime, attorneys point out, the coal commission will have ample opportunity to operate under the law, fix prices, and, in the absence of restraining orders enforce its order.

Attorneys for Heller & Co. are Clarence W. Nichols and Matson, Kane & Ross. State officials and attorneys have been conferring on a plan of defense in the suit. In the conference were Jesse E. Eschback, head of the commission; Ele Stansbury, Attorney General, and Ferdinand Winter and James W. Noel of counsel.

Monday, Sept. 6, has been set for a preliminary hearing of the American Coal Mining Co.'s suit. The two circuit judges and district judge who will come to Indianapolis for the hearing are Judge Francis E. Baker, of Chicago; Judge Evan A. Evans, of Baraboo, Wis., both of the Seventh U. S. Circuit Court of Appeals, and Judge Ferdinand A. Geiger, of the eastern Wisconsin U. S. District Court.

Try to End Sub-Contracting by Dynamite

TROUBLED by the prospect that the strike against sub-contracting at the mines of the Pennsylvania Coal Co. may be ended by the return of individual men to work, persons believed to be strikers have dynamited the homes of Samuel Latore and Michael Condosso and have hanged effigies in front of the homes of six more company employees labelled "Beware of the strikers" and "Guess what you will get next." Many of the men thus warned are outside men at the collieries. They have no connection with sub-contracted work. Samuel Latore's brother, Steve, is a contract miner, and it is believed that his relationship made him the object of this attack which broke the windows, hurled a door from its hinges and threw the occupants out of their beds. The state police is actively searching for the miscreants.

Howat's Case to Go to Supreme Court

FOILED in his attempt to get the Kansas Supreme Court to order a rehearing of their case charging them with contempt of the Industrial Court, Alexander Howat and three other officials of the United Mine Workers, District No. 14, have appealed to the United States Supreme Court. In consequence the judges of the Kansas Supreme Court granted him on Sept. 2 a ten-day stay of execution to allow him to prepare an appeal to the federal authority. The Kansas decision was delivered on Sept. 1. It will be remembered that Howat and his staff refused to appear and testify before the new Court of Industrial Relations established in the State of Kansas for the purpose of averting or ending strikes.

Indiana Coal Production Increases as Car Service Improves

PRODUCTION of coal at 193 mines in Indiana during the week ending Aug. 28 is reported as 319,214 net tons as compared with 281,485 net tons the week preceding. These mines worked 44.31 per cent of full time. Labor trouble was responsible for 49.65 per cent of the time lost, while car shortage and mine disability accounted for 4.49 and 1.55 per cent, respectively.

End of Anthracite Strike Near

Belief Exists That President Will Favor New Anthracite Conference if Men End "Vacation"—Some Return to Work

HOPE has been revived that the mine workers of the anthracite region will return to work in the expectation that as soon as they take up their tools President Wilson will call for a reconsideration of the terms of the wage contract as he did in the case of the bituminous mine workers. The concessions granted the soft-coal men widen the differential between the hard- and soft-coal fields and make advances to the men in the former more likely.

At first it was believed that the strikes were largely the outcome of union insurgency and were staged merely to upset the present official incumbents of the United Mine Workers—an idea quite naturally arising, for the strike commenced when 300 insurgent leaders representing sixty-five out of 125 unions in District No. 1 met at Wilkes-Barre, on Sept. 1 and voted unanimously to take a "vacation" until their demands were granted. Enoch Williams is their leader, and he has consistently stated that President Wilson must call for a resumption of negotiations and the mine workers must be represented by a committee in which the insurgents have confidence or the men will not return to work.

So general did the "vacation" become, among men who were not in any way affected by insurgency, that the idea that the movement was one to make a revolution within the union has long since died. The men, it is well known, expected large gains in wage from the expected action of the Anthracite Coal Commission and did not in any way regard the submission of its case to that tribunal as a forlorn hope, which could not make their fortune any worse and might possibly make it better. Long dwelling on their demands has made them disposed to believe that anything less than what they seek would mean for them a plight not to be endured.

Over Half the Mines Idle at One Time

As a result they quite generally went on "vacation." With the union leaders denying their right to quit work, the men did not venture to call it a strike. It seems possible that the "vacation" will be short. It certainly was for a time widespread, shutting down, it is said, 180 out of 300 collieries and perhaps 100,000 out of 175,000 men, though it was denied in Washington that more than 60,000 men were involved. The number is hard to determine as many mines which continued to work did so with reduced forces.

Apparently the collieries north of Scranton between Scranton and Carbondale were less affected than elsewhere, the height of the "vacation" being reached in the Wyoming Valley, Hazelton and the Schuylkill fields. On Sept. 4 eighteen collieries in District No. 1 voted to go back to work, Buttonwood, Avondale, Lance No. 11, Peach Orchard and Nos. 3 and 4 shafts of the Pettebone Colliery being in that list. On the same day Pine Ridge and Cayuga collieries in the Scranton region that had been kept working were closed down because of a lack of men to keep them in passibly effective operation. By Monday, Sept. 6 (Labor Day) many more unions had decided to return to work and the insurgents of District No. 1 had called a meeting to consider whether they would continue the struggle. The largest defections were at the mines of the big companies. Most of the independents continued to operate with, however, greatly reduced forces. The insurgents made efforts to call out the pumpmen and engineers, thus hoping to do considerable damage to the properties—such injury as would prevent any early resumption of work. However, there has not been any picketing or violence, probably because the "vacationists" feared they would be subject to state or federal laws in interfering with the production of coal.

The mine workers want 15 per cent further increase for contract miners and an advance of $2 per day for company men. John T. Dempsey, president of District No. 1 is to be retired for neglect of duty, and John Collins, of Nanticoke, who is vice-president takes his place. John Collins, who has a strong following among the miners, will call on the mine workers to return to work in obedience to the Tri-district's agreement that it would accept the terms of the Anthracite Coal Commission as soon as those terms should be declared.

No pay under the retroactive clause is being given to the "vacationists" until such time as they show a disposition to obey the terms of the decision, the operators arguing that if the mine workers will not accept its terms, it would be unfair to require the mine owners to do so. The contract, which embodies the Commission's award was signed at Scranton by the union leaders, though they protested its terms were far less generous than the mine workers believed they were entitled to receive.

Pittsburgh Daymen Get Wage Advance

APPROXIMATELY 10,000 men participate in the wage increase granted by the Pittsburgh Coal Producers Association at a meeting with the officials of District No. 5, held in the Farmers Bank Building of Pittsburgh on Aug. 31. Under this agreement the day men get an increase of $1.50 per day and the trapper boys, crippled and old men doing "less than men's work," receive an increase of 82c. These advances are made retroactive to Aug. 16 last. Inside men now receiving from $5.75 to $6.10 a day will now get $7.25 to $7.60 a day; outside day men now paid from $5.10 to $5.60 a day will receive from $6.60 to $7.10 a day and trapper boys whose recompense was $3.18 will now be raised to $4. The miners do not receive any increase.

Union Declares Strike in Alabama

ALLEGING that the operators of Alabama are not paying the wage granted by the Bituminous Coal Commission of last March, John L. Lewis, international president of the United Mine Workers of America, on Sept. 1 declared a general strike in the coal fields of Alabama. For a long time work has been suspended in many of the mines of that state, especially among those mining domestic coal.

To avert this strike Governor Kilby has appointed a commission of three representative citizens, George H. Denny, president of the University of Alabama, James J. Mayfield, former Supreme Court Justice and now Coal Commissioner, and C. E. Thomas, banker and stockman. He has invited J. R. Kennemer, president of District No. 20 (Alabama) to withhold the call for a general strike pending the investigation of this committee and its report.

He has also called on the railroads that serve the coal mines to assist in averting the coal shortage by furnishing a sufficient number of cars to haul the coal mined.

Production and the Market

Weekly Review

Production Gains—Midwest Section Demand Lively—New England Priority Is Temporarily Suspended—Prices Decline Further—Export Shipments Slump—Anthracite Settlement Is Seen

THE week ended Aug. 28 showed a partial recovery, when bituminous production exceeded the 11-million-ton mark. Figures of the Geological Survey place the week's output at 11,374,000 net tons, an increase of 3 per cent or 326,000 tons over the preceding week. The recovery is the more significant when it is recalled that during the early period Indiana labor troubles were greatly hampering production.

A substantial increase in total production is indicated by late reports. The Midwest is experiencing some new labor disturbances, a number of Illinois and Indiana mines being down by reason of local strikes. It is believed this trouble will be short-lived, as operators and miners are proceeding to patch up their differences.

Anthracite production increased to 1,800,000 net tons as compared with 1,595,000 tons for the third week of August. Production of beehive coke decreased slightly, total output being estimated at 412,000 net tons, a loss of 3 per cent.

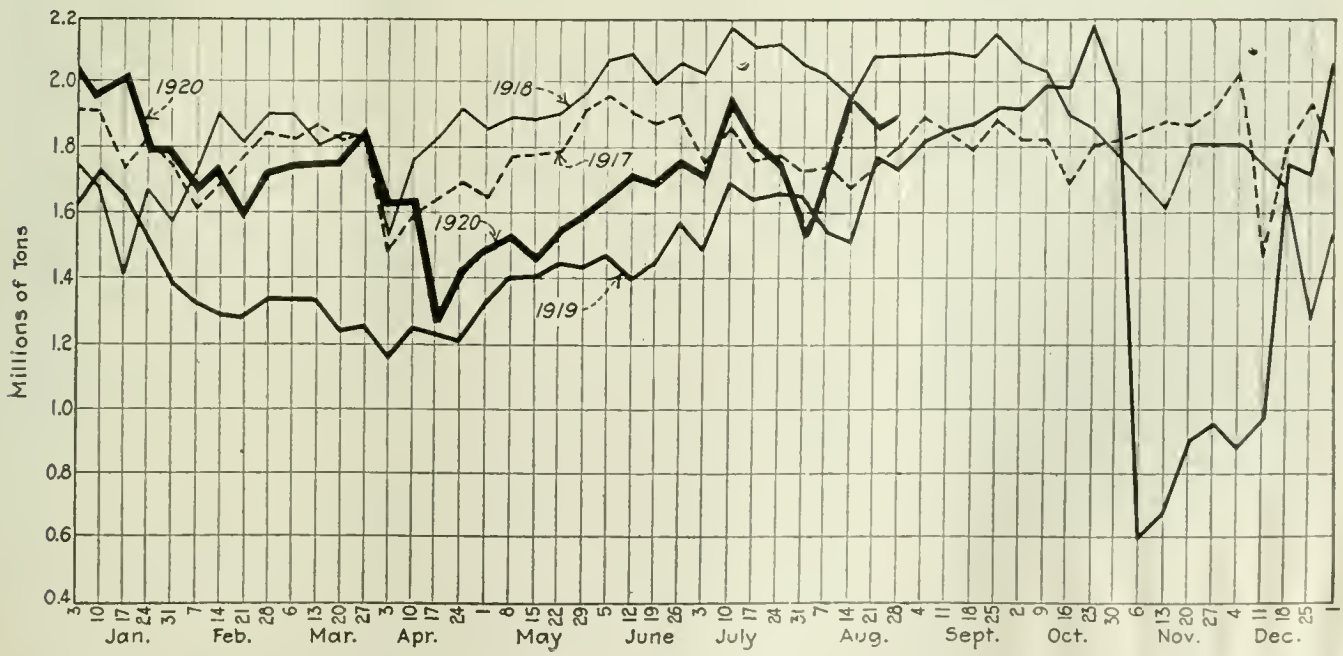
In the Midwest poor car supply lowered production created a lively demand and further advanced prices. Elsewhere, the improved car placements and labor situation were responsible for a continued price decline. Ohio cities are urging modification of the Lakes priority order, which is making local supply a difficult matter, and it is claimed that continued heavy Lake shipments are no longer necessary.

Lake dumpings of cargo and vessel fuel for the season including week ending Aug. 28 were 10,965,665 tons, about five million tons short of the 1919 dumpings for the same period.

Rail movement to New England continued its recovery, 5,792 cars being forwarded through the week. Shipments by Tide amounted to 345,000 net tons, or an increase of 137,000 tons over the preceding week. Congestion at ports was partly responsible for a 5-day suspension of the priority order. Exports declined to 530,000 net tons.

A possible reopening of the anthracite wage question is expected to end the miners "vacation" which practically put a stop to hard-coal production on Sept. 1.

Average Daily Production of Bituminous Coal*



*From weekly report of Geological Survey.

Reports From the Market Centers

New England

BOSTON

Prices Recede Still Further—Movement All-Rail in Good Volume—Pier Congestion Causes Suspension of Priority—Hampton Roads Up on Contracts—Renewed Anxiety Over Anthracite.

A less active market has caused a further decline in spot prices. All-rail grades from Central Pennsylvania have been quoted as low as $8 at the mines, while for shipment to Tidewater Fairmont coal has sold down to $6.50. These are the lowest spot prices known here since the latter part of May and indicate the extent to which the New England situation has improved.

Receipts all-rail are holding well up to the August average. The four or five day slump in mining that can be looked for in most districts over Labor Day will result in decreased movement the next week or ten days.

Plants have been able to build up a 60 to 90 days reserve, due partly to improved deliveries and also to a very pronounced manufacturing curtailment. From some of these manufacturers have come intimations that they might not need all the coal purchased earlier in the year. Even at contract prices plus the new rates all-rail coal will inventory so high that many buyers will plan on running into next season with as light stocks as possible.

There is little interest in current offering of coal by water. Wholesalers have found it difficult to make sales f.o.b. loading port and do not care to take the chance of sending coal forward unsold. Pier congestion at Baltimore and Philadelphia resulting from the poor handling of coal shipped on Order 11 has caused a suspension of that order for five days. It is significant that this has caused no concern here.

Hampton Roads agencies who took contracts early in the year are now able to show 100 per cent deliveries. Contract buyers have been offered extra tonnage on contract. Despatch at Norfolk and Newport News is excellent. At points like Lowell, Mass., where the all-rail rate has been advanced from $4 to $5.70, it is easy to see that even $8 coal f.o.b. mines for all-rail shipment is more expensive than smokeless coals sold per gross ton at figures not much over $12 f.o.b. Boston, Portland, or Providence. The new rates will probably induce a number of consumers to look to water coal next season as it is unlikely that water rates will show such proportionate advance.

Current quotations on bituminous at wholesale range about as follows:

	Clearfields	Cambrias and Somersets
F.o.b. mines, net tons	$6.75@ 9 00	$7 50@ 9.50
F.o.b. Philadelphia, gross tons	10 20@12 75	11 00@13 23
F.o.b. New York, gross tons	10 65@13.25	11 50@13.75

Anthracite — The "vacation" strike has caused renewed anxiety. Shipments have been slowing up not alone because of embargoes but because of reduced output.

The originating companies advanced prices again Sept. 1, the increase being 10c. in most cases. This makes the f.o.b. mine price $7.85 per gross ton for stove size, while independents are quoting the same size $12@$14.50 f.o.b. mines.

Tidewater

NEW YORK

Deliveries Are Short — Operators Add Monthly Advance and Retailers Increase Prices—Bituminous Slumps, but Reaction Is Expected Because of Anthracite Suspension — New England Priority Suspension Will Benefit Local Market.

Anthracite—The retail situation in this city has now become aggravated. Dealers have complained of the lack of receipts and have urged quicker shipments if trouble is to be avoided. They are now about 40 per cent behind scheduled delivery to Sept. 1.

The "vacation" taken by the miners because of their dissatisfaction with the Wage Commission's award has increased the calls for deliveries. But most of the yards are nearly empty of the sizes needed and dealers do not look for any big improvement in the near future.

The wholesale market is active. There is not enough coal coming to Tidewater to meet requirements. There was no let-up in demand because of the increased freight rate or the 10 cents per ton added cost of domestic coals on Sept. 1. It is expected that the operators will soon announce a new schedule of prices to conform to increases in wage scale. Although the dealers are anxious for coal they hesitate to pay the present prices quoted for independent product.

Buyers from Canada and Western points continue to offer excessive prices for shipments. Local quotations of $13 @ $15, alongside were made for cargoes of domestic sizes.

The steam coals are active. Buckwheat is strong with quotations ranging $5.50@$6 at the mines; rice $3.75 @$4.25 and barley is easy at $3. Cargoes of buckwheat were quoted $8.60 @$8.90 alongside; rice around, $6.75 f.o.b. piers and $7.25 alongside, and and barley $4.75 alongside.

Quotations for company coals, per gross ton at the mine and f.o.b., New York Tidewater, lower ports are as follows:

	Mine	Tidewater
Broken	$7.60@$7.75	$10 21@$10 36
Egg	7 60@ 7.75	10 21@ 10 36
Stove	7.85@ 8.10	10.46@ 10 71
Chestnut	7.90@ 8.10	10.51@ 10 71
Pea	6.10@ 6.55	8 57@ 9 02
Buckwheat	4.00@ 4 25	6.47@ 6 72
Rice	3.00@ 3.50	5 47@ 5 97
Barley	2.25@ 2 50	4.72@ 4 97
Boiler	2.50@ 2 75	4.25@ 5 22

Quotations for the domestic coals at the upper ports are generally 5c. higher on account of the difference in freight rates.

Bituminous—With plenty of coal to meet current needs and with demand easy there was a further slump in prices. A continuance of the trouble in the hard coal fields is expected to drive bituminous prices upward. This may be overcome, however, by the temporary diversion of New England coal shipments to this city.

There was an accumulation of coal at the local docks due to the falling off in orders from New England. This congestion is expected to be relieved by the suspension of the New England priority order.

Wholesale dealers reported a slump in inquiries from manufacturers due to an accumulation of stocks or because of the curtailing of factory operations.

The withdrawal by the Shipping Board of all bottoms and a plan to place additional penalties for delay of coal at Tidewater, caused some confusion here. A meeting of the dealers affected was called for Sept. 3 to take whatever action thought best.

Quotations for the various pools showed considerable variation, prices ranging $12@$15 alongside. Pools 10 and 11 were quoted $8@$9 f.o.b. mines, with stray quotations down to $7.50.

PHILADELPHIA

Miners' "Vacation" Upsets Anthracite Trade — Consumers Quickly Absorb Visible Supply—Steam Prices Are Unchanged, but Little for Sale — Bituminous Prices Recede Temporarily Only—Consumers Look for $6 Coal.

Anthracite—The retail trade has been badly upset by the miners' walkout. About two-thirds of all operations closed for the entire week has left the dealers here with very little coal. Most of them were quickly cleaned out of whatever prepared sizes they had on hand.

With the beginning of the trouble the trade became clamorous for coal, buyers showing a willingness to take any size. It was not long before even pea coal was well taken. The operators hope that wiser heads will prevail among the workers and that the "vacation" will be short-lived.

The larger companies sent out notices, which amounted to about the usual 10c. monthly advance. It is believed that no increase in price would result on account of the 17 per cent increase awarded to the miners, as this slight increase was considered in the routine advance as inaugurated in the spring. This would make prices for the winter season on company coal f.o.b. mines per gross ton and f.o.b. Port Richmond for Tide as follows:

	Line	Tide
Broken	$7.35	$9.20
Egg	7.60	9.25
Stove	7.95	9.85
Nut	7.95	9.85
Pea	6.20	8.00
Buckwheat	4.10	5.50
Rice	3.00	4.40
Boiler	2.50	3.90
Barley	2.25	3.65
Culm	1.50	2.90

The companies have made no change in the price of the steam sizes, but they have nothing to offer and with the labor troubles now confronting them even barley can be placed in the same class. Only a small amount was in storage this summer and now the companies are drawing on their storage stocks.

A number of independent shippers placed all prepared sizes on a parity, quoting egg, stove and nut at $9.25, with the average for individual coal about $9 for these sizes. Pea coal runs from $6.50@$6.90 and the demand is strong, particularly from the West. One of the more conservative larger independents priced egg coal at $8.50, stove and nut at $8.85.

Bituminous—While the week started off with every indication of continued price recession the beginning of the "vacation" of the anthracite miners caused soft coal prices to respond with an upturn of about 50c. On succeeding days prices were about as follows: Pool 10, $9@$9.50. Pool 11, $8.50@$8.75. Fairmont ranged $9@$9.50, and the Pennsylvania gas coals about $9.50.

With the lifting of the New England assignment order for five days the indications were that prices would move down rapidly and the only thing that held them back at all was the anthracite trouble. Even should that continue for some time it is thought that with the number of cars released from New England trade, users of bitumnous will be able to get an even better supply.

The opinion is quite general now that a price of $6@$6.50 will finally rule in the bituminous trade, and many consumers have expressed a willingness to buy at those figures.

The coke market on spot shipments is still strong at $17.50@$19 for 72-hour foundry.

BALTIMORE

Five-Day Suspension of New England Priority Turns Coal to Other Channels—Prices Continue Downward—Anthracite Men Hard Hit.

Bituminous—A five day suspension, of the New England priority order came when a quicker turn-around of ships and cars under the permit system for vessel loading had pretty well cleaned up congestion here. The number of cars reported running daily to this city on both roads was below 2,000, while pier dumpings alone were close to 600 cars. Principal coal was New England priority fuel, which was not getting particularly quick movement.

As the New England market is falling off and purchasers demand lower prices, a total suspension of New England priority may be forced. While a number of New England consumers are willing to pay $7@$7.50. At the mines others were demanding the same coals around $4.50@$5 just before the priority suspension.

In the unrestricted market the prices continue downward, especially on the Baltimore & Ohio R.R. connections, where car supply is running from 55 to 75 per cent, and on the Western Maryland R.R. with a 70 to 90 per cent supply. Such line coals are now offered $7@$8.50 f.o.b. mines, with considerable discrimination being shown as to grades in many cases. Best coals are $9@$9.50. The car supply on the Pennsylvania R.R. remains less satisfactory and prices range $10@$10.75.

Export movement, while lightened under the permit system of shipping, will still probably pass the 500,000-ton mark for the month of August. Close to 50,000 tons went for bunker use.

Anthracite—The situation here was made much more complicated by the miners' "vacation." Shipments to this city had been meagre enough before, but almost stopped with this new trouble. On the second day after the walk-out only four cars were received here. The situation will be very acute unless some early shipments come through.

Lake

BUFFALO

Bituminous Prices Soften — Situation Is Materially Improved — Disaster in Anthracite Situation if Miners Fail To Return.

Bituminous—The market has declined, most jobbers reporting that there is more coal in sight than for a long time. Consumers have bought little since the new freight rate went in. They believe that the advance of 60c. to 70c. a ton will soon be discounted.

The time is not far off when the complete control of the market by sellers will disappear. The present average mine price for steam coal is not far from $9. Gas coal and specialties like smithing are 50c. higher than steam.

Difficulties have eased off a little, unless it be the attitude of the miners. Cars are easier to get and the output is sufficient. Reserve stocks show comfortable gains.

It seems as if abnormal conditions in the entire trade are gradually disappearing. The report all along the line that there is "nothing doing" on spot offerings is becoming more common. Most of the jobbers would welcome a return to moderate prices. As a rule this is expected before winter, but all predictions have come to little of late, so not too much dependence can be put in them now. So the situation continues to be strained.

Anthracite—The supply is only fair. Lake shippers are complaining about as much as the local consumers. A protracted "vacation" of anthracite miners will cause a most serious condition here.

Lake—While the Lake shipments are not what they were last season to date, it is becoming apparent that the Northwest's fuel requirement will be safely provided.

The shipments for the week were fairly satisfactory, being 103,300 net tons, of which 46,300 tons cleared for Duluth and Superior, 20,000 tons for Fort Williams, 16,400 tons for Milwaukee, 6,000 tons for Sheboygan, 5,500 tons for Chicago, 5,000 tons for Manitowoc, 3,000 tons for Marinette, 1,150 tons for Racine.

Freight rates have now followed the Ohio ports and are $1.50 to Racine, 90c. to Manitowoc, 75c. to Milwaukee, 85c. to Chicago, 65c. to Sheboygan and 60c. to Duluth and Fort William.

Coke—Jobbers are finding it hard to to get coke of any sort and are paying $18.50 for 72-hour foundry, $18 for 48-hour furnace and $14 for domestic sizes. The demand continues light.

MILWAUKEE

Lake Receipts Increase—Inflow by Rail Continues Slow and Uncertain — Anthracite Advanced 10c. Per Ton.

The movement by Lake during August was fully 50 per cent better than the month previous, but the rail supply continues unsatisfactory. The prevailing opinion is that there will be a serious shortage and that rail movement must be brought to the maximum throughout the winter.

The prediction that coal would drop $5 per ton by November has had the effect of influencing some consumers to withhold their orders. Dealers however, say that as long as foreign buyers keep offering high prices there is little hope of a reduction in price. The continued shortage in the car supply is another serious drawback.

September brought an advance of 10c per ton on anthracite. Stove and nut sizes now sell at $15.05, egg at $14.80 and buckwheat at $11.50. Pocahontas is being sold at $14.25 for screened and $12.25 for mine run. Illinois and Indiana coal is held at $12.50.

The following table shows Lake receipts at Milwaukee from the opening of navigation up to Sept. 1:

Month	Cargoes, No.	Hard, Tons	Soft, Tons
April	4	17,500	18,500
May	35	109,600	136,462
June	42	138,771	192,573
July	45	106,529	243,859
August	63	131,206	396,249
Total	189	503,606	987,643
Same months, 1919	318	543,736	2,099,952

CLEVELAND

Better Production and Lighter Demand Lowers Prices—Ohio Cities Seek Modification of Order 10—Retail Prices Increase—Temporary Congestion of Coal to Lakes Hampers Receipts.

Bituminous—Better production at the mines and diminished buying by industrial plants have caused prices to show softening tendencies. It is well knwon that many large users of coal replenished stocks as greatly as possible before the new freight rates became effective.

Operators in the No. 8 district report that on a number of roads the car supply was equal to capacity of the mines, which is somewhat limited by the shortage of labor. The labor situation is still unsettled.

At a meeting in Cleveland a few days ago representatives from Ohio cities conferred with those of the Interstate Commerce Commission. The feasibility of obtaining some modification of Order 10 was discussed. Domestic consumers in Northern Ohio are much perturbed over the sending of the bulk of the coal mined to the Northwest. At a recent hearing before the Commission in Washington, relief was promised if an acceptable plan for distribution of coal could be drawn up, providing for the retention of fuel in Ohio cities.

Large operators with Lake obligations are opposed to drastic modification of Order 10. They insist that when the Lake season closes ample coal will be available for needs in this sectian. Operators suggest that a small portion be withheld from Lake shipment for this business.

Pocahontas and Anthracite—Prices have been increased by most dealers as a result of the new freight rates. Advances range from $1 to $2 a ton, which place domestic fuel quotations at the high point for the season. Some dealers are from 4 to 6 months behind in their deliveries.

Lake Trade—Coal was dumped at the rate of 4,000 cars a day during the week ended Aug. 28, and a record for shipments for the season was made. The fleet loaded 1,220,000 tons of cargo coal. Coal is being dumped faster than it is being received and last week some surplus stocks which were at the docks were cleaned up. Temporary blocking of transportation channels on some roads is causing lighter receipts. This difficulty is expected to be overcome soon and the heavy movement resumed within a few days.

Retail prices of coal per net ton delivered in Cleveland follow:

Anthracite—egg $16@$17.50; chestnut and stove $16.25.

Pocahontas—shoveled lump $16; mine run $12.50.

Domestic Bituminous—West Virginia splint $13.25; No. 8 $12.; Millfield lump $14.50; Cannel lump $15.

Steam coal—No. 6 and No. 8 slack $12.60@$12.75; No. 6 and No. 8 mine run $13.60@$14.25; No. 6, 3 inch lump, $14.45.

Inland West

CHICAGO

Steam Market Is Extremely Active—Rate Increase Advances Retail Coal—Anthracite Situation Is Serious.

The local market has deteriorated into a mad scramble for coal. Price is practically no consideration. This is particularly true of the steam coal market. The market on domestic has been more steady.

The increase of freight rates is going to have considerable effect on the householder. This increase will probably amount to $1.70 on anthracite, $1.05 on Pocahontas and New River and 50c.@60c. on Illinois and Indiana coals. It is no exaggeration to say that Franklin County coal is selling to the householder today at the price paid for anthracite last year.

The anthracite situation is beginning to attract a great deal of attention here. No dealer in the city has anywhere near the amount of anthracite he usually has on hand at this time of the year. The prospect of getting hard coal as the season advances is beginning to look exceedingly dark, especially now that the miners' "vacation" in the anthracite region has reduced production to a minimum.

MIDWEST REVIEW

Production Slumps with Car Supply—Prices Are Higher—Labor Discontent Continues—Improvement Is Predicted.

The coal market is as strong as ever. The car supply in all districts during the past week has slumped. Production has been so low that it has practically stampeded the buyers into the market. Industries are bidding against each other for coal and the effect this has on prices can readily be seen.

There seems to be a very decided wave of labor unrest in the Midwest producing districts. In the middle of the week 5 mines in the Springfield district were on a strike and it was said that other mines in the same district would go out within a few days. This strike is a protest from the men against the price of powder, which was raised 40c. a keg by the joint agreement recently made in Chicago.

In the Standard district around Belleville more than 20 mines were shut down because the mule drivers had failed to report for work. The new scale was to the effect that mule drivers, coming under the head of day men, were to receive $7.50 per day. It appears that these men demand a bonus in addition to this recent increase.

The coal operators and representatives of the United Mine Workers have been unable to come to an agreement on the new wage scale at a conference a few days ago. A special committee was appointed to go into the matter. Meantime, there is considerable dissatisfaction on the part of the laborers in the Iowa fields and production is suffering accordingly. In Kansas a special committee of miners and operators granted $1.50 a day increase to the day laborers. This puts the question up to the general committee which is expected to act almost any day. The districts of Missouri, Kansas, Oklahoma and Arkansas will be influenced by the decisions of this general committee.

Representative operators and wholesalers appear to be optimistic about the outlook of the Midwest industry. It is claimed that, inasmuch as the railroads are back on their own and as there has been an increase in both freight rates and wages of the men, conditions will now improve very rapidly. It is believed the car supply will be better and, once this takes place, the miners will be in a position to earn enough money to keep them entirely satisfied.

ST. LOUIS

Unusual Conditions Continue — Car Shortage Is Severe — Transportation Is Poor—Demand Is Heavy and Shortage Continues To Grow — Prices Advance

The condition in St. Louis proper is fair, everything considered. There is at the present time about a week's supply of steam coal ahead in storage and in transit. In the country conditions are far more acute and many steam plants are on a day-to-day supply.

The city retail situation is far from satisfactory; the domestic situation in the country threatens to be something that is going to call for drastic action when cold weather sets in.

In the Standard district the day men refused to abide by the Chicago decision to accept $1.50 a day increase. They have been paid a bonus of a couple of hours extra time per day to keep them at work and now want the bonus continued, although the officials say this will be eliminated. The Mt. Olive field is affected, and this trouble may spread all over the southern part of the state in a few days.

The car shortage is severe on the Illinois Central R.R. and some other trunk lines, working time in the past week being about 2½ days on commercial and 5 days on railroad coal. A great part of the Standard coal is going to railroads and most of the commercial coal is moving to outside markets, especially through the Chicago and Detroit gateways.

The last week has seen a heavy movement of coal from Standard and Mt. Olive fields to the Omaha market. The call for coal in the South continues heavy on account of the strike of the miners in Alabama.

In the Carterville field of Williamson and Franklin counties about ⅓ car supply is furnished for commercial coal. The situation on the Iron Mountain is equally bad.

Prices range from $4 in St. Louis to $8 for outside shipments on Standard, all sizes. Mt. Olive prices are $4@$4.50 for St. Louis shipment only, no outside shipments. Carterville ranges $4.50@$8.50 at the mines for all sizes.

DETROIT

Inadequacy of Supply Continues To Harass Dealers and Consumers—Statements from Government Sources Forecasting Lower Prices Encourage a Waiting Attitude.

Bituminous—Results of efforts to bring about a larger movement of bituminous coal into Detroit are not yet apparent. Shipments scarcely provide for current requirements of steam coal users and public service corporations. The retail dealers have found very little coal obtainable.

While reassuring predictions of price decline may be designed to relieve the present stress on the market until such time as coal will be available in larger quantity, some of the local trade doubt the wisdom of encouraging this delay. They are quite positive in expressing the belief that with the present condition of transportation and the unsupplied requirements of consumers in all sections, the probability of coal selling at lower prices is very remote.

Though some dealers are hopeful that more coal can be had for their customers after the priority order favoring public utilities terminates Sept. 21, others take a less optimistic view, arguing that the pressure on the railroads in crop movement and the probability of less favorable operating conditions are likely to offset this.

Anthracite—Supplies of anthracite continue very low. Few retailers are receiving shipments except in very small amounts and at irregular intervals. Many householders have not received delivery on March and April orders. One result of this will be to throw into a few weeks a volume of distribution which usually is handled through the summer months.

COLUMBUS

Production Is About 75 Per Cent in Most Fields—Lake Trade Is Active—Prices Continue High.

The Lake schedule asked by the Interstate Commerce Commission has practically been reached and a heavy tonnage is flowing to the Northwest. The old Lake rate of 50c. is increased 10c. and even higher. Consequently, vessels are not making light trips up but take time to load coal cargoes.

The Hocking Valley R.R. docks at Toledo during the week ending Aug. 28 loaded 222,131 tons, which is the largest week's loading of the season. The Toledo & Ohio Central R.R. docks during the same week loaded 94,173 tons.

Commercial business is about the same with strong demand from every source. Railroads are taking a fair proportion on assigned cars while public utilities are looked after under priority orders. Manufacturers have not been able to accumulate much surplus stocks. Active bidding for available free coal continues with the result that prices rule high.

The domestic trade is also quiet as a result of lack of stocks in the hands of retailers. Consumers are getting restless but dealers are unable to make deliveries on orders booked for weeks and in some cases months. Retail prices are high and show a considerable range. Hocking lump sells $8.50@$10, and West Virginia splints $9.50@$11. Pomeroy Bend grades sell slightly above those of the Hocking Valley. Some Kentucky coal is coming in which retails at the same price as splints. Pocahontas continues scarce.

Production is rather good. The Hocking Valley is producing about 75 per cent while Pomeroy Bend reports about 70 per cent output. Eastern Ohio is still hampered by lack of cars and reports a production of between 55 and 60 per cent. Cambridge and Crooksville report 65 per cent car supply.

CINCINNATI

Retailers Are Meeting the Soft Coal Demand — Second River Wave Will Bring Week's Supply — Operators Sue Railroad — Profiteering Investigation Continues.

Coal in small quantities is not difficult to get. Almost every dealer has enough on hand to satisfy the demand for soft coal, but there is no smokeless to be had.

The second artificial wave in the Ohio river to be started Sept. 4 from the Wheeling district was to bring down a week's supply for Cincinnati, of 40,000 tons.

The car situation is still bad but there seems to be a little improvement lately. Operators in eastern Kentucky have brought suit in the United States Court at Covington against the Louisville & Nashville R.R. in an effort to compel that road to supply enough cars to that field.

Several Cincinnati coal firms have been indicted by the Federal grand jury, charged with violation of the Lever act, it being alleged in almost all of the indictments that the companies charged $9.25@$9.50 a ton f.o.b. mines for coal when it should have been $4.50.

Many of the Eastern Kentucky operators declare that the investigation in Covington of charges of alleged profiteering is not a just one, since there was no set price for the coal. As a result of the investigation a committee has been appointed to call upon President Wilson and other officials with an idea of having a definite policy made to be pursued in the coal trade.

South

BIRMINGHAM

Car Shortage Cuts Production — Unsettled Labor Conditions Create Uncertainty—Strong Demand Continues.

Bad transportation facilities the past week have resulted in a heavy loss in output. Production was the lowest for many weeks. Mines which had been affected by labor troubles were in a position to produce much greater tonnage than was possible with the short car supply, which ran from 30 to 50 per cent of normal. Some mines are yet idle, but the majority have resumed and are making as steady a gain in output as car supply will permit.

The effect of the general strike to be called in the Alabama field is problematical. It is believed that the response will not be general or of serious proportions. However, the element of uncertainty is necessarily affecting every phase of the industry.

Spot coal is very scarce, selling from $7.75@$8.50 f.o.b. mines. Railroad stocks are short and confiscations are numerous.

LOUISVILLE

Operators Charge Utilities With Stocking Coal — Prices Slightly Weaker — Federal Investigation Is Causing Uneasiness.

Operators in the Eastern Kentucky field are much upset over the fact that mines serving utilities in assigned cars are getting a full supply, while others are getting so few that they are hardly able to operate. Suits were filed at Covington, recently to test validity of the Interstate Commerce Commission order on priority.

It is held that more coal is moving to utility companies than ever before and this tonnage is absorbing a large percentage of all coal as a result of the short car supply. Small mines without public utility orders, and small consumers are feeling the effect of the priority rule.

Prices are fairly steady as a whole, assigned coal moving at $6@$7, with mine run Eastern Kentucky gas on open bids at $10.25@$10.50 and steam mine run $9.50@$10.

Canada

TORONTO

Conditions Are Unchanged — Supplies of Anthracite Are Inadequate—Scarcity of Bituminous Causes Industrial Plants To Close Down — Prices Increased To Meet Rise in Freight Rates.

There has been practically no change in the condition of the coal market for several weeks. A moderate amount of hard coal is coming forward, but the supply is still inadequate to the demand. Receipts of bituminous continue very light, resulting in further curtailments of operation by industrial plants, some of which have been obliged to close down.

Prices will very shortly be advanced about $1.29 per ton by the increase in American freight rates. A further increase is anticipated when Canadian freights are raised.

Quotations per short ton are as follows:

Retail—	
Anthracite egg, stove, nut and grate	$15 50
Pea	14 00
Bituminous steam	$15@$16
Domestic lump	18 00
Cannel	16 00
Wholesale, f.o.b. cars at destination,	
3-in. lump	$14 @ $16

News From the Coal Fields

Northern Appalachian

CONNELLSVILLE

Car Supplies Fairly Steady — Spot Prices Are High but Irregular — Reports of Fourth Quarter Offerings.

Car supplies are steadier, running at about 20 per cent above the average for May to July inclusive. Hopes are entertained for further improvement as there is some congestion in the region that seems capable of being relieved.

The market for spot coke continues to vary from day to day, a small volume of demand exerting considerable influence. Operators do not hold quotations open, and seem to be offering spot coke only when they have car numbers.

Furnacemen report a slight improvement in receipts on contract. The pig-iron market has turned very dull and this situation may make furnacemen less disposed to buy spot coke. The spot market is quotable $17@$18 for furnace and $19@$19.50 for foundry, per net ton at ovens.

Some operators are now willing to make fourth-quarter contracts for furnace coke at $12, a price that certainly would not have been considered a fortnight ago, but there is a question whether furnacemen would pay even this price.

The *Courier* reports production in the Connellsville and Lower Connellsville region in the week ended Aug. 28 at 211,100 tons, a decrease of 7,960 tons, but notes that shipments from stocks exceeded production by about 4,300 tons.

UNIONTOWN

Car Shortage Continues—Prices Have Stiffened—Coke Production Slumps.

Prices have stiffened for both coal and coke, owing to the continued shortage of cars. Pool 34 and by-product coal commands $10 per ton today, with steam grades $8.75@$9. Coke ranges $17@$17.50 for furnace grades and $18.50 for foundry. Many consignments have been refused for quality this week, however.

Car shortage is at present the leading factor in price determination. This is worst on the Monongahela Railway where Pennsylvania placements for coal have sunk to a very low level. The Pittsburgh & Lake Erie R.R. did much better, placing an 80 per cent supply. The Pennsylvania branch lines showing was scarcely better. The Southwest branch received about 25 per cent of requirements, with but 15 per cent on the Redstone. Maintainance of the strike in the anthracite region is expected to free some cars for the local tracks.

Coke car placement was slightly better. The Pennsylvania placements on the Monongahela Ry. were 25 per cent. On the same tracks the Lake Erie put down a 75 per cent supply. On the Southwest branch the Pennsylvania reached a 60 per cent placement, with a slightly smaller average on the Redstone.

Complaint is being made that shippers so abused permit privileges in the shipment of export coal that sidings have been congested and many cars thus placed out of service. Many shipments have been refused on account of quality, thus further delaying the return of empties. Production of coke last week fell off about 8,000 tons, shipments exceeding production by about 4,300 tons.

PITTSBURGH

Wage Advance Forestalls Trouble—Car Supplies Increased Further—Spot Market Declines —Contract Shipments Improve.

Possibilities of labor trouble in the Pittsburgh coal district were eliminated, or indefinitely postponed, by the advances arranged at the recent conference. Wages now run up to $6.10 for inside men and $5.60 for outside men while boys receive $4.

Car supplies at the mines are greatly improved, and not a few mines are now practically up to the limit of what the men are willing to load. Shipments to Lakes are but little behind the prescribed schedule and congestion at the docks has been reduced by heavier vessel loading.

The iron and steel industry is endeavoring to have a change made in coal car classification. The first classification made "coal cars" of gondolas 33 inches and higher, the limit being afterward raised to 36 inches and the limit may soon be changed to class as coal cars only such flat bottom gondolas as are 42 inches or higher, inside measurement.

The spot market has further declined about $1, due chiefly to heavier offerings, although an influence is the continuance of restrictions upon the movement of coal for export. The market is now quotable at $8 for steam and $9 for gas and byproduct, per net ton at mine.

Shipment of coal on contract has increased materially. Contract holders now have little occasion to buy in the spot market.

CENTRAL PENNSYLVANIA

Prices Break Sharply — Wage Adjustments Are Under Consideration.

Adjustment of wage differences and the ending of a number of strikes which are now in the course of settlement, along with a better car supply, has reduced the spot price approximately $3 a ton, making the market $8.

Operators and miners are in conference in Clearfield County, having met for the purpose of making a new wage scale for all the mines in the Central Pennsylvania field. The new wage scale adopted by the United Mine Workers of District No. 5 and the Pittsburgh Coal Producers' Association, will probably form the basis for settlement.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

BITUMINOUS COAL

	1920 Week	1920 Calendar Year to Date	1919 (a) Week	1919 (a) Calendar Year to Date
Aug. 14*b*	11,813,000	324,984,000	9,092,000	276,595,000
Daily average	1,969,000	1,687,000	1,515,000	1,436,000
Aug. 21*b*	11,048,000	336,032,000	10,675,000	287,270,000
Daily average	1,841,000	1,692,000	1,779,000	1,446,000
Aug. 28*c*	11,374,000	347,406,000	10,443,000	297,713,000
Daily average	1,896,000	1,698,000	1,741,000	1,455,000

(*a*) Less one day's production during New Year's week to equalize number of days covered for the two years. (*b*) Revised from last report. (*c*) Subject to revision.

Production during the first 205 working days of the last four years has been as follows (in net tons).

1917	362,894,000	1919	297,713,000

ANTHRACITE

	1920 Week	1920 Calendar Year to Date	1919 (a) Week	1919 (a) Calendar Year to Date
Aug. 14	1,801,000	54,117,000	1,640,000	50,817,000
Aug. 21	1,595,000	55,712,000	1,862,000	52,678,000
Aug. 28*b*	1,800,000	57,512,000	1,941,000	54,619,000

(*a*) Less one day's production during New Year's week to equalize number of days.

BEEHIVE COKE

United States Total

Week Ended Aug. 28*c* 1920	Aug. 21*b* 1920	Aug. 30 1919	1920 to Date	1919 (*a*) to Date
412,000	425,000	417,000	14,048,000	12,798,000

(*a*) Less one day's production during New Year's week to equalize number of days.

NORTHERN PAN HANDLE

Cars More Plentiful—Labor Conditions Are Better — Demand Strong But Prices Recede.

Conditions were more satisfactory in the Northern Pan Handle district in the last week of August. Railroads serving the mines succeeded in maintaining a better car supply throughout the week. This made it possible to furnish a full allotment of coal to the Lakes, which was moved more expeditiously than had heretofore been the case.

Labor conditions were described as being generally satisfactory although at the same time few mines had a full complement of miners, owing to a general scarcity of labor in the field.

The demand for coal showed no signs of abating although prices were not as stiff as they had been during the first half of August.

FAIRMONT

Car Supply Declines—Mines Fail to Ship Lakes Apportionment—Prices Recede $1—Exporting Is Light.

Irregular car placements during the last week of August caused production to decrease in this field. The Baltimore & Ohio R.R. furnished a fair supply both at the beginning and end of the week but during the middle of this period considerable mine idleness was caused by lack of equipment. The same condition was noted on the Western Maryland R.R. with the exception of the Elkins end of the main line, where cars were more plentiful.

Mines on the Monongah Division of the Baltimore & Ohio R.R. failed to meet their apportionment of Lake shipments, the slump being due to shortage of cars.

Fairmont prices for Lake fuel ranged from $6 to $7. This is understood to be considerably higher than figures obtained for this class of trade in the nearby fields. Prices generally were on a lower level, there being a drop of about $1 per ton.

Export shipments were light. Drastic permit regulations are expected to prevent further congestion at the piers.

Middle Appalachian

POCAHONTAS AND TUG RIVER

Car Supply Dwindles — Attitude of Labor Is Improved — Prices Break Sharply.

During the last week of August the scarcity of cars on the Norfolk & Western R.R. was more pronounced than at any time during the month, consequently the output has shown a decided downward trend.

In the Pocahontas field inability to secure adequate car supply made it impossible to produce much more than 300,000 tons. With labor displaying a little more inclination to work there was more need for cars. No progress has been made by union organizers and legal action taken to prevent interference with non-union contracts between companies and their employees was also expected to play a part in stopping unionization work in the field.

A tumble in coal prices at Tidewater created consternation among speculators quartered at Bluefield and also among a certain class of jobbers. The drop, however, was welcomed by the established companies who have been marketing their product at reasonable prices.

Production declined in the Tug River region. Connecting lines failed to turn over to the Norfolk & Western R.R. a sufficient number of empties to take care of loading requirements. The Williamson field needed a larger quota of empties, owing to increased loadings. This absorbed a part of the supply which would otherwise have been utilized in the Tug River region.

Transient buyers were treated to a scare when prices began to slide downward with rapidity and orders began to pour in to cease buying.

KANAWHA

Production Slumps to 40 Per Cent, Due to Poor Car Supply — Exporting Is Embargoed—Lake Tonnage Is Low—Prices Are Still Declining.

Equipment was so scarce that operations were limited to about 40 per cent of potential capacity for the last week of August. Such a condition was due to congestion on lines connecting with the Chesapeake & Ohio R.R. That road was unable either to make delivery of coal with any degree of promptness or to secure empties for the mines on its line.

Exporting of coal was at a standstill because of a Tidewater embargo, seaboard shipments being permitted only for New England delivery. The restricted car supply made it impossible to meet Lake requirements.

Prices were off as compared with the earlier part of the month but with prospects of increase unless car supply improved.

NEW RIVER AND THE GULF

Production Curtailed, Due to Inadequate Car Supply and Power Shortage —New England and Export Tonnage Is Heavy—Prices Are Softening.

Curtailed production was apparent in both regions in the last week of August, that period ranking as the worst of the month from a production standpoint, largely because of an inadequate car supply.

Mines in the Winding Gulf region had two adverse factors to contend with. The Virginian Power Co. was unable to furnish enough power to enable mines to operate regularly, at least on the line of the Virginia Ry. This and a shortage of cars held production to 55 per cent at mines on this road. Shortage of equipment, however, limited production to about 50 per cent at mines served by the Chesapeake & Ohio Ry.

Eastern movement of coal from the Gulf region was for New England delivery and export, there being probably more coal exported than conditions had previously permitted.

Prices were off somewhat, but very little free coal was available.

Another car shortage developed in the New River field, preventing mines from producing anything like capacity. During the greater part of the week it is doubtful if mines were being operated at more than 40 per cent.

Consignments to the Lakes and to Tidewater rose and fell with the car supply. Of the tonnage to seaboard a fairly large percentage was for export. Shipments to western markets were comparatively small. In common with a movement elsewhere, prices appeared to have receded somewhat in the New River region.

LOGAN AND THACKER

More Mines Are Resuming Operations—Logan Production Still Is Below Normal — Lake Shipments Are Light — Prices Soften.

Gains were made in production in the Williamson field though such gains were not marked, despite the strike in effect in the region since July 1. With federal troops on duty in sufficient number to patrol plants in danger of attack, an increasing number of companies are operating. With the arrival of federal troops, Kentucky guardsmen were withdrawn.

Figures compiled show that the tonnage loss due to the strike during the week ended Aug. 21 was 108,973 tons. The arrival of federal troops had a most quieting effect on the strike situation.

There was a slight increase in the tonnage produced in the Guyan region, output reaching about 210,000 tons. Yet the car supply made it possible to produce only about 50 per cent of normal capacity. Public utility orders cut the car supply for free coal loading below the average of the field. A very small proportion of the Logan output was shipped eastward. Tidewater embargo prevented larger Eastern shipments. While Western shipments were increased in consequence, yet Lake shipments were reduced because of the limited car supply. The tonnage of coal mined on Aug. 23, amounting to over 62,000 tons, was the heaviest daily output of the year. As in other high volatile fields prices have also been reduced in the Guyan field.

NORTHEAST KENTUCKY

Production Increases Slightly — Exports Are Embargoed — Western and Lake Shipments Increase.

In the last week of August production amounted to 49 per cent of potential capacity as against 42 per cent during the previous week, a gain of 7 per cent. The total output was 115,910 tons. As the losses from a shortage of cars still amounted to 111,000

tons or 47 per cent it will thus be observed that there was available for mines on the Chesapeake & Ohio R.R. a 53 per cent car supply.

As during the previous week little or no coal was being shipped to Tidewater, an embargo making that impossible. While Lake and Western shipments in general were larger as a result of the Tidewater embargo and increase in car supply yet the tonnage flowing to the Lakes was not as large in volume as had been observed during the early part of August.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Wagon Mines Take Action Against I. C. C. Order — Local Strikes Curtail Production—Market Is Still Brisk.

The ruling that no open-top cars shall be placed for wagon mines came as a complete surprise. Some of the more prosperous wagon mine operators are consulting legal counsel as to whether they might have some redress through the courts.

A large operation on Straight Creek is out on strike again. The men are demanding an increase of $1 on loading and day work. This operation has an output of approximately 1,000 tons daily. Their car rating was reduced last month from 18 to 13.3 cars, due to labor disaffection.

The market is still brisk. Quotations are $10 up for gas coal and $9@$10 for steam. Quotation for box car coal is $9, which shows that this equipment will be at a premium should Order 14 remain in force.

WESTERN KENTUCKY

Operators Protesting Confiscations — Car Shortage Is More Severe — Little New Business Is Being Accepted — Prices Are Steady.

Operators report that railroads are seizing coal more freely, causing considerable trouble in making deliveries.

Car supply has again declined. It is reported that Western Kentucky last week got out about 2,700 cars, as against a production capacity of 4,500.

Car supply on the Illinois Central R.R. is less than 46 per cent, and not much better on the Louisville & Nashville R.R.

The labor situation is much easier and all mines are operating as close to capacity as car supply will permit

Very little new business is being accepted. Short car supply scarcely permits taking care of contracts, old orders and the assigned cars for utilities.

Prices are fairly steady as a whole, lump $5 and $5.50 on new business; mine run and screenings $4.50 and $5. A considerable amount of tonnage is moving to Louisville, Nashville and Memphis, with a fair movement North through Evansville.

UTAH

Fuel Oil Shortage on Pacific Coast Opens New Coal Market — Prices Are Advanced.

As a result of the shortage of fuel oil a new market for Utah coal is being developed on the Pacific coast. Plants there are said to be making arrangements to burn coal instead of oil, as in the past. It is felt that the coal deposits of Utah furnish the most available supply for the coast towns. Mines are capable of supplying the demand if adequate transportation facilities are provided.

According to officers of the one company in Ogden City, the price of coal in Utah will be increased 50 cents on Sept. 1. The company states that the advance on Wyoming fuel will be $1, sending up the retail price to $10.75 per ton. The increase will take effect at once. The Ogden coal companies have large quantities of coal on hand.

Germany and Czechoslovakia To Ratify Coal Convention

A coal convention, which still requires the ratification of both Parliaments, has been concluded between Germany and Czechoslovakia. In return for 101,000 tons of Silesian coal Czechoslovakia is to supply 202,000 tons of lignite per month, as also bunker coal for the transport of goods from Germany. The agreement is valid from July 1, 1920, to Jan. 1, 1921.

France's Coal Supply Was Nearly Normal in April

The French coal situation, according to the *Colliery Guardian*, is compared with the past in a general budget report drawn up by M. Paul Doumer for the Chamber of Deputies. In 1915 nearly 36,000,000 tons of coal were consumed; of this, 18,777,000 tons were imported. Consumption had increased in 1917 to 39,927,000 tons, and imported coal decreased to 15,100,000 tons. In 1918 the consumption was 38,000,000 tons, whereas the imported changed but little at 15,933,000.

The supplies in 1919 were, to the nearest thousand tons, as follows: 15,938,000 tons from the French pits, 15,646,000 tons from England, 1,030,500 tons from Germany, 1,735 tons from Belgium, and 420,000 tons from the United States, and 2,503,000 from the Ruhr basin. The exact total was 37,273,570 tons. The monthly amount at disposal, therefore, was 3,106,000 tons.

How France has fared this year in comparison with the position before the war, when the monthly supplies totaled 4,500,000 tons, is seen by the following figures:

January, 3,410,718 tons, of which 1,507,295 tons were French, 1,366,903 tons English, 247,786 tons from the Sarre, and 221,095 tons German.

February, 3,417,733 tons, of which 1,344,214 tons were French, 1,321,727 tons English, 292,928 tons Sarre, and 318,664 tons German.

March, 3,302,206 tons, of which 992,314 tons were French, 1,340,640 tons English, 265,306 tons Sarre, and 334,036 tons German.

April, 4,234,594 tons, of which 1,405,909 tons were French, 958,855 tons English, 278,509 tons Sarre, and 334,443 tons German.

May, 2,895,096 tons, of which 609,987 tons were French (so little on account of strikes), 1,154,530 tons English, 426,397 tons Sarre, and 551,812 tons German.

In the matter of coke, the monthly consumption was 583,300 tons, of which 330,000 tons were made in France. In 1920 the average tonnage obtainable per month was 350,000 tons, only 60 per cent of the normal requirements of her industries. To quote M. Doumer: "It is not surprising that a large proportion of her furnaces are out."

Coal Found in Malay Peninsula Will Help Industries

Official statistics at hand from Singapore reveal some interesting facts in regard to the coal supplies of the Straits Settlements. The following table shows the quantities and value of imports and exports in 1918 and 1919:

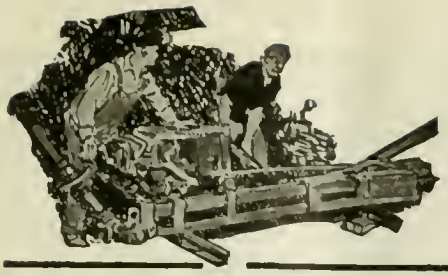
	1918		1919	
	Tons	Value	Tons	Value
Imports	510,100	£2,878,800	503,541	£2,281,751
Exports	369,288	2,160,236	487,924	2,245,726

It should be explained that this represents chiefly bunker coal, which accounts for the relatively large amount of exports. A comparison with the statistics of 1913 brings out two outstanding features—the falling off in shipping requirements at Straits Settlements ports in recent years and the greatly increased price of coal supplies. In 1913 no less than 1,080,454 tons were imported at a value of £1,325,470.

Detailed statistics showing the sources of supply in 1919 are not yet to hand, but it is possible to make the following interesting comparison (in tons) of the principal sources of supply in 1913 and 1918:

	1913	1918
Japan	498,510	370,345
China	93,935	28,344
British India and Burma	194,995	19,482
South Africa	36,591	18,019
French Indo-China	24,901	16,704
Brunei	17,062	13,509
Sumatra	5,250	8,730
British North Borneo		8,637
Australia	162,057	8,074
Dutch Borneo	20,557	7,236
United Kingdom	22,137	..

Some years before war broke out, coal had been discovered in the Malay Peninsula, in the States of Perak and Selangor. The coal found at Rawang, in Selangor, some twenty-five miles from Kuala Lumpur, the capital of the Federated Malay States, proved to be of first-rate quality, and as prospection proved a supply of over 10,000,000 tons the Malayan Collieries, Ltd., was formed to work it and place it on the market.



Mine and Company News

IDAHO

Pocatello—Articles of incorporation have been filed in the county clerk's office of Idaho County by the Neal Coal Mining Co. for the sum of $500,000. Some time ago a deposit was found which the miners thought would lead to an extensive coal vein, so several geologists were brought up from the University of Idaho and stated that indications were the best they had ever seen.

ILLINOIS

Carlinville—The people of Carlinville have realized for two years what it means for a big concern like the Standard Oil Co. to locate in their midst and go to developing their coal fields.

The company owns 25,000 acres of coal rights at Schoper, and during the past two weeks the officials have purchased about 250 acres more, so that if they should want to make much more developments in the future, they would have plenty of coal.

Benton—Suits aggregating $30,000 have been filed against Franklin county in the circuit court by fourteen persons who allege personal damage and loss of property in the recent anti-Italian demonstrations at West Frankfort, Ill. Among the plaintiffs is Maria Carrare, whose husband, Louis, was killed by a mob during the demonstration.

IOWA

Des Moines—The Iowa coal miners have presented to the operators demands for a wage increase of $1.50 a day or a weekly increase of $7.50. Both operators and the miners will confer on the demand, which is the same as is being asked in Kansas and Illinois.

The Iowa Southern Utilities Co. is now preparing to furnish power to 18 new electric mining machines as soon as they arrive, the order having been placed several days ago. These 18 new machines are to be placed in several different mines which are so situated as to be able to secure electric power from a high-tension line. Other machines will be ordered in the near future.

KENTUCKY

Whitesburg—Work has already been started on improvements undertaken by the Louisville & Nashville R.R. in line with a program which includes double tracking between Typo and Hazard. A road is also to be built around the "bend" from Lemmit to the mouth of Lott's Creek, where an important new coal field was opened this year. At Typo the double track will connect with the First Creek coal field, which produces 300 cars daily. Other parts of the road to be double tracked are those between Whitesburg and Hazard and Whitesburg and McRoberts. The Neon yards are to be enlarged also.

OHIO

Lisbon—Another coal-stripping proposition has just been put through here when U. V. Gaskill sold to the Miller Coal Co., of Youngstown, O., 191 acres on the Lisbon-Columbiana road and commonly known as the Gray Farm. The Miller Co. is now operating on adjoining farm lands. The overburden is said to range from 32 to 49 ft., with an average of 40 ft.

Maynard—The Griffen Coal Co., has been incorporated with a capital of $25,000 to mine coal in the Belmont County field. The incorporators are Joseph E. Christy, William A. Griffen, Frank Donley, Alonzo L. Beck and John E. Applegarth.

Columbus—With offices in the Dispatch Annex Building, the Franklin Coal Exchange has been chartered with a capital of $30,000 to do a retail business. The incorporators are Ray Wareham, Morgan L. Evans, James K. Hall, John H. Teters and Edward C. Hall.

Buchtel—The Klegg Hill Coal Co., has been incorporated with a capital of $50,000 to operate mines. The incorporators are M. E. Cox, Florence E. Cox, E. H. Hayman, Harvey Sayre and Bridget Sayre.

Martins Ferry—Three men were injured, one probably fatally, when stone fell on a car load of miners en route out of the Joseph Meister Coal Co.'s mine here.

OKLAHOMA

Tulsa—The Albert Coal Mining Co. has been organized and charter filed with the secretary of state. The company is capitalized at $50,000 and will develop coal lands near here. The incorporators are: J. Albert, A. Abend and A. Brodsky, all of Tulsa.

PENNSYLVANIA

Waynesburg—Work is expected to be started shortly on developing a tract of coal in Dunkard Township recently sold by Albert G. Titus, of Dunkard Township, to John H. Moffit, of Charleroi, and T. R. Sharpneck, of Rices Landing, who are understood to be representing the Lilley Coal & Coke Co.

The block consists of 285½ acres of both the Pittsburgh and the Mapleton veins, both outcropping along the Monongahela River near the mouth of Dunkard Creek.

Washington—Two miners were killed in accidents in Washington County mines recently. Frank Black, aged 29, met instant death when caught and crushed under a string of loaded cars at Cokeburg Junction, near Bentleyville.

Mike Bedna, aged 40, was crushed under a fall of slate at the Vesta No. 5 mine, near California.

Pottsville—Smoked out of their "breasts" in which they had fired a blast, two miners were instantly killed at the Wadesville colliery recently, when a runaway car dashed down the slope at a speed exceeding a mile a minute was released when a chain attached to a drawhead broke.

Pittsburgh—The Pittsburgh Steel Co. purchased several tracts of coal and surface in Monongahela township, Greene county. The total consideration is $128,604.53.

TENNESSEE

Crossville—The J. H. Finley Lumber Co. has punctured the Sewanee seam and found it running from 10 to 14 feet in thickness. The company has a force at work now, running an entry. The coal is a high-grade domestic and coking coal. The J. H. Finley Lumber Co. owns 10,000 acres in a continuous body. The property lies 3½ miles south of Crab Orchard where a gentle slope can be had to construct a road directly to the mine.

WASHINGTON

Spokane—To deal in wholesale coal throughout the Northwest and on the Pacific Coast the Union Coal Co. has been incorporated with a capital of $100,000 and will have its head office in Spokane. The incorporators are: R. G. Crocker, F. W. Dewart and Mrs. E. F. Waggoner. A branch office will be maintained in Seattle.

WISCONSIN

Milwaukee—A big impetus to Milwaukee's coal-receiving facilities was given recently when the new 300,000-ton coal storage dock of the Great Lakes Coal and Dock Co., at Twentieth and Canal Sts., formally began operations.

The giant unloading "clam" of the docks picks up ten tons of coal at a time, carries it 380 ft. to the end of the dock, drops it through the screener into the storage compartments or coal cars, and returns for another load, all in the space of 60 seconds. It can unload 600 tons of coal an hour.

WEST VIRGINIA

Montgomery—An unconfirmed report is prevalent in this district that the Belgian government soon will purchase the holdings of the Ingram Branch Coal Co.

It is said an option was given Belgium recently and several cars of coal were shipped abroad. The price involved is estimated at $1,500,000.

Welch—Col. Wm. Leckie of Welch and associates have launched another new company in southern West Virginia—the Cub Creek Coal Co., which is capitalized at $100,000.

This company, according to preliminary plans, will operate in Wyoming County. Others interested aside from Col. Leckie are: A. E. Jennings of Welch, J. B. Purcell of Huntington, W. R. Whitman of Roanoke, Va., and G. R. McAbee of Philadelphia, Pa.

Fairmont—Mining operations in Lincoln district of Marion County will be undertaken by the Troll Coal Co., newly organized according to present plans, this company having an authorized capital stock of $100,000. Principally interested in the new concern are: John T. Troll of Wheeling, Clay T. Amos, James H. Baker, Paul Haymond and Frank C. Haymond of Fairmont, W. Va.

Elkins—The Cobb Coal Co. has been organized with a view to operating in Upshur County. This company is capitalized at $50,000. Identified with the new company are: Wm. H. Cobb of Elkins, W. W. Cobb of Charleston and others.

Charleston—The Nellis Coal Co., operating on Brush Creek in the Coal River territory, said to now be a subsidiary of the American Rolling Mill Co., has under consideration the question of enlarging its plant. In the meantime the company is having new houses erected for the accommodation of additional miners at its plant.

Under the direction of Charles E. Sandberg, president and general manager, the Sandberg Coal & Land Co. has initiated development work on a new operation at Carkin, in the Kanawha county field, where the company will secure coal from the No. 2 Gas seam, although it is probable that the company will also operate in the upper seam. Work on the installation of a siding is progressing.

Plans are being made by the newly organized Houghton Gas Coal Co. of Charleston to operate at Marmet in the Kanawha county field, this concern having a capitalization of $50,000. Active in the organization of the new company were M. J. Houghton and C. C. Taylor of Charleston, C. S. Thompson of Quincy, Rean Turner of Diamond, W. Va.; M. J. Nelson of Malden.

Huntington—J. M. Moore, president of the Ruth Anne Coal Co., has purchased the Boone Block Coal Co. mines, located on Horse Creek, Coal River. It is stated that a considerable expenditure will be made on property development, to raise output to 1,000 tons per day.

Bluefield—Arrangements have been made by the Norton Coal Co., operating at Norton, Va., to make a number of improvements at its plant within the next few months, with a view to increasing production. In the first place more dwellings for miners are to be built and it is also planned to build a well equipped club house.

Clarksburg — Following the completion of its organization by the election of officers the Apex Coal Co. will within a short time take steps to develop a tract of something over 50 acres in Lewis County in the Pittsburgh and Redstone seams. This company has a capital stock of $50,000 and its officers are: C. A. Butcher, president and general manager; John B. Heffner, vice president and P. M. Ireland, secretary and treasurer, who, together with John W. Keister and F. F. Butcher, constitute the board of directors.

BRITISH COLUMBIA

Vancouver—H. W. Dawson and F. W. Osborn, officials of the Yorkshire and Canadian Trust Co. of Vancouver are now in Smithers for the purpose of making inspection of their extensive holdings in the Copper River district. The property, consisting of seventy-five leases, was taken up by the Copper River Coal Co., the National Finance Co. now in liquidation handling the property as fiscal agents, until 1914, and is now being handled by the Yorkshire and Canadian Trust Co., liquidators of the National Finance Co.

Association Activities

Pennsylvania Wagon Coal Shippers' Association

Newly elected officers of the association are: President, C. W. Hammond, Bolivar, Pa.; Vice-President, M. C. Stewart, Indiana, Pa.; Secretary, E. S. Bowden, Johnstown, Pa.; Treasurer, J. W. Rankin, Clymer, Pa.

Northern West Virginia Coal Operators' Association

The fact that the United States Circuit Court of Appeals has decided against the Lambert Run Coal Co. in its efforts to permanently restrain the Baltimore & Ohio R.R. from assigning cars will not deter the association from aiding the Lambert Run Co. in carrying the case to the Supreme Court. The Association still contends that the assignment of cars is only only discriminatory but that it is illegal and that no emergency exists at least insofar as the railroads are concerned.

Winding Gulf Operators' Association

According to figures compiled by the Winding Gulf Operators' Association which is seeking to encourage larger loadings per car, only one company—the Devils Fork Coal Company—succeeded in averaging 61 tons to a car in loading during June. The number of companies able to load 59 tons to a car on an average was only four. There were six companies able to load 58 and two companies succeeded in averaging 57 tons per car. The average for a good many companies in the district was only 38 tons per car.

New River Operators' Association

The executive committee of the New River Operators' Association at a meeting held in Charleston in the third week of August decided to send a team from the field to compete with other teams in the National Mine Rescue field day meet at Denver, whether a team from the field was successful or not in the state meet at Charleston.

President Caperton of the association summarized for the benefit of members what had been considered and decided upon at a number of meetings which he has attended in behalf of the association and in fact which have kept him extremely busy. The position he had taken on various matters was ratified by the executive committee which also received a report from its new traffic manager, W. B. Troxell. It was announced following the executive committee meeting that a general meeting will be held in September.

Traffic News

I. C. C. Decision—Decided Aug. 18, 1920. Supplementing original report, 58 I. C. C., 220, carriers authorized to increase rail-lake-and-rail rates between points on the Atlantic seaboard and interior points, on the one hand, and St. Paul and Minneapolis, Minn., and points grouped therewith, on the other, upon the same basis as is applied to corresponding rates to and from Duluth, Minn.

Intrastate Rate Increases.—Public service commissions of California and New Hampshire have authorized advances in intrastate freight and passenger rates in accordance with increases laid down by the Interatate Commerce Commission for interstate rates. With authorizations previously reported in Pennsylvania, Maryland, Michigan, Massachusetts, New Jersey and Wyoming, there are now nine state commissions which have allowed the full increase in both freight and passenger rates. Wisconsin, West Virginia, Iowa, Ohio, Minnesota, Montana and New York have allowed the full freight advance, but denied or postponed action on passenger fares under the limitations of state laws. Illinois commission authorized increases of 33⅓ per cent on intrastate freight. Permission already obtained from the Indiana commission to file the new freight tariffs prior to the hearing set for Aug. 23 probably indicates the intention of the commissioners to take action similar to that of the New York state commission, which allowed the freight advances to go into effect without approval of the justness of the increase.

Interstate Commerce Commission has notified the Washington Public Service Commission that coal rates are reduced from Montana field to Washington, thereby invading the Puget Sound district; decrease made on contention of Northern Pacific R.R. that lack of fuel oil and local supply necessitated additional coal receipts from new territory. New rates from Montana: $5.20 to Seattle and locality, $6.40 to Bellingham and $5.70 to the Chihalis region.

Coming Meetings

American Mining Congress will hold its annual meeting at Denver, Col., Nov. 15. Secretary, J. F. Calibreath, Munsey Building, Washington, D. C.

The Canadian Institute of Mining and Metallurgy will hold its second annual western meeting at Winnipeg on Oct. 25, 26 and 27; the headquarters of the meeting will be at the Hotel Fort Garry. Local secretary, W. W. Berridge, 905 Union Trust Building, Winnipeg, Canada.

National Safety Council will hold its 1920 congress on Sept. 27 to Oct. 1, inclusive, at Milwaukee, Wis. General Manager, C. W. Price, Chicago, Ill.

Oklahoma Coal Operators' Association will hold its annual meeting Sept. 14, at McAlester, Okla. Secretary, F. F. LaGrave, McAlester, Okla.

The Sixth National Exposition of Chemical Industries will be held in the Grand Central Palace, New York City, Sept. 20-25. The Fuel Economy Division has been added this year.

CURRENT PRICES—MATERIALS & SUPPLIES

IRON AND STEEL

PIG IRON—Quotations compiled by the Matthew Addy Company:

	Current	One Year Ago
CINCINNATI		
No. 2 Southern	$45.60	$2?.80
Northern Basic	51.30	27.55
Southern Ohio No. 2	47.80	28.55
NEW YORK, Tidewater delivery		
2X Virginia (silicon 2.25 to 2.75)	54.30	32.40
Southern No. 2 (silicon 2.25 to 2.75)	49.70	35.20
BIRMINGHAM		
No. 2 Foundry	42.00@44.00	27.75
PHILADELPHIA		
Eastern Pa., No. 2 x 2.25-2.75 sil.	50.00*	30.65
Virginia No. 2	50.00*	32.10
Basic	48.00†	30.90
Grey Forge	45.00*	29.90
CHICAGO		
No. 2 Foundry Local	46.00	26.75
No. 2 Foundry Southern	48.00	28.00
PITTSBURGH, including freight charge from the Valley		
No. 2 Foundry Valley	49.00	29.15
Basic	48.50	27.15
Bessemer	50.00	29.35

* F. o. b. furnace. † Delivered.

STRUCTURAL MATERIAL—The following are the base prices, f.o.b. mill, Pittsburgh, together with the quotations per 100 lb. from warehouses at the places named:

	Mill Pittsburgh	New York Current	New York One Year Ago	St. Louis	Chicago
Beams, 3 to 15 in.	$2.45@$3.10	$4.58	$3.47	$4.04	$3.97
Channels, 3 to 15 in.	2.45@ 3.10	4.58	3.47	4.04	3.97
Angles, 3 to 6 in., ¼ in. thick.	2.45@ 3.10	4.58	3.47	4.04	3.97
Tees, 3 in. and larger	2.45@ 3.75	4.63	3.52	4.09	4.02
Plates	2.65@ 4.00	4.78	3.67	4.24	4.17

BAR IRON—Prices in cents per pound at cities named are as follows:

New York	Pittsburgh	Denver	St. Louis	Birmingham
5.75	4.75	4.95	4.50	5.25

NAILS—Prices per keg from warehouse in cities named:

	Mill Pittsburgh	St. Louis	Chicago	Denver	Birmingham	San Francisco
Wire	$4.25	$6.00	$4.45	$5.40	$5.00	$6.45
Cut		None	8@10	....	5.90	8.50

TRACK SUPPLIES—The following prices are base per 100 lb. f.o.b. Pittsburgh for carload lots, together with the warehouse prices at the places named:

	Pittsburgh	Chicago	St. Louis	Denver	San Francisco	Birmingham
Standard railroad spikes ⅜-in. and larger	$4.00	3.55@4.25	$5.34	$5.50	$7.75	$6.00
Track bolts	6@6.50	4.00@5.25	7.00	6.75	8.75	8.00
Standard section angle bars	3@4	2.75	2.00	5.05	5.30	....

COLD FINISHED STEEL—Warehouse prices are as follows:

	New York	Chicago	Cincinnati	St. Louis
Roundsshafting or screw stock, per 100 lb. base	$6.36	$5.80	$6.50	$5.90
Flats, squares and hexagons, per 100 lb. base	6.86	6.30	6.85	6.40

HORSE AND MULE SHOES—Warehouse prices per 100 lb. in cities named:

	Mill Pittsburgh	Chicago	St. Louis	Denver	Birmingham
Straight	$5.75	$7.00	$7.00	$8.15	$7.00
Assorted	5.85	7.15	7.15	8.40	7.25

Cincinnati—Horseshoe nails sell for $4.50 to $5 per 25-lb. box.

CAST-IRON PIPE—The following are prices per net ton for carload lots:

	New York Current	New York One Month Ago	New York One Year Ago	Chicago	St. Louis	San Francisco
4 in.	$87.22	$79.30	$57.00	$82.10	$78.00	$105.55
6 in. and over	77.22	76.30	54.00	79.10	75.00	102.55

Gas pipe and 16-ft. lengths are $1 per ton extra.

STEEL RAILS—The following quotations are per ton f.o.b. Pittsburgh and Chicago for carload or larger lots. For less than carload lots 5c. per 100 lb. is charged extra:

	Pittsburgh Current	Pittsburgh One Year Ago	Chicago Current	Chicago One Year Ago
Standard Bessemer rails	$55.00	$45.00	$45.00@$55.00	$45.00
Standard openhearth rails	57.00	47.00	47.00@57.00	47.00
Light rails, 8 to 10 lb.	†2.58½*	2.585*	2.45@3.50*	2.835*
Light rails, 12 to 14 lb.	†2.54@3.84*	2.54*	2.41@3.34*	2.79*
Sight rails, 25 to 45 lb.	†2.45@3.75*	2.45*	2.32@3.25*	2.70*

*Per 100 lb. †Note:—These are Steel Corporation prices; spot rails not obtainable at present. Prices in open market range as high as $76 per ton.

OLD MATERIAL—The prices following are per gross ton paid to dealers and producers in New York. In Chicago and St. Louis the quotations are per net ton and cover delivery at the buyer's works, including freight transfer charges.

	New York	Chicago	St. Louis
No. 1 railroad wrought		$29.75	$28.50
Stove plate	$26.00	28.75	30.50
No. 1 machinery cast	41.00	36.50	38.50
Machine shop turnings	15.50	9.75	13.00
Cast borings	17.50	13.25	16.00
Railroad malleable cast	30.00	28.74	29.50
Rerolling rails	35.50	38.00@39.00	35.00
Relaying rails	54.00	57.50@62.50	50@55

COAL BIT STEEL—Warehouse price per pound is as follows:

New York	Cincinnati	Birmingham	St. Louis	Chicago	Denver
$0.10	$0.16½	$0.18	$0.12	$0.15	$0.18

DRILL STEEL—Warehouse price per pound:

	New York	St. Louis	Birmingham	Denver
Solid	12@14c.	13c.	15c.	....
Hollow, ⅞ hex	17c.	....	....	21c

WROUGHT PIPE—The following discounts are to jobbers for carload lots on the Pittsburgh basing card:

BUTT WELD

Inches	Steel Black	Steel Galv.	Inches	Iron Black	Iron Galv.
⅛ to 3	45 to 57½	41½ to 44	⅛	15½ to 25½	+ 1½ to 11½
			¼	19½ to 29½	1½ to 11½
			⅜ to 1½	24½ to 34½	8 to 18½

LAP WELD

2	47 to 50½	34½ to 38	2	20½ to 28½	6½ to 14½
2½ to 6	50 to 53½	37½ to 41	2½ to 6	22½ to 30½	9½ to 17½

BUTT WELD, EXTRA STRONG, PLAIN ENDS

2 to 3	53 to 56½	40½ to 44	⅛ to 1½	24½ to 34½	9½ to 19½

LAP WELD, EXTRA STRONG, PLAIN ENDS

2	45 to 48½	33½ to 37	2	21½ to 29½	8½ to 16½
2½ to 4	48 to 51½	3½ to 40	2½ to 4	23½ to 31½	11½ to 31½
4½ to 6	47 to 50½	35½ to 39	4½ to 6	22½ to 30½	10½ to 18½

	New York Black	New York Galvanized	Cleveland Black	Cleveland Galvanized	Chicago Black	Chicago Galvanized
⅛ to 3 in. steel butt welded	40%	24%	$39.00	$30.00	54@40	40½@30½
3½ to 3 in. steel lap welded	35%	20%	41.00	26.00	50@40	37½@27½

Malleable fittings. Class B and C, from New York stock sell at list + 23%. Cast iron, standard sizes, net.

WIRE ROPE—Discounts from list price on regular grades of bright and galvanized are as follows:

	New York and St. Louis
Hercules red stand, all constructions	20%
Patent flattened strand, special and cast steel	20%
Patent flattened strand, iron rope	5%
Plow steel round strand rope	30%
Special steel round strand rope	30%
Cast steel round strand rope	22½%
Iron strand and iron tiller	5%
Galvanized iron rigging and guy rope	+12%

San Francisco: Galvanized, less 5%, bright less 25%.
Chicago, +12½ on galvanized, 30 off on bright.

SHEETS—Quotations are in cents per pound in various cities from warehouse also the base quotations from mill:

Blue Annealed	Large Mill Lots Pittsburgh	St. Louis	Chicago	San Francisco	New York Current	New York One Yr. Ago
No. 10	3.55@3.50	$7.09	$7.02	$8.65	$7.23@$8.00	$4.57
No. 12	3.60@ 7.55	7.09	7.07	8.70	7.28@ 8.05	4.62
No. 14	3.65@ 7.60	7.09	7.12	8.75	7.33@ 8.10	4.67
No. 16	3.75@ 7.70	7.09	7.17	8.85	7.43@ 8.20	4.77
Black						
*Nos. 18 and 20	4.15@ 8.30	8.10	8.00	10.60	8.41@ 9.80	5.30
*Nos. 22 and 24	4.20@ 8.35	8.10	8.05	10.65	8.46@ 9.85	5.35
*No. 26	4.25@ 8.40	8.10	8.10	10.70	8.51@ 9.90	5.40
*No. 28	4.35@ 8.50	8.10	8.20	10.80	8.61@10.00	5.50
Galvanized						
No. 10	4.70@ 8.50	9.70	8.50	....	8.91@11.50	6.20
No. 12	4.80@ 8.60	9.70	8.60	11.35	9.01@11.50	6.25
No. 14	4.80@ 8.60	9.70	8.60	11.35	9.01@11.50	6.30
Nos. 18 and 20	5.10@ 8.90	9.70	8.90	11.65	9.26@11.90	6.60
Nos. 22 and 24	5.25@ 9.05	9.70	9.05	11.80	9.41@12.05	6.75
*No. 26	5.40@ 9.20	9.70	9.20	11.95	9.56@12.20	6.90
*No. 28	5.70@ 9.50	9.70	9.50	12.25	9.86@12.50	7.20

* For painted corrugated sheets add 30c. per 1000 lb. for 5 to 28 gage; 25c. for 19 to 24 gages; for galvanized corrugated sheets add 15c., all gages.

SHOP SUPPLIES

NUTS—From warehouse at the places named, on fair size orders, the following amount is deducted from list:

	New York Current	New York One Year Ago	Chicago Current	Chicago One Year Ago	St. Louis Current
Hot pressed square	+$6.00	$3.25	$0.50	$1.05	$2.25
Hot pressed hexagon	+ 6.00	2.70	.50	.85	2.25
Cold punched square	+ 6.00	3.25	.50	1.00	2.25
Cold punched hexagon	+ 6.00	2.70	.50	1.00	2.25

Semi-finished nuts, ⅞ and smaller, sell at the following discounts from list price:

	Current	One Year Ago
New York	30%	50-10%
Chicago	50%	50%
Cleveland	50%	60-10-10%
St. Louis	45%	....

MACHINE BOLTS—Warehouse discounts in the following cities:

	New York	Cleveland	Chicago
½ by 4 in. and smaller	+20%	20%	20%
Larger and longer up to 1 in. by 30 in	+20%	20%	20%

WASHERS—From warehouses at the places named the following amount is deducted from list price:

For wrought-iron washers:
New York.....list Cleveland.....$2.50 Chicago.....$3.00

For cast-iron washers the base price per 100 lb. is as follows:
New York.....$7.00 Cleveland.....$4.50 Chicago.....$4 75

RIVETS—The following quotations are allowed for fair sized orders from warehouse:

	New York	Cleveland	Chicago
Steel ⅞ and smaller	list Net	40%	30%
Tinned	list Net	40%	30%

Boiler, ½, ⅝, 1 in. diameter by 2 in. to 5 in. sell as follows per 100 lb.:
New York.. $6.00 base Chicago ...$5.62 Pittsburgh.... $4.50

Structural, same sizes:
New York ..$7.10 Chicago ...$5.72 Pittsburgh.. $4.60

CONSTRUCTION MATERIALS

LINSEED OIL—These prices are per gallon:

	New York Current	New York One Year Ago	Chicago Current	Chicago One Year Ago
Raw, 5-bbl. lots	$1.25	$2.15	$1.45	$2.53
5-gal. cans	1.40	2.28	1.70	2.73

WHITE AND RED LEAD—Base price.

	Red Current Dry	Red Current In Oil	Red 1 Year Ago Dry	Red 1 Year Ago In Oil	White Current Dry and In Oil	White 1 Year Ago Dry and In Oil
100-lb. keg	15 50	17.00	13.00	14.50	15.50	13.00
25 and 50-lb. kegs	15 75	17.25	13.25	14 75	15.75	13.25
12½-lb. keg	16 00	17.50	13.50	15.00	16.00	15.50
5-lb. cans	18 50	20 00	15.00	16.50	18.50	.15.00
1-lb. cans	20 50	22 00	16.00	17.50	20.50	16.00

500 lb. lots less 10% discount. 2000 lb. lots less 10-2½% discount.

COMMON BRICK—The prices per 1000 in cargo or carload lots are as follows:

Chicago	$16.00	Cincinnati	$24 00
St. Louis, salmon	16.00	Birmingham	15.00

PREPARED ROOFINGS—Standard grade rubbered surface, complete with nails and cement, costs per square as follows at manufacturing points:

	New York 1-Ply	New York 2-Ply	New York 3-Ply	Philadelphia 1-Ply c.l.	Philadelphia 2-Ply l.c.l.	Philadelphia 3-Ply c.l.
No. 1 grade	$2 50	$3 00	$3 55	$2 40	$2 90	$3 45
No. 2 grade	2 25	2 70	3 20	2.15	2 00	3.10

Slate-surfaced roofing (red and green) in rolls of 108 sq. ft. costs $4.25 per roll in carload lots and $4.50 for smaller quantities.

Shingles, red and green slate finish, cost $8 75 per square in carloads; $9 00 in smaller quantities, in Philadelphia.

ROOFING MATERIALS—Prices per ton f.o.b. New York and Chicago:

Tar felt (14 lb. per square of 100 sq.ft.) per roll	$3 50
Tar pitch (in 400-lb. bbl.) per 100 lb	2.00
Asphalt pitch (in barrels) per ton	54 50
Asphalt felt (light) per ton	123 00
Asphalt felt (heavy) per ton	127 00

HOLLOW TILE—Price per block in carload lots for hollow building tile:

	4x12x12	8x12x12	12x12x12
Minneapolis	$.1152	$.2016	$ 3168
St. Louis	15	.260	....
New Orleans	.23	.28	.30
Chicago	.1516	.2728	.4093
Cincinnati	.125	.2186	.3286
Birmingham	.135	.240	.....

LUMBER—Price of pine per M in carload lots:

	1-In. Rough 10 In. x 16 Ft.	2-In. T. and G. 10 In. x 16 Ft.	8 x 8 In. x 20 Ft.
St. Louis	$	$	$41 00
Birmingham	50 00	52.00	54 00
Cincinnati	55 00	50.00	50 00

EXPLOSIVES—Price per pound in small lots and price per 25-lb. keg for black powder:

	Low Freezing 20%	40%	Gelatin 60%	80%	Black Powder
New York		$0 3125	$0 3425		$2 30
Boston		28	31	34	
Kansas City	2475	27	30	34	2 40
New Orleans	2475	2825	3125	38	2 40
Seattle	18	2025	225	2925	2 60
Chicago	2175	2525	2975	34	2 45
Minneapolis	2067	2476	2782		2 80
St. Louis	23	27	30	3425	2 20
Los Angeles	22	27	31		2 95

MISCELLANEOUS

GREASES—Prices are as follows in the following cities in cents per pound for barrel lots:

	Cincinnati	St. Louis	Birmingham
Cup	8 5	8 9	8 5
Fiber or sponge	9	12@15	8 5
Transmission	10	12@15	8 5
Axle	5	6@6½	5 5
Gear	6 5	8@9	8 5
Car journal	12 0	25@2	4 5

BABBITT METAL—Warehouse prices in cents per pound:

	New York Current	New York One Year Ago	Cleveland Current	Cleveland One Year Ago	Chicago Current	Chicago One Year Ago
Best grade	90.00	90.00	57.00	79.00	60.00	75.00
Commercial	50.00	50.50	21.00	18.50	15.00	15.00

HOSE—Following are prices of various classes of hose:

Fire	50-Ft. Lengths
Underwriters' 2½-in.	8½c. per ft.
Common, 2½-in.	30%

Air First Grade	Air Second Grade	Air Third Grade
¾-in. per ft. $0.60	$0.40	$0.30

Steam—Discounts from list
First grade.. 20% Second grade..... 30% Third grade.. ... 45%

LEATHER BELTING—Present discounts from list in fair quantities (½ doz. rolls):

Light Grade	Medium Grade	Heavy Grade
30%	25%	20%

RAWHIDE LACING—For cut, best grade, 25%, 2nd grade, 30%. For laces in sides, best, 79c. per sq. ft.; 2nd, 75c. Semi-tanned: cut, 20%; sides, 83c. per sq. ft.

PACKING—Prices per pound:

Rubber and duck for low-pressure steam	$1.00
Asbestos for high-pressure steam	1.70
Duck and rubber for piston packing	1.00
Flax, regular	1.20
Flax, waterproofed	1.70
Compressed asbestos sheet	90
Wire insertion asbestos sheet	1.50
Rubber sheet	50
Rubber sheet, wire insertion	.70
Rubber sheet, duck insertion	.50
Rubber sheet, cloth insertion	.30
Asbestos packing, twisted or braided, and graphited, for valve stems and stuffing boxes	1.30
Asbestos wick, ½- and 1-lb. balls	.85

MANILA ROPE—For rope smaller than ¼-in. the price is ½ to 2c. extra; while for quantities amounting to less than 600 ft. there is an extra charge of 1c. The number of feet per pound for the various sizes is as follows: ¼-in., 8 ft.; ½-in., 6; ¾-in., 4½; 1 in., 3½; 1¼-in., 2 ft. 10 in.; 1½-in., 2 ft. 4 in. Following is price per pound for ½-in. and larger, in 1200-ft. coils:

Boston	$0.32½	Birmingham	$0.324
New York	.29½	Denver	.30
St. Louis	.27½	Kansas City	.30½
Chicago	.27½	New Orleans	.28½
Minneapolis	.29	Seattle	.28
San Francisco	.27	Los Angeles	.31

PIPE AND BOILER COVERING—Below are discounts and part of standard lists:

Pipe Size	Standard List Per Lin.Ft.	Thickness	Price per Sq.Ft
1-in.	$0.27	½-in.	$0.27
2-in.	.36	1 -in.	.30
3-in.	.45	1½-in.	.45
4-in.	.60	2 -in.	.60
6-in.	.80	2½-in.	.75
8-in.	1 10	3 -in.	.90
10-in.	1.30	3½-in.	1 05

85% magnesia high pressure ..... List + 5%

For low-pressure heating and return lines: 4-ply.... 40% off; 3-ply.... 42% off; 2-ply.... 44% off

WIRING SUPPLIES—New York prices for tape and solder are as follows:

Friction tape, ½-lb. rolls	55c. per lb.
Rubber tape, ½-lb. rolls	60c. per lb.
Wire solder, 50-lb. spools	42c. per lb.
Soldering paste, 2-oz. cans	$1.20 per doz.

COPPER WIRE—Prices per 1000 ft. for rubber-covered wire in following cities:

	Denver Single Braid	Denver Double Braid	Denver Duplex	St. Louis Single Braid	St. Louis Double Braid	St. Louis Duplex
14	$14 00	$19 75	$38 35	$15 64		$38 45
10	23 50	29 80	60 10	24 50		58 70
8	32 95	40 35	81 05	33 48		
6	56 45	58 35			55 81	
4	81 30	83 60			77 17	
2	122 10	124 85			108 10	
1	158 70	160 00			142 00	
0	197 50	197 50			167 70	
00					198 20	
000					234 60	
0000					279 60	

FREIGHT RATES—On finished steel products in the Pittsburgh district including plates, structural shapes, merchant steel, bars, pipe fittings, plain and galvanized wire nails, rivets, spikes, flat sheets (except planished), chains, etc., the following freight rates per 1,000 lb. are effective:

Boston	$0 41½	New Orleans	$0 51½
Buffalo	29½	New York	38
Chicago	38	Pacific Coast (all rail)	1 66½†
Cincinnati	33	Philadelphia	35
Cleveland	24	St. Louis	47½
Denver	1 35*	St. Paul	69½
Kansas City	81½	Detroit	33
		Baltimore	33½

Note—Add 3% transportation tax. *Minimum carload, 40,000 lb. †Minimum carload, 50,000 lb., structural steel only.

COAL AGE

The Weekly Journal of the Coal and Coke Industries

Volume 18 NEW YORK, THURSDAY, SEPT. 16, 1920 Number 12

WIDESPREAD dissatisfaction with the high prices for coal has given rise to a general questioning of the good faith of the coal industry and a doubt of the fundamental honesty of those who represent it. No commodity can rise in price as has soft coal in the past six months without the producers and dealers being subjected to the charge of manipulation and profiteering.

Of producers, sales agents, jobbers and wholesalers—those who produce, sell and distribute bituminous coal—there are today not less than 15,000 companies and individuals, and among so many there cannot be other than a large number of those whose rules of business conduct contain no creed other than that of "grabbing while the getting is good." Every industry, every group, contains its quota of people of that type, for all are but human, and humankind is alike everywhere.

* * *

WHAT the consuming public does not understand, however, is the condition or set of conditions that has permitted the weeds to grow and the undesirable fruit to ripen in the field of the legitimate coal industry. No friend of the coal business should pass by a single opportunity to bring home to this same public the fact that every industry, and particularly those supplying universal necessities, is passing through stages of post-war adjustment in many ways similar to that of coal.

That we can point with more or less certainty to the things that are wrong with the coal industry and can talk about the necessity of stabilization and regulation within the industry or from without it proves nothing more than that we know more about the ills of coal production and distribution than we do about those of other basic industries. The important thing to bear in mind is that the men who were in the coal business last year and who expect to be there next year are as interested in working out the proper solution of the present problem as is the public in having cheaper coal, and the present abnormal condition as to prices and supply will be corrected by natural processes if time be allowed.

* * *

IN FIXING responsibility for the shortage and high prices of 1920 we must differentiate between the ultimate or basic cause and the present limiting factors. The actual cause of this shortage has been lack of sufficient stocks of coal in the hands of consumers—producers cannot and do not attempt to carry stocks of soft coal—and responsibility for this lack of stocks can be definitely traced back to the consumers who in 1919 rather than buy, almost universally used their storage coal to the point of depletion.

The supply produced and delivered since April has been sufficient to meet the actual necessities of the country for day-to-day consumption, but has not been adequate to fill the additional demand for storage, which consumers unwisely burned in 1919 and now are anxious to replace. This intense demand in the summer for storage coal is in itself abnormal and is the fundamental underlying cause of the present high prices.

* * *

THE consumer will not dispute this explanation of underlying causes, but he always comes back with the query as to why the coal operators do not supply the coal which the country is demanding, and he always has a doubt as to why prices should be so very high. The answer to both of these queries is simple—the soft-coal mines can produce no more than the railroads in the bituminous region are able to haul away.

Production for months has been solely limited by lack of transportation, except where strikes have temporarily served further to constrict it. Given more transportation, there will at once be more coal. Apparently every scheme has been tried to increase the transportation of coal, even the use of open-top cars to freight other than coal has been denied, but the rate of output has not yet reached the desired level and certainly has not maintained it long enough to meet the demand.

* * *

PRICES mounted and stayed up because buyers bid for the coal. Some buyers seem willing to go beyond all limits in bidding for what they urgently need or imagine they must have. Examples by the score could be cited in which the consumer of bituminous coal has placed his orders with several jobbers or buyers and has thus bid against himself.

As an example may be cited the manufacturer in New York State who placed an order with a certain well-known responsible middle house for 10,000 tons of central Pennsylvania coal to be delivered during the past summer. This house sent a buyer to Johnstown, Pa., who made an offer of $8 to a producer for this tonnage. The deal was about to be closed when the seller asked to be relieved of his bargain promise because he had just been offered and later accepted $9.50 for his coal.

The buyer on his return to New York was advised by the manufacturer that he need not concern himself about that order, for the contract had been placed by another buyer. It soon developed that the two buyers who had been bidding for the self-same consignment of coal were both the agents of this one manufacturer, who was in consequence compelled to pay $1.50 a ton more for his coal than it could otherwise have been purchased for. His over-anxiety cost him $15,000.

* * *

WHEN consumers are as eager to pay high prices as they have recently been some one is going to charge them a fancy price and if necessary will even open a mine to get coal for that purpose. When in April and May the supply of railroad cars was, because of the switchmen's strike, so limited that not enough coal was being produced to meet even current consumption, the regular operator found that with his mines running but

two or three days a week, he could not fill his contracts.

The consumer, promptly sensing trouble, placed orders with coal buyers, and the ball started to roll. With each jump in the price another score of individuals felt justified in reopening old "gopher holes," wagon mines, country banks and abandoned pits. In the whole of the Appalachian coal field, from northern Pennsylvania to Birmingham, coal beds outcrop on the hillsides, and all the equipment that is required for a coal-mine is a few tools, powder and a mine car. Throughout the Middle West, where the coal beds are below the surface, there are many shallow openings that are quickly brought to a producing stage when prices go up and as quickly are closed when prices go down.

* * *

WHEN the price passed the $5 line every citizen of a coal-mining community was a prospective coal operator, and by the time $10 was reached most were such in fact. Labor to mine the coal in these mushroom operations was drawn from the regular mines by higher and higher wages and bonuses and cars were obtained by making requisition on the railroads, which in turn supplied them by lessening the number delivered to the regularly operated, properly equipped and economically conducted mines.

The bonanza operations had no contracts and hence have been able to exact the top of the market for their product, to the despair of the real operator. Progressively drawing labor away from mines which had contracts and regular business, cutting down the capacity and thus the car ratings of the regular mines, increasing their own capacity at the same time, the wagon mines and small "fair-weather" operations have grown to the point where they are in many fields a sizable element in the trade of that region.

There is no economic justification for their existence as railroad-car shippers, for they make poor use of transportation, detaining cars longer than the larger operations; they generally load much poorer coal both as to quality and as to preparation, and they are wasteful of man power both because the average daily output in tons per man per day is less in these unequipped mines largely owing to the fact that coal after its production has to be loaded in wagons, hauled long distances over poor roads and shoveled into railroad cars and that the coal worked is often abnormally thin, dirty or hard and would not be considered workable in normal times. Furthermore there is the objection to wagon mines that the high wages paid the mine labor does not induce continuous work. The miner is induced to accept employment in a wagon mine because he can make as much there in one day as he can in two or more days at the regular scale paid at a standard operation.

* * *

HOW the metamorphosis of a country bank into a wagon mine can affect trade is shown by the experience of one town in Illinois. A number of small operations in the immediate neighborhood of this town had for years supplied the coal by direct haul from the mine mouth to consumers' bins. When prices reached a certain point some enterprising citizens bought all the small local mines, ordered railroad cars and, forsaking the local market entirely, entered the free-coal market and realized handsomely on their investment.

The consumers in the town were not disposed to pay the fancy prices offered by the outside world and some of the old-line companies found it necessary to protect the community by shipping coal in from other mines at a distance. Thus were railroad cars used to carry coal away from trade which could be supplied without cars while other cars were taken from useeful trade elsewhere to fill the gap.

Small Mines and Large

TO THE UNINITIATED the existence of small, ill-equipped mines alongside big ones is a perpetual surprise. In fact, some coal men otherwise well posted find the fact hard to explain, but the answer is not difficult. The small mine succeeds because it is so small. As soon as it extends it can no longer in normal times prove profitable unless it purchases the equipment that the larger mine always possesses and moves thereby into the large-mine class.

The small mine has almost invariably a short haul to the railroad tipple. Most small operations manage to keep in a strongly competitive condition so long as the haul does not exceed a half mile. Somewhere beyond a half mile it becomes necessary to have mechanical haulage and big cars. The mule will serve for a shorter distance and do good work. When longer distances are to be traversed the transportation below ground becomes a difficult problem and large units are required—bigger trips and longer, with heavier track and better traveling ways. Only electric, pneumatic or gasoline traction will fill the larger needs of a mine with ramifications extending from a half mile to perhaps five miles from the shaft or portal.

The small mine is ventilated readily. It interposes less resistance to the passage of air. A little coal burned on a rude grate with natural ventilation will supply all the air current needed. Being near the crop the small mine is nearly always free of gas and safety lamps and daily inspections—considerable drains monetarily which many large mines have to meet daily in their operations —are unnecessary.

Drainage is often natural also, for a small mine would not be opened unless this condition was assured from the first. Moreover the supervision of the mine is easy. Being temporary the small operation needs less supplies than one that has had a longer life. Timber lasts longer because no fungus has developed to cause decay. Props are usually easy to obtain because the little mine has not been in operation long enough to denude the wood lots adjacent of the timber needed for operation, and the transportation of the necessary wood supports is therefore relatively inexpensive.

All these things make it legitimately possible to operate a small mine having a railroad tipple in competition with a large mine. The question of machine mining is partly solved in the small mine by the fact that the unions have succeeded in keeping the differential between pick and machine mining so small as to make it cover little more than the charges for power, interest, depreciation and obsolescence.

Furthermore, the small mine frequently can get along without the erection of houses which at the rents which the union permits to be charged are unprofitable instead of a source of income. A large plant which must draw men from points far and near must have not only houses but well-appointed buildings for all kinds of sociological adjuncts which the small mine need not have. The miners live in their own homes, make their own congenial environments and thus save the operator much expense.

Lens Coal Mine Reopens

A small shipment of coal left one of the pitheads at Lens, France, Wednesday, Sept. 8. This coal was the first that had been taken out of the Lens mines since they were flooded by the Germans during the war.

J. K. Dering Says Coal Men Raised Only $20,000

Replying to charges by Governor Cox that an attempt had been made to levy a Republican campaign assessment of $80,000 on certain coal operators, J. K. Dering, named by the Governor as one of the principals, in a statement made public in Chicago Sept. 6 said: "We never held any such meeting as Governor Cox described. The committee of which I was chairman met, but we never assembled even the committee alone in the Auditorium Hotel. Generally the committee met in my office and generally it was I who had to run around to the coal men and pry the money out of them. We raised between $18,000 and $20,000 and turned it over to Fred W. Upham, treasurer of the Republican National Committee."

Representative Esch Defeated in Wisconsin Primaries

Representative John J. Esch of La Crosse, Wis., co-author with Senator Cummins of Iowa, of the recently enacted railroad bill, was defeated for renomination from the Seventh Wisconsin district, according to returns from the state-wide primary of Sept. 7. His victorious opponent was Joseph E. Beck, of Viroqua, who was supported by Senator Robert M. La Follette.

Governor Allen to Campaign in Three States

Governor Henry J. Allen of Kansas has accepted the invitation of the Republican National Committee to speak in Indiana, Ohio and New Jersey from Oct. 10 to 15, inclusive.

I. C. C. Expedites Return of Rolling Stock

Efforts of the railroads to have their own freight cars returned to them is bearing fruit, largely because of the co-operative orders which have been issued by the Car Service Commission of the Interstate Commerce Commission. When the roads appealed to the Interstate Commerce Commission some time ago to exercise its emergency powers to expedite the movement of coal and grain cars, some operators said that it was not good railroading. Redistribution of that equipment has gone on steadily meantime and the situation is much improved over three months ago. With the car movement records being established by many of the roads this is one of the most favorable developments since the roads were returned to private control on March 1.

Deny Reported British Coal Deal

With the arrival in London of Scott Hindley, commercial adviser to the British Coal Controller, an official statement has been issued to the effect that the report that Mr. Hindley had been sent to America to purchase large coal supplies for the Government is entirely without foundation.

NEWS BRIEFS

Terse Items Chronicling Events of Interest to the Industry

New York Transit Company Has Coal for Only Four Days

Public Service Commissioner Nixon announced that the public utilities of New York City had on hand Sept. 7, 338,977 tons of soft coal, a decrease of 4,000 tons in a week. It was pointed out at the commissioner's office that the usual supply at this season is 400,000 tons and by Oct. 1 this amount should be doubled. The Interborough Rapid Transit Co. had a supply for only four days, and the B. R. T. for eleven days.

Freight-Car Movement Reaches Pre-War Level

Railroads of the United States have attained the pre-war level in the movement of loaded freight cars, it was stated Sept. 7 by the Car Service Commission of the American Railway Association. During the week ended Aug. 21 the railroads moved 964,836 loaded cars, the largest movement during any one week since the Government relinquished control and exceeding by over 2,000 the number moved in the preceding week. This movement is only approximately 12,000 cars behind the largest movement during July, 1918, when the roads were operating at their highest point of efficiency. The roads at that time were under Federal control and individual ownership of cars was not considered.

Tumulty Advises Coal Men to Appeal to Car Commission

The Independent Coal Dealers' Association of Chicago appealed to Secretary Tumulty to obtain the support of the White House for their plea for priority orders allowing Eastern coal to come into Chicago. According to William O'Rourke, secretary of the association, there is "hardly an ounce of coal" in coal dealers' yards in Chicago. He declared the situation worse than it was last winter. Secretary Tumulty wired a reply directing the association to appeal to the Chicago Car Service Commission, of which J. J. Pelley is chairman.

Allied Delegates to Confer on Payment for German Coal

British, French, Italian and German delegates have arrived at Stresa, Italy, for a conference at which are to be arranged the conditions of payments and advances to be made to Germany for the delivery of coal to the allies.

Car Commission Reorganized as Car Service Division

Thomas DeWitt Cuyler, chairman of the Association of Railway Executives, announces that at the association's Chicago meeting the name of the Car Service Commission in Washington was changed to the Car Service Division of the American Railway Association, and that it had been reorganized. W. L. Barnes, superintendent of transportation of the Chicago, Burlington & Quincy R.R., has been appointed executive manager, reporting to Daniel Willard, president of the Baltimore & Ohio R.R., as chairman of the Advisory Committee of the Association of Railway Executives.

Gompers Urges Campaign to Abolish Industrial Court

Denouncing the Court of Industrial Relations Law of Kansas as a vicious measure designed to establish compulsory labor, Samuel Gompers, president of the American Federation of Labor, in a letter to the Central Labor Union of the State of Kansas urges the holding of a conference to outline a statewide campaign for the abolition of this law.

Silesian Situation Menaces Coal Agreement

German peace delegates in Paris, says a Berlin wireless communication, have handed a note to the Peace Conference calling attention to the situation in upper Silesia. Conditions are declared to be growing worse and making the impracticability of carrying out of the coal delivery obligation more imminent.

Through the Coal Fields With a Camera

Mechanical Haulage and Good Air Have Eased the Miner's Toil

1. A CONCRETE FANHOUSE OF THE KINGSTON COAL CO., KINGSTON, PA.
This fan supplies air to the No. 4 colliery. It is a Vulcan 8 x 25 ft. machine driven by a Uniflow engine. Note the cars with which the steam pipes have been insulated. In too many plants this feature of economy is not sufficiently emphasized.

2. A NEEDLESS DELAY AT THE ROOM FACE
This picture illustrates a typical and sometimes avoidable delay. The miner is waiting for an empty. Meanwhile he takes a "snack."

3. A 5-TON STORAGE-BATTERY LOCOMOTIVE AT WORK
This is a Westinghouse machine in the Red Ash bed at the No. 3 shaft of the Kingston Coal Co., Kingston, Pa.

Methods in the Northwest That Impressed The Coal Men of the A.I.M.E.

Product Is Stored Automatically on Light Trestles or Peg-Leg Mine Tracks—Methods of Shooting and Using Ventilating Conduits Have Been Carefully Standardized—Stripping Equipment Is of the Heaviest

By R. Dawson Hall

STOCKING TRESTLE AT FRANCIS MINE

The headframe of this mine is of the open type. The light bents and superstructure of the stocking trestle can be removed and replaced at insignificant cost.

In the previous article entitled "Engineers Visit Copper and Iron Ranges," I described the summer meeting of the American Institute of Mining and Metallurgical Engineers as far as the arrival of a section of the party at Ishpeming and its visit to Negaunee with its interesting bath houses.

Negaunee Trestle Gives Convenient Storage

The most striking feature in the visit to the Negaunee mine was the permanent "trestle" that has been erected at that place for the storing of ore. Of course, it would be impossible to pile bituminous coal at the depth at which iron ore is customarily stored, but the methods which are adopted at the mines in the iron region are quite suggestive of possibilities in the coal fields of the United States.

It will be noted that this trestle appears in the illustration accompanying this article to be made wholly of steel, but that is not the case because on the inside of the large posts has been placed a filling of reinforced concrete, which is the permanent support for the tracks above. It is unnecessary to call attention to the fact that this trestle gives every facility for steam-shovel work. The piers have 114 ft. centers, the height to the top of the rail is 42 ft., and in consequence of these generous dimensions it is possible to obtain the greatest degree of freedom when shoveling up the ore for the filling of railroad cars.

The columns are 6 ft. in diameter at the base and 4 ft. at the top. They are attached to pyramid-shaped rectangular reinforced concrete bases 12 x 26 ft. in plan and 6 ft. deep. The reinforcement consists of ¾-in rods which extend up into the columns a distance of 20 ft. The length of the trestle is just short of one-half mile, namely 2,320 ft., with 2,090 ft. available for stocking ore. It was built in 1912 by the Wisconsin Bridge & Iron Co. and was guaranteed to support a moving load of ten tons.

Men Do Not Go with Cars Onto Trestle

The cars which run on the trestle contain barely five tons of ore, hence there is no undue stress. The top tram cars run by an endless-rope system, the cars being furnished by 50-hp. motors. The rope operates through rubber-lined grooved sheaves, 8 ft. in diameter. An automatic dumping device placed on the track empties the cars as they reach the desired location, and consequently no one has to accompany them in their travel to and from point of discharge.

In this article are shown some of the other installations for stocking purposes. One is a single-track trestle at the Francis mine. It will be noted how light and airy this trestle appears and how readily it can be constructed whenever its extension is desired. Such trestles are usually taken down every year and replaced with equal frequency. Another trestle illustrated here

IRON ORE CONCENTRATOR AT COLERAINE, MINN.—EXAMPLE OF BENEFICIATION OF A LOW-GRADE PROD

In 1905 the Oliver Iron Mining Co. erected the present Trout Lake concentrator. The plant was ready for use in 1910. It is located on the east side of Trout Lake, readily accessible from all directions. The mill building is of heavy steel construction throughout, 255 ft. long, 162 ft. wide, and 124 ft. high, enclosed with corrugated iron. The approach to the mill is an earth fill, some 4,000 ft. long, containing several million cubic yards of stripping from the Canisteo and Walker pits. It has a maximum height of 125 ft. and was planned to accommodate four tracks. A steel trestle 650 ft. long connects it with the mill. At

is the stockpile trestle at the Morris mine in the North Lake district. Here there are two tracks and a three-post wooden trestle; the construction, however, is as light as at the Francis mine and gives the shovel an equal chance to work around the vents.

At the Republic mine is a stockpile trestle which has a close likeness to that in use at Negaunee, there being but one post under the track, which in this case is of wood and not of reinforced concrete. There is but one track, however, in the Republic mine trestle. As it would be somewhat unstable without proper reinforcement, it will be noted that wire ropes have been used to prevent any lateral motion.

Can Like Methods Be Used at Coal Mines?

These designs, it would seem, might furnish to those who are stocking coal some suggestions as to the methods to be employed. It is clear that if an automatic dumping device is provided it is possible to omit any scrupulous adherence to the rules of safety, because where men do not have to go there is no danger to human life, and all we are jeopardizing is the structure and equipment and some possible delay at the mine. Where there is more than one trestle, the matter of delay may be overlooked.

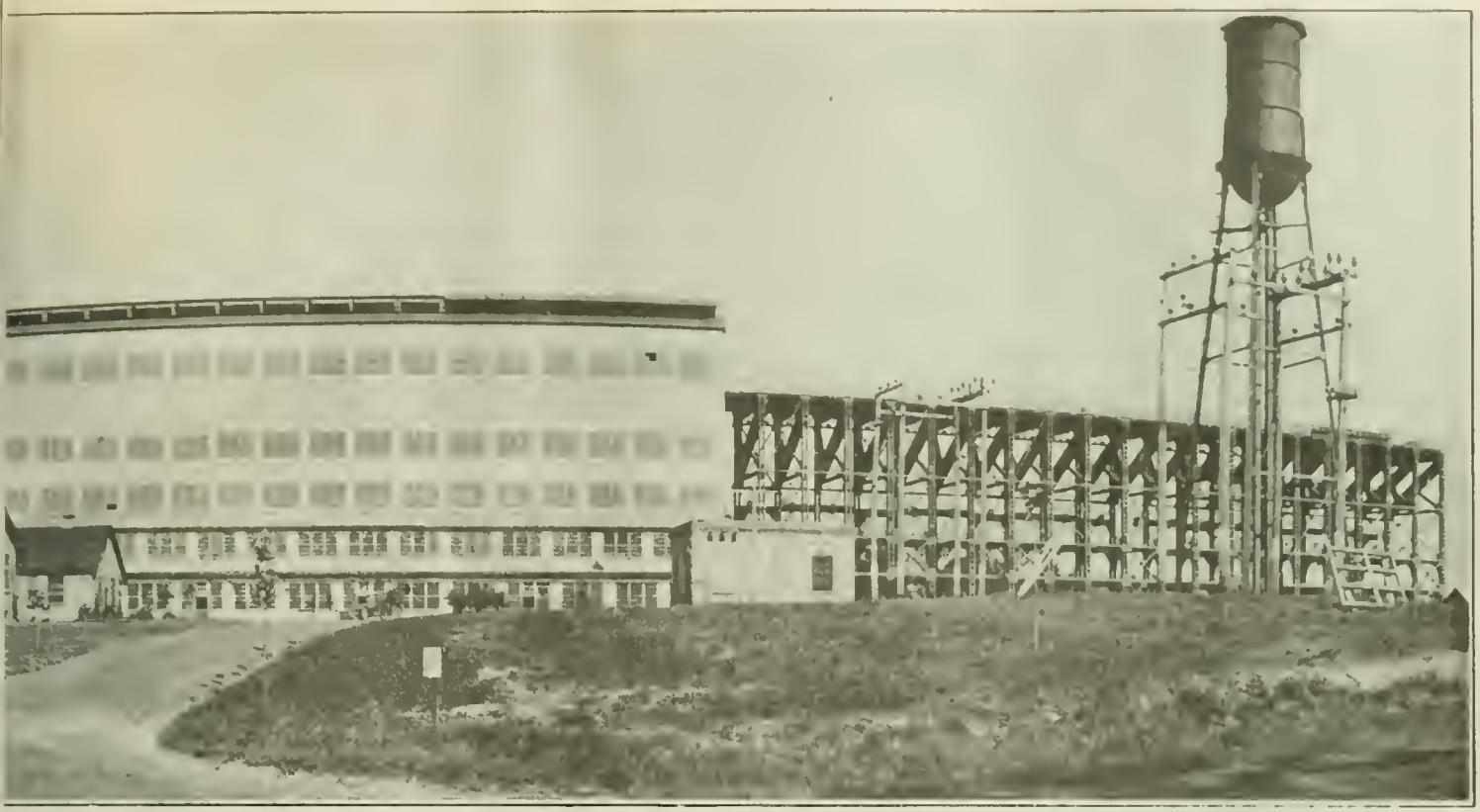
A further advantage is that there is not much lumber in the trestles and should they catch fire the loss would be less severely felt. In the dumping of coal direct from the mine, however, there would be the difficulty that large and small coals would be mixed and a greater probability of fire would ensue. This difficulty is unfortunate because the better way to handle the coal would be to stock it unsized and then size it afterward, because in standing out in the rain, snow, frost and air it would be sure to break up and need resizing. Furthermore, there would be considerable breakage in putting the coal into storage, especially in trestles such as those at the Marquette region. Consequently resizing would become necessary even if the coal were left only a few days in storage. However, the trouble might be met by rough resizing at the tipple and a more careful preparation later.

It will be noted in looking over some of the pictures of these stocking trestles that some of the headframes are quite lightly constructed and are not housed as are other trestles to which reference has been made in earlier numbers of this article, but whether to house or not house the headframe apparently is a question which has not so far reached settlement in the Marquette region.

Early in the afternoon the Marquette party took a train for Iron Mountain and met the Norway, Vulcan and Iron Mountain party at the latter town. A meeting was held in a local motion picture house where the Midvale Steel Co. showed some reels illustrating their operations in the Menominee iron field, at the big Johnstown iron works and elsewhere. Cornelius Kelly introduced Mr. Hoover, who spoke most interestingly on the good administrational work done by mining engineers during the war and afterward in Belgium, France, the United States and lastly through central Europe.

Paper on Details in Shooting Entries

During the night the special trains that had transported the parties from Houghton to Iron Mountain by way of Marquette and Ishpeming and through Vulcan and Norway respectively formed one large train which



UCT—IRON ORE—WHICH, LIKE COAL, DOES NOT PERMIT OF MORE EXPENSIVE METHODS OF TREATMENT

the opposite end of the concentrator 300 ft. of additional steel work is in place and is now being used for tail track; it can be utilized for an addition to the mill if need arises. The total amount of steel in the plant is about 7,000 tons. The total cost of mill and equipment approximates $1,500,000. The structure emphasizes the value of gravity in the construction of a washery for the cleaning of low-grade materials. Most of our modern breakers are trying to eliminate unnecessary conveying equipment. It also shows what can be done by the efficient placing of strip-pit material wherever it has to be handled by railroad cars.

took all the members and visitors to Minneapolis. Arriving at that city, automobiles conveyed the members of the institute to the Hotel Curtis and registration and thence to the University of Minnesota, where a session on Mine Practice was held with Herbert Hoover presiding, one on Geology and Resources with W. R. Emmons in the chair and one on Oil and Gas Wells and Non-Ferrous Metallography with C. E. Julihn as chairman.

The article by J. E. Hackford on the "Nature of Coal" reproduced in this issue in another place was presented at the last-mentioned meeting. An article on "Standardizing at North Butte Mining Co.'s Mines," showing how in those workings the placing of shots for drilling has been made the subject of a most careful analytical study and how as a result there is no happy-go-lucky placing of shots but a close following of the best possible methods planned with due regard to diameter at different depths, position, angle and depth of holes, size of charge, and position of primer.

Tables on Use of Cloth Air Conduits

This article by Robert Linton of New York City is commended to all who have rock work to do. It standardizes the ventilation of headings by means of canvas tubing similar to the "Flexoid" conduits manufactured by the Bemis Bag Co. of St. Louis, prescribing the cross sections of the tubing for given lengths, the sizes of the motors and their speed, all the data being based on the clearing from smoke of a heading 6 x 8 ft. in 35 min. The article gives standards for chutes and prescribes completely also the details of stoping. The anthracite-mining engineer will find this careful treatment of the art of mining eminently practical and full of suggestions for the conduct of his identical or, at least, similar work. Another paper presented was "Modern Commercial Explosives and Their Uses" by A. J. Strane of Tamaqua, Pa. Looking at many of the papers on mining practice, one cannot see how coal-mining engineers can afford to pass up the achievements of their sister branches of their profession as without bearing on their own daily duties.

A luncheon was served at the St. Paul Hotel at St. Paul, at which Mr. Hoover spoke. The lunch was followed by a delightful drive through the wonderful park system of Minneapolis—truly one of the fairest of cities. Some visited flour mills, others played golf and some inspected the Minneapolis Steel & Machinery Co. plant.

In the evening a reception was held in honor of Mr. Hoover, and a banquet followed presided over by the past president, Philip N. Moore, at which W. C. Edgar, the editor of the *Northwestern Miller*, was toastmaster, and Herbert Hoover, the institute's president; J. E. Spurr, editor of the *Engineering and Mining Journal*, and F. B. Snyder, president of the Board of Regents of the univerity, were speakers. Professor Spurr's speech was a masterpiece of humor and reminiscence.

Herbert Hoover spoke on the necessity for a Department of Public Works and incidentally made some remarks on the coal situation which we append. It is perhaps unfair to single out that part of his speech which most fittingly deserves disapproval. Most of his friends will wish it had been omitted and will regret that he is so prone to seek remedies which would only land us in difficulties more profound and yet quite similar to those from which we are suffering as the result of our war and pre-war socialism. He said "We have a long list of such [politico-engineering] problems. Some

PERMANENT TRESTLE AT NEGAUNEE NO. 3 SHAFT
Piers have 114 ft. centres. The height to the top of the rail is 42 ft.

of these have been discussed before the Institute on previous occasions. I may refer to our discussion of Eastern bituminous coal. During the past year the Institute undertook to look into the economic situation of this industry as a national whole. It was demonstrated to be the worst functioning industry in the country. Owing to seasonal and other irregularities of demand, the average term of employment in the bituminous industry is less than 190 days per annum. If this industry could be operated a normal work year 125,000 men could be turned to other production. It is an industry in which 30 per cent more capital is invested than would otherwise be necessary. The cost of coal to the consumer and the risks to the operator are greatly increased, and, above all, it presents a great human problem fraught with all the terrible misery and strikes and justified discontent that flow from intermittent employment.

"I am not proposing nationalization of the coal mines; far from it. What is required is that we should realize that with our necessary social view of prohibition of combination there remains a national problem beyond the solution of any individual coal operator or any group of operators. It must have national guidance and national plan for its solution, a co-operation of great consumers, railways, operators and miners—but what individual operator can do this?

Why Start Investigations and Forget Facts?

"In respect to our coal supplies again, if we would look forward to the next generation, we have a problem of conservation of immense importance. In this connection, it has been ably proposed by our members that the national government should co-operate in investigating the possibilities of the establishment of a great electrical trunk line throughout the great power consuming districts of the Northeast, and that we should feed into this great power road power generated at the mines and available water sources, drawing from it at every town and city. The consummation of this project means cheaper power to all consumers. It means a great economy in consumption of coal. It means more regularity in output. It thus means greater ability to compete in world manufacture. It means great relief to the railways from expansion. It means an increased standard of living and a decreased cost of living to a very large section of our population."

It is unfortunate that Mr. Hoover should give "the average term of employment in the bituminous industry as less than 190 days per annum." In no year since 1910 have the bituminous fields averaged 190 days or less. In 1914 the average was 195 days. The average number of days worked per year for 10 years has been 231 days. Last year, when we were recovering from the war, it was probably 201 days; the year before it was 249 and the year before that 243.

That industry from Maine to California works irregularly. All branches of mining "function badly" much of the time—and what is more always will. Mr. Hoover has said that the mind of the engineer is quantitative instead of qualitative. Are these erratic figures he presents an evidence of the quantitative quality of the engineer's mind? Certainly no quantitative mind would rest content with finding out about only one branch of mining or manufacturing when trying to establish a superlative so sweeping as the "worst functioning industry in the country."

After the banquet the guests made a hurried decampment, many of them in their evening dress. The train left at 11:30 p.m. for Duluth, Minn., and thence for Eveleth in the same state where some 200 automobiles met the party. Here again was a parting of the ways, about a quarter of the party going to Babbitt, in the extreme east-northeast of the Mesabi range. The first establishment visited by the larger party was the concentrating plant of the Oliver Iron Mining Co. at the

STOCK-PILE TRESTLE AT REPUBLIC MINE
This is a one-leg trestle, giving a maximum opportunity for the approach of the shovel. Note the almost horizontal cables which steady the track and keep it from toppling over. The trestle is at the Pascoe shaft.

Mine and Dumping Trestle

At this mine of the Cleveland - Cliffs Iron Co., Morris Mine, North Lake District, note the character of the bents which are usually taken down as soon as the ore is removed.

Leonidas mine, named after Leonidas Merritt, who gave first commercial start to the Mesabi range.

The ore at the Leonidas mine is, for the Mesabi region, relatively deep, and it is the expectation that at some time the shaft will be sunk lower to another deposit as the ore is split at this point. About half the ore of the Mesabi region comes from shafts, and it is interesting to notice that here as in the Marquette and Copper ranges the rope instead of coming off the head sheaves and going direct to the drum at a vertical angle of roughly 45 deg. goes at a much less steep angle back to a relatively remote shaft house, being upheld by a lofty series of idler sheaves which shift laterally on their shafts as the ropes wind off or wind on different parts of the drum.

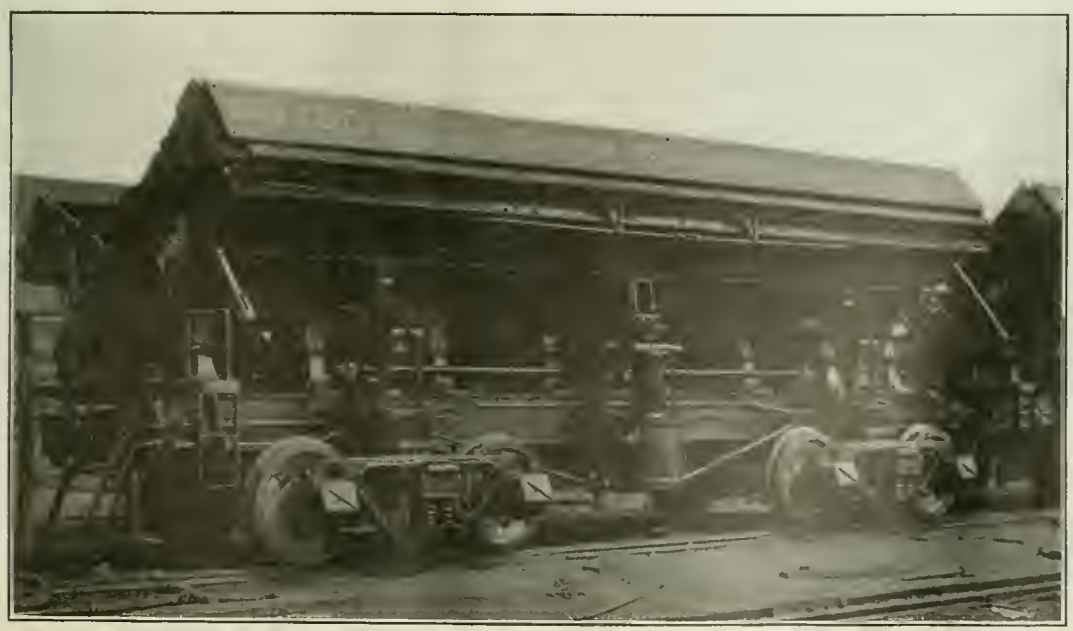
The use of idlers is to save the rope from binding on the rim of the headsheave as is necessary with a deep shaft and the wide drum that goes with it. Some shafts which use idlers are, however, by no means deep, yet even with these the idlers are used. This precaution seems to have been taken even where there has been no greater need of it than is found at the average American coal mine. The use of the idlers in these instances arises probably from the persistence of a type long after the need for its preservation ceased to be present. The coal-mine engineers possibly tend to a persistence of the opposite character.

It must be remembered that where the ore body lies steeply as in the Copper Range and in the Marquette Iron region it is well to put the hoist house at some distance because thereby it is rendered less subject to the disturbance of the strata caused by mining. Where the shaft is in the solid footwall, however, there can be no disturbance and the need for idlers and a remote hoist house does not exist.

At the Leonidas concentrator the large ore is crushed and washed free of loose surface sand so as to improve its quality. As someone said, it was "laundered" rather than "washed" in the sense in which the word is now generally used in regard to coal and metallurgical work.

The party then traveled northward to the Virginia and Rainy Lake Co.'s large sawmill, which manufactures daily a million feet board measure of white pine, the largest white pine mill in the world. The plant covers 300 acres, employs 1,400 persons including many women and has 20 years of timber supply. Cafeteria lunch was served in the I. O. O. F. hall at Virginia of which place and of other fine villages in the Mesabi region something will be said later.

In the afternoon the automobiles hit the trail again via Mountain Iron, Wade Mine, Kinney, Woodbridge and other Buhl mines, the Shenango pit at Chisholm and the Buffalo pit at Hibbing. At one of the mines a large blast of 100 holes was made for the delectation of the visitors, filling the air with a dense cloud of impalpable ore dust. Arriving at Hibbing and the headquarters of the Oliver Iron Mining Co. the visitors took seats in sightseeing flat cars provided by the United States Steel Corporation and went down into the celebrated trio of mines, the Hull-Rust, Mahoning and



Spoil Stripping Car

Twenty-cubic yard cars made entirely of steel with a dump operated by compressed air are used for the transference of spoil, the material discharged being thrown over the edge of the berm by a spreader. Some of the large methods of the iron country should long ago have been adopted at the big strippings of the anthracite region.

Sellers, now all connected; the last, however, was not entered but seen from a short distance.

Just absorb a few of these figures, and you will conclude that the wonders of American industry dwarf those of our governmental achievements. The Panama Canal construction involved an excavatiton of 231,351,000 cu.yd. Since the Mesabi range has been opened, of worthless stripping alone 354,301,371 cu.yd. have been removed. The Oliver Iron Mining Co. alone has put into stock piles no less than 9,000,000 cu.yd. of lean ore. Yet stripping engineers of the anthracite region have apparently quietly ignored these wonderful achievements, to judge from the difference in practice prevailing. The stripping in the Buffalo and Susquehanna pit reached in one place a depth of 156 ft. and the average over a considerable area was 135 ft. The Mesabi range produced up to the first of the year 520,686,631 long tons, the greater part of which had to be transported to Cleveland, Buffalo and Pittsburgh.

Narrowing our vision to the Mahoning and Hull-Rust pits and overlooking the Sellers pit that a mere line separates from the others, the length is 1¾ miles, the width ¾ mile and the maximum depth 250 ft. The area at present stripped is 500 acres. The maximum grade for loads is 1½ per cent and for empties 6 per cent. The stripping grade is 2½ to 3 per cent. The mine grades are 1.85 per cent for both empty and load tracks. The locomotives run from 17 x 24 to 23 x 28 in., and the weights on the drivers from 86,000 to 120,000 pounds.

Have No Use for Dinkeys in Hibbing Pits

The larger locomotives can haul four 30-yd. dirt cars. In the pit about 750 men are employed. Shovels of many types are used, the smallest weighing 76 tons, having 3½-yd. dipper, and devouring 5 tons per bite. Intermediate-size shovels weigh 91, 95, and 100 tons, having dippers of 4½- to 5-yd. capacity, and raise 8 to 10 tons per bite. The largest shovel, which originally was at work stripping off the surface, is now shoveling ore. It digs 40 ft. below the level of the track on which it loads. On the rear it carries a chute and a pipe line, by which it is supplied with coal and water from the top of the 40-ft. bank.

The banks or levels are drilled by 4½- to 6-in. churn drills operated by gasoline engines. The stripping cars carry from 20 to 30 cu.yd., are all steel and are dumped by compressed air. The dumps are leveled by spreaders. The big shovels load 214 cars, or 10,400 tons, in 10 hours. The Mahoning pit, running 10 hours a day, and the Hull-Rust, 20 hours, together loaded per day 2,095 cars, or 95,658 tons. From these two pits 38,236,000 cu.yd. have been stripped and 81,472,000 tons of ore sent to market, the ore reserve being 181,000,000 tons.

Part of Hibbing is being pulled down to permit of the extension of the pits. There are 16 shovels in operation and 34 locomotives, and the track in the pit measures 37 miles. In 1916 a total of 10,000,000 tons of ore was shipped in 200 days—approximately one-seventh of all the iron ore mined in the United States for that year. The tracks are kept in wonderful condition, compressed-air tampers of the Ingersoll-Rand Co. being used to pack the ballast under the ties.

There is so much for a stripper to learn in the Mesabi region that it would be worth the while of any strip-pit engineer in the anthracite region to go to that range and learn its methods. Its shovels, its cars, its engines, its tracks, its drilling machines, above all its enterprising spirit, are worthy of imitation.

While there, it will pay the engineer to visit the Cuyuna region some few miles to the south where the sand and gravel of the overburden is being removed by hydraulic methods, though a steam shovel is required for the final clean-up work on the top of the ore body. The stripping here ranges from 25 to 80 ft. in depth. One of the mines using the method is the Hillcrest operation a little to the west of Ironton and Crosby.

In the evening the guests had a buffet lunch in Bennett Park, which is one of Hibbing's many glories. This was followed by a technical session on the Metallurgy of Iron and Steel at the High School and an athletic entertainment at the Armory.

I have already weakened my reputation for sane judgment by a large use of superlatives. I have others, however, to add. Nowhere are there such industrial villages as Eveleth, Virginia, Buhl, Chisholm, Coleraine and Hibbing. The citizens therein domiciled regard that fact as a cause for boasting, but the opulence and magnificence of the villages arises purely from "profiteering" practices. The public of the United States, and, it might be said, of the whole world is paying for the schoolhouses, the recreation halls, the power plants, the electric lights, the libraries, the parks and the streets of these cities.

Towns with Opulent Municipal Treasuries

The taxation by which this money is raised is a property tax based on the iron ore in the ground and not on the ore shipped. The holder of the ore pays 50 per cent on its full value, while other property is taxed at only 33⅓ per cent and 25 per cent.

As a result in 1919 the mining interests on the Mesabi and Vermilion ranges paid in taxes $18,000,000 or $0.554 per ton of ore shipped. Thus villages of from 10,000 to 20,000 inhabitants have one or two million-dollar schools. One school has been built three years without opening its doors to a pupil. Hibbing has a million and a half-dollar power plant. It has a library containing 300,000 volumes. The building is lined with marble and decorated with mural paintings. The village is building a $300,000 conservatory.

It has two fine parks and a zoological garden. Many if not all the blocks have sixteen lamp stands, each with five lights. It is a byword around Hibbing that the chickens cannot sleep in that village because the night is too brilliantly illuminated. The taxes expended average $350 per inhabitant. It is a sight that demoralizes, for the average man overlooks the fact that the money that makes it possible comes from the pockets of perhaps 200,000,000 of people in this country and abroad. It is natural to question why such community comforts cannot be made universal, but it cannot be done if others outside the community cannot be compelled to pay for them.

The mines are not as trimly kept as those in the Marquette region. The expenditures are mostly in municipal architecture and in the welfare provided by taxation.

The institute spent the night on the special train, arriving the next morning at Coleraine and being met by the same sight-seeing flat cars which took them over the Mahoning Hull-Rust pit. This train, provided by the courtesy of the Oliver Iron Mining Co., took the party into a large strip pit near Coleraine, in an idle part of which it was interesting to note the growth of vegetation, possibly oats, which would tend to show that a stripping is not necessarily incapable of sustaining

Houses at Morgan Park

This is First Street of Morgan Park, a suburb of Duluth, built by the United States Steel Corporation. All the houses are built of concrete block.

vegetation. However, these pits will ultimately be lakes.

The cars took the visitors up to the great Trout Lake concentrator, near Coleraine. As it has little of interest to coal men, nothing need be said of it. The party then took its own train back to Duluth, where it was taken in charge by the Duluth Engineers Club, several trips being offered.

MORGAN SCHOOL NO WHIT BEHIND HIBBING'S

The school faces the community building, from the porch of which the photograph from which this illustration was made appears to have been taken.

My preference was for Morgan Park, a delightful suburb of West Duluth owned by the United States Steel Corporation. All the buildings are of concrete block. The dwellings are certainly as fine as any built for the housing of workmen in any section of the country, much better than the superintendents of some of our large coal companies are favored with. Some quite representative dwellings are shown in this article. The men who live here work at the steel plant and the cement works.

Leaving Morgan Park we traveled to the shipbuilding plant, where a Shuveloder was on operating exhibition. One of these shovels is now being made every day. Shuveloders are small, relatively inexpensive machines, and so can be bought in sufficient numbers to fill the many isolated loading jobs which mining operations entail. A trip along the beautiful boluevard that traverses the hill back of Duluth, a ride in the steamboat through the inner harbor with buffet lunch and a dance on the boat and a chance to view the wonderful docks, some very busy unloading the coal that they are at last receiving, ended up a perfect trip, some 78 of the party leaving by special train for Chicago and others waiting for Monday's boat.

Among the notables present at the meeting were Eli T. Connor, consulting engineer, Hudson Coal Co., with his wife, son and daughter; R. V. Norris, consulting engineer, with his wife; H. H. Stoek, dean of mining, University of Illinois, with his daughter; J. W. Knowlton, mining engineer of the West Virginia Coal and Coke Co.; C. E. Young, professor of mining, Kansas University; James S. Cunningham, of the Berwind-White Coal Co., and wife, and George S. Rice, chief mining engineer, Bureau of Mines. The last not being in the best of health could only be with the party while at Minneapolis.

MORE OF THE HOUSES ADORNING MORGAN PARK

So many pretty vistas can be found at Morgan Park that selection is difficult. The occupants of these fine dwellings are mostly newly transplanted Europeans who work at the steel mill and the cement plant. They certainly seem to justify the large expenditures that have been made. Morgan Park is not merely beautiful; it is orderly also.

Commissary

A company store where anything goes so long as it is the best.

In Presence of Oxygen and Sulphur, Peaty Oils Harden to Bright Coal Substance*

Chemical Research Would Appear to Indicate That Coal is the Residuum of a Deposit of Terrestrial Vegetation While Petroleum Originated Either from Animal Remains or Decayed Marine Plants

By J. E. Hackford
London, England.

[Perhaps Mr. Hackford will pardon my temerity in briefing his argument in my own way before submitting his article. He believes that peat at some time contained intrinsic oils similar to petroleum which were retained by the cellulosic structure of vegetal matter, which oils in the presence of free oxygen and possibly free sulphur with low heat become successively diasphaltenes, asphaltenes and kerotenes and so became fixed in the cellulose. Present-day petroleums are oils which being made from animal matters or marine vegetation were not retained by the substance from which they were derived and, being unassociated with free oxygen or free sulphur, did not change progressively to kerotenes but remained as oils.

Some segregated oils did not thus escape mixture with oxygen and sulphur and they became in time natural kerotenes (oxykerites or albertite and thiokerites or wurtzilite), low in ash but abounding in oxygen or sulphur, as the case may be. Mr. Hackford in his paper treats of oils first because he views them as similar to the original oils in coal. He shows how they change character with addition of oxygen, sulphur and a "boiling" or somewhat lower heat, and argues plausibly that what can be done to turn them into kerotenes has been done to coal to convert it to a substance containing kerotenes.

However, it is likely that he alleges too much, as he has shown only what may have occurred to assist in making peat into sub-bituminous or bituminous coal. The decline in oxygen content as a high grade of coal is reached is evidence of other actions than oxidation and a "boiling heat" at atmospheric pressure will supply. Possibly, however, oxidation goes on, while the quantity of oxygen decreases, that element being steadily removed as carbonic dioxide or water. One may ask is it his suggestion that the bright portions of the coal might be kerite and so of vegetal-oil origin? Possibly kerite may be present in the black shales which often cover the coal.—Editor.]

IN RESEARCH work that I have performed results have been obtained bearing on the fundamental nature and origin of coal and the relationship existing between coal and petroleum. By way of introduction, without discussing the details of the experiments, which were conducted on petroleum and derived bitumens, some of the relations that I have established between certain classes of bitumens of petrolifierous origin are given in the form of definitions.

Bitumen.—A natural organic substance, gaseous, liquid, or solid, consisting of hydrocarbons and their oxy- or thionic derivatives or of a mixture of all three.

Diasphaltenes.—Those portions of bitumens that are soluble in ether or carbon disulphide but are insoluble in a mixture of equal parts of ether and alcohol. Diasphaltenes are produced by the oxidation or thionization of petroleum oils; they have, as the name indicates, twice the molecular weight of asphaltenes, into which they are converted when subjected to moderate temperature. For example, an artificially produced diasphaltene which was readily soluble in pentane and ether was quite insoluble in either of these solvents after heating for three weeks at a temperature of 212 deg. F. It has been converted into an insoluble asphaltene.

Asphaltenes.—Those portions of bitumen that are insoluble in ether or ether alcohol but are soluble in carbon disulphide.

Asphaltites.—Those solid or semisolid natural bitumens that are composed for the most part of asphaltenes or diasphaltenes. A pure asphaltite[1] would be composed wholly of asphaltenes and diasphaltenes, but most asphaltites contain small percentages of oil and wax which have not yet been converted into asphaltenes; they may also contain a small percentage of kerotenes, which represent the next stage of the metamorphosis of asphaltenes. Among the naturally occurring oxyasphaltites may be mentioned grahamite; and among the thioasphaltites, gilsonite.

Kerotenes.—Those portions of bitumen that are insoluble in carbon disulphide. They are produced, by gentle heat, from asphaltenes. It can be demonstrated experimentally that artificially produced thioasphaltenes and oxyasphaltenes, when kept at a temperature of 212 deg. F. for three months, are converted, with but slight gaseous losses and without change in sulphur content, into kerotenes,[2] Most of the kerotenes produced by gentle heating from asphaltenes in this manner were entirely insoluble in any known solvent, including pyridine, chloroform and quinoline.

Kerols.—Those portions of kerotenes that are soluble in chloroform as well as in pyridine.

Keroles.—Those portions of kerotenes that are soluble in pyridine but insoluble in chloroform.

Kerites.—Natural solid bitumens composed for the most part of kerotenes. A pure kerite would be composed wholly of kerotenes, but the natural kerites generally contain small percentages of one or more of the following: asphaltenes, diasphaltenes, wax and oil whose conversion to kerotenes has not been completed. Of the natural examples, wurtzilite may be mentioned as a thiokerite and albertite as an oxykerite.

It has been demonstrated in the course of these

*Reprint of paper entitled "Nature of Coal" to be presented before the Oil Section of the American Institute of Mining and Metallurgical Engineers, St. Louis, September, 1920. Copyright, 1920, by the American Institute of Mining and Metallurgical Engineers, Inc.

[1]The term asphaltite, as recommended by Eldridge (*Twenty-second Annual Report*, U. S. Geol. Survey, 1901) is preferable to Dana's term "asphaltum" ("Descriptive Mineralogy," 6th edition, 1906, 1017), for the reason that the naturally occurring representatives have the generic ending "-ite," *e.g.*, gilsonite, grahamite, etc.

[2]This term is derived arbitrarily from the word "kerogen," the term introduced by Crum Brown ("Oil Shales of the Lothians," Geol. Sur. of Scotland, 1912, 43) to denote the organic matter present in oil shales, in ordinary solvents, and from which hydrocarbons are obtained by dry distillation. It was at first proposed to use the term kerogen, which would be entirely appropriate in this general sense, but it was felt that some confusion might arise because the word kerogen has become associated with the bitumen of the oil shales only.

experiments that either sulphur or oxygen can play a predominating rôle in the formation of these classes of bitumens. If a straight Pennsylvania lubricating oil with a negligible sulphur content is digested at a temperature of 212 deg. F. with either sulphur or oxygen, a darkening in color first takes place (owing to the formation of thio- and oxydiasphaltenes); this discoloration gradually increases to black with the formation and precipitation of asphaltenes, which constantly increase until the whole, except for gaseous losses, is converted into kerotenes. Similar results have been obtained from sulphur-free paraffin wax[3] and from natural petroleum oils of all characters; that is, by oxidation or thionization, accompanied by gentle heat, any natural petroleum oil may be converted first into oxy- or thioasphaltenes, then into kerotenes. Certain kerotenes are wholly insoluble in any of the known solvents, including chloroform, pyridine and quinoline. As these experiments progressed it became evident that bodies closely analogous to coal were being produced from petroleum in the laboratory by oxidation, thionization and gentle heat; this gave rise to certain inferences which it is the purpose of this paper to set forth.

Summary of Previous Coal Researches

The elucidation of the nature of a body like coal, that is only sparingly soluble in solvents and cannot be made to yield crystalline derivatives without previous violent manipulation, has naturally presented no little difficulty. During the last five years a large amount of work has been accomplished respecting the nature of coal by numerous investigators.[4]

These investigations have been mainly along two lines: one was the examination of solvent extracts, and the other was the study of the products of low-temperature distillation. The results are scattered and the interrelationships have not been fully pointed out. Briefly stated, these investigators have shown:

(1) That by low-temperature distillation and by the examination of solvent extracts, paraffin, olefines and naphthenes have been isolated and identified.

(2) That the tar distilled from coal at high temperatures is a decomposition product of coal tars previously formed at low temperatures.

(3) That the cellulosic compounds present in coal result in the formation of phenols upon dry distillation.

(4) That the temperature at which coal was formed cannot have approached 572 deg. F.

In 1913 Messrs. Clark and Wheeler[5] described experiments in which a soft bituminous coal upon extraction with pyridine yielded a substance representing by weight a percentage of the original sample, which upon subsequent low-temperature distillation yielded a mixture of paraffin-hydrocarbons and hydrogen. In view of my own research I suspected that the portions of coal extracted in this manner by pyridine consisted largely of asphaltites and the soluble kerites; accordingly the following experiment was carried out:

A sample of 250 gr. of Yorkshire coal was extracted with pyridine. The bulk of the pyridine was then distilled off under reduced pressure and a large excess of ether added. A voluminous black precipitate was thrown down, which was pumped, washed with ether, and weighed. By weight it represented 5.1 per cent yield. This black powder was found to be 15 per cent asphaltenes and 84.9 per cent kerotenes. The 84.9 per cent of kerotenes was found to be a combination of 17.9 per cent of kerols and 67 per cent of keroles. This black precipitate was thus split up in a manner and into fractions similar to those obtained when working upon natural kerites, as, for example, albertite and wurtzilite, which gave the results shown in Table I.

TABLE I. DERIVATIVES OF OXYKERITE AND THIOKERITE

	Oxykerite (Albertite), Per Cent	Thiokerite (Wurtzilite), Per Cent
Asphaltenes	9 0	12 8
Kerotenes	89 03	81 37
Sulphur	Trace	5 83
Oxygen	6.97	0 00

The similarity, however, does not end here, for many of the fractions upon heating melted with decomposition, evolving oil containing (in the case of albertite) quantities of paraffin wax; while the asphaltenes and kerols evolved sulphuretted hydrogen. The most sparingly soluble fraction, keroles, does not intumesce to any extent upon heating, as do the asphaltenes. The solubilities of these substances are exactly the same as those of similar fractions derived from natural kerites,

TABLE II. ANALYSIS OF UNFRACTIONATED PRECIPITATE

	Asphaltenes and Kerotenes from Coal, Per Cent	Natural Kerite, *e.g.*, Albertite from New Brunswick, Per Cent	Kerite in a Transformer Sludge *a* Naturally Produced by Oxidation of Transformer Oil, Per Cent	Synthetic Oxykerite Prepared by Passing Oxygen Through Lubricating Oil, Per Cent
Asphaltenes and Kerotenes	100	98 03	100	100
Carbon	73.64	.....	76.0	74.0
Hydrogen	4 87	.....	7 1	6 2
Sulphur	1 07	trace	?	1.58
Nitrogen	2 83	1 4	?	
Oxygen	16 67	6 97	16 96	18 22

(*a*) Dr. A. C. Michie [*Journal* Institute Electrical Engineers, 1913, 51, 213] gives an analysis of a sludge deposited by a transformer oil when used in an auto-starter for a considerable period. I have carried out detailed experiments on a similar sludge. The original oil in this case was known to be a straight cut oil. The sludge was found to consist of 10.1 per cent of oxykerotenes and 79.9 per cent of oxyasphaltenes. The oxyasphaltenes, after gentle heating for a month, were converted into oxykerotenes, portions of which were insoluble.

e.g. the asphaltenes both from the coal and from a sample of a natural kerite were soluble in carbon disulphide, benzene, phenol, nitrobenzene, chloroform pyridine, etc., but were insoluble in petroleum ether, ethyl ether and ethyl alcohol.

The analysis of the whole unfractionated precipitate is given in Table II and, for the sake of clearness, is contrasted with a natural kerite, a naturally produced kerite and a synthetic kerite.

It has been found that upon prolonged heating a portion of the kerotenes becomes insoluble in pyridine or any known solvents; by inference it is believed that

[3]Allen (*Pet. Rev.*, April 26, 1913) and Redwood ("Treatise on Petroleum" 1, 275) consider the black precipitate formed in paraffin wax, when heated with sulphur, to be carbon, but I have demonstrated that this precipitate dissolves entirely when heated with benzol; it therefore cannot be carbon. The addition of an excess of ether or pentane to this benzol solution throws down a black precipitate, which is simply a thioasphaltene.

[4]D. T. Jones: *Jnl.* Soc. Chem. Ind. (1917) 36, 3-7; Jones and Wheeler: Chem. Soc. *Trans.* (1916) 109, 707, 714; Burgess and Wheeler: Chem. Soc. *Trans.* (1910) 97, 1917-1935; (1911) 99, 649, 667; (1914) 105, 131-140; Clark and Wheeler: Chem. Soc. *Trans.*, 103, 1704-1713; R. Maclaurin: *Jnl.* Soc. Chem. Ind. (June, 1917); Pictet and Bouvier: *Compt. Rend.* (1913) 157, 779-781; Pictet, Ramseyer and Kaiser: *Compt. Rend.* (1916) 163, 358-361; Fischer and Glund: *Berichte* (1916) 49, 1469-1471; and Fraser and Hoffman: *Tech. Paper* 5, U. S. Bureau of Mines.

[5]Chem. Soc. *Trans.* (1913) 113, 1704-1713.

most of the insoluble portion of coal consists of a true bitumen that has been transformed by gentle heating into an insoluble kerotene, and that a small portion is due to the decomposition products of cellulose, as shown by the formation of phenol upon dry distillation.[6] I have proved that the kerites experimentally produced from petroleum yield by both low- and high-temperature distillation exactly the same products as are obtained under the same temperature conditions from the kerites of coal.

Animal or Marine Remains Make Oil

The following theory is put forward concerning the mode of formation and nature of coal, comparing it at the same time, for the sake of clearness, with the mode of formation of oil.

First, consider a stratum containing a deposit of either animal remains or marine vegetation. These substances, on decomposition, form oil and gas which if contained in a sandy bed are swept away from their source by either gravity or water as rapidly as formed, since neither the animal remains nor the marine vegetation contain cellulosic material capable of forming a spongelike mass, which would hold the oil *in situ* during the decomposition stage.

Second, assume a buried deposit of terrestrial vegetation. Decomposition takes place, resulting in the formation of oil and gas, as in the case of the marine vegetation. However, owing to the cellulosic nature of the material and its porous spongy structure, the oil is kept *in situ* while decomposition proceeds. Accompanying this decomposition there is probably a rise in temperature, which even if not above 212 deg. F. is quite sufficient, as has been proved in the laboratory, to convert into kerotenes the oxy- or thioasphaltenes that are simultaneously formed with the oil. As the process goes on the kerotenes become less and less soluble until they are insoluble in pyridine and quinoline and so remain as a solid in the spongelike mass afforded by the cellulosic structure of the terrestrial vegetation.

It has been recorded by Hodgland and Lief[7] that the algæ on which they made tests contained from 5 to 13 per cent of sulphur. It therefore follows that in those coals that contain algal ingredients in quantity, some undoubted cases of which White[8] puts on record, a larger amount of thiobitumens should be present with a corresponding reduction in the oxybitumens and the cellulosic residues.

Soluble Bitumen Will Be Greatest in Peat

According to this theory the amount of soluble bitumens should be greatest in peat and should decrease through lignite, sub-bituminous, bituminous and semi-bituminous coals to anthracite. This indeed is the case. It is interesting to note that where pure kerite deposits have been found, they have nearly always been mistaken for coal. It took ten years' litigation to decide whether the New Brunswick oxykerite was coal or bitumen. Similar instances are given by L. L. Hutchison[9] in the case of the Jackfork Valley, the Impson Valley, etc. A similar case of a thiokerite is a deposit in Nova Zembla, where coal suitable for metal smelting was reported to be situated near an ore deposit. Samples of this deposit were forwarded to me and yielded on analysis: ash, 0.72 per cent; sulphur, 15.54 per cent; nitrogen, 0.76 per cent. The sample possessed a pronounced luster and had the appearance of a bright soft coal. It was, however, totally insoluble in solvents and on heating gave off little gas. No oil whatever was evolved; in fact, the sample behaved in nearly every respect like anthracite. The volatile matter was only 1.8 per cent. However, from a comparison with certain experiments then in progress, it was decided that the material was a kerite.

A subsequent geological examination showed the deposits to occur in small lenses in a metamorphosed deep-sea limestone, which contained none of the depositional associates of coal, and, in fact, confirmed the oil origin of the deposit. This is regarded as a pure sample of the thiokerite. It probably is true that certain so-called coals from Colombia that have a sulphur content of 13 per cent are simply thiokerites.

Point of Differentiation from True Coal

The main difference between these so-called coals and true coal rests in the fact that the former possess no cellulosic residue which upon distillation can produce phenols, as is the case in true coals. It is conceivable that a kerite produced from microscopic vegetal remains containing some cellulose—but not in sufficient quantities to act as a sponge—would yield phenols on dry distillation; this would be but another connecting link between coal and petroleum.

Petroleum oils, such as occur in nature, are clearly not derived from coal; but given a quantity of vegetal material, petroleum may be produced under a given set of circumstances if no cellulose is present and coal will be formed if the vegetal matter contains sufficient cellulose to form a sponge.

[6] See Jones and Wheeler: Chemical Society *Transactions*, 1916, 109, 707-714.

[7] *Journal of Biological Chemistry* (1915) 23, 287-297.

[8] David White: U. S. Geological Survey, *Bull.* 29, 48 *et. seq.*

[9] Oklahoma Geological Survey, *Bull.* 2, 81-89.

New England Rail Shipments for August

THE rail movement to New England continued its recovery during the week of Aug. 28. As reported to the Geological Survey by the American Railroad Association, the number of cars forwarded through the five rail gateways of Harlem River, Maybrook, Albany, Rotterdam and Mechanicsville totaled 5,792. This was an increase of 423 cars, or eight per cent over the preceding week, and was almost double that of the corresponding week of 1919.

CARS OF BITUMINOUS COAL FORWARDED THROUGH HUDSON GATEWAYS FOR NEW ENGLAND (a)

Week Ended:	1920	1919
Aug. 7	6,732	4,643
Aug. 14	4,860	5,064
Aug. 21	5,369	3,772
Aug. 28	5,792	3,182

Coal Mining Institute to Hold Annual Meeting in Pittsburgh

THE ANNUAL meeting of the Coal Mining Institute of America will be held Dec. 8, 9 and 10, in the Chamber of Commerce Auditorium, Pittsburgh, Pa. Over 1,000 prominent coal men are expected to attend and discuss questions of import to the industry. A portion of the third day of the meeting will probably be spent in an inspection trip to the world's largest byproduct coke plant at Clairton, Pa. For further information address President Joseph Williams, Altoona, Pa.

FIG. 1.

Silver Creek Breaker

The settling tank is behind and largely obscured by the cloud of steam in the foreground. Also in the forefront on the right is a long rock chute running from the breaker to a rock pocket not visible in the illustration.

Modernized Breaker with Hand Pickers, Spirals, Jigs and Concentrators

Although Old and of Wooden Construction This Breaker Is Modern Both in Methods Followed and Results Obtained—Both Dry and Wet Preparation Is Here Employed and Hand Picking Practiced Wherever It Will Give Better Results Than Can be Attained by Mechanical Apparatus

By D. C. Ashmead,
Wilkes-Barre, Pa.

AT ITS Silver Creek colliery the Philadelphia & Reading Coal & Iron Co. has in operation an old breaker, yet one that internally has in every respect been modernized. The original designer of this structure could he compare his first plan with the present building would doubtless find little similarity between the two. Were it not for the title on the drawing he might readily fail to associate the design of the now existing structure with that first made for the Silver Creek breaker.

With every advance in the art of coal preparation the Philadelphia & Reading Coal & Iron Co. has kept pace. Not only this, but it has itself advanced the science by experiments of its own. The knowledge thus gained

FIG. 2

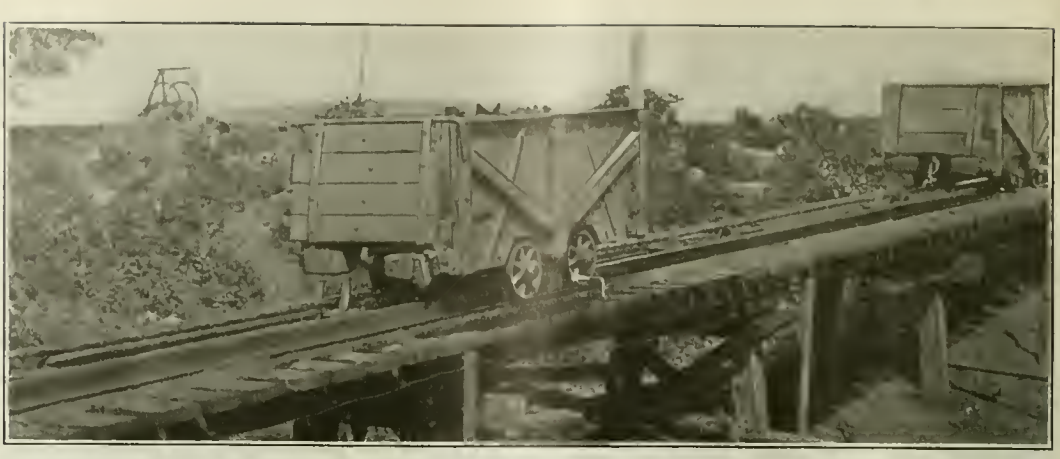
Head of Breaker

The air-operated kickback dump at the top of the breaker occupies the center of the illustration. A similar dump, not shown, is used to discharge slate cars to the rock chute.

FIG. 3

Wheels Are Sprayed

As the cars are pulled upward by the car haul, the wheels are sprayed with water which permits the cars to travel by gravity over an easy grade.



has been embodied in this breaker, and every appliance has been installed that would tend to lessen the cost of preparation or improve the character of the output. The building in one respect has not partaken of the progress made in the methods of preparation, for it is still of wood, as when first constructed. In general breakers of recent erection have been constructed of steel. However, the material of the structure is in this case no index of its efficiency for it shelters machinery and equipment of the most modern type.

The exterior of the building is shown in Fig. 1, and from this illustration some idea may be gained of its enormous size. One great advantage possessed by this structure, as will be immediately noted, is the fact that it is practically a sidehill construction, allowing the mine cars to come directly by gravity from the shaft to the head of the breaker, consequently the expense of hoisting the coal to the top of the building by means of car haul, dragline or gunboat is eliminated. This circumstance not only saves the actual cost of hoisting but also decreases the amount of handling to which the coal is subjected and consequently lessens the degradation incurred.

From the shaft landing the cars are dropped by gravity to a kickback dump operated by compressed air. This has a capacity of four cars per minute, each car having a capacity of 127 cu.ft. This kickback is shown in Fig. 2, which is an illustration of the interior of the head of the breaker. After discharge the cars coast to the foot of the car haul, which raises them a sufficient height to permit of their gravitating to the head of the shaft.

Wheels Are Sprayed to Lessen Friction

One peculiarity of this car haul is the fact that as the cars are moving upward the wheels are sprayed with water. This is shown in Fig. 3, which illustrates a mine car passing the spraying point. This spraying is performed in order that when the cars reach the top of the haul and are released, they may operate more freely, since it is well known that cars will move easier when both the rails and wheels are wet. Spraying

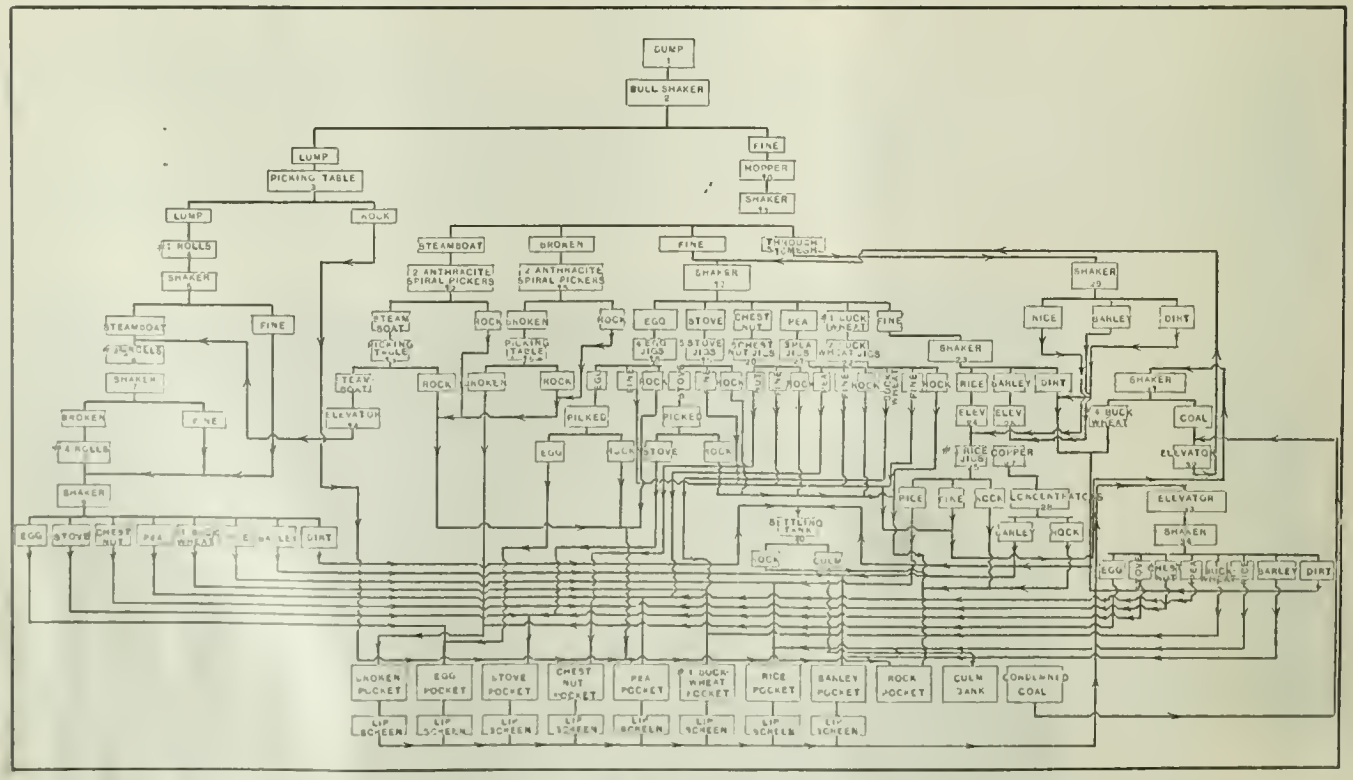


FIG. 4. FLOW SHEET OF THE SILVER CREEK BREAKER

Numbers on this diagram correspond with similar numbers in the text so that the sequence of operations may be readily followed from the description

FIG 5. PREPARATION EQUIPMENT IN BREAKER
Spiral pickers occupy the left and shaking screens, and washing tables for treating fine coal the center of the illustration

permits the company to employ a lighter grade for the cars to run over and consequently reduces the elevation to which it is necessary to raise them in order that they may be dropped by gravity to the shaft head.

The head of the breaker is so designed that if it is desirable, rock cars from the mine may be dumped over a second kickback, which likewise is operated by compressed air. The rock discharged passes directly into the main rock chute of the breaker and is conveyed by it to one of the rock pockets near the bottom.

The method of preparation employed in this breaker is interesting, for it embraces practically all the most modern ideas on this subject. It is both wet and dry, and almost entirely mechanical. Manual labor is, however, employed where it is more efficacious than mechanical methods. The main object sought by the designers was not only to produce a coal that would sell readily and bring a profit, but to produce a finished product that would be attractive not because of its cheapness but because of its excellent quality. It is not profitable for a consumer to burn a cheap coal containing a high ash, whereas it is desirable to burn one with a lower ash. Ash not only does not generate heat but actually wastes the heat which the fuel produces.

In the accompanying flow sheet the method of preparation may be followed step by step. In describing it figures in parentheses will be inserted from time to time, referring to corresponding figures on the flow sheet. This will enable the reader to follow closely the methods employed and their relations one with the other in the process of preparation.

As soon as the coal is discharged (1) from the car it

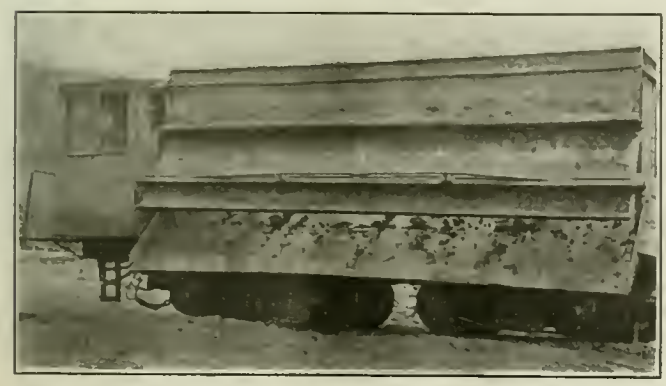


FIG. 6. CAR USED FOR THE DISPOSAL OF ROCK
Two of these dump cars can handle as much as 600 tons of rock in one day. Each is of 20 tons capacity

is run over a bull shaker (2) and the first main separation made. All coal smaller than lump passes through this screen, while lump and larger go over. The coal that passes through is treated by the wet process, while that which passes over is prepared dry. The dry preparation will be described first.

Lump coal passing over the bull shaker goes to a picking table (3), where the rock is removed by hand. This is the only point in the entire dry preparation where rock is removed. Some lumps of rock are so large that it requires the united effort of from four to six men and boys to dump them into the rock chute by which they are transferred to the rock pocket. The cleaned lump next goes to a No. 1 roll (4), where it is crushed to steamboat and finer. From that point it goes to a shaker (5), where the steamboat coal is removed and sent to a No. 3½ roll (6), where it is crushed to broken, and from which it passes to a shaking screen (7), where the fine coal is separated and from which the broken is sent to a No. 4 roll (8), after which it is again sent to a shaker (9).

At this stage of the process the fine coal from the steamboat (5) and the broken shakers (7) is passed to the shaker (9) and all commercial sizes separated on this multiple-deck screen. The egg, stove, chestnut, No. 1 buckwheat, rice and barley coal from this point go to their respective pockets, while the buckwheat No. 4 passes through a settling tank (30). No further treatment or preparation is necessary for any of this coal.

Wet Process for All Coal Below Lump

The second division of the preparation, namely, the wet process, is performed on that part of the coal which passes through the bull shaker (2). This coal goes to a hopper (10) and then is fed automatically to a three-deck shaker (11). Here the steamboat is taken off the upper deck and the broken off the second deck, while the smaller sizes pass over the third deck, except that portion that passes through holes ⅜ in. in diameter.

Two anthracite spiral pickers (12) are employed for removing slate from the steamboat coal, after passing which it is fed to a picking table (13), where it is further cleaned. It is then elevated by a bucket conveyor (14) and discharged to the No. 3½ roll (6), which has been already mentioned in connection with the dry treatment. After passing the roll this coal is treated exactly as is that which has already been described.

From the second deck of the shaker (11) the broken coal is fed to two anthracite spiral pickers (13). Coming from these in a semi-cleaned condition, the broken coal is finally cleaned by hand on a picking table (16). The discharge from this table goes to the broken coal pocket and is ready for shipment. Under normal conditions sufficient orders are received for this size of coal, so that it is not necessary to crush it to smaller grades, as is done in the case of the broken made in the dry preparation. If sufficient orders were not on hand for this coal, it could be sent by means of an elevator and chute to the No. 4 roll (8) and be treated in a manner similar to that accorded the rest of the coal that passes through this machine.

From the third deck of the shaker (11) the fine coal goes to another shaker (17), where it is sized on five decks. The egg and stove coal go to the left hand side of the breaker while the smaller sizes proceed to the right hand side. From this shaker the egg coal passes through four P. & R. jigs (18). The product is then picked in picking chutes, from which the material proceeds to the egg pockets. The rock from the jig also is

FIG. 7. DAM WHERE FINE MATERIAL FROM BREAKER IS DEPOSITED
Fines are sluiced into this pond, and the water is allowed to drain off. Material of this nature that is worthless today may be valuable tomorrow and the operator does well to retain it on the surface where it may be reclaimed at small cost and in good condition

hand-picked, so that no coal may by accident find its way into the rock. Stove coal from the shaker (17) receives exactly the same treatment accorded to the egg, except that five jigs (19) are required to clean this material. It is thus evident that the breaker produces more stove coal than egg.

On the right-hand side of the breaker the chestnut coal is passed through five jigs (20). It is not necessary to hand-pick this material, as is the case with the egg and stove, and it is consequently sent directly to the chestnut-coal pocket. The pea and No. 1 buckwheat receive the treatment accorded to the chestnut, except that they do not require as many jigs for their washing. The pea coal requires three jigs (21) and the buckwheat, two jigs (22).

Fine coal from screen 17 is sent to a two-deck shaker (23) where the rice, barley and No. 4 buckwheat are made. The rice is taken by an elevator (24) to the rice jig (25), from which the cleaned coal goes to the rice pocket. Two jigs are necessary for this operation.

Instead of passing the barley directly into pockets, as was the former custom, it is now raised by an elevator (26) to a hopper (27) and fed to Deister-Overstrom coal-washing tables (28), where the ash content is considerably reduced. These tables each have a capacity of approximately nine tons of barley per hour, or seventy-two tons per eight-hour day. Excellent results have been attained with these washers and the ash content has been reduced 50 per cent, making this coal much easier to market than it was before it had this treatment. So pleasing have been the results obtained with these tables that a large number of them will be installed soon.

Now, referring back to the first shaker (11) the treatment accorded the fine coal that passed through a ⅜ in. mesh has not yet been described. This material passes through a two-deck shaker (29), where the rice and barley are separated, the rice going to jigs (25) and the barley to the barley hopper (27) for treatment on the concentrating table (28). The No. 4 buckwheat, which passes through the bottom deck of this shaker (29), goes to the setting tank (30), as does the fine material from shaker 23.

In treating coal in the jigs a tendency toward degradation develops, consequently a considerable amount of fine material is produced. This fine coal is separated from the sized grades and is fed to a shaking chute passing beneath the jigs to a shaking screen (31) which separates the No. 4 buckwheat from the balance of the material. The buckwheat is then sent to the settling tank (30), while the larger sizes are elevated by a bucket elevator (32) and delivered to shaker 17 for re-sizing and re-treatment.

From the coal pockets the coal passes over lip screens before being loaded into railroad cars. The undersized material passing through these screens is taken by chute to an elevator (33), by which it is delivered to a set of shaking screens (34) having seven decks, making coals of proper sizes, which again pass to their respective pockets, except that the No. 4 buckwheat there made goes to the settling tank (30).

In case any coal should be condemned, it is delivered to an elevator (32) and sent back to shaker 17 for re-treatment. No coal is permitted to be shipped out unless it comes up to proper specifications. Rock separated from the coal by the spiral pickers, the jigs, concentrators and by hand is taken by shaking chutes to a dragline conveyor on the outside of the building. This delivers it to a rock pocket. The heavier material removed from the settling tank by a bucket elevator is delivered to the dragline and also is taken to the rock pocket. The water from the settling tank is drawn off to a silt pond, from which it filters off, leaving behind the fine material, which is mainly fine coal. From the rock pocket the material is taken by large electric dump cars to the rock dump. These cars have a capacity of twenty tons each and the two in operation often handle as much as 600 tons per day.

Almost enough water is hoisted or pumped from the mine daily into large tanks near the head of the breaker to meet the breaker's requirements and only a comparatively small amount is used over again. The coal company has made arrangements so that in case there is an oversupply of small sized coal, this may be placed on a storage pile by means of dragline scrapers. It is removed from these piles for use as boiler fuel or is loaded into railroad cars for shipment to market.

John George Leyner

JOHN GEORGE LEYNER, of Denver, Col., was killed in an automobile accident near that city on Aug. 5, 1920. Mr. Leyner was a pioneer in the development of rock-drilling and mining appliances, and an inventor who contributed much to the industrial progress of

JOHN G. LEYNER
Inventor of rock-drilling and mining appliances.

his age. Through his inventions the rock drill has passed from the percussive to the hammer stage and has become little larger than a pneumatic tool.

The piston type of drill is necessarily heavy and limited in drilling capacity. Mr. Leyner advocated the use of the piston as a hammer only, to strike the end of the steel or an intervening medium connected with it. He introduced water jet passing through the piston into the bit for clearing the hole cuttings. His system patent was taken out in 1903 and his method patent in 1904.

Incorporating the Leyner Engineering Works in 1902, Mr. Leyner built shops at Littleton, Col., soon thereafter. After twelve years of difficulties, both mechanical and financial, all patents to his inventions were taken over by the Ingersoll-Rand Co., and the manufacture of his machines was transferred to this company's works.

It has often been said that all that the genius of Leyner required was the experience and mechanical skill of the Ingersoll company to make a success of this new principle. The Jackhamer, which might almost be placed in one's overcoat pocket, is built on the Leyner principle. The water Leyner drill, now known as the Leyner-Ingersoll, is also widely used for mining and tunneling, and holds the world record for fast tunnel driving.

Leyner's other inventions include the drill sharpener bearing his name and the Little Tugger hoist used in mines and shipyards. He also built the original machines used for producing shredded wheat, while his latest invention was the "Linapede" or Leyner farm tractor. He was engaged in the development of this at the time of his death. He was the son of Peter A. Leyner, who was born in Boulder County, Col., in 1860, being the first white child born in that county. He leaves a widow and three adopted children.

A product of the great West, Mr. Leyner was a man of strong physique, a worker with both hands and head, stubborn and determined in accomplishing results. It was this faculty that helped him bring his radical idea concerning the rock drill to the point of fruition. Like most inventors his main strength was mechanical, though his vision was laid on practical lines and in advance of conventional methods. The mining industry owes much to Leyner's genius, the world much to the mining industry. To have reduced the cost of removing rock and ore, as Mr. Leyner did, is an achievement which should place him among America's great inventors.

Tidewater Movement Slackens

CARS of bituminous coal dumped over tidewater piers during the week ended Sept. 4 are reported to the Geological Survey by the American Railroad Association as 25,275. This was a decrease from the preceding week. Dumpings increased at New York and Philadelphia but decreased slightly at Baltimore and Hampton Roads.

CARS OF BITUMINOUS COAL DUMPED WEEKLY OVER TIDEWATER PIERS

Week Ended	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Total
Aug. 7	10,065	3,151	4,580	9,394	274	27,464
Aug. 14	9,314	3,158	4,100	9,636	291	26,499
Aug. 21	9,227	3,363	3,597	8,852	468	25,507
Aug. 28	9,927	3,632	3,322	8,830	405	26,116
Sept. 4	10,109	3,745	3,191	7,672	588	25,275

Includes coal destined for bunker, for New England, or other coastwise and local use, and for export.

Reports furnished the Geological Survey by the courtesy of the Tidewater Bituminous Coal Statistical Bureau indicate that total dumpings from tidewater piers during the week ended Aug. 28 amounted to 1,319,000 net tons.

TIDEWATER BITUMINOUS COAL SHIPMENTS, WEEK OF AUG. 28
(In net tons)

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Total
Coastwise to New England	100,000	7,000	40,000	198,000		345,000
Exports		86,000	103,000	310,000	31,000	530,000
Bunker	88,000	9,000	17,000	54,000	3,000	171,000
Inside capes		47,000	24,000	8,000		79,000
Other tonnage	186,000			7,000	1,000	194,000
Total	374,000	149,000	184,000	577,000	35,000	1,319,000

Considerable quantities of coal shipped under Service Order No. 11 for New England account have not been dumped for lack of vessels at the ports. On Aug. 30 the coal on hand at Hampton Roads consigned to New England was reported to the American Railroad Association as 126,000 net tons, whereas the capacity of vessels available for loading this coal was 8,400 tons.

Why Americans Fail to Get French Rehabilitation Contracts*

French Want to Build to Accord with Traditions—Resent Offers of Help—Await Assessment of Damage—Would Build in Order of Need

By E. J. Meiren†

WHY have not American contractors participated in the rebuilding of the devastated regions of France? There were predictions at the time of the armistice of great opportunities for them. Few of these opportunities have been realized. There are a number of reasons:

(1) The French want to rebuild according to French ideas, having regard also for the traditions of the ruined cities. These ideas are incompatible with the mass production proposed by some American contractors.

(2) The French have a pride in their ability to carry on construction. They resent the suggestion that they need help. There is, so far as I can learn, only one construction company in France that represents American capital—and it is in reality a French company manned by French engineers and contractors. There are only three Americans in a responsible force of probably fifty.

Building Must Wait on Cost Determination

(3) Construction can be taken in hand only as fast as the damages can be determined. This is an enormous task and necessarily can proceed only as rapidly as the relatively limited number of commissions of qualified men, familiar with local conditions, can work. With the fluctuations in wages and material prices, too, these damage credits are subject to frequent change. Under the law, an owner who rebuilds within 50 km. (31 miles) of the original site is paid the reproduction value as of the present date. Necessarily the estimate must be revised if wages and material costs change. A 20-per cent credit is wanted as soon as the damages are determined, and other advances made as the work proceeds. If an owner chooses not to rebuild, or to rebuild at a distant point, he receives damages based on values in 1914.

(4) The French Government wisely decided to concentrate on work in the order of its economic importance: First, the reclamation of the land, and the erection of temporary dwellings, then the restoration of the building-material industry, followed by the reconstruction of factories and the construction of permanent dwellings. The last feature has hardly yet been taken in hand. Therefore plans for rebuilding whole towns in permanent construction were not in order early in 1919 and are scarcely in order today.

(5) Building materials are scarce and must be distributed so that in all districts and towns progress may be at about the same rate.

There are other reasons, but these are the really important ones.

It is worth noting that the financing of work was not referred to until the question was raised by the visitor. In other words, the various factors above mentioned have always disposed of the American contractor before the question of finance was reached. The traditional position that all flows to the man with money did not hold here. Of course, France would still like to have American credits, but only for the purpose of enabling it to pay for raw material when the exchange has returned to normal or materially improved.

The financing of contracts is, nevertheless, a matter of grave importance; not due to failure to get estimates promptly but to the necessity of carrying a large material supply. This applies to the relatively large operations—not to the building of one or two small dwellings, for which material is secured from the Government material depots. The root of the trouble is a combination of inadequate transportation facilities and material shortage.

One must wait three months for deliveries. Consequently the large contractors are following the practice of taking work only in a given locality and carrying there large stocks, which are delivered to the building sites with their own truck fleets. The capital required is about 50 per cent of the amount of work done in a year. Sub-contracting, with the upset conditions, is very unsafe. For that reason most contractors do all the work themselves, and even go so far as to make the window frames, doors and trim in their own shops. Material, it should be said, is paid for only after it has been built into the job.

Contracts are all on a unit-price basis, the bid price being considered a base price which is adjusted every three months in accordance with the fluctuations in labor and material prices. The contracts are made with individual owners or, for dwellings, with co-operative building societies, the membership of which is composed of those whose damages have been determined by the Government commissions. One may get a contract to build a whole village but, unless one wishes to carry the risk, only if the appraisal work has been finished and the owners have all joined the co-operative society. The Government advances go into the treasury of the society, which in turn pays the contractor.

There is still much work to be done. In fact, only a beginning has been made, but the work is not likely to be done by American contractors. If they have capital to be employed they may use it in France if they want to lose their identity and organize as a French company with French officials. Even then they will not get work or succeed in what they get unless they are willing to respect French customs and acquire some of that tact to which we are largely strangers.

Americans Should Avoid Self-Assertion

The last remark is made advisedly. Many who go to France carry a superior air. It is naturally and rightfully resented. "I will bring a hundred Americans over here and show you how to do construction work," was said by the representatives of a strong American company to a French official. What chance would that organization have to get work, no matter how heavily its arms were laden with gold? I could cite other cases of boorish assertion of superiority—but this case will suffice. Our help will be welcome; but we must go there to help only. The French must do the work in their way. That does not mean that American construction methods cannot be used; they can be, if tactfully proposed and where conditions are suitable.

With reference to reconstruction it is to be noted that it is proceeding much more rapidly than the work in Belgium. In Ypres, for instance, only work in the cities and towns is in progress. That is not true of France. Work of every kind is going forward and the progress is rapid in the French Republic.

*From *Engineering News-Record.*
†Editor, *Engineering News-Record*

Discussion by Readers

Edited by
James T. Beard

Ambition vs. Faultfinding in Workers

VIEWING the question of the treatment accorded a worker who applied to his superintendent to be transferred to another department, and judging the case from the facts stated in *Coal Age*, Feb. 12, p. 327, and the comments of W. H. Noone, July 8, p. 72, one is inclined to the opinion that the superintendent was inconsiderate in his dealing with this employee. However, it is my belief that there is more connected with the case than has been brought to light.

In the absence of more accurate knowledge, it would be unfair to comment further on the superintendent's action than to say, as Mr. Noone has remarked, that there was no occasion for the use of harsh language on his part. There is a right and a wrong side to every question and this little instance teaches the lesson that had a little reason been exercised between the man presenting his request and the superintendent to whom he applied, the unpleasant occurrence would not have taken place.

Unreasonableness is the cause of all social, industrial and national ills, and it is surprising how little this faculty is cultivated among men. Consider, for a moment, the possibilities surrounding the case on either side. A student of human nature realizes that the temperaments of men are varied, so that it is hardly possible to find two persons of exactly the same disposition.

The Official and the Worker

A large class of men, acting officially, take exceeding delight in the display of lordly authority. They foolishly think that their position gives them such a license. Abuse of workmen is to them an indication of power. At other times it is a poor effort made to conceal some weakness on the part of the official.

On the other hand, there are workmen who have an unreal ambition. In order to attain their ends, they will scheme against their employers' interests and not hesitate to take any unfair advantage. With such men, faultfinding is a general practice. The most unskilled labor in the world is that which is prone to find fault at every turn. It is the poor worker that lays his failure to produce to the tools given him or the conditions about him. Such are the men who have the least brains and make the least use of what they have.

There is little hope for improvement in industrial as well as in social affairs, until people get this habit of faultfinding out of their dispositions and cultivate forebearance toward one and other. The get-together spirit, devoid of all sham and deceit, must possess both employers and employed, before progress will be assured. While we are not warranted in forming such a conclusion in respect to the case cited, it is possible that this worker was a faultfinder.

Looking back over our own careers, how many of us fail to realize that, at some time or other, we have imagined ourselves overlooked and suffered the disappointment that such an occurrence as this brings to the truly ambitious? Again, how many of us, acting in an official capacity, have not truly fulfilled our obligations to those in our employ? It is easy to see the faults of others but often difficult to discover our own. It is the height of hypocrisy to be continually sitting in judgment on the acts of others when we fall short of our own high ideals.

It is hard to believe that any fair-dealing superintendent would be so lacking in judgment as to roughly turn down the application of a worker who was really desirous of improving his condition by seeking to be transferred to another class of work for which he was fitted, when the opportunity was open. Let us strive to remember that, whatever our position in life, it should be our purpose to serve others. It is true that the superintendent is as equally in the service of his workers as they are in his service. The recognition of this fact will develop a co-operation that builds for success.

Ladysmith, B. C., Canada. WILLIAM WESNEDGE.

Problems of the Mine Foreman

SPEAKING of maintaining a uniform output of coal, there are two problems that confront the mine foreman in this respect. Briefly stated, they are: (a) The advantageous distribution of the men, and (b) providing for the future development of the mine.

All miners are not alike. There are those who will never give their best until this is compelled by reason of their circumstances. Again, there are those who are good workers as long as they are given good places but quickly lose their ambition for work when face to face with any difficulty. As mine foreman for ten years, I have been deceived many times in this respect. Men whom I thought could make a fair day's wage in any place in the mine have proved useless when put to work under unfavorable conditions.

Men of this second type may work well when given good places, but when difficulties arise they are the first to grumble and complain. They are not satisfied with lying down on the job themselves but will use all their influence to have others do the same with the idea of getting a little extra allowance.

Distributing Good and Bad Workers

Now, in regard to the proper distribution of men, I have obtained better results by placing the more indolent and careless workers in company with those who are more competent and active. As has been suggested, they have the example and receive the assistance of their fellow workers. There is, however, another reason for sandwiching these poor and often careless workers in with good men.

It will generally be found that where any trouble arises regarding the price being paid for deadwork such as taking down roof, lifting bottom, or handling

refuse in the seam, a miner of this class will depend more on his ability to drive a good bargain than on his skill in overcoming the difficulty. I have known miners that would rather quit than mine coal next to a good man, for the simple reason that the comparison of his own work with that of the other man would spoil his chances of getting any allowance. The foreman would simply point to the earnings of the man in the next place and say that if he had made the same effort *his* pay would have been just as large.

Every foreman knows that it is a simple matter to add a few cents to the price of labor but it is a different proposition to take it off again. He is mighty lucky if he can get back to the former price without having a strike on his hands. The foreman must be a good judge himself and his knowledge and experience of mining must be such as to enable him to estimate correctly the work done and his decision must be final.

Keeping the Development Well in Advance Necessary to Maintain Output

Aside from the proper distribution of his men, a problem of equal importance and perplexity that the foreman is compelled to face is keeping the development well ahead of the present work. When a miner finishes his place, there must be another place waiting for him. Double-shifting the narrow-work to make room for more places is frequently necessary. The trolley line must be extended and new parting or sidetrack built. In addition, the development will often require changes in the circulation of the air. Too often it happens that these requirements for maintaining a uniform output are not considered but are left until a drop in tonnage calls attention to their necessity.

In planning for the future of a mine, it is most important to consider the concentration of the work, in order to effect economy in haulage and the supervision of the men. This will also reduce the cost of maintenance of roadways and air-courses. Where conditions are such that miners have to wait for cars many of the best men will leave for mines where the service is better. It is a mistake, however, to carry concentration of work to the extreme and crowd too many places into a single section, which will congest haulage.

Factors Affecting a Miner's Tonnage

In making a just comparison of the work performed by different miners, it is necessary to consider not alone the physical conditions in their places, but regard must be had to the time consumed by the men in going to and from their places and the quality of the air furnished them. Men working on the last of the air must lose considerable time waiting for the smoke to clear after a blast is fired. Neither are those men able to perform the same work as men working on a fresher current. A miner working in a place handy to the shaft or mine entrance may load a car or two while another miner is getting to his place.

In estimating on what is required to maintain uniformity of output, all of these factors must be carefully studied. The allotment for each district must accord with the conditions, or confusion and disappointment will result. After all, no matter how anxious a foreman may be to produce a maximum tonnage his success will depend largely on the ability and faithfulness of his assistants, firebosses, drivers and daymen. Much of his own skill will lie in the training of these men. The foreman who is continually calling up on the 'phone to ascertain why the coal is not coming to the shaft bottom, will not succeed like the foreman who makes regular visits to the working faces while he plans and thinks out schemes to expedite the work by making the men more efficient in its performance.

Plains, Pa. Richard Bowen.

Attention to Details in Coal Production

THE question of maintaining a uniform output of coal in a mine depends primarily on the proper distribution of men referred to in *Coal Age*, July 29, p. 239. But, without denying the necessity of properly distributing the men with a view to securing a constant supply of coal from each section of the mine, I want to say that of even greater importance is giving the closest attention to every little detail of the work to see that things are kept moving regularly and that there is no delay waiting for cars or supplies of timber, tracking, etc.

One great cause, indeed the chief cause of the dropping off in the output of a mine, is the failure on the part of a foreman to provide a sufficient development in the live workings. The headings must be advanced to provide new places for the men as quickly as the old places are finished and abandoned. It frequently happens, however, that the foreman is handicapped in this respect by a faulty condition in the strata. Or, it may be that his efforts are restricted by the limited means placed at his disposal. In either case there is bound to result a falling off in the daily tonnage.

Disadvantages Due to a Lack of Concentration of Work

Another factor that is responsible for the decrease in output of coal is the lack of concentration of the work. Owing to one reason or another, the men have become scattered over a large area. The result is that it is impossible for the foreman or his assistant to give them the necessary supervision to insure good work. The supply of cars to the men and the hauling of coal from their working places is rendered more difficult and delays are unavoidable because of the extensive territory a driver must serve under these conditions.

No plan can be prescribed that will meet all conditions, but one of the chief essentials in the economy of operation is such a concentration of the work as to permit of the closest supervision and service. It is only in this way that every little detail pertaining to efficiency can be given the needed attention.

In order to maintain a proper development in many mines, particularly in the working of low coal, it may be and often is necessary to double-shift the productive entries and other advance work. In a large mine, an assistant is often given charge of one section of the mine with authority similar to that of a foreman in a smaller mine. He is held responsible for the condition of his section, the daily output of coal and the safety of the men in his charge.

In some large operations it has been a favorite plan, in the development of a pair of entries, to have the entrymen cut the roomnecks as they proceed, so that the switches can be laid at the mouth of each room. Everything is thus made in readiness and all the rooms on those entries are started at once when the work on another pair of entries is finished. The men are

transferred from the section to be abandoned to these new entries within a day or two.

Another plan is to divide the mine into sections or panels, of say 600 × 1,200 ft., which provides for rooms from 200 to 300 ft. in length. In this plan the rooms are turned off both the entry and parallel. But the first room turned on the parallel is at the inby end or head of the entry and that room is not started until No. 1 room on the entry is finished and the pillar drawn. The man who had been working this room is then transferred to the first room on the parallel, which is room No. 22, assuming all the rooms are driven on 50-ft. centers, and allowing for the necessary barrier pillars flanking the main entries.

Keep the Men's Supplies Moving

In order that these plans shall work smoothly, the foreman or the assistant in charge will have to keep in close touch with his entrymen, and see that they have everything they need so that there will be no delay waiting for supplies. This is quite necessary in the second plan mentioned where the entries must go 1,200 ft. while the first room is being driven up and the pillar drawn back. To accomplish this it will often be necessary to double-shift the entries.

Whatever plan is followed, it is necessary that every condition be met promptly and every obstacle overcome. Wet places, low coal, rolls, horsebacks, clay veins and other adverse conditions must be given prompt attention as they occur.

The disposition of the average mine foreman is to steer clear of adverse conditions and things that mean extra expense and delay production. Too often, entries and rooms are stopped because of some little trouble. The men working the places grumble and want allowances made them. In all this a good foreman will treat men as he would be treated himself.

Pikeville, Ky. G. E. Daugherty.

Negligence or Ignorance, Which?

READING the account given by Donald J. Baker of a gas explosion that occurred at the Renton No. 3 mine of the Union Collieries Co., *Coal Age*, July 29, p. 250, raises the question as to whether this accident was the result of negligence or ignorance on the part of the men in charge and who lost their lives thereby. One cannot help but feel that nine more lives have been needlessly sacrificed.

It is hard for me to understand how, in the operation of a gaseous mine, it is ever safe to permit a fan that has been shut down for many hours to be again started without first examining the mine to make sure that there are no burning feeders below ground. It occurs to me that such may have been the cause of the explosion in this instance. However, the article states that the night foreman ordered the man on the surface to turn on the power, a short time after he had entered the mine with the other men, and immediately when this was done the explosion followed.

In my opinion, it was a great error on the part of the foreman to order the power turned on before he had sent the fireboss around the mine to see that there were no accumulations of gas. It may be, however, that the fireboss was proceeding to make his examination of the working faces in the usual manner.

I assume, from the mention made in the article with respect to the trolley wire, that the belief is the trolley wire was charged when the power was turned on. Of course, the trolley wire extended along the main haulage road and did not approach the working face nearer than 50 or 100 ft. If this wire was charged by the turning on of the power, I would ask why there was not a switch provided at the shaft bottom for cutting off the mine and permitting the power to reach the pumps without incurring the risk of damage in the mine.

It is my opinion that this is an important provision in the safeguarding of a gaseous mine. After any temporary stoppage of the ventilation, not only should the working faces be examined, but every haulage road and traveling way likewise, before it would be safe to turn the power into the mine.

It would seem that a calamity of this kind must happen, in order to make us realize the great need of observing more precaution at all times and take nothing for granted. Judging from the great force of the explosion, as shown by the damage done in the mine and on the surface, it could not have resulted from the ignition of a small body of gas in some cavity or pothole in the roof. Instead, the entire air current was probably charged with gas and the firedamp mixture was at its maximum explosive force. It is fortunate, indeed, that the night force had been prevented from going to work.

Equipment Not Up-to-Date

Although the article states that this mine was "one of the newer developments in western Pennsylvania," it is strange to observe that there was but a single fan installed, when a more up-to-date equipment of a gaseous mine would suggest duplicate fans. In that case, if it became necessary to shut down one fan for repairs the circulation in the mine would be maintained by the operation of the other fan.

Again, the omission of a switch at the shaft bottom, assuming there was no such switch to control the power in the mine, would indicate that the equipment of the mine was not wholly up to date in every respect. Providing a mine with the best type of fan is not to say that the mine is well ventilated. The fan may be surrounded by a well built concrete structure, while the ventilation at the working faces is deficient.

To my knowledge there are many mines where the fans are circulating 300,000 cu.ft. of air per min. in the main airways, while the current sweeping the working faces is so sluggish that one can hardly tell the direction in which the air is moving. If proper airways, good doors and stoppings are not provided in the mine, there is little benefit to be derived from a large volume of air put in circulation by the fan.

Again, a truly up-to-date mine that is generating gas in any considerable quantity will not be dependent on electrical power alone for the operation of the fan. At some critical moment, the electrical power may fail, the fan be rendered helpless, and the circulation in the mine cease. This would mean extreme danger underground, unless steam power is available for driving the fan and maintaining the circulation in the mine.

It is worthy of note that, at large collieries where great changes have taken place in the equipment, the steam lines leading to the fans are still to be seen. It has happened during severe electrical storms that operators have been forced to shut down the electrical equipment for the time, but the fan has been kept running by the use of steam on such occasions.

————, Pa. Safety Inspector.

Inquiries of General Interest

Answered by

James T. Beard

Nature and Force of Explosives

KINDLY explain the nature of an explosive and give the two general classes of explosives used in the mines. Also, state the approximate temperature developed and the force exerted by black powder at the instant of explosion. What is the theoretical velocity due to such initial force? FIREBOSS.

Providence, Pa.

An explosive is any substance that is capable of being converted suddenly and more or less completely into gas at a high temperature, the rapid expansion of the hot gas causing a violent disturbance of the surrounding medium. The explosive may be a single elementary substance, a chemical compound or a mechanical mixture of substances that will enter into combination on the application of heat, or on being subjected to a sharp blow. The reaction that takes place between the components or substances forming the explosive is so sudden that the large quantity of gas set free expands in every direction with explosive force.

The two general classes of explosives used in mining are known as "low explosives" of the deflagrating type, such as black powder; and "high explosives," of the detonating type, such as dynamite, nitroglycerine, etc. In the first class mentioned, the full force of the explosion is not developed instantly, the action being communicated from particle to particle by burning. On the other hand, in detonating explosives, the action is communicated instantaneously throughout the mass by a wave of compression that resembles a shock.

In the explosion of black powder, it is estimated that a single volume of gunpowder produces 280 volumes of gas, which, being crowded into two-thirds of the space occupied by the original powder, represents $280 \times \frac{3}{2} = 420$ volumes of gas, measured at normal temperature and pressure. But, since the temperature of the explosion is about 6,100 deg. F., the initial force of the explosion is that corresponding to $420(460 + 6{,}100) \div (460 + 32) = 5{,}600$ expansions, which represents a pressure at sea level of $(14.7 \times 5{,}600) \div 2{,}000 =$ say 40 tons per sq.in.

In practice, this theoretical pressure is only approximated, owing to the loss of heat by conduction and the action not being wholly instantaneous. It is estimated that nitroglycerine is capable of 16,000 expansions, which would correspond to an initial pressure, at sea level, of $(14.7 \times 16{,}000) \div 2{,}000 =$ say 120 tons per sq.in.

The theoretical velocity developed by a pressure of 40 tons per sq.in., assuming the density of the air is 0.0766 lb. per cu.ft., is

$$\frac{1}{5{,}280}\sqrt{\frac{64.32 \times 40 \times 2{,}000 \times 144}{0.0766}} = 18\tfrac{1}{4} \text{ mi. per sec.}$$

In the case of nitroglycerine, the theoretical velocity due to an initial pressure of 120 tons per sq.in. is 32¼ mi. per sec. While these velocities are almost inconceivable, it must be remembered that they are only initial velocities and, in practice, are found to be unattainable. They are, however, suggestive of the terribly destructive forces set free in the explosion of these substances.

Effect of Working an Underlying Seam

We have a proposition confronting us with which we must deal in the near future and which leads us to seek the advice of *Coal Age* and its practical readers. It relates to the mining of the coal in a 42-in. seam lying 250 ft. below another seam that we expect to work later. The question is what would be the result of taking out the coal more or less completely in the lower seam, using either the longwall method of working or the room-and-pillar system, robbing the pillars as the rooms are finished. We are anxious to learn if this would damage or injure the later working of the coal in the upper seam. We believe this question will prove of interest to others who are facing similar propositions.

Betsy Layne, Ky. SUPERINTENDENT.

Extracting the coal from a 3½-in. seam lying 250 ft. below another coal bed will not ordinarily affect the successful working of the upper seam, providing the intervening strata is a fairly solid formation and does not contain too much water.

From the meager information given in this inquiry it is not possible to state definitely what effect the working of the lower seam will have on the upper coal, or to what extent it will damage the later working of that seam. Everything will depend on the character of the intervening strata. If the formation is a succession of shale, sandstone and limerock, such as is common to the coal measures, and the work in the lower seam is properly conducted there need be no undue disturbance that would interfere with the safe working of the upper seam, unless a large amount of water is contained in the strata.

We would advise the use of the longwall method of working this 3½-ft. seam, chiefly because it is low coal lying at a considerable depth below the surface. Moreover, the employment of the longwall method of mining, where proper care is taken in the building of the packwalls will afford a more uniform settlement of the overlying strata and entail less risk and damage to the coal lying above. The longwall method also affords a more complete extraction of the coal, better ventilation of the working face and requires less timber than when the room-and-pillar system of mining is employed.

It is of prime importance, in order to insure the successful working of the upper seam at a later time, to provide for an ample shaft pillar in the lower seam. The side or diameter of this shaft pillar should not be less than 250 ft. for a depth of 500 ft. below the surface. It will be interesting to learn the experience of readers in regard to the working of these seams.

Examination Questions

Answered by

James T. Beard

Mine Foremen's Examination Held at Carbondale, Pa., May 4, 5, 1920

(Selected Questions)

Ques.—What is the minimum quantity of air per minute, for each person, in order to comply with the mine law?

Ans.—The Anthracite Mine Law requires a minimum air volume of 200 cu.ft. per min. for each person employed in the mine and "as much more as the circumstances may require." (Art. 10, Sec. 3.)

Ques.—How are the ventilating currents to be distributed so as to comply with the mine law?

Ans.—The air currents must be conducted to the face of every working place throughout the entire mine in sufficient quantity to dilute, render harmless and sweep away the smoke and gases, so that all working places and traveling roads shall be safe and fit for work and the passage of men going to and from their work. (Art. 10, Sec. 4.)

Ques.—How are the abandoned parts of a mine in operation to be kept so as to conform with the mine law?

Ans.—The law requires that all worked-out or abandoned parts of a mine in operation, so far as possible, shall be kept free from dangerous bodies of gas or water. Where this is not practicable the mine inspector must be immediately notified to that effect. (Art. 10, Sec. 5.)

Ques.—(a) What are the conditions in a mine that call for a division of districts? (b) How shall each district conform with the mine law in matters pertaining to ventilation?

Ans.—(a) When more than seventy-five persons are employed in a mine, it must be divided into two or more separate districts, in respect to ventilation.

(b) Each district of the mine must be ventilated by a separate air split and the circulation must be so arranged that not more than seventy-five persons shall be employed, at the same time, on the same current or split of air. (Art. 10, Sec. 6.)

Ques.—What governs the size or area of airways through which air currents are passing and where persons are employed?

Ans.—All air passageways shall be of such an area as to permit of the flow of not less than 200 cu.ft. of air per minute for each person employed on that current, and the velocity of the air where the mine is generating explosive gas shall not exceed 450 lineal feet per minute in any opening where gauze safety lamps are used, except in the main inlet or outlet airways. (Art. 10, Sec. 7.) This means that where a mine is generating explosive gas and gauze safety lamps are in use, there must be provided in each passageway or opening, four feet of sectional area for every nine persons or fraction thereof employed on that current or split.

Ques.—There are two dams in a mine, each 6 ft. high and 12 ft. wide, filled with water. If the water is backed 1,000 ft. in one and 400 ft. in the other, what is the total pressure in pounds, against each dam?

Ans.—The size of each of these dams being the same, the area of pressure of the water is the same in each case; namely, $6 \times 12 = 72$ sq.ft. Assuming the seam is level, the pressure head in each case is one-half the height of the dam, or 3 ft., which makes the total pressure on each dam, $3 \times 72 \times 62.5 = 13{,}500$ lb.

Ques.—What is meant by the term pressure, as used in ventilation?

Ans.—This term relates to the pressure producing circulation in the mine. While the ventilating pressure is created by the action of a fan or other means of producing circulation, the amount of pressure produced is determined by the frictional resistance of the mine or airway. Except for this resistance, there would be no pressure.

Ques.—How would you find the total ventilating pressure in an airway in a mine?

Ans.—Multiply the reading of the water gage, expressed in inches, by 5.2, which gives the unit pressure (lb. per sq.ft.). This unit pressure multiplied by the sectional area of the fan drift, in square feet, will give the total ventilating pressure, in pounds.

Knowing the amount of rubbing surface in a mine or airway and the velocity of the air current, the total ventilating pressure may be calculated by multiplying the unit resistance, or coefficient of friction, by the rubbing surface, in square feet, and that product by the square of the velocity in feet per minute. The final product is the total pressure producing the circulation, in pounds.

Ques.—If ten horsepower is required to produce an air current of 20,000 cu.ft. per min., what power will be necessary to produce a current of 40,000 cu.ft. per min.?

Ans.—To double the quantity of air in circulation, in the same mine or airway, will require eight times the power, which is in this case, $8 \times 10 = 80$ hp. The power producing the circulation in a given mine or airway varies as the cube of the quantity of air circulated.

Ques.—State the conditions under which you would remove the workmen from the mine so as to conform with the mine law.

Ans.—The law provides (Art. 12, Rule 8) that if noxious gases are found to prevail in a mine or portion of the mine, or any cause of danger exists, every precaution must be taken to insure the safety of the workers. The law further requires that all persons be withdrawn from the mine or any portion of the mine that is found to be dangerous, except those persons employed to remove the danger. The men must not be allowed to re-enter until the mine or section has been examined and pronounced safe for work.

Shifts Blame to Trade Commission for Failure to Bring Lawsuits

REPLYING to the charge of the Federal Trade Commission that the National Coal Association failed to carry out its agreement to bring a number of test suits against the commission to test its legal authority (*Coal Age*, Aug. 26, page 463), it is stated by the general counsel for the association that pursuant to the arrangement with the counsel for the commission the attorneys of the National Coal Association drafted several complete bills of complaint on behalf of different operators presenting different situations, but counsel for the commission flatly refused to serve any of these companies other than the Maynard Coal Co. with the default notice which was considered a necessary condition precedent to the filing of the suits. Counsel for the commission stated that he would not serve any such default notices until the Maynard case was finally disposed of, in spite of the agreement with the representatives of the commission that the Maynard case and the decision therein was to be treated as a test case.

Attorneys for the association have repeatedly asked counsel for the commission as to whether the commission desired to appeal from Justice Bailey's decision and have offered to co-operate to expedite the hearing of any such appeal. Counsel for the commission have finally advised attorneys of the association that they had not intended to appeal from the injunction granted by Judge Bailey and have intimated that there is no haste as to taking further steps in the case, the responsibility for not having cases other than the Maynard case now pending and the responsibility for the failure to appeal from Justice Bailey's decision so that an early and final decision might be rendered by the upper courts resting solely with counsel for the commission.

Coal and Coke Shipments for First Four Months, 1919 and 1920

Classes and Railroads	Originating on Line 1919	Originating on Line 1920	Received from Connections 1919	Received from Connections 1920	Total 1919	Total 1920
For Revenue Only	Short Tons	Short Tons	Short Tons	Short Tons	Short Tons	Short Tons
Anthracite						
Baltimore & Ohio			464,474	663,435	464,474	663,435
Buffalo, Rochester & Pittsburgh			50,241	60,682	50,241	60,682
Buffalo & Susquehanna			592	3,293	592	3,293
Chesapeake & Ohio	1,108	6,108	8,304	5,868	9,412	11,976
Erie	2,221,809	2,261,315	695,703	899,270	2,917,512	3,160,585
Huntingdon & Broad Top Mountain			97	101	97	101
Pittsburgh & Lake Erie			48	333	48	333
Pittsburg, Shawmut & Northern			3,592	7,639	3,592	7,639
Virginian	475	1,183	48	150	723	1,333
Western Maryland			95,704	108,123	95,704	108,123
Totals	2,223,392	2,268,606	1,319,003	1,748,894	3,542,395	4,017,500
Bituminous						
Baltimore & Ohio	8,358,793	11,628,509	2,456,149	4,167,119	10,814,942	15,795,628
Buffalo, Rochester & Pittsburgh	1,951,259	2,701,966	124,041	62,452	2,075,300	2,764,418
Buffalo & Susquehanna	389,663	609,637	914		390,577	609,637
Chesapeake & Ohio	5,909,729	8,178,195	712,302	811,834	6,622,031	8,990,029
Erie	95,767	142,283	2,294,798	3,464,381	2,390,565	3,606,664
Huntingdon & Broad Top Mountain	216,428	289,990	4,080	17,714	220,508	307,704
New York Central (Buffalo and East)	1,869,412	2,831,209			1,869,412	2,831,209
Norfolk & Western	5,766,425	6,321,565	779,950	974,923	6,546,375	7,296,488
Pittsburgh & Lake Erie	1,596,878	1,693,306	1,924,626	2,093,029	3,521,504	3,786,335
Pittsburg & Shawmut	569,885	883,429			569,885	883,429
Pittsburgh, Shawmut & Northern	135,847	257,815	85,487	121,685	221,334	379,500
Virginian	1,102,534	1,943,844	154,411	207,163	1,256,945	2,151,007
Western Maryland	872,913	1,626,750	2,035,993	2,561,829	2,908,906	4,188,579
Totals	28,835,533	39,108,498	10,572,751	14,482,129	39,408,284	53,590,627
For Company Fuel						
Anthracite						
Baltimore & Ohio			1,447	1,445	1,447	1,445
Buffalo, Rochester & Pittsburgh				1,509		1,509
Erie	50,309	74,877	4,134		50,309	78,011
Totals	50,309	74,877	1,447	6,088	51,756	80,965
Bituminous						
Baltimore & Ohio	1,855,478	1,458,554	108,445	91,461	1,963,923	1,550,015
Buffalo, Rochester & Pittsburgh	215,139	270,004	773	244	215,912	270,248
Buffalo & Susquehanna	22,795	40,125			22,795	40,125
Chesapeake & Ohio	581,863	785,645			581,863	785,645
Erie	396,779	482,327	663,634	789,354	1,060,413	1,280,681
Huntingdon & Broad Top Mountain	12,187	5,079	46	3,268	12,233	8,347
New York Central (Buffalo and East)	580,190	550,117			580,190	550,117
Norfolk & Western	873,968	837,637	146,226	204,404	1,020,194	1,042,041
Pittsburgh & Lake Erie	90,549	100,433	102,573	111,789	193,122	212,222
Pittsburg & Shawmut	12,407	15,550			12,407	15,550
Pittsburg, Shawmut & Northern	12,342	21,259			12,342	21,259
Virginian	96,296	155,467	1,486	4,107	97,782	159,574
Western Maryland	99,832	207,934	98,613	19,697	198,445	227,631
Totals	4,849,825	4,930,131	1,121,796	1,233,324	5,971,621	6,163,455
Coke for Revenue and Fuel						
Baltimore & Ohio	416,308	555,252	176,686	292,703	592,994	847,955
Buffalo, Rochester & Pittsburgh	89,326	69,838	103,421	135,897	192,747	205,735
Buffalo & Susquehanna	108,318	124,701	75	39	108,393	124,740
Chesapeake & Ohio	181,781	187,189	21,388	46,919	203,169	234,108
Erie	43,075	72,633	98,486	173,688	141,561	246,321
Huntingdon & Broad Top Mountain	27,747	23,305	3,045	17,798	30,792	41,103
Norfolk & Western	483,539	380,365	49,325	72,717	532,864	453,082
Pittsburgh & Lake Erie	167,084	131,171	1,733,051	1,501,632	1,900,135	1,632,803
Virginian			90		90	
Western Maryland	15,694	17,962	152,382	75,663	168,076	93,625
Totals	1,532,872	1,562,416	2,337,949	2,317,056	3,870,821	3,879,472

NOTE—No report was received from the Pennsylvania Railroad

Wagon Mines vs. Tipple Operations

Attracted by Inflated Prices, Large Operators Hold That They Are Transitory and Irresponsible, Intensifying Car Shortage and Upsetting Wage Rates Small Owners Now Plan Organizations to Pool Coal and Fight for Rights

By William A. White*

MUCH attention has been directed of late to the operations of so-called country bank or wagon coal mines. Operators of established tipple mines have been waging a bitter fight against their smaller brethren. Railroads and the large coal concerns assert that much of the present car shortage and the attendant high prices of coal may be traced to the wagon mine operators and especially those who have entered the industry in large numbers during the last few months. As a result several orders have been promulgated tending to restrict the activities of the "team tracker," whose "practice of loading coal into open-top cars," the Interstate Commerce Commission order states, "results in undue delay and wasteful use of equipment, and aggravates the existing shortage of such equipment and the congestion of traffic."

The Public Service Commission of Pennsylvania recently ordered that the Pennsylvania R.R. should not furnish open-top cars to wagon mines except where mines load on private tracks and over tipple or other arrangement permitting coal to be dumped into cars. Cars so furnished must be counted against such operations under the same uniform mine-rate and car-distribution rules applying to established tipple mines. Following this the Interstate Commerce Commission issued a like order, but specified that open-top equipment shall not be furnished wagon mines until other mines and those with private track and equipped for dumping coal have been fully supplied with cars. The order is effective immediately and remains in force until April 1, 1921. With the existing car shortage this practically means that nothing but box cars will be available for the wagon miner.

A Typical Wagon Mine

A 250-ton bin stores output on days when no cars are available. Truck dump (background) provides facility for dumping direct into trucks or wagons.

Another View of Same Mine

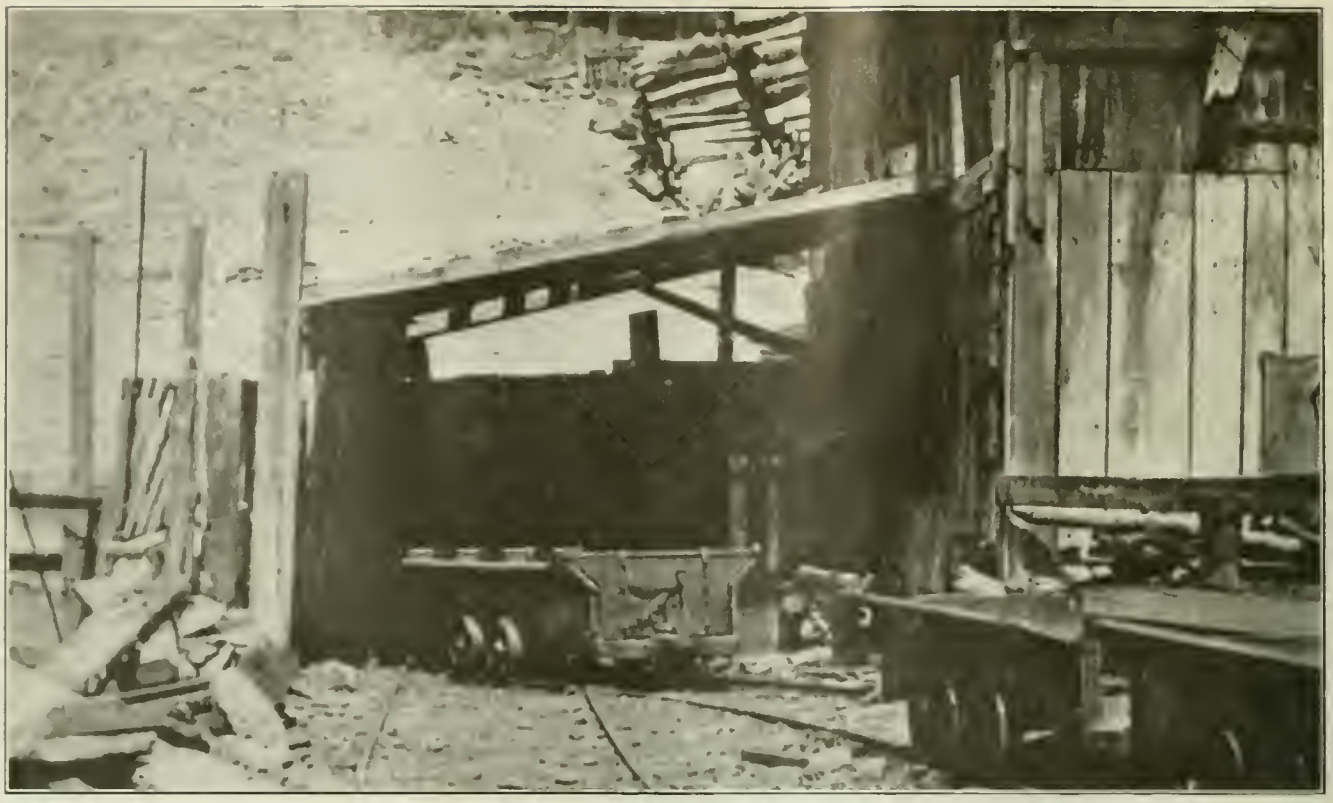
Mine cars may be unloaded at storage bin or run around to truck dump in the background.

In order to get a first-hand view of the situation I made a trip to various sections of the central Pennsylvania district and was able to secure considerable data covering both sides of the argument.

In the mining region east of Pittsburgh it is asserted that there are upward of 2,000 of these small operations. On one division alone 337 out of 512 mine operations served by the Pennsylvania R.R. are of the wagon mine type. It has been stated that there are some 7,500 mining operations in the country, more than 3,000 of which are of the "team tracker" variety. Hundreds of these small operators have opened up in the last few months, availing themselves of the high coal prices.

Railroads contend that the scattered locations and ever-increasing number of these greatly hampered and

*Editorial staff, *Coal Age*.



WAGON MINE DRIFT-MOUTH ENTRY
Typical conditions at entrance of mine are here seen. This operation is located within city limits and is surrounded by residences.

slowed up their service, both in the distribution of empties and the switching out of loads from public tracks, which with the slow loading of cars contributed unnecessarily to the existing car shortage. Better movement of cars is now predicted, as established operators assert that they are in position to load promptly all the cars railroads can furnish.

Large coal concerns deplore the tactics of these "mushroom" operations, contending that, as their name implies, they are only temporary affairs, attracted by the high coal market. They acquired parcels of land by lease and the payment of a small royalty. Putting in a railroad siding was too expensive a proposition, so they hauled to the cars in wagons. Wage scales meant nothing to them; they were willing to pay any price for labor, and labor, as usual, went to the highest bidder. They did not operate under mine-rating and car-distribution rules, and therefore obtained more than their fair quota of cars. By reason of their slow methods cars were frequently delayed in loading.

An operator in one section visited stated that the average per-ton pay of wagon miners in his locality was 80c. over the wage scale. He could not and would not meet this, consequently his best men left for "snow-bird" operations. Not only was the cream of his labor diverted elsewhere but this also caused considerable discontent among his remaining men. All of the above conditions tended to reduce the output of the established mines and to further complicate the already complex wage question.

Being of a purely temporary nature, the top of the spot market held the only attraction for them. They were "getting it while the getting was good" and usually auctioned their coal to the highest bidder. Contracts were not considered. Legitimate operators usually contract from 50 to 80 per cent of their normal output at figures which this year were about $5 per ton under the present high market. The large number of cars required to serve wagon mines necessarily reduced the number of those available for loading of contract coal and at the same time added to the tonnage of high-priced fuel being thrown on the market. Operation of wagon mines therefore tended to increase the ultimate cost of coal to the public. Since the issuance of the Interstate Commerce Commission order limiting the activities of the wagon mine, however, the average price for coal shipped has dropped in the section visited from $12 to $8, f.o.b. mines.

Unusual Profits Attract Outsiders

Attracted by the amazing profits being made, not only the old miner fell victim to the lure of a team-track operation. Hundreds outside of the industry forsook their usual work for this more lucrative occupation. Inefficient mining methods naturally followed, the one idea being to scratch the coal out in the largest possible volume and in the quickest manner. As a result an ever increasing tonnage of an inferior grade was being shipped at top market figures. The real operator, with his investment running into many thousands of dollars, was forced to load his superior coal to cover legitimate contract obligations at prices far below the current market. Obviously such a condition was unfair, both to the public and to the responsible operator.

About all the investment necessary for a "snow-bird" operation, after securing the lease, was a few hundred dollars for supplies, rail, live-stock, and a couple of cars, etc. Teaming to the cars was usually contracted for on a per-ton basis. Operating expenses were amply met and in many cases anticipated by coal sales. Such was the demand for coal that cash payment was exacted when a car was loaded. It was not at all uncommon for

brokers in their frantic quest for free coal to "advance" the temporary producer sufficient cash to enable him to start his operation, this in consideration for the sale of the first few cars mined.

Profits in the magic wagon mine industry were enormous. In one section visited maximum cost of coal on cars was $4 per ton while the market had reached $14 and higher. This same and in some instances even a greater differential existed throughout the entire country. Overnight new fortunes were being made and by people who for the most part were poor less than a year ago.

The hills in the mining sections are pockmarked with these small openings, sometimes within a stone's throw of one another. As may be imagined, there were wild rushes for coal lands and considerable activity reigned in the acquisition, sale and exchange of such property, the valuation doubling and trebling with each turnover. I recall the case of one opening which could not be sold last April for $700. Less than two months ago, however, a price of $5,000 was asked for a half interest in the lease and equipment of this property.

A practical cessation of loading has followed the Interstate Commerce Commission ruling. In some instances box cars are being loaded but these are very scarce and most of the workings are running no coal at all. A few are supplying local house and steam demands but at prices far from their former levels. Railroads are receiving numerous applications for installation of sidings, but one official declared it would be a matter of months before the applications could be filled.

Wagon mine operators throughout the country are organizing to fight the recent orders, claiming the enforcement will involve them in considerable loss and will constitute a virtual confiscation of their property without due process of law or just compensation, contrary to the Federal Constitution.

It appears that a majority of the members of these new organizations are of the permanent type, have owned or leased their coal lands for a number of years, investing in some cases as high as $25,000. They resent their classification with the "mushroom" type of wagon mine and are determined to obtain their rights to continued operation on the same basis as the smaller tipple mines.

Owing to their location it is impossible for wagon mines to be served with individual railroad sidings, therefore the purchase of sites for common loading tracks, and the erection of chutes and storage bins, where several members may pool their coal, is contemplated. These mines can operate on about the same basis as the smaller tipple mines and make contracts on a legitimate market. Under these circumstances they are unquestionably entitled to the same privilege of continued operation.

Indiana's Coal Regulatory Law Declared Valid

Judge Baker Rules That State Can Lay Its Hand on Mining Industry—Coal Company's Petition Dismissed Without Prejudice

AFTER an all-day hearing in Indianapolis, before three federal judges, in the case of the American Coal Mining Co. of Bicknell against the Indiana Coal Commission, asking an injunction against the operation of the new Indiana Coal Commission Law, the court upheld the power of the State of Indiana to regulate the coal industry within its boundaries. Judges Francis E. Baker, Ferdinand A. Geiger and E. A. Evans heard the petition. The commission was recently established by the special legislature to regulate coal prices within the state. The coal company's petition was dismissed without prejudice that the record might show only that the state may regulate such an industry under its police powers. Charles Martindale, chief counsel for the coal company, said his client has not decided on an appeal.

The opinion denying the injunction was given by Judge Baker, the other judges concurring. Sitting as District Judge, he upheld the motion of the defense to dismiss the petition which was before the District Court alone. The decision sets a precedent regarding the police power of the state. Not since 1696 in England has there been regulation of the coal industry by the state except in war time.

After reviewing several of the minor points presented Judge Baker said: "There is involved, however, in this application for a preliminary injunction the one fundational question of the right of the state to touch at all the coal mining business. If no such right exists in the state, then the temporary injunction should be issued at once, and it would go as a matter of course that a final injunction should thereupon issue, because there would be no question of fact to controvert and a final decree in favor of the plaintiff would at once be entered, if there is a total lack of power in the state to create this commission, through which to undertake the control of mining.

"The legislature is an absolutely free agent except insofar as its principals, the people, have expressed a limitation in the state constitution. For the purpose of this federal inquiry it may be taken that the state legislature had the full power of the people of the State of Indiana and the people of Indiana stood as absolute sovereigns over the person and properties within the limits of the state — that means the power of the people to determine upon measures for public welfare, which may be expressed by the legislature, without any limitation that is not imposed upon the state by the Federal Constitution. The state under its police power can lay its hand upon the coal-mining industry."

In his opinion Judge Baker indicated that the administration of the act may be such that emergencies can arise under which the court might have the right to interfere, but that such emergencies were at this time purely conjectural and hypothetical and until a time when such an order might be issued by the commission were not a basis for action.

New York's Public Utility Coal Stocks Show Gains

THE public utility corporations of Greater New York had 343,860 tons of bituminous coal on hand on Aug. 31, according to recent report of the Public Service Commission. This is a gain of 34,000 tons over the amount on hand the previous week. In previous years the corporations have had on hand at least 400,000 tons by Sept. 1, and twice that amount a month later.

Good Business Without Panics Predicted By U. S. Chamber of Commerce

STRONG belief in a gradual and natural readjustment of business conditions without financial disorder or any sudden economic calamity is expressed by the Committee on Statistics and Standards of the Chamber of Commerce of the United States, in its semi-annual bulletin on crop and general business conditions.

Tight money, unrest of labor, the loosened bonds in some phases of social life, the Russo-Polish war, and the high cost of necessities are enumerated as disturbing business factors, but in the opinion of the committee there is no need to become panicky over any of these matters. The committee finds a widespread feeling that business probably will continue good for the remainder of the year.

West Virginia Sales Agent Arraigned with Operators as Profiteer

IN ADDITION to the coal concerns in southern West Virginia against whom warrants have been issued by the U. S. Attorney for the Southern District of West Virginia, the Lake & Export Coal Corporation, with general offices at Huntington, has been served with a warrant issued by U. S. Commissioner J. P. Douglas upon complaint of Special Agent M. D. Campbell of the Department of Justice, the warrant charging profiteering in the sale of coal. The president of the company is E. J. Payne. T. A. Dietz is the vice-president and S. J. Hyman is the secretary and treasurer, at least as named in the warrant. All the other southern West Virginia companies against whom warrants have been issued are operating companies, the Lake & Export company being the only coal sales concern to be served with papers.

West Virginia Will Disarm Mingo Men

AN INFANTRY battalion of the United States army with regulation riot equipment, including machine guns and one-pound cannon, five motor trucks, one ambulance and several motorcycles, arrived at Williamson on Aug. 29 to patrol the strike zone from Kermit east to Delorme, a distance of about 50 miles. Col. Samuel Burkhardt, of Fort Sherman, Chillicothe, Ohio, is in command. There are between 400 and 500 men.

Judge James Damron expects soon to try the twenty-six men indicted for murder in connection with the killing of seven private detectives. Fearing the effect of the presence of many armed men, he dismissed forty-two deputy sheriffs on Sept. 6, replacing them by twenty professional and business men of Williamson. Seventy citizens who had been permitted to carry firearms were also disarmed. All men entering the court were searched to see if they carried weapons. By these means it is hoped that it will be possible to avoid a declaration of martial law.

Estimated Production of Coal in the Principal Countries of the World During the Years 1913 to 1919, Inclusive

BECAUSE of the confusion introduced by the war into the official statistics of many countries, estimates of world production of coal for years since 1913 must be regarded as tentative and subject to revision. The following table, prepared by F. G. Tryon, of the U. S. Geological Survey, summarizes information received by the Geological Survey up to Aug. 15, 1920. Lignite and brown coal are included. The metric ton (2,206 lb.) will be most easily remembered by American readers as practically equivalent to the gross ton.

PRODUCTION OF COAL IN THE PRINCIPAL COUNTRIES OF THE WORLD

(In Metric Tons of 2,206 Pounds)

	1913	1914	1915	1916	1917	1918	1919
United States	517,057,000	465,860,000	482,275,000	535,325,000	590,939,000	615,260,000	493,745,000 (a)
Great Britain	292,041,000	269,926,000	257,268,000	260,488,000	252,486,000	231,402,000	232,574,000 (a)
Germany	278,986,000	245,482,000	235,082,000 (a)	252,847,000 (a)	262,311,000 (a)	261,108,000 (a)	210,300,000 (ab)
Austria-Hungary	53,698,000	47,939,000	46,600,000 (a)	49,702,000 (a)	47,064,000 (a)	40,090,000 (a)	(a) (b) (c)
France	40,844,000	27,528,000	19,533,000	21,310,000	28,915,000	26,259,000	22,477,000
Russia (European)	33,814,000	33,198,000	34,999,000 (a)	34,630,000 (a)	(c)	(c)	(a) (b) (c)
Belgium	22,842,000	16,714,000	14,177,000	16,863,000	14,920,000	13,822,000	18,546,000
Japan (d)	21,416,000	22,339,000	20,591,000	33,010,000	26,514,000	28,203,000	30,832,000 (a)
India	16,468,000	16,728,000	17,378,000	17,531,000	18,505,000	21,055,000	22,109,000
China	13,779,000	9,272,000 (a)	18,000,000 (a)	21,700,000 (a)	(c)	(c)	(c)
Canada	13,619,000	12,372,000	12,036,000	13,139,000	12,743,000	13,588,000	12,325,000
Australia (b)	12,617,000	12,644,000	11,598,000	9,969,000	10,361,000	11,125,000	10,697,000 (a)
Union of South Africa	8,079,000	7,831,000	7,676,000	9,288,000	9,933,000	9,457,000	9,979,000 (a)
Spain	4,292,000	4,424,000	4,687,000	5,589,000	6,005,000	7,239,000	(c)
Asiatic Russia	2,160,000	2,102,000	2,247,000 (a)	(c)	(c)	(c)	(c)
New Zealand	1,918,000	2,312,000	2,244,000	2,293,000	2,102,000	2,067,000	(c)
Holland	1,873,000	1,929,000	2,262,000	2,656,000	3,050,000	4,883,000	5,357,000
Chile	1,283,000	1,087,000	1,172,000	1,418,000	1,539,999	(c)	(c)
Mexico	891,000 (f)	(c)	(c)	(c)	(c)	460,000 (a)	(c)
Turkey	842,000	661,000	496,000	243,000	368,000	355,000	561,000 (b)
Italy	710,000	781,000	953,000	1,301,000	1,682,000	2,500,000 (a)	(c)
Indo-China	509,000	620,000	644,000	685,000	654,000	636,000	(c)
Dutch East Indies	411,000	568,000	619,000	749,000	832,000	(c)	(c)
Sweden	364,000	367,000	412,000	416,000	443,000	404,000	(c)
Bulgaria	358,000	421,000	534,000	640,000	761,000	673,000	570,000 (a)
Serbia	311,000	(c)	(c)	(c)	(c)	(c)	104,000 (a)
Peru	274,000	284,000	291,000	319,000	354,000	346,000	(c)
Roumania	241,000	273,000	309,000	(c)	(c)	(c)	(c)
Rhodesia	216,000	317,000	372,000	446,000	498,000	446,000	(c)
Other countries (g)	429,000	472,000	560,000	706,000	841,000	1,000,000	1,000,000
Totals	1,342,333,000	1,205,291,000	1,195,785,000	1,296,192,000	1,344,710,000	1,330,610,000	1,163,341,000

(a) Based on incomplete or unofficial data, subject to revision. (b) Production from fields included inside former boundaries before changed by peace treaties. (c) Estimates included in total. (d) Includes Twiwan (Formosa) and Karafuto (Japanese Sakhalin). (e) Includes New South Wales, Queensland, Tasmania, Victoria, and Western Australia. (f) Production in 1912. (g) Includes the following countries: Greece, 170 tons (1913); Federated Malay States, 103,000 tons (1916); Greenland, 1,800 tons (1916); Portugal 23,000 tons (1913); Tunis 32,000 (1917); Venezuela, 6,000 tons (1913); Algeria 7,000 tons (1918); Spitzbergen 62,000 tons (1918); Switzerland, 146,000 tons (1918); Brazil 15,000 tons (1912); British Borneo 89,000 tons (1912); Korea 110,000 tons (1912); Philippines 3,000 tons (1912); and Colombia 36,000 tons (estimated).

Performance of a Consulting Economist Turned Financial Expert*

As an Authority on Capital and Income Mr. Lauck Produces as Extraordinary Results as in Other Expert Rôles Statement of Cost and Sales Agents' Margin Grossly at Variance with Facts

IT WAS doubtless a sore disappointment to W. Jett Lauck, consulting economist for the United Mine Workers of America, that he was not permitted to place in evidence before the Anthracite Coal Commission the half dozen or so exhibits in which he proposed to show the excess profits exacted by the anthracite companies from the public, and to prove them guilty of other high crimes and misdemeanors. It is just as well for Mr. Lauck's reputation as a consulting economist that he should have suffered this disappointment, for had his exhibits been admitted and the operators' representatives been given an opportunity to reply to and refute them, he would have been even more thoroughly discredited than he was in his rôle of expert on irregularity of employment, wages and the cost of living, earnings of anthracite miners as compared with workers in other industries, the budget system as applied to household expenses of wage earners, and occupational hazards.

In protesting against the admission of this extraneous material S. D. Warriner, spokesman for the operators, fully realized that the stand taken by him would invite the criticism of a hostile pross and that no rule of ethics would deter Mr. Lauck from seeking all the notoriety possible by the publication of a large part of the excluded material. Again the newspapers were kind in giving him a large amount of free advertising. The press, however, carefully avoided any mention of Mr. Warriner's statement that the anthracite operators were ready and willing to submit to any proper investigation of their business. In fact, such investigation had been made by committees of both houses of Congress, by the Federal Trade Commission, by the U. S. Fuel Administration (this being particularly complete and exhaustive), and by the U. S. Bureau of Labor, and the reports of these investigations, some of them—notably those of the Bureau of Labor—made from actual examinations of the books of the companies by official representatives of the Government, were a matter of public record and available to any one interested. As the material was extraneous to the matter in controversy Mr. Warriner contended that the commission was without jurisdiction "to hear, to determine and to enforce," and he was unequivocally sustained in his position by the commission. Mr. Lauck, however, immediately rushed into print.

It is difficult to select from such a mass of misstatement and mendacity the portions to which it is worth while to reply. The one which seemed to gain the largest degree of publicity was given out as containing "figures showing all the factors entering into the retail price of a ton of anthracite coal, and giving the increases in those factors for 1920 as compared with 1914, made public by W. Jett Lauck, consulting economist for the United Mine Workers of America, appearing at the wage arbitration proceedings before the Anthracite Coal Commission at Scranton. . . . It is claimed that they are the only statistics that have ever been compiled on the subject that may be regarded as authoritative." The only claim of this character that has been made was by the publicity department of Mr. Lauck's Bureau of Applied Economics, and the only authority for the figures given was W. Jett Lauck.

The first item in the table which follows the above self-laudatory quotation purports to show the cost of anthracite at the mine, divided into labor, supplies and general expenses. In this table Mr. Lauck states that the labor cost of anthracite in 1920 is $2.71 a ton. There is absolutely no warrant for any such statement and Mr. Lauck knows it. The Federal Trade Commission's report published in June, 1919, showed that in November and December, 1918, following the advance in wages in November, the labor cost of producing a ton of anthracite was $3.31, and there has been no reduction in the rates of wages paid the contract miners or the day labor in the anthracite region since that date. As all of the deductions made in that and other tables contained are dependent upon this falsehood the "authoritativeness" of the statement may well be questioned.

Some of the curious, myself among the number, would also be glad if Mr. Lauck would give his authority for the statement that the average margin of the sales agent had increased over 670 per cent from 1914 to 1920. The question, of course, will not be pressed if his delicate sense of honor prevents divulging his authority as in the confidential character of 252 made in a public address by a Government official. In this statement, however, with $2.71 erroneously given as the labor cost, Mr. Lauck himself shows that while the total operating cost had increased 74.1 per cent, the operators' margin had increased only 62.5 per cent. If the actual labor cost had been used in the compilation it is safe to say that the operators' margin would have been shown to be less in 1920 than in was in 1914.

One of the remarkable features of the statement "made public by W. Jett Lauck, consulting economist for the United Mine Workers of America," is the uniformity of the sales agent's margin, be he in New York, Boston or Washington. It is given as $1.19 in 1914 and $3.29 in 1920 in each case, though in the original table the sales agents' margin was 21c. in 1914 and $1.62 in 1920.

Another batch of "news" which Mr. Lauck succeeded in getting somewhat widely distributed related to the earnings of a few of the companies whose annual reports are published. Here again this versatile consulting economist branches out as an expert on finance and capitalization.

*This is the third of a series of articles on the consulting economist in wage controversies. The first and second articles of the series appeared in *Coal Age*, Sept. 2 and 9, respectively.

One of the comparisons he is pleased to make is with reference to the capitalization of the Philadelphia & Reading Coal & Iron Co. and the Lehigh Coal & Navigation Co., and he says:

> For a complete understanding of the extent of profiteering in the anthracite industry one other fact in the financial side of the companies should be mentioned. The Philadelphia & Reading Coal & Iron Co. with $8,000,000 capital stock produced nearly three times as much coal each year as did the Lehigh Coal & Navigation Co. with three times as much capital stock—$29,173,950 being the capitalization of the latter company. This clearly indicates that the Lehigh Company is either grossly overcapitalized or that it is holding an immense area of anthracite coal land out of use for future exploitation. In either case the actual reported rate of return upon investment is no indication of the actual amount which the public is paying for the real capital actually being employed. In the first case profits are being realized upon a heavily watered capitalization. In the other case the public is being charged for the use of property which is being reserved for the making of future profits.

Mr. Lauck in this statement shows himself as either grossly ignorant or wilfully mendacious. It is hard to believe he is the former. It is common knowledge that in the reorganization of the Reading interests the Philadelphia & Reading Coal & Iron Co. was capitalized at a purely nominal figure of $8,000,000 and continued business with an acknowledged debt to the Reading Company of $70,500,000. Besides this it has a bonded indebtedness of $930,000. Mr. Lauck surely knew this, and he also must have known that the Philadelphia & Reading Coal & Iron Co. has not earned or paid the full interest on this debt. It certainly did not earn it in 1915, when its total net income from operations was $60,572, though Mr. Lauck asserts that it earned 0.8 of 1 per cent on its capital stock.

The total capitalization of $8,000,000 stock and $71,430,000 debt is not excessive, for, according to R. V. Norris, one of the Engineers Committee of the U. S. Fuel Administration, the amount of capital required properly to develop and operate an anthracite property is from $7.50 to $8 per ton of annual output, and as the yearly production of the Philadelphia & Reading Coal & Iron Co. is in excess of 11,000,000 tons an actual investment of more than $80,000,000 is represented. According to Mr. Lauck's own statement the total net income of the company in the last seven years has been $14,137,715, an average of a little over $2,000,000 a year, or 2½ per cent on $80,000,000. Yet Mr. Lauck has the effrontery to state that from the pre-war period to the war period "the profit realized increased nearly 500 per cent" and that "this finds expression in an increase in the profit per ton of 435 per cent." A statement more unregardful of the truth was never given public utterance, for, as shown above, the company has not in the last seven years earned or paid the interest on its debt, let alone accumulate a profit.

Equally misleading is the consulting economist's statement "that the Lehigh [Coal & Navigation] Company is either grossly overcapitalized or that it is holding an immense area of anthracite coal land out of use for future exploitation." This company is one hundred years old, having been organized as the Lehigh Navigation & Coal Co. in 1820. Its stock is owned almost entirely in Philadelphia and largely by Quaker interests. Its properties in the Lehigh district of the anthracite region, while extensive, do not lend themselves to low-cost methods of production, nor are they among the really high-cost properties. They may be considered as about midway between what are known as high- and low-cost operations. The properties, however, have the disadvantage of producing relatively low percentages of the prepared sizes so that the product does not yield as high a realization as the more favorably located properties in the Wyoming district, and conservative and skillful management has been at all times necessary in order to yield a profit on the investment.

The Lehigh Coal & Navigation Co. has never been a big dividend payer, but what earnings it has made above its established dividend rate in the century of its existence have been wisely invested, though one investment, the Lehigh Canal, has outlived its usefulness and is now rather a liability than an asset. It constructed and is the owner of the railroad from Easton to Wilkes-Barre, now leased to and operated by the Central Railroad of New Jersey and it financed and is the chief owner of the Lehigh & New England R.R., which it promoted to obtain a more satisfactory outlet for its product into New England. The capital stock of the company outstanding in 1919 was $29,173,950; its funded debt is $26,083,000. Its total production in 1919 was 4,250,000 tons, which, according to the formula announced by Mr. Norris, requires an investment of something over $30,000,000. The company's statement of capital invested in its coal-mining properties for the same year was $31,719,042. Its investment in other properties, securities, government bonds, etc., is about $45,000,000.

If there is anything in these figures to justify the statement of the consulting economist that the Lehigh Coal & Navigation Co. is grossly over-capitalized, it does not appear on the record. Its issue of capital stock is $2,500,000 less than the value of its coal property and improvements. The net income of the Lehigh Coal & Navigation Co. from its coal mining properties was $1,271,812, from which a proportion of the Federal and general taxes, administrative expenses, and interest, has to be paid. Its net revenue from other investments was $3,768,697, or almost exactly three times its net revenue from its coal-mining operations. The total net revenue for the year from all sources, less loss on the canal operations, amounted to $4,910,236, from which administrative expenses, general taxes, interest, etc., amounting to $2,035,353, were deducted, leaving a net income carried to profit and loss of $2,874,883. The proportion of the general expenses that might be allocated to the mining operations cannot be accurately determined, but if only one-fourth were so charged the net income carried to profit and loss from the coal-mining operations would be about $762,000, or less than 3 per cent on the capital stock. The total assets of the company are reported at $85,200,000.

The other statements put forward by Mr. Lauck in this and the other "excluded exhibits" are equally as misleading and as little worthy of credence as those to which attention has been called in this article. It does not appear, however, that anything is to be gained by entering specific denial to every detail. It is believed that enough has been said to show that the Anthracite Commission was justified not only in excluding these but in discrediting by its awards the entire testimony introduced by Mr. Lauck on behalf of the mine workers, for which it is understood they paid him a sum of money approximating $40,000. Whatever else they may be, the mine workers are not "cheap skates."

News from the Capital

By Paul Wooton

To Prosecute Anthracite Profiteers

AT THE Department of Justice Sept. 11 it was stated that attempts to profiteer in anthracite coal would be prosecuted. The department is watching anthracite prices and if attempts be made to unduly raise prices because of present conditions prosecutions will be entered. It was also stated that the action of the department in prosecuting resales of bituminous coal is having effect, tending to lower prices. The department has cases pending in which charges are made that the resales have been merely to increase prices and escape taxes and charges of profiteering.

Nearly 500 Indicted as Profiteers in Coal —More Warrants Expected

IN ITS new drive against coal profiteers the Department of Justice has announced that indictments have been brought against nearly five hundred bituminous coal dealers throughout the United States. A marked increase in the number of indictments is expected during the next thirty days, it was stated at the department.

F. G. Tryon Explains Scope of Survey Statistics on Wagon Mines

REPLYING to an inquiry by Justice J. F. McGee, who represents in Washington coal interests of the Northwest, F. G. Tryon, the geologist in charge of coal and coke statistics for the Geological Survey, says:

"The records of the Geological Survey are not kept in such a way as to show the precise number of wagon mines, defining that term as a mine without railroad switch.

"There are, however, available accurate statistics concerning the output of bituminous coal by size of mines. In the annual report on coal in 1917, part A, production, pages 947-948, it is shown that the total number of mines producing less than 10,000 tons a year in 1917 was 5,888, or 55.3 per cent of all the mines in the country. The production of this group amounted to 10,449,000 short tons, or 1.9 per cent of the entire production of bituminous coal. This was an average per mine per year of 1,775 tons.

"The Geological Survey attempts to collect annual reports of products from every mine, no matter how small. The statistics from the country banks are never complete because of the great number of these little producers. In 1918, the year of maximum production, reports were obtained from 2,719 country banks, practically all of which were without tipples. Their total contribution to the production of the country was 1,108,000 short tons, an average of 406 tons per year.

"The Geological Survey also recognizes a class of 'local commercial mines' which in ordinary times are restricted to a local business only and which produce less than 3,000 tons a year and employ less than ten men. In 1918 reports were received from 550 of these local commercial mines.

"To summarize, the records of the Geological Survey show that there are at least 3,300 country banks and local commercial mines producing less than 3,000 tons a year; that there are about 5,900 mines producing less than 10,000 tons per year; and that the total production of the latter group is less than 2 per cent of the entire output for the country."

Coal Pools Ask Extension of Credit for Demurrage Charges

THE Tidewater Coal Exchange and the Sewalls Point Coal Exchange, operating pools for transshipment of coal through New York, Philadelphia, Baltimore and Norfolk, have requested the Interstate Commerce Commission to grant a hearing concerning extension of credit in connection with demurrage charges assessed under the average agreement. Hearing was set for Sept. 24 in Washington.

Seeks Transfer of Locomotives to Accelerate Movement of Coal

WHILE cars are moving freely from the anthracite roads onto the bituminous carriers, the movement of coal has not been accelerated as much as should be the case, due in some instances to the lack of motive power. As a result the National Coal Association is trying to procure the transfer of locomotives as well as cars. The Transportation Act gives the Interstate Commerce Commission the same power over locomotives that it has over cars, but there is some reluctance to exercise this authority in the present instance.

The owners of locomotives are very much opposed to allowing them to pass out of their possession. Their argument is that a borrowed locomotive receives treatment comparable with that accorded the horse hired from a livery stable. Another argument advanced is that the anthracite strike is likely to come to an abrupt end and the anthracite carriers would be in a position to furnish cars and move the coal promptly. They fear delays in getting both cars and engines back.

Commerce Commission Declines to Modify Open-Top Order for Wagon Mines

AFTER listening to a full presentation of the case of the wagon-mine operators, the Interstate Commerce Commission appeared to be of the opinion that sufficient reasons had not been advanced to justify any change in its order which denies open-top cars to such operators as do not have overhead loading devices. At the start of the hearing the wagon-mine operators were asked to formulate a proposal which would cover the situation and be helpful to them. This request was not complied with.

The main contention on the part of the wagon-mine operators was that the denying of open-top cars to them constitutes an unjust discrimination as between coal producers. Some of the wagon-mine operators went so far as to contend that the delay to cars at their particular mines is no greater than at tipple mines. Practically every witness admitted that he operated only when prices were high.

E. S. Ballard, of counsel for the National Coal Association, asked that the order remain unchanged, in view of the continuing emergency which requires the most efficient possible use of open-top cars. Representatives of the railroads were unanimous in their request that the order be continued. They were joined in this position by the representatives of the Northwest, who held that the order is essential to the public welfare.

The Labor Situation

Edited by
R. Dawson Hall

Connellsville Daymen Get Wage Advance

ON SATURDAY, Sept. 4, the H. C. Frick Coke Co. posted notices at all its plants in the Connellsville region notifying its employees of a wage advance, effective Sept. 1, of $1.50 a day of eight hours to all inside daymen and $1 per day of nine hours to common outside labor in the coke yard and to other daymen in proportion. No change is made in the mining rate or in the pay for other piece work.

This will increase the rate at slope and drift mines of drivers, rope riders, trackmen, blasters, timbermen, motormen and snappers from $6 to $7.50 per day, assistant track and timbermen from $5.25 to $6.75 per day, and common inside labor from $5.05 to $6.55 per day. At shaft mines the rate is 5c. per day higher. Common cokeyard labor is increased from $4.40 to $5.40 per day. All the independent coal and coke plants in the coke region will, as is customary, immediately follow the scale of the Frick company.

Alabama Mine Strike Has Extended Since It Received Union Authorization

LARGE extension of the Alabama coal-mine strike is alleged by the union as a result of the complete authorization of the shutdown by international headquarters, T. R. Kennamer, president of the Alabama district, asserting that 12,000 men out of 26,000 men are out.

Four coal-mining companies and the coal-mining department of a steel corporation have been shut down as the result of the order for a strike to start at midnight Tuesday, Sept. 7.

The issue as defined by the mine workers is that the Alabama mine owners ignored the report of the Bituminous Coal Commission. This the operators deny. The facts, however, are not really in dispute. The commission raised the daymen 20 per cent, which meant to the mine workers of the Central Competitive Region an increase of $1, namely from $5 to $6. Scales, however, rule lower in Alabama and 20 per cent in that state meant less than a dollar a day. The union holds to the dollar advances, the operators to the percentage increase.

"Under the Garfield agreement," says the Alabama branch of the union, "drivers and other classes of inside workmen were getting $3.44 a day, and the highest wage under the scale for inside day labor was $3.84 per day. Tipple men and other classes of outside labor received $3 per day.

"If the operators had given the full award of the commission, drivers would have received $4.44 where they are now receiving from $4 to $4.15 per day; inside day labor should have received $4.84 instead of $4.60 and tipple men $4 per day instead of $3.60."

The operators contend that they were not bound in any way by the commission's award, as they did not in any manner pledge themselves to accept it, nor when requested to do so did they present their testimony, as did the mine workers of Alabama. The hearing was set for Feb. 11, 1920, but the operators did not appear. On the other hand the mine workers assert that the President gave the commission jurisdiction and that the commissioners recognized that fact by recommending that the operators of Alabama meet the representatives of the mine workers and compose their differences.

Feeling that the "representatives" might be held to mean the union, which the operators would not recognize in any way, the employers granted the wage increases awarded, placing their own construction on the award. The union called on the operators to meet with them April 15 of this year, but without avail.

Now the operators and mine workers have agreed to submit all matters in dispute to the new state commission appointed by Governor Kilby, the operators, however, saying that "We will not, directly or indirectly, recognize or deal with the United Mine Workers of America now or hereafter." They cite the fact that the Bituminous Coal Commission did not recommend such recognition.

What Alabama Mine Workers Are Demanding

The demands of the mine workers are in brief: Collective bargaining and recognition of the union as in other districts, uniformity of tonnage and yardage rates for pick and machine mining throughout the state, readjustments of day-labor prices to accord with those obtaining in other states (a somewhat ambiguous demand), abolition of contract and subcontract system for tonnage basis of payment, right to put checkweighmen on tipples (now provided by law), and abolition of payment by measurement or by car.

On Sept. 7 in a coal-strike dispute at Gintown, Sam Lynn, a non-union miner, was shot and killed and several others were injured. J. R. Allison, a union miner, is being held, charged with the murder of Lynn; and Henry Brewer, another miner, is held on the charge of intent to kill.

On the same day the Bessemer Coal, Iron & Land Co. entered suit for $50,000 damages against J. R. Kennamer, J. L. Clemo, W. L. Harrison and other union leaders, charging them with a conspiracy to force the plaintiff to operate a "closed shop" and causing the plaintiff's employees to abandon their work.

It should be added that the mine workers of Alabama have not received any increase corresponding to the advance to daymen recently conceded in the Central Competitive Region and some other districts.

About fifty of the mines of Alabama have already signed up with the union. They employ about 5,000 men. None of these men is included in the call of the union of Sept. 1.

Anthracite Strike Still Unbroken

Asked to Reconvene the Joint Scale Committee for the Purpose of Revising the Report of the Anthracite Commission, President Wilson Refuses

CONDITIONS in the anthracite region are not on the mend. The declaration of the President, that the verdict of the Anthracite Coal Commission must stand, disposes of the hope that a return to work would be followed by a resubmission of the case either to the commission or to the scale committee of operators and mine workers. Thus it removes the reward which the latter hoped to secure by a resumption. Yet at the same time it fills the men with apprehension and so may cause them to return to work without any prospect of reward.

The mine workers know that with the commission and Mr. Wilson against them, the operators will feel sure of their ground. In fact, the operators could hardly dare to make concessions even if they so desired except at their own expense, which is unthinkable with the prices now current. If they did so venture, a conspiracy to raise prices would be assuredly alleged, and the operators would bitterly rue the day. Not only the commission, the President and the operators are siding against the mine workers; the public also will now be in opposition. Hence victory cannot be won by them. This will be borne in slowly upon their consciousness. When it is, the strike is lost. It will not last long.

Many Men in the Northern Field Return to Work

Early last week it seemed as if the men would return to work. On Saturday, Sunday and Monday, Sept. 4, 5 and 6, respectively, the following collieries in District 1—the "insurgent" area—voted to end their "vacation": Lance No. 11 and Nottingham, at Plymouth; Pettebone, at Dorranceton; Warrior Run and Heidelberg No. 1, at Avoca; Heidelberg Nos. 2 and 5 and Cunningham, all at Wilkes-Barre; Mineral Spring, at Parsons; Pancoast, at Throop; Woodward at Edwardsville and Raubs at Luzerne.

Confidence was expressed that the insurgent convention of Tuesday would end the trouble by voting to go back to work. When it met there were bitter recriminations. Edward McCrone of Oliphant, one of the "vacation committee," accused George Evans, also of the committee, of abetting the return of the members of his local union to work, intimating that Evans himself had not been entirely idle. Enoch Williams, the chairman of the committee, berated those who had voted for a "vacation" and who nevertheless had returned to work.

Union Leader Berates Backsliders

He charged the men of District 1 to help maintain the strike they had started. It was a disgrace to them, he declared, to give up battling when Districts 7 and 9, which were not insurgent, were still continuing the struggle unwearied. Even in those districts, however, there were not wanting signs of resumption. On Sept. 8 the Derringer colliery of the Lehigh Valley Coal Co. renewed operation and the Cranberry colliery of the Lehigh Coal & Navigation Co. resumed after a half day's "vacation" on Tuesday, only to close down again soon after.

It must be conceded that with these exceptions the two districts in the south (Nos. 7 and 9) did not give favorable indications. Today they are entirely idle. The leaders seem quite willing to see the vacation continue. It is said that their private admonitions belie entirely their public professions. They trust that having publicly declared against a strike the declaration will protect the union. The "vacation," however, they feel will procure for the mine workers what they want, so why take steps to end it?

On Sept. 10 of 229 fair-sized collieries 66 were working and 163 idle, as shown in the following table:

MINES WORKING AND IDLE SEPT. 10

Name of Company	Number	Working	Idle
Lower Coal Field:			
Philadelphia Reading Coal and Iron Co	34		34
Buck Ridge Coal Mining Co	1		1
W. R. M. McTurk Coal Co	1		1
Pine Hill Coal Co	1		1
Susquehanna Collieries Co	9		9
East Bear Ridge Colliery Co	1		1
Lehigh Valley Coal Co	6		6
Dodson Coal Co	2		2
Oak Hill Coal Co	1		1
Buck Run Coal Co	1		1
Port Carbon Coal Co	1		1
The St. Clair Coal Co	1		1
Maryd Coal Co	1		1
Lehigh Coal & Navigation Co	8		8
Alliance Coal Mining Co	1		1
Mill Creek Coal Co	1		1
Wolf Creek Coal Co	1		1
Trevorton Coal Co	1		1
Mt. Hope Coal Co	1		1
Darkwater Coal Co	1		1
The Enterprise Coal Co	1		1
Madeira-Hill Coal Co	4		4
Laurel Coal Mining Co	1		1
Greenough Red Ash Coal Co	1		1
Cambridge Coal Co	1		1
White & Co	1		1
East Lehigh Colliery Co	1		1
Ellsworth Coal Mining Co	1		1
	85	0	85

Besides this there are seventeen other small collieries not working.

Hazleton Field:			
Lehigh Valley Coal Co	7		7
A. S. Van Wickle Est. (Coleraine)	1	1	
Evans Colliery Co	1		1
G. B. Marle Co	4		4
C. M. Dodson & Co	1		1
J. S. Wentz & Co	3		3
Madeira-Hill Coal Co	2		2
Wolf Colliery Co	1		1
Upper Lehigh Coal Co	1		1
East Point Coal Co	2		2
Lehigh & Wilkes-Barre Coal Co	1		1
Pardee Bros. & Co	1		1
Cranberry Creek Coal Co	1		1
Hardwood Coal Co	1		1
M. S. Kemmerer & Co	1		1
A. S. Van Wickle Est	1		1
Beaver Valley Coal Co	1		1
T. R. Riese Coal Co	1		1
	31	1	30
Upper Field:			
Lehigh Valley Coal Co	13	5	8
Susquehanna Coal Co	3	3	
Lehigh & Wiles-Barre Coal Co	9	9	
Delaware, Lackawanna & Western R.R., Coal Dept.	18	6	12
Hudson Coal Co	14	10	4
Pennsylvania Coal Co	14	3	11
Haddock Mining Co	1	1	
George F. Lee Coal Co	1	1	
Temple Coal Co	6	3	3
Scranton Coal Co	10	5	5
Price-Pancoast Coal Co	1	1	
Leggitts Creek Anthracite Co	1		1
Mt. Jessup Coal Co., Ltd	2	2	
Archbold Coal Co	1	1	
Humbert Coal Co	1	1	
Von Storch Collieries Co	1		1
Connell Anthracite Mining Co	1	1	
West End Coal Co	1	1	
Madeira-Hill Coal Co	1	1	
Wilkes-Barre Colliery Co	1	1	
Peoples Coal Co	1		1
Suffolk Coal Co	1	1	
Jermyn & Co	1		1
Kingston Coal Co	4	4	
East Boston Coal Co	1	1	
Carbondale Coal Mining Co	1	1	
Pittston Coal Mining Co	1		1
West Nanticoke Coal Co	1	1	
Alden Coal Co	1	1	
Phoenix Coal Co	1	1	
	113	65	48

Besides this there are thirty-two collieries in the upper field from which no reports were obtainable, but twenty four of which were probably working.

Seventy-Three Teams Compete at Denver Mine Meet

Winner of First-Aid Contest Is Scarbro, W. Va., and of the Mine-Rescue Event, Leisenring Rescue Station — Lignite Demonstration Mine Fails to Explode in Manner Scheduled

DENVER and the coal operators of the Rocky Mountain region were most hospitable to the Fifth National First-Aid Meet conducted on Sept. 9, 10 and 11 by the U. S. Bureau of Mines. Many who attended the meet at Pittsburgh last year were enthusiastic in declaring that in interest and attendance the gathering at Denver was the best that has ever been held. Certainly the fact that seventy-three teams, the majority from east of the Mississippi, were in attendance shows that interest in safety first has not been permitted to languish in the coal mines of the country. Although the first-aid and mine-rescue contests were the chief centers of interest, the sessions of the Rocky Mountain Coal Mining Institute, the Colorado Metal Mining Association, the Colorado Chapter of the American Mining Congress and the Colorado Society of Engineers were all well attended and fruitful of such results as the exchange of ideas and the renewal of acquaintanceships, for which conventions are noted.

Among local institutes that of the Rocky Mountain region has always been known for sustained interest and practical work. F. W. Whiteside, secretary of the institute, is to be commended for the excellent program and the participants for the instructive papers read. President B. J. Matteson opened the sessions at the State Capitol building on Thursday morning with a welcoming address and introduced James Dalrymple, coal-mine inspector for Colorado, who talked on the subject of ventilation in a way to induce confidence in the ability and technique of his inspection staff, to which he gave much credit for aid in the preparation of his paper. John McNeil had written a paper on the subject of safety in the mining of coal that was read by his son. In this paper stress was laid on the excessive use of powder in the United States as compared with Great Britain. It was pointed out in the discussion that followed that although a greater quantity of powder may be used per shot here than abroad, the discrepancy is not so great when the tonnage also is considered.

Public Must Get Safety Facts and Spirit

In the meeting on Friday the speakers were Robert Snedden and Carl A. Allen, state inspectors of Wyoming and Utah respectively, and Director F. G. Cottrell of the Bureau of Mines. Mr. Allen pointed out the absolute necessity of educating the public as well as the coal operator and the miners in essential safety measures, for no law or regulation can be effective until public sentiment fully supports it. In Utah last year 48 per cent of the accidents were attributed to the carelessness of the man hurt, 12 per cent to lack of proper safeguards by the company and for the remaining 40 per cent it was not possible to place the responsibility with perfect assurance.

Dr. Cottrell made a most earnest plea to the coal men for support in the work of the Bureau of Mines. He called attention to the fact that 60 per cent of the appropriations of the bureau are now spent either directly or indirectly in safety work and stressed the need of more extensive engineering investigations into mining problems. He conceives his work to be to promote conservation and better mining methods through technologic studies and asked the coal-mining industry to help by suggestion and criticism.

Mine-rescue contests with breathing apparatus were held on Thursday with eighteen teams competing. Each team was required to pass inspection of apparatus and to make two trips through a gas-filled gallery and effect the rescue of men overcome by gas. The men were fully equipped with oxygen breathing helmets and their work was pronounced by experts to have measured up to the highest standards. To put all the teams through the tests required from two in the afternoon until nine in the evening, but all stayed on the field until the work was completed. Because of the unsettled condition of Denver following the strike of city tramway employees, the military authorities did not permit the outdoor contest to be held within the city limits, and although excellent grounds were found to the east of Denver the distance was so great that the spectators were not so numerous as at the first-aid contests held within the city on the following days. To Mr. Forbes and Mr. Harrington of the Bureau of Mines, who perfected the arrangements under difficulties, great credit is due for the smooth working of the scheduled program.

Lignite Dust Fails to Explode at Test

A feature of the open-air meet was the attempt to explode a gallery filled with Northern Colorado lignite dust. Until the official report has been made on the test it will not be known just what the test showed. The unofficial version is that the lignite dust was inert to the flame not because lignite is not subject to dust explosions but because the gallery was not properly prepared for the demonstration and the powder charge was not large enough to produce the result. It was stated that none should conclude from this test that lignite dust will not ignite, as samples of the same material have been exploded at Pittsburgh under more normal conditions.

Rescue by aëroplane was demonstrated with the cooperation of the army. A plane was sent from Fort Sill, Ark., to participate in the exhibition. A model slope entrance on the field was seen to explode and a telephonic message was sent for help from the nearby aviation field. A plane carrying medical officers soon arrived, first aid was given the miner brought from the smoke-filled interior of the mine and he would have been carried by air to the base hospital had not the plane suffered a punctured tire. F. J. Bailey, assistant director of the Bureau of Mines, who is an enthusiast on the subject of the use of aëroplanes in rescue work, staged this stunt.

It was not to be expected that there would be as many teams competing at Denver as at Pittsburgh, for a Colorado meeting involves great expense for the contesting teams and the companies that send them. There were over 100 teams at Pittsburgh and seventy-three at Denver, which is considered a remarkable record for a

point so remote from the geographical center of coal production. The exhibition was held in the stadium of the Union Stockyards, an ideal place, where sixteen teams were able to be in action at a time. Hundreds of Denver people as well as visitors attended the meetings.

Operators and Miners Lend Financial Aid

The success of the meet was made possible by the financial support of the Colorado-New Mexico Coal Operators Association, the United Mine Workers, and many mining companies and manufacturers of mining equipment and machinery. Director Cottrell and Assistant Director Bailey of the Bureau of Mines were enthusiastic over the success of the meet and the reception extended by Denver and the Western mining men. Although it may be some years before another meet as far west as Denver may be attempted it is recognized that in every respect the results of this effort were beyond expectations.

At the closing meeting of the institute on Saturday morning, Sept. 11, David Griffiths, formerly State Coal-Mine Inspector of the State of Colorado, read a paper on the relation of coal to the World War. Attorney-General Case of Colorado gave an inspirational address on Americanism. James W. Paul, of the U. S. Bureau of Mines, discussed the failure of the demonstration of the explosibility of lignite dust in the exhibition mine on Sept. 9. He said that its partial failure to explode under the conditions obtaining in the experiment did not mean that lignite mines would be found exempt from the possibility of dust explosions.

R. Z. Virgin, of the Carnegie Institute of Technology at Pittsburgh, Pa., explained the methods used by that educational body in the teaching of mine foremen. Dan Harrington, of the U. S. Bureau of Mines, read an excellent paper on the "Duties, Trials and Difficulties and Co-operation of Officials in Connection with the Fire Boss."

Butte and Huntington Contend for Meet

The first-aid contests were concluded on schedule time in the afternoon, a large number of persons attending the event. In the evening a notable gathering of mining men assembled in the Denver Auditorium to witness the award of prizes, the speakers being Governor Shoup; J. T. Burns, assistant secretary of the American Mining Congress; W. W. Curds, a coal operator of Colorado Springs; Samuel Pascoe, district president in Kentucky, of the United Mine Workers, and F. G. Cottrell, Director of the U. S. Bureau of Mines, who announced the awards of the Jospeh A. Holmes Safety Association and the victors in the first-aid and mine-rescue contests.

A request from Butte, Mont., that the next meet be held in that city was extended by J. L. Boardman of the Anaconda Copper Mining Co., while R. M. Lambie, the chief inspector of West Virginia, spoke in favor of Huntington, W. Va. Eight teams tied for the first place in the artificial-respiration and resuscitation event. The award was given to the Knox County Operators' Association team of Bicknell, Ind.

The *Coal Age* silver cup for first place in the mine-rescue event fell to the H. C. Frick Coke Co.'s Rescue Station at Leisenring, Pa.; S. Cominsky captain. The second prize fell to the Victor-American Fuel Co., Madge mine, Col.; captain, Robert Halbert. This team also was awarded first place for the combined rating in mine-rescue and first-aid work and was further honored as first in the State of Colorado. Third place was won by the Homestake Mining Co.'s team of Lead, S. D.; captain, Ed English.

The first Illinois team was that of the State Mine-Rescue Station at Benton; Alex. Weir, captain. Among the Wyoming contestants the leading team was that of the Union Pacific Coal Co., Rock Springs; Lige Daniels, captain. From the States of Indiana, New Mexico, Pennsylvania, South Dakota, Utah, Washington and West Virginia, only a single team entered the mine-rescue contests. They were all awarded recognition as being first in their respective states.

The *Coal Age* silver cup for primacy in the first-aid contests fell to a team of the New River Co., Scarbro, W. Va.; Louis Roncaglione, captain; percentage 99.1. This team also was awarded prize for first place among coal-mining teams only. It further got a prize as the leading team in first-aid work in the State of West Virginia. This team has won honors before, being second in the state contest last summer.

Second place fell to No. 1 team of the St. Louis, Rocky Mountain & Pacific Coal Co., of Raton, N. M.; James L. Bisch, captain. To it fell the prize for being first in first-aid of all teams entered from the Rocky Mountain States. It received honors and a prize for leadership in first aid in its own state. The De Bardleben Coal Co.'s team, from Sipsey, Ala., took third place. L. Shores captained this team. It also received the honor of being first in its own state.

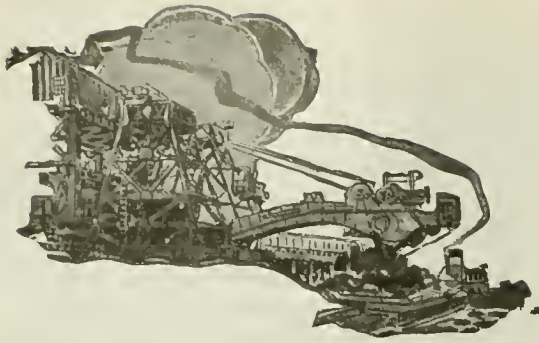
State honors fell to the Berwind mine, of the Colorado Fuel & Iron Co.; D. Aitkin, captain. Eugene Fultz, captain of the Illinois State Mine Rescue Station at Herrin, having piloted his men successfully, received for that team the honor of being first from Illinois. Indiana's leading team was that of the J. K. Dering Coal Co., Mine No. 6, Clinton, Ind.; Matthew Kerr, captain. Iowa's leadership fell to the Smoky Hollow team of Hiteman; Alf. Hjort being captain.

The Haileyola Coal Co.'s team of Haileyola, Okla., William Ogilvie, captain, took first place for Oklahoma contestants. From Pennsylvania, the best first-aid team was that of the H. C. Frick Coke Co., Standard mine, Mount Pleasant; C. J. Spence, captain. Utah's first honors fell to the Spring Canyon's First-Aid Society, Standardville, Utah; James W. Bingham, captain. Virginia's champion was the team of the Clinchfield Coal Co., of Dante; W. E. Wolfe, captain. The leading honors for Wyoming were captured by the Owl Creek Coal Co.'s team, Kirby; with William Lloyd, captain.

Other states having but one participating team in the first-aid events were Arizona, Arkansas, Montana and Washington. In all eight silver cups were awarded to the teams occupying first places. Every contestant received a watch fob.

Rail Movement to New England Recedes

MOVEMENT of bituminous coal to New England by rail fell off sharply during the week ended Sept. 4. Cars forwarded through the five Hudson gateways of Harlem River, Maybrook, Albany, Rotterdam and Mechanicsville as reported to the Geological Survey by the American Railroad Association numbered 4,456. This was a decrease of 1,336 cars, or 23 per cent, when compared with the preceding week, and was 280 cars below the movement during the corresponding week of 1919.



Production and the Market

Weekly Review

All Production Declines—Car Placements Are Better—Prices Recede—Southern and Midwest Regions Experience Labor Troubles—Continuance of Priorities Is Protested—Anthracite Miners Showing Disposition to Return

BITUMINOUS production declined during the week ending Sept. 4, with an output estimated by the Geological Survey of 11,051,000 net tons. This is a decrease of 339,000 tons, or 3 per cent, when compared with the preceding week. The decrease centered in the northern Appalachian region.

Week's anthracite output fell to 1,084,000 net tons, occasioned by the miners' "vacation." Production of beehive coke decreased with an output of 395,000 tons.

Bituminous loadings on Labor Day amounted to about a fifth of a normal day's loading. This usual Labor Day slump will hold down the production figure for the week ending Sept. 11. Late reports from mining sections point to a marked improvement in car placement as well as labor conditions. Exceptions to this are the local strikes in Midwest region and Alabama.

Price recession continues in districts favored with better car supply. In the South and Midwest the market has advanced or at best remained firm.

Consumers in the areas adversely affected by the continuance of Lake and New England priorities are apprehensive of a shortage unless this coal is diverted from priority channels.

The release of 25,000 cars now assigned to the coal trade by Service Order 7 is requested by representatives of steel manufacturers, who assert that they are being handicapped by lack of transportation equipment.

New England rail movement fell off sharply, a total of 4,456 cars being reported through the Hudson gateways for the week of Sept. 4. Lake dumpings are in excellent shape, 884,989 tons being the figure for the week ending Sept. 11.

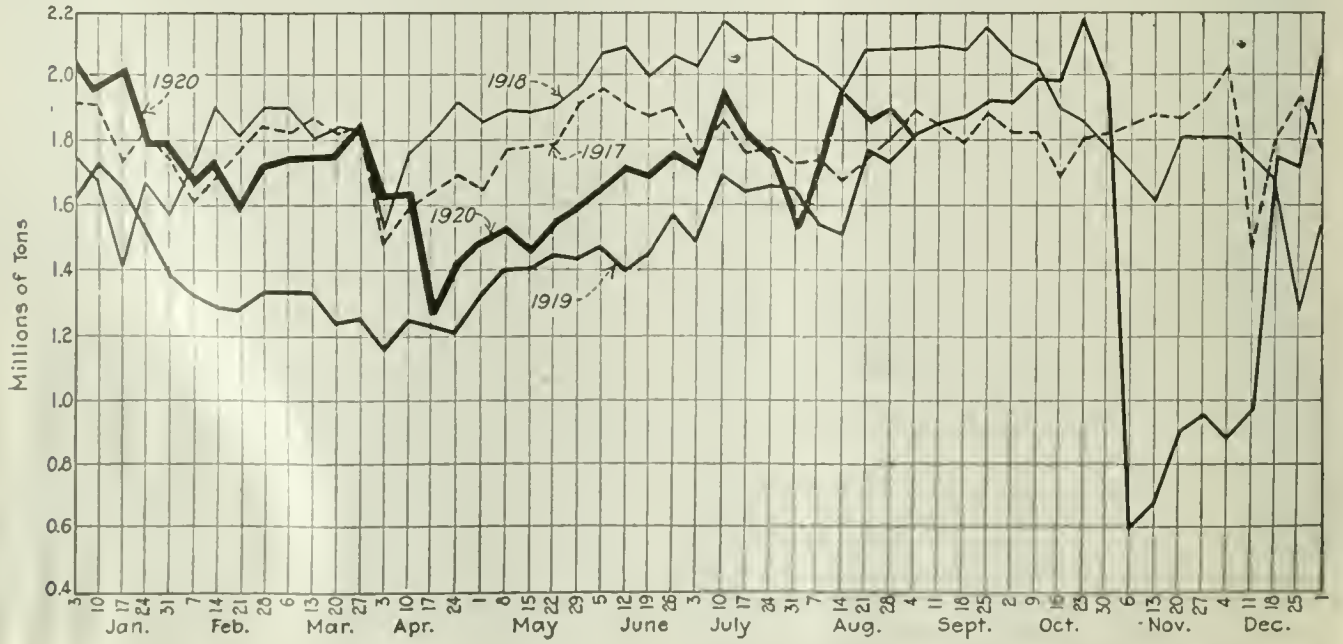
President Wilson's refusal to reopen the anthracite wage parley has evidently been accepted by labor. Developments indicate the return of more miners to work. The men are preparing for a long and intensive campaign to obtain higher pay.

Lake Coal Dumped Season to Sept. 11

(NET TONS)

	Cargo	Fuel	Total
1919.....	16,331,581	752,707	17,084,288
1920.....	12,545,059	745,329	13,290,388

Average Daily Production of Bituminous Coal*



*From weekly report of Geological Survey.

Reports From the Market Centers

New England

BOSTON

Demand Continues Light — All-Rail Shipments Are Good — Contract Deliveries Increase — Better Inquiry for Water Coal — Anthracite Outlook Causes Anxiety.

Bituminous—There have been almost no developments of any significance here in the past week, although certain features of the market have been emphasized the last few days. The trade is beginning to feel the effect of so much curtailment in some of the industries and it is clear that for a month or two there will be only a dull market.

There is no active demand for spot coal. Consumers who were steadily purchasing to replace coal not forthcoming on contract and to secure a seasonable reserve are now out of the market, content to take what may come forward on early spring commitments. Most distributors report only meagre sales and are wondering what the course of prices will be the next few weeks. Apparently there is an entire absence of coal coming on speculation, either by water or rail, and this shows that for the immediate future no very considerbale spurt in manufacturing is looked for.

Practically all east-bound embargoes against coal are now cancelled. Congestion at the Hudson River gateways is clearing up gradually and receipts are being maintained well up to the August average. A few weeks more of this will dull the edge of current demand and probably cause widespread cancellations of old purchases for delivery in September and October. When Service Order 9 expires on Sept. 21 there is certain to be an acceleration of deliveries on contract. Large consumers, however, are now free to admit they have comfortable stocks in the aggregate; their anxiety now is to arrange for more even distribution to their several plants. This sounds very little like a panic market in the fall.

Water coal is in somewhat better demand, but not to the extent of furnishing any broad market for coal on Order 11. The five-day suspension expired Sept. 7, but the tonnage dumped the past few days is nowhere near up to the quota, nor would New England absorb the coal if it were.

At Hampton Roads despatch on shipments continues excellent. The leading agencies are well up on contract deliveries and several of the rehandling factors have free coal. Current requirements of many small plants are being met through these channels.

Congestion continues at Curtis Bay, due to the difficulty of moving high-volatiles shipped from the mines under Order 11. Liberal use of the embargo process is expected to correct this.

Current prices on bituminous at wholesale are slightly firmer this week, chiefly owing to fewer traffic restrictions:

	Clearfields	Cambrias and Somersets
F.o.b. mines, net tons	$8 50@ 9 75	$9 00@10 00
F.o.b. Philadelphia, gross tons	12 15@13 55	12 75@13 85
F.o.b. New York, gross tons	12 60@14 00	13 15@14 50

Anthracite—The "vacation" which at most collieries has now lasted 10 days is causing some apprehension. Retailers here have been on a hand-to-mouth basis all season and any prolonged suspension in mining is bound to have serious results.

Tidewater

PHILADELPHIA

Anthracite Is at a Standstill — Steam Activity Confined to Storage Rice and Barley—Bituminous Prices Are Firm—Contract Shipments Improve — British Trouble Increases Export Demand.

Anthracite—Very little coal has been received during the week past, due to continuance of trouble at the mines. Independent operators have been able to ship some coal, but it has had no effect on the general situation. The dealers generally have delivered all of the prepared sizes they had on hand and are now working on pea.

The public as yet takes but a passing interest in the strike. There is a strong tendency on the part of the consumer to complain of prices. Rumors of more price investigations naturally emanate from such agitation. It cannot be denied that the retailers are getting at least a fair profit for their coal. However it is really difficult to establish any figures, as dealers are not advertising prices, having no coal to offer.

Steam trade activity is confined to rice and barley, the only two sizes available in any quantity for the market. A few of the larger companies have a fair tonnage of barley in storage and they are loading this rapidly at their fixed price of $2.25 per gross ton at mines. Rice coal in limited quantity is $3. Independent buckwheat is $5@$6, rice around $4 and barley $2.50.

The river coal producers are offering mostly rice and barley. This coal is close to $3, making a delivered price of $5.45.

Tide movement of steam coals, with the exception of barley, has almost ceased. The accumulation has been almost cleaned up. Recent prices prevailing at Tide for company coal were: buckwheat $7.65, rice $5.55, boiler $5.15 and barley $4.80.

Bituminous—As is to be expected, the anthracite trouble has increased the demand. Price range has hung close to $10. Better coals are still almost unobtainable and on such as Pool 9 quotations are rarely heard. Most of the steam trading is confined to Pools 10 and 11. Pool 10 prices range $9.50@$10, while Pool 11 is $8.75@$9.25.

The Fairmont gas coals are selling $9.25@$9.75, the mines. Many concerns want screened coal but so far very little tonnage is being screened. The Pennsylvania gas coals, particularly the low sulphur grades, are being sold $11@$12 at mines.

Concerns with contracts are getting good shipments and continue to accumulate fair stocks. Very few selling concerns are soliciting business and 90 per cent of the spot trading is direct with shipping offices.

Consumers are not stocking spot coal and complain of the high cost, particularly with the increased freight rates. The iron trade continues to take heavy tonnages of coal.

Assigned car orders are causing much trouble for the producer, as consignees are not taking the full amount allotted. A market is easily found for such coal, but the confusion is causing the shipper more than ever to hope for the time when he does not have to conduct his business upon orders from those not directly concerned with the production of coal.

This week has shown an increase of inquiries for foreign deliveries, due to the unsettled condition in the British coal industry. Nevertheless, only limited permits are being granted for export shipments. Should the anthracite dispute be settled it is thought the export ban will be lifted, as there is a general feeling that there would then be more than enough bituminous to cover domestic demand.

Coke prices remain firm with foundry $18.50@$19 per net ton at ovens for Connellsville, and furnace around $18.

BALTIMORE

Strong Protest Made Against Continuance of Order 11 — Car Supply Fine and Prices May Decline Further — Hard Coal Receipts Almost Wiped Out.

Bituminous—Following action of officials of the New York Wholesale Association in protesting to the Interstate Commerce Commission against continuance of Order 11, the subject was taken up by the Maryland Jobbers' Association last week. The Government contends that the recent 5-day suspension of the order was due to a condition at Hampton Roads, and not to general congestion. Also that there was no need for further suspension of the order, but that the movement would soon create a supply condition in New England and cause the end of priority. No action has been taken on the subject by the local wholesale trade as yet.

Meanwhile, business men are being stirred by the fact that New England industries are being supplied with coal at prices about $2 per ton f.o.b. mines below what others must pay for the same grade.

On line trade Baltimore & Ohio R.R. coals are selling about as follows, f.o.b. mines: Pools 9 and 71, $9@$9.50; Pool 10, $8@$8.50; Pool 11, $6.50@$7.50 and Pool 18, $6@6.50. Gas coals jumped 50c.@75c. in the past week. Run of mine is around $9, and a little ¾-in. is offered at $10@$10.50. The Pennsylvania line coals are stiffer, and sell $10 @$10.50.

Car supply on the B. & O. and Western Maryland is fine. Since Labor Day there has been a splendid run. Coal men say that such a supply will bring decided drop in prices if continued. Local industries are fairly well supplied and good deliveries on contract in many cases allow some diversion of contract coal to bunker sales. This has cut a hole in bunker prices and brought the entire market to a more even level.

Exports for the first part of September have dropped. The first week shows a movement of only 46,429 tons of cargo and 2,945 tons of bunker. Loadings in sight, however, are expected to run the month's total above the 300,000-ton mark, despite the necessity of having both the ship and coal ready before a permit is granted.

Anthracite — Receipts have been almost wiped out by the miners' "vacation." It is hoped that the stand of President Wilson will cause the men to gradually resume work. A big gap has been made, however, and with the local supply already very short, dealers are pessimistic over the outlook.

NEW YORK

Receipts Are Slowing Up — Shortage May Ensue — Prices for Independents Stiffen — Bituminous Demand Is Slow and Price Easy — England's Threatened Strike May Raise Prices.

Anthracite—Should shipments continue in their present reduced state for any great length of time conditions here would be serious. No great hardship is expected, however, as most consumers have part of their winter coal put away.

The advance in the price of coal at the piers has occasioned comparatively little complaint. Retail prices have increased correspondingly, but there are instances where no quotations are being given because the dealer has no coal to sell. Stocks on hand are being delivered in small lots only.

Reports that labor trouble in and around Pittston is likely to be settled soon was welcome news. A resumption of shipments from those mines would go a long way toward alleviating the situation.

President Wilson's refusal on Sept. 10 to reopen the wage negotiations is expected to be favorably received by the industry. What effect it will have upon the workers themselves is problematical.

All of the prepared coals are badly needed. Independent coals are scarce, most of the output having been sold up. Although Canada is said to be well prepared for winter, buyers are still trying to get additional tonnage.

The steam coals are becoming scarcer. For the independent coals at the mines some dealers were quoting buckwheat $6@$6.25; rice $4.25@$4.50 and barley $3@$3.50.

Quotations for company coals, per gross ton, at the mine and New York Tidewater, lower ports follow:

	Mine.	Tidewater.
Broken	$7.60@$7.75	$10.21@$10.36
Egg	7.60@ 7.75	10.21@ 10.36
Stove	7.85@ 8.10	10.46@ 10.71
Chestnut	7.90@ 8.10	10.51@ 10.71
Pea	6.10@ 6.55	8.57@ 9.02
Buckwheat	4.00@ 4.25	6.47@ 6.72
Rice	3.00@ 3.50	5.47@ 5.97
Barley	2.25@ 2.50	4.72@ 4.97
Boiler	2.50@ 2.75	4.97@ 5.22

Bituminous—Suspension of the anthracite mines did not create the anticipated increased demand for bituminous. Market conditions are not active. Prices are low and certain shippers expect a further break. A continuation of the suspension in the hard-coal fields and the inauguration of the English strike will, however, likely stimulate prices.

The report that the suspension of Service Order 11 only applied to the mines and not to the piers raised a storm of protest here. A telegram was sent to the Interstate Commerce Commission asking that the suspension be made permanent, as coal men believe that New England consumers are well prepared for cold weather.

Car supply is improving. Most of the roads are furnishing over 60 per cent. Many new miners are coming into the fields because of the anthracite troubles. It is expected many will remain permanently.

There is no demand and not much coal is being offered. There are many loaded boats lying about and among them some "hot" cargoes which in some instances have been offered at lower prices than coal f.o.b. piers.

Coals along the New York Central lines were being quoted $8.35 at the mines. Later quotations varied, ranging $7.50@$9.50 for the cheaper grades. On Pool 18 the range was $7.50@$8.50 and at the piers up to $13.50. For Pool 10 and better, prices ran as high as $14.50.

Lake

BUFFALO

Relief Anticipated with Close of Navigation—Demand Is Not Very Active—Uneasiness Displayed Over the Anthracite Mining Outlook.

Bituminous—The effort is apparently being made in some operating quarters to maintain high prices, but the Buffalo jobbers are not assisting. The only way to get miners' wages down to the union scale everywhere is to cut down the prices till they have to drop. Here is a conflict in sight that may last some time.

A good many of the consumers are holding off and refusing to stock high-priced fuel, some of them even shutting down rather than pay a premium. This will have its effect, but more of it will have to be done before there are results. Jobbers are doing what they can by making the most of their low-priced contracts. At the same time consumers appear to be getting what coal they want.

The situation is easier from week to week. Not much complaint is heard of car shortage, and when the priority order to ship to the Lakes is off the rush of coal this way will be heavy. It may be that this will be needed to bring down the prices.

About all that consumers will pay for steam coal is $7.50@$8.50, though it is hard to get uncontracted coal for that. Predictions of further decline continue, but the actual falling off is slow.

Anthracite — The situation is anything but encouraging. Production is far short of demand, though before the late disturbance among the miners it might have been sufficient to meet actual consumption. The men have done little work for some time and the way they come back to the mines is not encouraging. Meanwhile, the shortage is daily growing most serious.

The anthracite consumers are anxious. They see winter coming with no coal ahead but they say nothing about the late advance in prices. The city price now is $13 for grate and egg, $13.25 for stove and chestnut, $11.10 for pea and $9.40 for buckwheat. Consumer has a top cost of $2.50@$2.75 above this. The advance over August is $1.05 for the larger sizes and 90c. for pea and buckwheat.

Lake—Shipments are so far pretty good, being for the week 103,000 net tons of which 14,000 tons cleared for Chicago, 17,100 for Milwaukee, 14,000 for Sheboygan, 1,300 for Racine, 40,100 for Duluth and Superior, 10,000 for Fort William and 6,500 tons for Port Arthur.

Freight rates are very irregular, depending on the handling facilities at unloading ports, a small dock often paying 15c.@50c. over a large one in the same port. The rates are $1.50 to Racine, 75c.@$1 to Chicago, 60c.@90c. to Milwaukee, 60c. to Sheboygan, Duluth, Fort William and Port Arthur.

Coke—The price is very unsteady, but jobbers are generally able to get 72-hour foundry $18@$18.50 at the ovens and $15 for 48-hour furnace. The very high price of $20 is asked for crushed domestic coke. Actual sales are light.

MILWAUKEE

City May Resort to Coal Rationing—Competitive Buying Causes Famine Scare — Lake Receipts Show Improvement.

There may be strict rationing of coal to Milwaukee consumers during the coming winter unless anthracite production is speedily resumed. Not-

withstanding this serious outlook, dealers say it is improbable that there will be any increase in price of anthracite. Deliveries of hard coal have been above normal thus far the present year, and it is figured that fully 40 per cent of the users of this grade of fuel have secured their winter supplies.

Individuals and firms have bid against each other and accumulated enormous stocks while others have been compelled to get along with moderate supplies. Several big industries in the city are running on a hand-to-mouth basis. Unless the fuel supply will be adequate, the city libraries and the public museum may close for the winter months.

Receipts by Lake thus far in September compare favorably with the record of the same period last year. The total receipts of hard coal by Lake this season aggregate 536,046 tons, soft coal 1,155,943 tons. Last year 580,371 tons of anthracite and 2,225,025 tons of bituminous had been unloaded.

The following schedule of prices prevails in the Milwaukee coal market:

	Per ton.
Anthracite—	
Stove and nut	$15.05
Egg	14.80
Buckwheat	11.50
Plus an extra charge of $1 per ton if coal is carried into bins or cellars.	
Bituminous—	
Youghiogheny and Pittsburgh lump	$12.50
Youghiogheny and Pittsburgh pile run	11.50
Youghiogheny and Pittsburgh screenings	10.00
Hocking screened	12.50
Hocking pile run	11.50
Hocking screenings	10.00
West Virginia splint screened	14.00
West Virginia splint pile run	12.00
West Virginia splint screenings	10.00
Pocahontas screened	15.25
Pocahontas mine run	12.00
Pocahontas screenings	11.00
Kanawha gas mine run	12.00
Smithing	13.00

CLEVELAND

Heavier Receipts Promised Cities — Better Movement Is Predicted — Lake Dumpings Slightly Lower — Retail Stocks Are Low, but Price Unchanged—Mine Prices Soft.

Bituminous — Labor Day interruptions resulted in diminished coal production but output is again improving. Temporary congestion on a number of roads was partly the cause but this situation also is being cleared away.

In conference with representatives of northern Ohio cities, operators and rail representatives promised relief to apprehensive communities. Owing to the large shipment to Lakes it is estimated that the receipts at these cities have been reduced 85 per cent.

It is feared that even if production were sufficient to supply all needs after the Lake season ends, railroad facilities would be inadequate to handle same. Under the plan put forth by the operators deliveries to various cities are to be increased. Cleveland is promised 115 cars daily, cumulative from Sept. 1, which compares with an average of 34 cars previously.

Operators believe that under the stimulus of better freight movements they will be able to take care of the Lake trade, public utilities and railroads as well as affording the cities temporary relief. The communities concerned, pending the trial of this plan, have dropped their campaign to get a modification of Order 10.

Mine prices for No. 8 slack and mine run are still soft at $8.75@$9.

Pocahontas and Anthracite — Pocahontas dealers are hoping for better supplies as a result of the above plan of operators to increase city shipments. Retail stocks are extremely low and householders are becoming insistent upon deliveries. Sufficient coal will probably be received to care for immediate needs, carrying the trade over to the end of navigation, when ample tonnage should be released. Due to labor troubles in the anthracite regions receipts are exceedingly small.

Lake—Dumpings are slightly less. This is occasioned by a temporary decline in freight movements resulting from the Labor Day holiday. Sufficient bottoms are available for coal and are being loaded out as rapidly as coal is received. Better movements during the latter part of the month are predicted.

Retail prices of coal per net ton delivered in Cleveland follow:

Anthracite—Egg $16@$17.50, chestnut and stove $16.25.

Pocahontas — Shoveled lump $16, mine run $12.50.

Domestic Bituminous—West Virginia splint $13.25; No. 8 $12, Millfield lump $14.50, Cannel lump $15.

Steam Coal—No. 6 and No. 8 slack $12.60@$12.75, No. 6 and No. 8 mine run $13.60@$14.25; No. 6, 3-in. lump $14.45.

Inland West

CHICAGO

High Prices Continue — Larger Consumers Are Retiring From Market— Domestic Situation Is Causing Considerable Apprehension.

High prices are prevailing in spite of the fact that very few big industries are buying much coal. Operators and jobbers are having no difficulty in obtaining their price, even though the more important consumers are not in the market.

The public is now very much worried over the coal problem, and there is some talk of the Chicago Association of Commerce undertaking a vigorous campaign, warning the public to conserve supply. Coal men are of a divided opinion as to the benefits to be derived from such a campaign. Doubtless some fuel would be saved, but, on the other hand, the public would be thrown into an unnecessary panic and pressure would be brought to bear on the market.

While there has been but slight activity in the steam coal market, the demand for domestic is perhaps a little more urgent than it has been this year. Dealers are willing to pay almost any prices for good prepared coal. The great demand is for southern Illinois coals, like the Franklin County product, but, on the other hand, dealers are glad to get coal from the other less favored fields. Eastern coals are becoming scarcer every day.

MIDWEST REVIEW

Prices Are Firm — Labor Conditions Are Unsettled — Car Supply Is Inadequate.

Prices are firm, and the tendency of the market is upward. The main factors in keeping prices at their present high levels are unsettled labor conditions and abnormally poor car supply. Both factors are prevalent in all of the Middle Western producing fields.

The labor difficulties encountered in the Springfield district over the price of powder appear to have been settled, as has the "outlaw" strike of the muledrivers in the Belleville district. The differences of opinion between Iowa operators and miners has also been adjusted, and mines are now reported working again.

The whole question of coal mine labor is getting to be most unsatisfactory, both to the public and the operators. Now that the day-men at the mines have acquired their increase, it is thought pretty generally that the miners themselves will feel that they are entitled to more money. The result, of course, will be another strike. It might be said that the operators in Northern Illinois have already been faced with this question, and a number of mines are now down.

The unsatisfactory feature of the whole problem is that labor is loafing on the job. It makes no difference whether or not the wage scale is satisfactory, or whether there is an opportunity to work, the men are not producing anywhere near the coal that should be mined. If labor really made up its mind to do some real work, the tonnage from the mines in the Middle West would be increased to a marked extent. It is a common thing to hear of the men refusing to go to work on Saturday morning, even if the mines are provided with cars enough for a satisfactory day's run.

The car supply has not improved and it will doubtless be shown that the Middle West mines received only a 40 per cent supply during the past week.

Prices on coal produced in this territory are as follows:

Northern Illinois (Spring Valley, Wilmington, etc.,) on contract: Prepared sizes $4@$4.25, screenings $3.25 @$3.75. Current sales: Prepared sizes $5.50@$7, steam $5@$6.50.

Central Illinois, (Springfield and Peoria districts) on contract: Prepared sizes $3.50@$4, mine run $3@$3.25, screenings $2.50@$3.25. Current sales: Prepared sizes, $6.25@$8.50, mine run $6@$7.50, screenings $6@$7.

Southern Illinois, (Franklin, Williamson and Saline Counties) on contract: Prepared coal $4.25@$5.50, mine run $3.75@$4.25, screenings $3.25@$4.25. Current sales: Prepared coal $7.25@ $8.50, mine run $7@$8, screenings $6.75 @$7.50. All prices f.o.b. mines.

INDIANAPOLIS

Operators See Effect of New Price-Fixing Law — Demand Is Lighter — Prices Show Slight Decline—Car Situation Is Clearing.

Operators believe they can already see some effect from the recent ruling of the Federal Court Sept. 6, when it was decided that a coal commission created for the purpose of fixing prices in the state was legal and binding. Several operators say that the ruling has had a decided effect on the buying public in that they have quit buying in large quantities, preferring to wait until the operation of the law is put into effect. At the present time little change has been noted in price, but the demand is slow. Steam prices are slipping a little.

The car situation appears to be clearing up. Operators on the Pennsylvania R.R. say that road during the past two weeks has been showing every disposition to co-operate with them to provide better service. Other roads are improving in this feature of production to a marked degree.

LOUISVILLE

Coal Shortage Is Unabated — Export Demands Controlling Spot Market — Strikes Curtail More Operations — Prices Are Firm.

Retail yards are empty, with not much prospect of improvement until after Lake shipments end and public utilities priority is lifted.

Export buying has opened up stronger as a result of weakers prices Considerable tonnage is moving toward Savannah and Charleston from Southeastern Kentucky. Northeastern Kentucky export shipments are handicapped by embargoes.

There is not much coal available for industrial or domestic use. It is claimed that exporters are controlling the spot field today.

There is very little Western Kentucky coal available in the market just now due to priorities, strikes and continued car shortage. Louisville retailers are paying $8.50 for West Kentucky lump, the freight making $9.25 on yard. The retail price is $11.50 a ton.

River movement has been greatly curtailed by the heavy demand, it being more profitable to ship by rail and avoid chances of heavy losses in hazardous boating.

It is claimed that public utilities are stocking coal heavily. Detroit has been securing very large supplies and the same situation holds good elsewhere. Assigned cars are taking a large percentage of production.

There are a few scattered strikes in the Southeastern Field, principally around Pineville, with trouble also in Pike County, on the West Virginia border. This trouble is not affecting the field as a whole, in view of the short car supply.

Gas coal is selling around $10.25 a ton; steam coal $9.50@$9.75. Assigned car coal is being sold $6@$7 a ton.

DETROIT

Active Demand Continues — Receipts Are Altogether Inadequate — Anthracite Stocks Are Depleted.

Bituminous—While some consumers are withholding orders in the expectation of lower prices, the number apparently is so small as to make little appreciable difference in the volume of inquiry coming to wholesalers and jobbers. Consumers are all manifesting a lively interest in the market, although not making much headway toward getting winter stocks.

The movement of coal into Detroit is altogether inadequate. The greater proportion of incoming shipments is to meet the current requirements of industrial and manufacturing plants and the public utilities.

The supply is too slender to enable steam coal users in general to accumulate reserves that are necessary to assure continuance of operation during the period when unfavorable transportation conditions will make a regular supply uncertain.

There is a small amount of coal coming from Ohio and very little from West Virginia or Kentucky, except stock sent to apply on longtime contracts. Mines in Indiana and Illinois are contributing only a limited quantity of coal, labor troubles in these districts having curtailed shipments.

Anthracite—Uncertainty as to the future and a very inadequate supply in the present, create an unsatisfactory condition in the local market. Prices to householders range $14.25 for egg to $16.75 for chestnut, and predictions are being made by some of the dealers that a considerably higher price level will be attained.

Few retail yards have any stock on hand and dealers who have been unable to get shipments during the summer find that the present labor troubles are cutting off even the small amount of stock previously obtainable.

COLUMBUS

Production Is Reduced During Week—Car Supply Is Estimated About 65 Per Cent — Demand for All Grades Is Strong and Prices Range High—Lake Trade Is Progressing Satisfactorily

Production is still restricted by car shortage although some fields show an improvement. The car supply is still erratic and this has the effect of keeping the trade in a very unsettled condition.

Production in the Hocking Valley field was about 70 to 75 per cent while Pomeroy Bend, Crooksville and Cambridge supply was about 65 per cent. Eastern Ohio shortage is still acute and production is not much over 55 to 60 per cent.

The Lake trade is still attracting the major portion of tonnage. Lake priorities still hold fast despite efforts to have them amended and dumpings at the docks have been exceptionally heavy. Much encouragement is felt over the situation and it is believed the Northwest will be well supplied. Lake prices are holding fairly firm in all fields. The usual figures offered for Lake tonnage range $5.75@$6.50. Vessel movement is improving.

The retail trade is quiet as a result of lack of stocks. Dealers are now apportioning the available supply to various customers. Householders are getting anxious and are bringing their pressure to bear to have priorities suspended. It is realized that a heavy burden will be thrown upon dealers when tonnage is available, as only about 27 per cent of the winter's supply has been stored.

Steam business is strenuous and there is active bidding for free cargoes. Prices are maintained at high levels with no weakness appearing. Public utilities are well supplied under the priority orders. Manufacturing concerns are able to operate from hand-to-mouth and no shutdowns of consequence are attributed to fuel shortage.

Retail prices in Columbus are: Hocking lump $8.50@$9.50, mine run $8@$9.25, Pomeroy lump $9@$10, mine run $8.50@$9.50, West Virgina lump $10.50@$11, mine run $10@$10.50, Pocahontas lump $11.50.

Prices at mines of the various coals used in Ohio are:

Hocking lump	$5 50@$8 50
Hocking mine-run	5.00@ 8.25
Hocking screenings	5 00@ 8 00
West Virginia splints, lump	6 50@ 9.00
West Virginia splints, mine-run	6.25@ 8.75
West Virginia splints, screenings	6.25@ 8.50
Pomeroy lump	6.50@ 8.50
Pomeroy mine-run	6.25@ 8.25
Pomeroy screenings	6.50@ 8.50
Pocahontas lump	8.00@ 9 50

South

BIRMINGHAM

Production Is Not Seriously Crippled by General Strike Order—Car Supply Is Somewhat Improved — Market Is Strong for All Grades.

A summary of the situation incident to the general strike order made effective Sept. 8 shows that union leaders so far have signally failed to seriously disturb coal production. No large number of strikers were added to the list of those remaining idle from the local strikes which have been in force at different points for several months past. At most of these operations the places of strikers have been filled to a large extent by recruited labor.

Mines in the Birmingham district have been furnished a better car supply. While some time was lost due to lack of equipment, a fair output was obtained at all of the larger mines and at the small commercial and domestic operations with undisturbed labor conditions.

There is an acute demand for all grades of coal. Spot prices range from $8@$8.50 per net ton, mines, though a peak figure of $10 was reported the past week. Vessels at Mobile, New Orleans and other Gulf points are being badly delayed awaiting receipt of coal for bunker and export. Slow and inadequate loading facilities at the ports contribute to the delay.

News From the Coal Fields

Northern Appalachian

CONNELLSVILLE

Spot Market Is Easier, with Lighter Demand — Efforts Made To Negotiate First Half Contracts — Heavier Receipts on Contracts Reported.

Prices for spot coke have eased off perhaps 50c. a ton and the market generally is less active. The softening seems to be due to decreased demand rather than to heavier offerings. The decreased demand may be attributed to heavier receipts on contracts rather than decreased furnace requirements. As a matter of fact the production of pig iron is tending to increase. No blast furnaces are going out except for physical reasons, and some idle furnaces would probably blow in if they could secure an assured supply of coke. They would not, however, pay anything like the present spot market.

A few operators have approached customers on the subject of making contracts for the first half of 1921, this applying to both furnace and foundry coke, but have found consumers unresponsive, as they feel that the time is not ripe for contracting. On the other hand, it is related that some consumers have applied to operators with whom they have contracts running, on the subject of first half contracts and in this case also there was no disposition to get together.

The spot market is quotable $17@$17.50 for furnace and $18.50@$19 for foundry, per net ton at ovens.

The *Courier* reports production in the Connellsville and Lower Connellsville region for the week ended Sept. 4 at 196,590 tons, a decrease of 14,510 tons. The holiday had much to do with the decrease.

PITTSBURGH

Car Supplies Improve — Many Mines Operating to Limit of Men's Willingness To Work—Spot Market Is a Shade Stronger.

Car supplies continue to increase and a larger number of mines are now supplied with practically as many cars as their men are willing to load. The last weekly report for the rail mines shows production at 78.6 per cent, the losses being 8.9 per cent from transportation disability, 7.8 per cent due to labor shortage and 4.7 per cent from mine disability.

Practically all the loss of production was attributed to car shortage by some mines, to labor shortage and mine disability by others. The time was when practically all the loss was from car shortage but the increase in car supplies has uncovered a labor shortage at many mines. The river mines showed no transportation or mine disability, their curtailment in production from rated capacity being 10.6 per cent, all ascribed to labor shortage.

It is improbable that the rail mines would find their men willing to work up to 90 per cent of rated capacity, although 85 per cent might be attained, and this would compare with 78.6 per cent production in the week reported.

The spot market is a little stiffer. A week ago $8 was regarded as the regular quotation on steam coal and in fact that figure had been shaded in occasional instances. We quote the spot market $8@$8.50 for steam and $9@$9.50 for byproduct and gas. Tidewater is likely to bring an extra price, on account of difficulty in securing permits and making shipment.

UNIONTOWN

Coal and Coke Prices Drop — Demand Slackens with Improved Car Placements—Outlook Is Good.

Prices have dropped this week on both coal and coke sales and judging from indications, next week should show a continuance of the present softening market. Car supply recovered nicely from its slump and with it came a slackening in demand and resultant shrinkage of prices. Placement of coke cars was particularly improved.

Furnace coke dropped $2 per ton to $16, with foundry grades slightly higher but correspondingly under the former quotations. An even larger car supply next week is anticipated through the diversion of idle equipment from the anthracite region, continuance of the hard coal miners' "vacation" being expected to help local car placements. Recent wreck on the Monongahela Ry. at Brownsville may temporarily embarrass car placement. Traffic was suspended 24 hours and delays in transit of consignments resulted.

Monongahela Ry. car placements this week have been good. The Pennsylvania R.R. put down fully 50 per cent of required equipment, placing in the first five days of the week a total of about 725 cars against requirements of 1,400 for coal loads. A like supply was also given by the Pittsburgh & Lake Erie R.R., some 500 empties being placed on requirements of approximately 900 cars. Coal car supply on the Southwest branch was about 80 per cent and on the Redstone practically the same.

Coke car supply was much better. About 150 per cent was registered by both Pennsylvania and Pittsburgh & Lake Erie on the Monongahela rails, the former placing over 2,000 cars when but 1,300 were required and the latter putting down nearly 1,400 against requirements of 990. On both Southwest and Redstone branches between 80 and 90 per cent in coke car placement was reached.

CENTRAL PENNSYLVANIA

Clearfield Miners May Get Increase—Prices Are Lower — Car Situation Is Unchanged — Wagon Mines Protest Order 14.

Following a meeting of coal operators in Clearfield County it was announced that they would not confer with representatives of the miners to

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

BITUMINOUS COAL

	1920 Week	1920 Calendar Year to Date	1919 (a) Week	1919 (a) Calendar Year to Date
Aug. 21*b*	11,939,000	336,023,000	10,675,000	287,270,000
Daily average	1,840,000	1,692,000	1,779,000	1,446,000
Aug. 28*b*	11,390,000	347,413,000	10,443,000	297,713,000
Daily average	1,898,000	1,698,000	1,741,000	1,455,000
Sept. 4*c*	11,051,000	358,464,000	9,651,000*d*	307,364,000
Daily average	1,842,000	1,702,000	1,821,000	1,459,000

ANTHRACITE

	1920 Week	1920 Calendar Year to Date	1919(a) Week	1919(a) Calendar Year to Date
Aug. 21	1,595,000	55,712,000	1,862,000	52,678,000
Aug. 28*b*	1,818,000	57,530,000	1,941,000	54,619,000
Sept. 4*c*	1,084,000	58,614,000	1,349,000	55,968,000

BEEHIVE COKE

United States Total

Week Ended Sept. 4 1920 *c*	Week Ended Aug. 28 1920 *b*	Week Ended Sept. 6 1919	1920 to Date	1919 *a* to Date
395,000	419,000	448,000	14,450,000	13,246,000

(*a*) Less one day's production during New Year's week to equalize number of days covered for the two years. (*b*) Revised from last report. (*c*) Subject to revision. (*d*) Week of Labor Day holiday.

discuss a new wage scale. However, they expressed a willingness to increase the wages of day men $1.50 and trapper boys 83c. a day. This makes the wages the same as in the Pittsburgh Field.

Coal prices, especially in Cambria County, are still showing a downward trend. The highest price quoted this week was $9.50 a ton, with the wagon mines selling as low as $7.50.

The car situation throughout the central Pennsylvania Field shows little sign of change and was described as "fair." Operators of wagon mines, of which there are a large number in Cambra County, are not satisfied with the present system of car distribution which they characterize as unfair. Reduced to box cars on all the Pennsylvania lines, the wagon loaders do not believe they are getting a square deal.

Representatives of the Pennsylvania Wagon Coal Shippers' Association went before the Interstate Commerce Commission in protest against Order 14. The commission was asked to rescind or modify the order which is a sweeping one. The wagon loaders assert this will put them out of business if enforced.

NORTHERN PAN HANDLE

Cars Are More Plentiful—Lake Shipments Heavy—Prices Are Down—Rail and Labor Conditions Improve.

Cars furnished for the first period of September were not much more than sufficient to transport heavy tonnage required for the lakes. Hence, mines had little commercial coal available.

An improvement in dumping facilities at the Lakes was reflected in better movement of cars. Labor conditions, aside from the usual shortage of men, were rather conducive to larger loadings.

While prices were down to some extent, nevertheless, there was a ready market for output. The best market was at the Lakes but owing to the fact that producers were being called upon to make such large Lake shipments, it was found somewhat difficult to take care of existing contracts.

Transportation conditions in eastern Ohio were about on a par with those across the Ohio River in the Pan Handle region, with a large movement to the Lakes in evidence and with the rail movement of coal all that could be expected.

FAIRMONT

Car Supply Improves Slightly — Shippers Incensed Over Alleged Abuse of Assigned Car Privilege—Lake Shipments Are Heavy —Prices Soften.

Loadings were larger during the first part of the period ending Sept. 4, because of a perceptible increase in the car supply. About the middle of the week there was the usual slump. On the Monongahela R.R. a large proportion of the cars were being assigned during the week. Production was at the level maintained throughout the previous week.

Charges were being circulated that the Baltimore & Ohio R.R. was tipping off certain operators as to impending shortages and suggesting the loading of railroad fuel, and it was charged that the road was greatly abusing the assigned car privilege. As a result many shippers were up in arms.

The railroads seemed to be getting more than their share of coal. Shipments to the Lakes and for export were very much curtailed as the week drew to a close. While exports probably were larger than during the previous week, yet shipments were greatly restricted, through difficulty in securing permits to cover.

Lake loadings were in excess of those for the period ending Aug. 28, owing to a better car supply and also partly because of the embargo on New England shipments, some producers sending their coal to the Lakes in preference to other markets.

While there was no decided break in prices in northern West Virginia they appeared to be somewhat softer.

Middle Appalachian

VIRGINIA

Week's Production Placed at 75 Per Cent of Capacity — Wagon Mines Suspend Operations — Prices Drop $3 in One Week.

Production for week ending Sept. 4 amounted to 173,000 tons. Shortage of cars and insufficient man power were responsible.

The effect of Service Order 14 in Virginia caused a virtual suspension of operations at all wagon mines. While a falling market would undoubtedly have reduced this production, yet Order No. 14 has hastened such cessation of operations.

Prices were undergoing further downward changes, reaching $9 early in the second week of the month. This was a drop of $3 a ton as compared with prices prevailing during the previous week.

POCAHONTAS AND TUG RIVER

Production Rises with Better Car Placement—Lakes Priority Shipments Are Heavy — Price Recession Continues — Labor Situation Is Much Improved.

Better conditions were enjoyed along the Norfolk & Western R.R. during the first week of September. Production in the southern tier of counties was increased. Western shipments, particularly those for the Lakes, were on the increase.

The last two days of August in the Tug River Field were marked by an increase in production. A car shortage developed during the last day or two of the week and transportation conditions were not very satisfactory. A large tonnage was moving to Tidewater for export. Fully 35 per cent of the output was sent to Lake points. While prices for spot coal were on a lower level they were still much in excess of contract prices. The fact that spot buying was not as active as formerly had no effect whatsoever on production.

Ground lost during the last fortnight of August in the Pocahontas Field was partially regained during the first few days of September. The car shortage was not such as to cause a great deal of idleness at the mines. Although labor shortage losses were still hovering around 40,000 tons a week yet the morale of the miners was improving. With winter only a few months away the chances of a strike are diminishing, there being insufficient union sentiment in the field to make the possibility of organizing the Pocahontas Field imminent.

Not only were export shipments from the Pocahontas Field increased after Service Order 11 was suspended, but Lake shipments also were believed to be larger. Producers in general looked upon lower prices with favor, there having been a drop in the Pocahontas region just as in other fields.

KANAWHA

Production Improves Slightly — Lake Shipments Increase — Demand Is Lighter and Prices Decline Further.

Although the weekly production was slightly improved, mines were still greatly handicapped by a shortage of cars. Due to a brief suspension of New England priority Service Order 11, more coal was available for Lakes. Export shipments were somewhat larger in volume, the previous week's embargo to Tidewater having been removed as to unfilled permits only.

The market in the Kanawha region was much softer than during preceding weeks, although production was easily marketed. Prices for spot coal were in the neighborhood of $9. For the time being, however, buying was not as heavy as it had been. The sudden cessation of orders was more apparent in the East than in the West. Expectation of further car shortages has caused representative coal men to predict that prices would not go much lower.

NEW RIVER AND THE GULF

No Improvement in Car Supply — Released New England Tonnage Flows Westward — Lakes and Export Shipments Are Good—Prices Are Lower.

A scarcity of cars on the Chesapeake & Ohio R.R. in both fields held down the production during the first week in September. At the same time there was a recession in price, but it was easily possible to market all the coal produced. Inquiries were less numerous from eastern markets but there still seemed to be as heavy a demand as ever in the West. Much coal was also being exported.

Complaint was general throughout the New River Field of a scarcity of cars during the entire weekly period. Not even on Monday was there anything like an adequate supply of empties and subsequent to that date there was a decided slump in the supply. Production was very much below that of the preceding week.

There was a slight increase in the western movement and more particularly to the Lakes. The downward trend of prices caused the general run of producers little or no concern, there being a ready market for all the coal mined.

Inadequate transportation facilities afforded by the Chesapeake & Ohio R.R. were largely responsible for holding down production in the Winding Gulf Field. More cars were available on the Virginian Ry. With no coal going to New England, exports were increased to some extent, at least from mines shipping over the Virginian, there being no western movement from that section.

There was not the wild scramble for coal there had been, owing to the fact that the trend of prices was downward rather than upward.

LOGAN AND THACKER

Logan Production Increases, Due to Improved Car Supply — Williamson Labor Trouble Waning — Buyers Holding Off in Face of Falling Prices.

An accumulation of cars enabled Logan mines to exceed the previous week's production. The largest day's output for the year was 64,000 tons on Aug. 30. One result of the betterment in car supply was to make it possible to ship more coal to the Lakes. New England shipments were destined elsewhere but Tidewater coal increased following the lifting of an embargo.

Prices were falling and buyers refrained from placing orders, pending developments. Less buying did not retard production, owing to a very general demand in the West.

Production slowly increased in the Williamson Field, more miners returning to work after the advent of United States soldiers. Not only were a number of plants able to increase their working forces but the Red Jacket Coal & Coke Co. and the Glen Alum Coal Co. started operations at their mines which had been closed down since early in July. While attacks were made early in the week on two plants despite the presence of soldiers, such attacks did not deter miners from continuing work. After these attacks no further trouble was experienced. Losses entailed by the strike were running rather heavy but strike sentiment was gradually dying out. A strike was called for the Pond Creek section on Sept. 1 but few if any miners responded.

NORTHEAST KENTUCKY

Car Supply Is Unchanged—Substantial Tonnage Goes to Lakes—Prices Moderate Chiefly on Eastern Orders.

There was little change in the car supply for the week ending Sept. 4. Mines were still limited to about half of potential capacity. Car supply dwindled throughout the week. Lake shipments, fairly large on the first day of the week, were rather small after that date.

While mines in other fields were in idleness on Labor Day, which was observed as a general holiday, there was no general suspension of mining activities in this field.

It was not possible to resume Tidewater shipments, owing to an embargo. While prices were moderating somewhat, the change was not so marked in western markets as in the East. There was ample market for all the coal produced, owing to Lake and contract demands. About the only effect of price recessions, therefore, was to curtail activity in spot buying to some extent.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Department of Justice Will Not Allow Set Prices—Rate Complaints to Be Heard—Wagon Mine Operations Are Curtailed.

Harlan, Hazard and Southern Appalachian operators were unsuccessful in their recent attempt to have the Government appoint an administrator or else set prices of bituminous coal in this section. The Department of Justice has announced that no prices would be fixed.

The southeastern coal associations are preparing material to be used in complaints to be heard at Cincinnati by the Interstate Commerce Commission in the matter of rate on coal to Lakes from Louisville & Nashville R.R. points in eastern Kentucky.

Wagon operators in some sections of the state are reported to have quit operations when open cars were barred from use. Others are loading box cars where they can get that class of equipment. A ready market for box-car coal is obtained, at prices only slightly lower than that for open-top equipment.

WESTERN KENTUCKY

Fresh Strike Troubles Are Cutting Production—Car Supply Is Worse—Little Coal for Spot Shipment—Considerable Amount Shipped in Assigned Cars.

Conditions are again bad, due to a fresh strike, principally in Muhlenberg County, but also affecting Henderson, Union, Davies, McLean and Ohio Counties to some extent. Operators state that there are about 2,000 miners out, while others place the number at 8,000. A peculiar condition is said to exist. Where companies operate several mines one mine will be out one day and the next these men will go back to work and another mine will be down, indicating an attempt on the part of the union men to work partial time and "give everyone a chance."

The car supply has been worse than usual for the past few days. Supply for last week was about 15 per cent on the Kentucky division of the Illinois Central R.R. and 49 per cent on the Louisville & Nashville R.R.

Very little new business is being booked as a result of heavy movement of assigned cars, contract coal, railroad demand, etc. Last week there was so little new business accepted that there was hardly a market.

Quotations made Louisville retailers and consumers show Western Kentucky lump $8.50 a ton, mine run $8, nut and slack $7.50.

Middle Western

INDIANA

Many Wagon Mines Close — Another Strike in Prospect — Situation Is Critical.

A number of wagon mines in western Indiana will be forced to close down immediately on account of the order forbidding railroads to provide them with cars. Many small mines have been opened near Linton, Indiana, since disputes between the operators of larger mines and miners arose.

What with operators and miners under indictment, a new coal commission that is trying to function and a prospect of another coal strike—this time the loaders who think they have been left out in the cold by wage agreements—Indiana is in a bad way for coal. It is safe to say that 85 per cent of the state's industries are on the verge of closing down.

IOWA

It is shown that almost every small town in Iowa, with the exception of those that are mining centers, is destitute of coal, according to answers to a questionnaire sent out by the State Transportation Committee. Between 800 and 1,000 answers to the questionnaire have been received and more than half of them report that no coal is on hand at present. Others state that only a very few tons at most are in the towns. As a rule, the larger towns and cities fare better.

Western

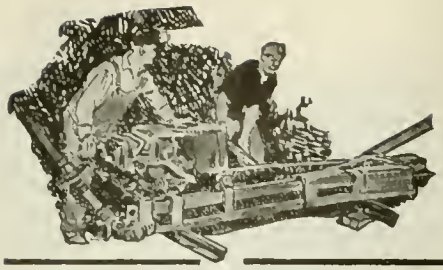
UTAH

Wyoming Competition Is Temporarily Removed—Freight Increase Being Contested.

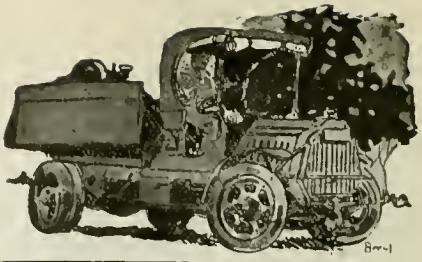
Competition from Wyoming coal fields has practically ceased as that fuel is now selling at $1 above the Utah price. This is partly due to the increase in freight rates in Wyoming, which was not permitted by the Utah Public Utilities Commission.

It is stated in Salt Lake City that a line of 50 Trans-Pacific and coastwise vessels, with headquarters in Seattle, is making arrangements to buy Utah coal exclusively as soon as assurance is given that a steady supply can be secured.

It is expected that the refusal of the Utah Public Utilities Commission to grant the increase in freight rates allowed by the Interstate Commerce Commission will result in the matter being carried to the U. S. Supreme Court.



Mine and Company News



ILLINOIS

Tamora—The Alladin Coal Co., which recently purchased a mine here and also operates several other mines in this county, has announced that plans are completed for the erection of about 30 new resident houses for the miners. The houses will be somewhat better than the average, having all modern installations. This step is taken in anticipation of bringing more miners within range of the mine which is greatly hampered by man shortage.

Springfield—The "Spring Creek" mine recently broke its hoisting record by hoisting 1,606 tons in eight hours. The mine has been in operation for over fifteen years. The total number of cars hoisted and dumped during the day the record was broken, was 800.

Coulterville—The Perry County Coal Corporation, have been experiencing considerable trouble with a near race-riot. When a cage operator refused to let a negro down the shaft the company fired him. Three hundred white miners employed at the mine went out on strike, and that night burned the negro's house down. Many negroes left the town since this demonstration due probably to fear that another such occurrence might happen.

INDIANA

Sullivan—Mines and all the mineral holdings of the Consolidated Indiana Coal Co., and approximately 10,000 acres of other mineral land in Hamilton, Curry and Jackson townships became the property of John L. Baker, Wm. E. Baker, Frank P. Emison, Frank P. Culbertson and others of Terre Haute and Vincennes in a deal completed recently.

Jesse—Daubenspeck Coal and Land Co., owning and selling lands, was incorporated recently at a capital stock of $100,000. D. Forest Early, A. W. Daubenspeck, Roy Daubenspeck, all of Mullens, Fred N. Stewart, and Hartley Sanders, Princeton, were the incorporators.

KENTUCKY

Whiteshurg—Unusual development activity is everywhere evidenced in coal fields in this section, especially along the L. & N. branch on the Kentucky River headwaters.

Sergent—The Imperial Elkhorn Coal Company is making powerhouse and electrical improvements, building a new tipple and opening new mines. Near by the Elkhorn Collieries Company is increasing its production. The Apex Coal Co., Bastin, also is making improvements to double production.

Boone's Fork—The Logan Elkhorn Coal Corporation will make a number of improvements that will necessitate a largely increased production. This company has obtained new areas of coal lands recently and a new town soon will be under construction. It is expected that the New York work will be completed before 1921.

Smoot Creek—In the Dalna section the Consolidated Fuel Co., Pittsburgh, which recently located in Eastern Kentucky, is doing extensive development work. The company has taken over the Kentucky & West Virginia Coal Co., the Amburgy Coal Co., and the Blackey Coal Co. near Blackey, besides acquiring thousands of acres of additional coal lands, which will be opened for development before the end of the year.

This concern also is preparing to extend its branch railroad further up Smoot Creek to tap new properties. This company owns large mining plants in Pennsylvania, Ohio, Maryland and West Virginia, and its investment in Elkhorn field mines means much for this section.

Louisville—The Julius Fleischman, one of the biggest coal tow boats on the Ohio River, smashed things up badly at New Albany, Ind., last week, in delivering four barges of coal to the Finger Brothers Coal Co., when a signal cord broke, and the boat crashed into the dock. An excursion boat was struck, while the dock of the River Coal & Supply Co., and a sand dredger were sunk. A large gasoline launch was also damaged.

Pikeville—The Pinson-Elkhorn Colliery, has filed amended articles increasing its capital from $30,000 to $50,000. The Muddy Gap Coal Co., at Manchester, has incorporated with a capital of $3,000—D. M. Allen, M. F. Porter and D. L. Walker, Jr., incorporators.

MISSOURI

Freeburg—Articles of incorporation of the General Coal & Mining Co., capitalized at $100,000 have been filed. The company's principal office is situated at the St. Clair mine near Freeburg. The incorporators are Ernest L. May and Chas. F. Waters of St. Louis and W. F. Driemeyer of East St. Louis.

OHIO

Cleveland—The Goff Kirby Coal Co., are perfecting plans for the erection of a large building, 300 x 600 ft., on E. 39th St. and Payne Ave. Estimated cost about $200,000.

OKLAHOMA

Wimburton—Two miners were killed and at least eight more were entombed in the Doonan-McConnell mine at Doonan, three miles west of here, this afternoon when a gas explosion occurred.

PENNSYLVANIA

Oil City—It was learned here today that a vein of hard coal has been located near Pleasantville, in the northeastern part of Venango County, and that geologists from Harrisburg have been making investigations during the past few days.

The vein of coal is on the M. C. Beebe and J. Y. Siggins farms and was located through the drilling of oil wells. The vein, it is said, is from three to five feet in thickness and lies from 55 to 60 ft. below the surface.

Johnstown—The Knickerbocker Fuel Co. has purchased the Caldwell property on Vine St. for use as offices for the company. The property is 50 x 115 ft. and has a two-story brick, mansard roof, building.

Architect Henry M. Rogers of Johnstown has been engaged to make plans for remodeling. The plans will call for fifteen office rooms. A fireproof garage, to accomodate eight cars, will be erected in the rear.

Officers of the company are James A. Hill of New York, president, Telford Lewis, Johnstown, vice-president and W. P. Graff, Johnstown, treasurer. Subsidiary companies are Telford Coal Mining Co., Jasahill Coal Mining Co., Wilbur Coal Mining, Knickerbocker Smokeless Coal and the Somerset Coal Mining Co.

Lilly—Cambria and Blair County coal operators have formed and chartered the Bens Creek Collieries, Inc., for the purpose of supplying the coal needs of Altoona during the next few months. The new concern plans to put in operation 30 steel cars, each of 55 tons.

The mines are in splendid working condition and the capacity has been nearly trebled during the last two years. The 30 new steel cars were ordered from the Pressed Steel Car Co. and delivery has been promised by Oct. 1. The mining office will be located at Lilly while the mines are on the east side of Benscreek, along the Benscreek branch of the Pennsylvania R.R. and above Cassandra station.

Scranton—Mining of coal in the Briggs, or Capouse shaft, of the Scranton Coal Co., in the Keyser Valley section, where the breaker was totally destroyed by fire, will be resumed within a few days, officials of the concern announced after an informal conference.

Lisbon—The West Penn Coal Co., represented by John Seger, of Point Marion, Pa., has purchased several farms in Madison township.

All of the land sold at high figures, and the company will begin at once to strip the same for coal. The Youghiogheny & Ohio R.R. will run a switch into the new territory so that the coal may be marketed.

Waynesburg—Deeds have just been filed for record here conveying to the Pittsburgh Steel Co. several tracts of land in Monongahela Township, Greene County. Five tracts aggregating 436 acres were purchased at about $300 an acre.

The coal was owned jointly by Lenora T. Niccols, of Uniontown, and the Piedmont Coal Co.

Pittsburgh—R. B. Hays Fuel Co., has been organized with a capital stock of $50,000 to handle the product of coal in Pools 34 and 44 in the Pittsburgh area. R. B. Hays, president of the First National Bank of Masontown, W. H. Cover of Masontown and D. H. Christner of Connellsville are the incorporators. The company starts with taking the production from three mines, two near Leckrone and one near Gray's Landing on the Monongahela River, the coal coming from tracts comprising 200 acres in all.

Robindale—A million-dollar coal deal, one of the largest consummated in the Johnstown district, has been closed whereby the Robindale coal plant, including the mining village of Robindale, a short distance below Seward, was transferred from the Conemaugh Smokeless Coal Co., to H. D. Waldbridge & Co. of New York for the Penn Public Service Corporation, which is controlled by the purchasing company.

Harrisburg—According to present estimates, new rates for compensation insurance on coal mining are to be made effective about Nov. 1. Final decision in regard to the figures will not be made until some tests and experiments are made and inspections carried out. State insurance, compensation and rating officials have been at work for weeks on the basis for the new rates.

TENNESSEE

Chattanooga—An order has been issued by Judge A. M. J. Cochran, acting Federal Judge of this district, restraining District Attorney W. T. Kennerly and Edward Finlay, local agent of the Department of Justice, from securing warrants or indictments against the Riddle Coal Co., of Chattanooga, charging violation of the Lever act in making excessive profits on coal in carload lots. The order was based on a bill of complaint filed by the coal company.

Knoxville—Henry Ford may buy more coal mines in the Kentucky district. According to reports received here, he has offered $2,000,000 for the Creech Co.'s operations on Wallin Creek in Harlan County. These mines are near the Banner Fork operations recently purchased by the Ford interests for $1,500,000.

The seat of this new venture is understood to be in Eastern Kentucky near the West Virginia border, in Pike County, on the Chesapeake & Northern R.R. The railroad is soon to extend its lines over the bridge to be built across the river near Pikesville. This second development is reported to be contemplated by the Pittsburgh Steel Co.

UTAH

Sunnyside—A fire discovered in Mine 2 of the Utah Fuel Co. has caused the sending of a special rescue train from Salt Lake City, containing vice-president and general manager Cowie and two state mine inspectors, among others. At the time of writing the fire is reported as under control. So far no lives have been lost.

VIRGINIA

Lynchburg—The Pinnacle Block Coal Co., recently organized with a capital of $1,000,000, has acquired 3,000 acres of coal properties in the district about Altman. Plans are being prepared for the development of this property with a daily output of 2,000 tons. Henry B. Adams, Lynchburg, is president.

WASHINGTON

Spokane—For the purpose of dealing in wholesale coal throughout the northwest and on the Pacific coast, the Union Coal Co. has been incorporated with a capital of $100,000 and will have its head office in Spokane. The incorporators are R. G. Crocker, F. W. Dewart and Mrs. E. F. Wagoner. A branch office will be maintained in Seattle.

"I have confidence in the importance of Spokane as a center," said Mr. Crocker. "We expect to deal in Montana, Utah and British Columbia coal and will handle some Washington coal."

L. Estell together with T. D. Bevan of Spokane have taken a 44-year lease of extensive coal deposits in Alberta. A dozen Spokane and other men were associated with them, and already are hauling out coal by trucks, pending the completion of a tram line.

Their holdings are a short distance from the properties of the International Coal & Coke Co. and the McGillivray Creek Coal and Coke Co., which are the largest coal-producing companies in which Spokane people are extremely interested.

WEST VIRGINIA

Beckley—It is understood that New York interests have acquired the holdings, plants and assets of the Ingram Branch Coal Co. at Page on the Virginian Ry. If such is the case the consideration was probably large for the Ingram Branch property is considered a valuable one. C. H. Mead one of the successful operators of the Winding Gulf field, organized the Ingram Branch Company.

Welch—One of the largest deals in coal land of the current year in southern West Virginia was that recently consummated under the terms of which D. J. F. Strother of Welch and Howard Eavenson of Pittsburgh secured title to about 30,000 acres of coal land in Mingo and McDowell counties.

Part of the acreage secured is under development and a portion is undeveloped. The coal land was secured from the Lasher estate. The new owners will not take over the acreage acquired until the first of the year.

Morgantown—Further development of the coal territory on Scott's Run and on Robinson's Run, and of the territory in between, is insured by the organization of the Gustan Run Northern Ry., it being the intention of the promoters of the new railroad to link the Guston Run and Robinson's Run section by a line from the mouth of Guston Run to Bowlby to be on the newly organized Monongalia & Northwestern R.R.

The new railroad company has been chartered and has an authorized capitalization of $25,000. A. M. Davis, Ernest H. Gilbert and other coal people were active in the organization of the new company.

New Coal—Mining operations in Cass District of Monongalia are contemplated by Pittsburgh and Beaver Falls business men, who have organized the Bunker Coal Co. of Cassville, W. Va., the new company having a capitalization of $200,000.

Identified with the new company are: Paul E. Berlin, W. R. McAfee, Norman R. McAfee and W. P. Vandervort of Pittsburgh, Pa.; C. E. Moretta of Beaver Falls, Pa.

Fort Defiance—The Fort Defiance Coal Corporation, recently organized with a capital of $150,000, has acquired coal property aggregating about 400 acres, in this district. Plans for development are being arranged, with a daily output of 250 tons a day. Considerable machinery for mining and general operation will be installed at an early date. W. L. Burruss, Ansted, W. Va., is president.

Clarksburg—Apex Coal Co. was organized in Clarksburg, W. Va., to operate mines in Lewis County, capital stock $50,000—incorporators, John B. Heffner, John W. Keister, C. A. Butcher, Frederick F. Butcher, and Presley M. Ireland, all of Clarksburg.

Huntington—The Big Eagle Mining Co. operations in the Triadelphia district of Logan County, dealing in coal products, was incorporated recently at a capital stock of $400,000, Paul Hiner, B. J. Hiner, Herbert Fitzpatrick, D. W. Brown, and C. M. Pickroll, Huntington, are the incorporators.

Charleston—Further Kanawha County development is presaged by the organization of the Fair Seam Coal Co. with a capitalization of $100,000. Prominently connected with the new company are: A. M. Belcher, J. F. Bouchelle, J. F. Davis of Montgomery, Thomas Haggerty of Reynoldsville, Pa.

Much impetus was given to the development of the coal resources of the state during the month of July by the

organization and incorporation of thirty-five resident coal companies, the combined capital of which was $6,280,000. As the total number of new companies incorporated during the state number 120 it will be seen that new coal companies alone represented about one-third of those organized. Many companies awaited the beginning of the tax year before incorporating. Coal companies organized during the month of July were as follows:

Judson Coal Co., Fairmont	$100,000
Deep Hollow Coal Co., Coalburg	$50,000
Field Coal Co., Fairmont	$25,000
Logan-Wyoming Coal Co., Logan	$500,000
Stone Lick Coal Co., Weston	$40,000
E. C. Minter Coal Co., Besoco	$150,000
Ray-Burdette Coal Co., Big Chimney	$25,000
Becco Coal Co., Bracholm	$50,000
American Collieries Co., Charleston	$200,000
By-Product Coal Co., Fairmont	$200,000
Dennison Coal Co., Morgantown	$25,000
University Coal Co., Grafton	$50,000
Mildred Coal Co., Junior	$5,000
Lore Coal Co., Emoryville	$25,000
Indian Run Collieries Co	$1,000,000
By-Product Pocahontas Co., Big Four	$250,000
Tiger Coal Co., Huntington	$150,000
Barnard Coal Co., Kingwood	$75,000
Twin Mountain Coal Co., Piedmont	$50,000
Winters Coal Co., Parkersburg	$50,000
Dixie Mining Co., Fairmont	$25,000
Emmons Collieries Co., Charleston	$1,000,000
Melrose Coal Co., Fairmont	
Copen Gas Coal Mines, Inc., Bower	$200,000
Riverview Coal Co., Ansted	$10,000
Warnock Coal Co., Barnum	
Gauley-Concord Coal Co., Charleston	$100,000
Kanawha Consolidated Coal Co., Charleston	$1,000,000
Fort Defiance Coal Corp., Ansted	$150,000
La Rue Coal Co., Kingwood	$200,000
Wee Wee Coal Co., War	$10,000
Green Ridge Coal Co., Morgantown	$50,000
Pocahontas Low Vein Coal Co	$25,000
Farnum Coal Co., Clarksburg	$50,000
Dixon Branch Coal Co. of Cirtsville	$25,000

WYOMING

Conroy—The Wyopa coal mine located at Conroy has been sold to eastern capitalists for $110,000. The sale was conducted by C. O. Dunlap, representing the Potter Title and Trust Company of Pittsburgh, Pa., and the buyer was C. D. Scully, who represented the associated bondholders. The sale attracted only a few spectators and there was no competition in the bidding.

Shoshone—The Wyoming Coal, Oil & Refining Co. has been incorporated in Wyoming with an authorized capital of $1,000,000 to develop a deposit of coal nine miles north of Shoshone, on the Chicago, Burlington & Quincy R.R., in Fremont county, Wyo.

Last fall the Howe Oil & Gas Co., drilling for oil, encountered a vein of coal at 270 ft. This vein was afterward prospected with a diamond drill and proved to be 12 ft. thick and of a high grade of bituminous coal.

The men behind the oil company, consisting mostly of people from Lincoln, Neb., then began the organization of the coal company.

F. E. Schaaf, of Lincoln, Neb., is president of the company. J. R. Heagy, Shoshone, Wyo., is in charge of operations. Preparations are being made for the sinking of a small shaft to the deposit to be followed by a larger shaft and the installation of machinery and equipment.

ALBERTA

Brule—One of the leading gold mining companies of Northern Ontario, the McIntyre Porcupine Gold Mines, Ltd., has purchased the property of the Blue Diamond Coal Mines, Ltd., of Brule, capitalized at $1,500,000 comprising 3,300 acres. The mine is producing over 500 tons of steam and coking coal daily.

Equipment has been ordered which will increase the daily output to 2,000 tons. The McIntyre company has also secured an option on the Canadian Coalfields, Ltd. in the same vicinity owning a much larger area stated to contain anthracite and capitalized at $10,000,000.

The Government of Alberta has backed up the efforts of the coal operators of the province this summer in their efforts to develop summer trade in coal, and the result of their joint endeavor is seen in a 50 per cent increase in exportations.

Statistics show that the output of Alberta mines up to the end of July was 3,043,940 tons, compared with 2,068,907 for the same period last year. Operators say that there has been more coal marketed in the same period than any corresponding period in the history of coal production in Alberta.

NOVA SCOTIA

Morien—The Dominion Coal Co., Ltd., Union Street, has started work on the erection of a boiler house, engine room and machine shop for two coal mines to cost $200,000. M. J. McCann, Sydney, N. S., is purchasing agent.

Springville—A beginning was made in the British Empire Steel Corporation's scheme for the development of the Dominion Coal Co.'s properties at Springhill on Aug. 18 by the breaking of the ground for a new mine one hundred yards distant from No. 7 recently opened. The new slope is expected to tap a rich seam of coal from 4 to 6 ft. in width.

Traffic News

Pittsburgh—Suit has been entered in the United States District Court here by the Pennsylvania Coal & Coke Corporation, with principal offices in Philadelphia, to enjoin the Pennsylvania R.R. Co. from favoring certain companies and discriminating against others, the plaintiff included, in the distribution of coal cars, according to the complaint filed. The company avers that it operates 33 mines in various parts of Pennsylvania and its complaint charges that it has not received its just quota of cars. The suit is brought to compel the Pennsylvania R.R. to pro-rate the car supply equitable according to mine ratings. The coal company further charges that it is mining more coal than it can move under existing conditions.

Personals

Floyd S. Chapman, formerly mayor of Huntington, W. Va., later a member of the West Virginia Senate and until quite recently a candidate for clerk of the county Court of Cabell County, W. V., has been named as division manager of the Lake & Export Coal Corporation, of Huntington, with offices at both Bluefield and Beckley, W. Va.

Colonel Wm. Leckie, who is interested in quite a number of coal companies in southern West Virginia, will probably move his headquarters from Welch, W. Va., to Bluefield, W. Va., where he owns property. Colonel Leckie plans to build a new home at Bluefield.

Walter J. Davis of Monongah, W. Va., the new manager's field representative for the West Virginia division of the Consolidation Coal Co. Mr. Davis has come up from the ranks, being at the time of his promotion mine foreman at mine No. 43 of the Consolidation company, at Monongah.

John W. Meyers, for four years with the Security Coal & Mining Co., at Duquoin, Ill., and for the last year with the Southern Gem Coal Co., both with offices in Chicago, has accepted a position as mine manager for the Illinois Sixth Vein Coal Co., operating at Cutler. The company has offices at Chicago and Pinckneyville, Ill., and operates several mines in the Duquoin section.

S. A. West, formerly with the Consolidation Coal Co., and the Hedstrom-Schenck Coal Co., has joined the forces of the Mitchell Dillon Coal Co., of Chicago.

William H. Greenwood, superintendent of the construction work of remodeling the old No. 5. mine at Duquoin, Ill., and formerly president of the Greenwood Coal Co., and the Greenwood-Davis Coal Co., recently was taken suddenly ill with appendicitis, and was rushed to a hospital in St. Louis. Attending physicians announced that he would recover.

William Gates, formerly real estate agent of the H. C. Frick Coke Co., whose headquarters were at Pittsburgh, Pa., has been chosen as the successor of the late D. H. Coble, as secretary of the company. Mr. Gates is a graduate of Lehigh University, of the class of '88, and has occupied his present position for a number of years.

Henry M. Payne, formerly assistant to the president of the Bertha Coal Co., has resigned, to become general manager of the Douglass Barnes Corporation, with offices in the Barnes Building, 53rd St. and Fifth Ave., New York City. He expects to begin his new duties on Sept. 20. Mr. Payne is a director in the Tidewater Coal Exchange and the Wholesale Coal Trade Association; he is treasurer of the latter. He is also on the Export Committee of the American Mining Congress.

B. H. Stockett, superintendent for Locust Mountain Coal Co. at Shenandoah, Pa., was recently promoted to general manager for the C. M. Dodson operations in Shenandoah, Beaver Brook and Shamokin districts, with headquarters in Shenandoah.

C. M. McCrecken, of Taylorville, Ill., has been made the new division superintendent of the Peabody mines in Williamson and Franklin counties, to fill the vacancy caused by the death of Phillip White, who lost his life while fighting a fire in No. 18 mine of the Peabody company. Mr. McCrecken will make his headquarters at Marion.

F. R. Wadleigh has been appointed export sales manager for Western Dodson & Co., Inc., vice **J. H. Davison** resigned. **J. W. Sands** has been selected as his assistant.

Carl Robinson, for some time connected with the Boone County Coal Corporation of Sharples as general superintendent, has resigned to become associated with the Rock House Coal Company at Blackie in the Hazard field of Kentucky. The Rock House Coal Co. is a subsidiary of the Central States Coal Co. of Toledo, Ohio.

Coming Meetings

Coal Mining Institute of America will hold its annual meeting Dec. 8, 9 and 10, 1920, in the Chamber of Commerce Auditorium, Pittsburgh, Pa. Secretary, H. D. Mason, Jr., Chamber of Commerce Bldg., Pittsburgh, Pa.

The Sixth National Exposition of Chemical Industries will be held in the Grand Central Palace, New York City, Sept. 20-25. The Fuel Economy Division has been added this year.

American Mining Congress will hold its annual meeting at Denver, Col., Nov. 15. Secretary, J. F. Callbreath, Munsey Building, Washington, D. C.

COAL AGE

The Weekly Journal of the Coal and Coke Industries

Volume 18 NEW YORK, THURSDAY, SEPT. 23, 1920 Number 13

Makers of Civilization

HEREWITH is the announcement of the first meeting of the American Engineering Council of the Federated American Engineering Societies, where will gather together the builders of civilization. Lawyers may rule what is built, doctors may heal the builders, bankers may trade in the works when built, farmers may feed the workers, but the real makers of the material foundations of civilization are the engineers and those who work under their direction.

Look where you will you see the work of engineers, either what they have actually made or what has been performed by the instrumentalities their work has created. Others may adorn and beautify life, but the engineer lays the material basis on which the others work. So it is no small matter when these mastermen form a society of societies—an all-embracing association of engineers—to typify that this age is neither of stone, nor brass, nor iron, nor coal, nor electricity but of engineers and their handiwork. What is wrought is wrought by and through them. They feel strongly that this has not been known in the past. When, for instance, a coal company was formed, a lawyer or banker was elected president. "We can hire our engineers," was the comment. The profession has hardly risen above the employee stage. An age-long sense that engineers were not executive timber has kept them from coming to the fore. Men with meretricious qualities have taken precedence. Lawyers, bankers, teachers fill governmental commissions and call on engineers for advice but not leadership.

The emancipation of the engineer—the right to be what he really is, subject neither to his own fears nor to the doubts of others, the right to lead if he can lead and the duty to consent to be led if the stuff of leadership is not in and of him—is a leading aim of the new organization. How better can he show himself of executive quality than by joining himself in counsel with those of his profession in a group large enough to impress the world and powerful enough to serve the interest of the public effectually? There is a balance of judgment in the engineer of which the world stands in need. His is a mind that weighs. Herbert C. Hoover has said that it is a quantitative mind. It thinks in figures. It is solidly grounded in research. Unlike the mirage-forming vision of the qualitative genius, it cannot fill thirty-six inches of linear space with anything less than a full yard of material. No one can deny that the faculty for performance is greater than oratory, yet why is it that the engineer is passed up perpetually for a man whose ability consists in being able merely to talk of doing without ability to see the work through? Civilization is held back because those who know the way to build are restrained by men who, not knowing, must always be assured by precedent. The last word in the erection of any structure is not the word of the man who understands how to build it but of some man who has the vaguest idea of how the work will be acomplished and what, when finished, it will resemble.

The large societies of engineers are already members of the Engineering Council of the Federated American Engineering Societies. The smaller societies the country over are coming into the larger body. The new federation is in no way exclusive. It will be ruled from below not bossed from above. The larger societies have started it but they are controlled by their members. The local societies are joining the Council and their vote will be similarly democratic.

The purpose of the new amalgamation will be to convince the world that the men who are planning and creating the equipment on which all our necessaries and comforts depend are worthy of a leading place in public life and private industry and can only secure it by showing themselves in public and letting the world see what resources are behind them.

Those who believe that the engineer is the great constructive force of the twentieth century should support this new movement, which promises by service to the

First Meeting of the American Engineering Council of the Federated American Engineering Societies

New Willard Hotel

Washington, D. C., Nov. 18 and 19, 1920

Thursday, November 18

8:30 A.M.

Registration.

10 A.M.

Call to order. R. L. Humphrey, chairman.

Election of Temporary Chairman and Secretary.

Appointment of Temporary Committee on Progress, Credentials,, Constitution and Bylaws, Nominations, Plan and Scope, Budget and Resolutions.

2 P.M.

Address: J. Park Channing, A. I. M. E.

2:30 P.M.

Discussion of Field of Activity of the Federated American Engineering Societies.

Friday, November 19

9 A.M.

Report of Nominations.
Report of Permanent Officers.
Report of Constitution and Bylaws.
Ratification of Constitution and Bylaws.
Report on Plan and Scope.

2 P.M.

Report on Budget.
Report on Resolutions.

8:30 P.M.

Address of President.
Address: Herbert C. Hoover, A. I. M. E.

9:30 P.M.

Informal Reception and Smoker.

country and the community to raise the standards of the profession and by securing public recognition to place the engineer in the position his talents should assure to him.

Rubber Belts About Mines

INEXPLICABLE are the preferences of engineers. Around metal mines the rubber belt is found everywhere solving transportation problems and doing it successfully. So also in British coal mines, but not in American. Just lately there have been indications that the rubber belt is coming into American coal preparators, where it will perform as useful a service as it does in metal-mine concentrating plants. Certainly coal will not wear out a belt as rapidly as will hard and heavy minerals.

Among the interesting uses may be mentioned the belts at the washery of the United States Fuel Co. at Middle Fork, Benton, Ill., where one belt is seventy-two inches wide. Another is a belt which handles the whole tonnage of the Aluminum Coal Co. at Renoulf's Beach, near Pittsburgh, transferring the coal from a dump inside the mine to a point on the tipple. Another belt runs out on a loading boom over the river.

Yet another instance is a belt at the Alliance Coal Mining Co.'s breaker in the anthracite region. The pockets at the plant are set at right angles to the railroad, and the coal is taken to the cars by a belt conveyor. A belt at the Culbertson strip-pit operation connecting the tipple shed with the preparator illustrates yet another of these uses. It is mentioned in an article contained in this issue.

Great Britain is using many rubber and ballata belts at the coal face to deliver coal to the mine cars. They have been adopted for that purpose here, but face conveyors are rare in America, and accordingly this use is one of less importance.

Demand That Never Fails

SIR HENRY MORRIS, the economist, says that 52,116 more persons were employed in the coal-mining industry in 1919 than in 1913, and that with much more pay and fewer hours (which conditions are said to mean increased production) they raised 58,026,456 fewer tons of coal in 1919 than were raised in 1913.

In Great Britain a pernicious doctrine has pervaded all orders of society proclaiming that each individual has a limited ability and desire to consume, that the salable output is just so much per person, no more no less. Given a fixed demand for so many shoes, coats, shirts, houses, food and fuel there is a menace to the individual if more than will fill that fixed demand is produced, for as soon as there is overproduction there will be idle men and bread lines and big reductions in wages. The more able will be retained, and the less able will drift around unable to get work, and all will get smaller wages.

All thinking men know that the fixed demand is inconceivable. Demand responds rapidly to fit production so long as the public is assured of the continuance of values. We have had a remarkable evidence of that fact. The end of the war checked enterprise. Business waited for lower prices. Expenditures were delayed by the wealthy because they expected to buy more cheaply and to hire labor for less wages. The workingmen did not buy because irregular work made them afraid and disposed to husband their resources.

Once the rich men were assured of the stability of values they entered the market. As soon as the workingman was assured of work he became a spender. His Liberty Bonds were sold, and he bought everything his heart desired. Thus a hesitating, feeble consumption became bold and reckless. Never was there greater demand. The consumption was prodigious. It was not the outcome so much of need as of desire, for during the six months after the armistice which ended a war, in which frugality and delayed spending had created many extraordinary shortages, there was a greater need for many commodities than in the year that followed. The halt in consumption was the outcome of a fixed determination to exercise economy during a period expected to be one of lowering prices and already one of irregular work.

As soon as confidence came, buying became rampant. It made up not for delayed purchases but went far beyond—a riotous purchasing of silk shirts and hosiery, of furs and follies, of riding in pullmans, of travel for pleasure and of expenditure in sumptuous living. The public which had been saving was spending. Who shall say that demand did not rise with opportunity? It always has and always will.

Consequently, while the dividend in the national division is by no means fixed, the divisor—namely, the number of participants—is unvarying except as population grows. Hence the quotient varies. The demand per inhabitant, in short, changes. There need be no fear that we will ever produce more than we can consume.

The British miner, in particular, has no reason to shirk because of an alleged inadequacy of demand. He is entirely failing to supply the needs of the market. By his selfish abstention from energetic toil he is laying idle fellow workers the world over. Even in times of hesitation, when buying falters from lack of confidence and when summer months retard consumption, the British miner is protected and works steadily. He has no longer reason to put on his brakes; but the habit once formed grows. What is today a reasoned, even if a badly reasoned, practice is tomorrow a habit, a rut out of which the wagon of progress cannot budge.

The British workman, with every evidence of the falsity of his argument that great industrial effort ends in idle men, believes the less he does the better it will be for himself and his fellows. He endeavors to lower production and his unions protect him. In doing so today the miner has a minimum wage that insures him in case he decides that he does not want to work hard enough to exceed that meager earning. He can say he has an "abnormal place" and receive his generous minimum wage for a minimum of work.

Fortunately, especially where poor work earns discharge, most workmen in America will work and not loaf. Judge E. H. Gary, chairman of the United States Steel Corporation, is reported to have said, "I have, upon inquiry, during the last thirty or forty days ascertained that labor at our various plants is more efficient per man than it has been at any time during the last five years." These men realize that trifling at their work means discharge and consequently they give full measure, and as a result of that labor they and their fellows in industry get the benefit. More product means more demand; and more demand, a larger competency. What one makes another uses, and if it is not made how then can it be available for his use?

John Markle Injured in New York Bomb Explosion

One of those who entered the doors of J. P. Morgan & Co. just a few minutes before the bomb explosion Sept. 16 was John Markle, the largest independent anthracite coal operator in this country. Mr. Markle came from the mines in Pennsylvania on Wednesday on his way to his summer home on the North Shore of Long Island. He had business relations with the firm. Mr. Markle was accompanied by A. B. Jessup, a mining engineer and general manager of the mines. Both were injured by flying glass, and subsequently went to St. Vincent's Hospital to be treated.

Publication of Labor Union Held Up by Strike

Some of the difficulties incident to the issuance of a labor-union publication are indicated by the following notice, printed in the current issue of *Labor*, a weekly newspaper published by the Plumb Plan League at Washington: "Editor Phil Ziegler of the *Railway Clerk* requests *Labor* to announce that the September issue of the magazine is delayed on account of a strike of pressmen and assistants."

Ohio City Homes to Get More Coal

As a result of a conference of representatives of northern Ohio cities, coal men, railroad officials and the Intestate Commerce Commission an agreement has been reached whereby northern Ohio cities will obtain more coal for home use. The plan provides that bituminous coal operators, through a committee, shall pledge themselves to furnish sufficient quantities of coal to take care of domestic needs. Distribution will be in the hands of local committees named by chambers of commerce or other civic bodies.

Urge President Wilson to Fix Price of Coal

A committee of manufacturers and merchants of Danbury, Conn., has wired President Wilson asking him to take control of the price of coal under the Lever Act. In its telegram the committee says many coal operators "are taking advantage of present conditions and charging $14 at the mine for anthracite coal."

Name Director for Rehabilitation

Industrial rehabilitation work, provision for which was made in a recent act of Congress, will be under the direction of Lewis R. Carris, former Assistant Commissioner of Education in New Jersey. Appointment of Mr. Carris as Assistant Director was announced by the Federal Board for Vocational Education. He will have supervisory control of the work as it is carried on by State boards for vocational education. He has been employed by the Federal board since 1917.

Government Drops Profiteer Hunt in Texas

Federal officials in Texas have dropped the inquiry into the prices and profits on coal, following instruction from Attorney-General Palmer. Such investigation as had been made failed to disclose evidence of profiteering, it is admitted. Amarillo retail coal dealers showed that they were selling coal at retail at a profit of 48c. a ton, and it is said that profits in other towns were little more than this.

NEWS BRIEFS

Terse Items Chronicling Events of Interest to the Industry

Rich Resources Opened in Northern Alberta

That one of the richest countries in respect to natural resources in the world will be opened up in north Alberta now that the Canadian Pacific Railway has acquired the Edmonton, Dunraven and British Columbia Ry., was the statement made by J. R. Renton, of Calgary, after an extensive investigating trip through the territory that will be served. Not only is there a tremendous grain growing country in the far north, but there are excellent cattle ranges and oil and mineral resources whose extent can only be guessed at.

Arrange Joint Operation of Tar Products Company

The Koppers Co. and the Aluminum Co. of America, both of Pittsburgh, have jointly purchased the American Tar Products Co. and will operate it together. It is planned that operations shall include manufacture of electrodes for the use of the Aluminum Company, as well as a continuance of the general tar refining work.

Railroad Men Uphold Harding's Stand on Cummins-Esch Act

A delegation of railway employees living in Marion and nearby cities marched to Senator Harding's front porch on Sept. 13 in a demonstration of their allegience to his candidacy and of their disagreement with the labor leaders opposing him because of his support of the Cummins-Esch Act. The delegation represented the Marion Harding and Coolidge Railway Club and presented to the Senator a resolution declaring that their visit was in protest against misrepresentation of his position on railway labor. A speech by the nominee reiterating his faith in the Cummins-Esch law was a part of the program.

Radical Labor Men Fail To Break Out

The committee appointed to draft a constitution for the new Central Trades and Labor Assembly met in New York, Sept. 15, went over tentative drafts and adjourned to meet again on Sept. 24. At that time it is expected the document will be completed. Though radicals, who sought to break up the meeting Sept. 10 have been making threats of bolting the new organization, their representatives sat in harmony with the conservative majority at the last meeting.

Employees Buy Railroad's Stock

One thousand employees of the Lehigh Valley Railroad have purchased an average of 4.4 shares of the company's stock apiece since they were offered the opportunity to subscribe for it on the instalment plan a short while ago, according to E. E. Loomis, president of the road. All classes of employees are represented among the purchasers of approximately $200,000 worth of the stock, many of them paying for it out of the back pay given to them in the recent wage award announced at Chicago.

N. Y. Central Authorized to Issue Bonds

Authority was given the New York Central Railroad Co., Sept. 15 by the Interstate Commerce Commission to issue collateral trust bonds to the amount of $25,000,000 and refunding and improvement mortgage bonds to the amount of $25,000,000.

Miner Earns $245 in Two Weeks; Missed a Day, Too

Joseph Varga, a coal miner employed by the Marion mine of the West Penn Bi-Product Coal Co. of Mount Pleasant, Pa., for two weeks' pay drew $245. He missed one day in the two weeks.

Through the Coal Fields With a Camera

Above and Below at the Plants of the Kingston Coal Co.

(1) LOADING WAGONS AND TRUCKS WITH COAL FOR LOCAL DELIVERY AT A KINGSTON COAL CO. BREAKER

In rear of the retail coal-pocket, railroad cars are being filled for shipment. Many, and perhaps most, anthracite mines are located in industrial centers of great activity where coal is in demand for both manufacturing and domestic uses. The local trade, supplied by motor truck and wagon, is in consequence of great importance.

(2) A 5½-TON LOCOMOTIVE IN THE LANCE BED, NO. 2 SHAFT

This Ironton storage-battery machine is extra short and slightly higher than the regular type. It is built to fit existing conditions. A short wheel base is necessary on four-wheeled locomotives in order to enable them with ease to traverse curves of short radius and to avoid nosing into ribs and timber on sharp turns.

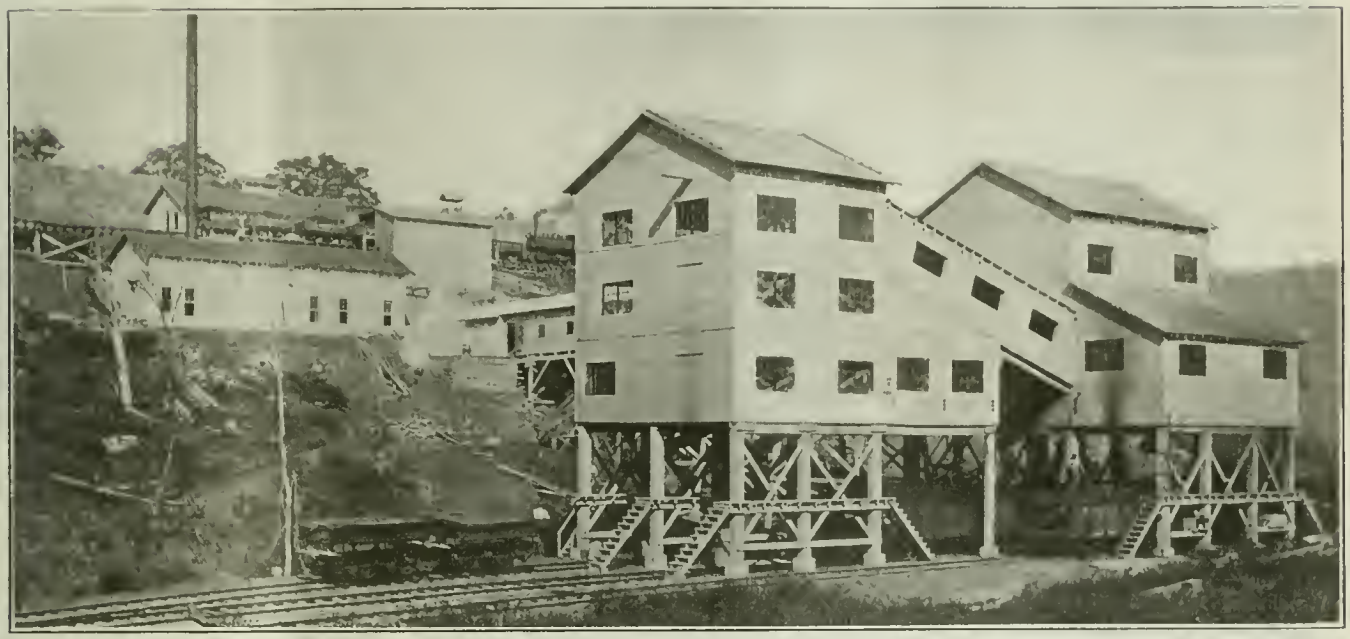
(3) A TIMBERED MANWAY IN THE RED ASH VEIN, NO. 4 SHAFT

The pack walls upon either side are built of gob. Traveling on such a manway as this is safe, speedy and preferable to travel on the haulage roads. Where a good manway is provided there is less danger that miners will be tempted to violate the safety rules by traveling on the adjacent trackways.

Solid Cars at Strip Pit Combine Stability, Strength and "Dumpability"

Stripping at Unionvale Uncovers Coal Having Roof Too Bad to Mine Otherwise—Portable Gasoline Pump Saves Ditching—Solid Cars Meet Loading Shocks and Dump Icy Coal with Facility—Rubber Belts and Movable Grizzlies in this Coal "Concentrator"*

By D. J. Baker
Wilkinsburg, Pa.



SUBSTANTIAL COAL PREPARATOR OF UNIONVALE STRIPPING PIT
On the side hill can be descried the train of loaded cars from the stripping with the house in which the rotary dump is located. A 48-in. belt carries the coal from the 50-ton hopper under the dump to the tipple in the foreground.

WHEN the war was in progress activity developed in the coal industry—especially in western Pennsylvania and Ohio—and many strip-pit mines opened. These operations, an appreciable percentage of which sprang into existence over night to meet the demand for coal, were in many cases equipped to strip and prepare their product in only the crudest fashion. As emergency mines they served a purpose because of the unusual conditions prevailing at the time in which they flourished. In normal times the mushroom mine of war days finds the going not of the easiest, for unless the coal from the strip pits is carefully prepared the open market looks askance at the finished product.

New stripping operations—or those dating their initial development from the Armistice—are vastly different from their war-baby sisters in general layout and equipment. So great is the care now taken at these mines in the preparation of the coal that the product received from the consumer varies little from that mined by underground methods. As a matter of fact, there is small choice between the two fuels, providing that the coal from the strip pit has been removed from under a sufficient amount of cover.

Depth of Unionvale Stripping is 35 Ft.

Eastern Ohio boasts of one stripping operation that differs radically from others in the general nature of its equipment. Four miles east of Cadiz and twenty-eight miles north of Wheeling at Unionvale can be found a strip mine which for an operation of moderate size is one of the best equipped of its kind in the country. Here the R. L. Culbertson Coal Co., a Youngstown concern, has within the last year started operations on a 400-acre tract of land that is underlaid with the Pittsburgh bed of coal, or the No. 8, as it is better known in Ohio. This averages about 6 ft. in thickness and is under a cover almost uniformly 35 ft. deep.

In consequence of the uniformity of the overburden there is only a small quantity of crop coal to be handled, while the topography of the country makes it easy to drain the water from the pits. All things considered, a condition is found that is nearly ideal for the stripping method of removing coal.

A Marion 300 model steam shovel provided with a 90-ft. boom and a 6-cu.yd. bucket is used to remove the overburden. This burden, it is true, seldom exceeds 40-ft.

*As in many other tipples the actual dump is no longer in the main building but in a shed alongside connected by a conveyor line. It is difficult to retain the word "tipple" when describing the building in which the coal is not tipped, but where it is prepared by picking, crushing and sizing. It would preferably be termed a concentrator, as in iron-ore preparation, because the coal is concentrated by the removal of the slate. Yet crushing in this case is not done for the purpose of concentration, as it is in a mill or breaker, so the term is still inadequate. "Breaker" is a good word for the purpose but it expresses only one operation out of many. "Preparator" might be suggested as a better word than any other.—Editor.

SHED ON WHEELS PROTECTS A CENTRIFUGAL PUMP AND THE GASOLINE ENGINE THAT DRIVES IT

By this means the pump is taken to the water and not the water to the pump. It is readily taken to any part of the work and, being wholly self-contained, no piping or wiring is needed as with steam, air or electricity.

in thickness, but the rock strata are of unusual hardness and must be broken by the aid of explosives. A second —smaller—shovel is a Marion No. 36 model, provided with a 2-cu.yd. bucket and caterpillar truck. By reason of the uniform thickness of the cover, the large machine is able to furnish the smaller one with plenty of uncovered coal without crowding its own capacity.

Coal Almost Unminable Without Stripping

The surface of the coal is prepared quite carefully before loading, as indeed it must be, for the roof is a thick fireclay of extreme friability. One of the main reasons why this bed of coal has never to any appreciable extent been mined in this neighborhood by underground methods is found in the nature of the roof that overlies it. In stripping, the surface of the coal is first scraped with pick and shovel and later brushed before loading. The floor is a firm sandstone, such as delights the eye of the stripper, since it provides an excellent shoveling surface and insures the cleanliness of the product. Little of the bottom is ever disturbed, even when subjected to the hard pounding of the shovel. It is not necessary to shoot the coal before loading, as the smaller machine is able with no great effort to break it loose from its undisturbed condition.

COAL PASSING OVER GRIZZLY FROM CRUSHER

At this tipple crushed run-of-mine or else slack and nne size of coal can be delivered. Note the uniformity of the size of the screened product.

Moves Pump to Water, Not Water to Pump

In stripping operations the problem of dewatering the pits often assumes large proportions, but not so at the Unionvale mine. The operator is here employing a portable centrifugal pump mounted on a covered wagon and operated by a gasoline engine. The Domestic Engine & Pump Co. supplied the pump, which has a capacity of 265 gal. per min., while the Goulds Mfg. Co. built the engine. By reason of the easy portability of this equipment, no attempt is made to direct the collecting water to any specially constructed sump. The water is allowed to gather where it will. Instead of leading the water to the pumping apparatus, the pump is taken to the water. A few hours' operation of this unit is sufficient to remove all water that collects during the day.

The portable gasoline engine and pump is a piece of apparatus that rightly belongs to most stripping operations. By its use not only is the necessity for constructing a sump for the water avoided but electric and steam lines need not be bothered with. Since all machinery compounding this unit is inclosed by the wagon, there is little likelihood that the mechanical parts will suffer in inclement weather.

Sixty-pound rails are used for the trackage in the strip pits, and they are laid to a 36-in. gage. Two 16-ton Vulcan locomotives transport the cars between the small shovel and the tipple.

In the matter of design and details of construction these dump cars differ radically from those usually employed. This is the first stripping operation in the country to make use of a solid-body dump car.

Solid-Body Dump Cars Used for Haulage

When the equipment was being purchased and the mine was being laid out, side-dump cars with a capacity of 4 cu.yd. were ordered. This was in general conformity with the practice followed at many stripping operations. It was desired to dump these cars into a hopper in order that the coal might be fed to the tipple at a uniform rate. But side-dump cars may be discharged into a hopper only at a considerable expense of time, to say nothing of risk to life and limb. The design of such rolling stock permits of only a comparatively frail car being built, and one that is ill suited to withstand the rigors of the strip pit.

Stripping coal is perhaps more of a contractor's job than a mining engineer's, for it is an earth-moving proposition. The contractor is familiar with the side-dump car, and this is undoubtedly one of the reasons why such cars have had a general use around strip mines. In this case soon after the cars had been ordered the decision was reached to install a rotary car dumper and discharge the loaded cars in this manner. It was believed that the cars already ordered could still be utilized by bolting down the sides. The possibilities inherent in a solid type of car were not to be denied, however, so the Western Wheeled Scraper Co., which had the contract for the cars called for on the first order, undertook the building of the new equipment.

The solid type of dump car for use around strip pits

possesses too many advantages to be passed over lightly. For operations equipped to handle moderate outputs this is perhaps the best type of rolling stock that can be employed. The cars in use at Unionvale have a capacity of 5 cu.yd., which is one yard greater than the same weight of equipment when built for side dumping.

Solid cars have a lower center of gravity than those of the side-dump type, and as a result are not so liable to derail or overturn on track that is faulty or light and hastily laid. Such cars ride the track easier and will stand up better under the rough treatment that this equipment receives when being loaded. The cars, being simple in construction, have but few parts to get out of repair. Furthermore they are cheaper in first cost than the side-dump model, to construct which requires more iron parts.

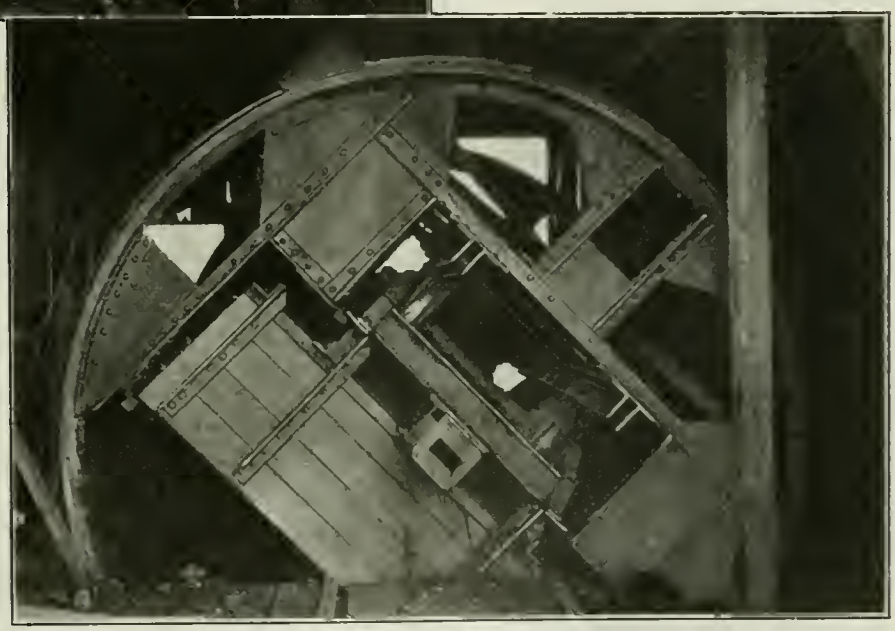
Trips, each composed of eight cars, are handled by two dinkey engines. As one trip is being dumped the other is being loaded. As a little more time is required to load the cars than to dump them, the empty trip gets back before the cars at the shovel are filled. The empty trip, accordingly, pulls into a siding near the entrance of the pit, where it waits until the loaded trip leaves for the tipple. Thus there is an adequate supply of empties on hand at the small shovel and that machine does not lose appreciable time waiting for the arrival of cars.

A single-car rotary dump manufactured by the Car Dumper & Equipment Co. has been installed on a hillside overlooking the tipple that lies in the valley below. A wooden building houses this apparatus. The locomotive coming from the pit with its string of eight cars pushes the trip through the shed and dumper until the car connected to the engine is in proper position within the revolving mechanism. This car is then turned through an angle of 135 deg. without uncoupling, as all cars are equipped with vanadium-steel swivel couplings. As the car rights itself the trip is moved forward by one car length. This operation is repeated until all cars have been discharged.

The dumper, constructed of steel girders, is operated by steam at 125 lb. pressure. Two cylinders, attached to the rings of the revolving mechanism by means of

Solid-Body Car in a Revolving Dump

The coal is not broken nor the car injured in the revolving dump. Being rigid the solid car stands the strains of coal loading, which, by the way, are a mere trifle compared to those a car suffers when loaded with rock or stumps as in anthracite stripping. The car with a movable side, end or bottom has always been regarded as having a weak spot that makes it necessary to give it additional stiffening weight. It also serves to direct the car with frequency to the repair shop and to lessen the reliance that can be placed on its daily service.



Car Tilted at 135 Deg. on Dump

No surer way of emptying a receptacle exists than to turn it upside down. End-gate and side-gate cars often discharge only with the aid of jerks or the use of a bar. Especially hard to remove is frozen coal. The revolving dump is the surest of unloading devices. There is no chance for the coal to wedge or clog, and it is therefore emptied without delay. In this case only one car is dumped at a time, but it does not have to be uncoupled, for a vanadium-steel swivel coupling enables any one car to revolve while the others attached to it retain their place on the regular track.

UNIONVALE STRIPPING OF R. L. CULBERTSON COAL CO., YOUNGSTOWN, OHIO
The cover over the coal is 35 ft. thick and the seam itself measures 6 ft. The excavator illustrated is lifting the coal with a two-yard shovel into solid-body cars. The rock has to be broken by blasting.

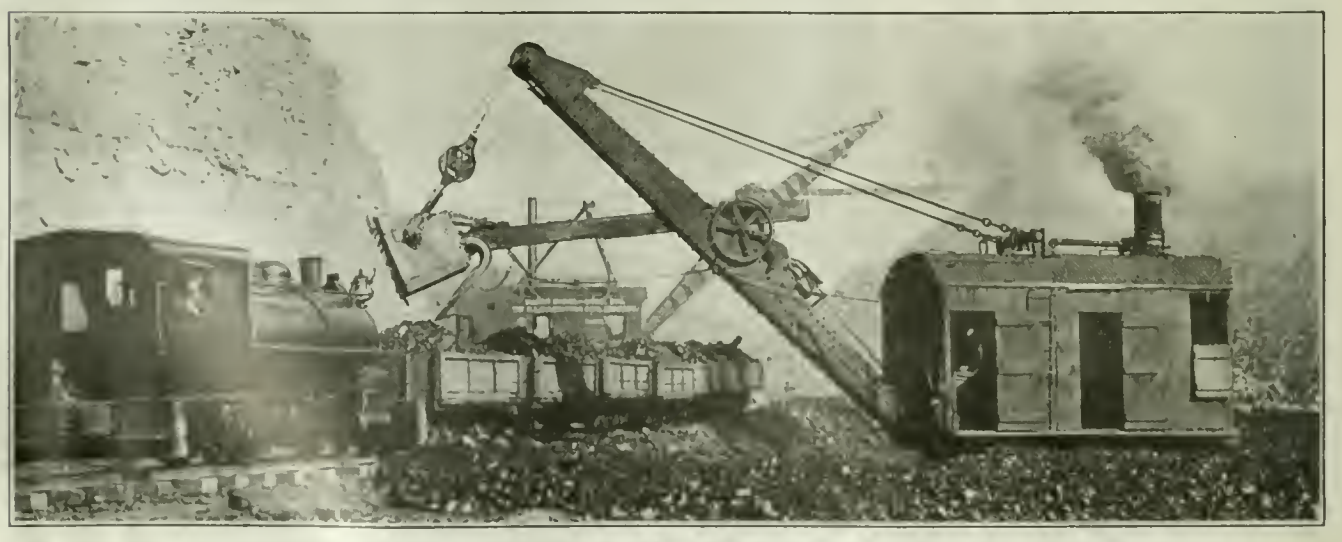
two wire ropes, turn the dump over and right it again. Thus the equipment is kept free from gears or other parts that might get out of order in the course of the heavy continuous service that is demanded. The dump is supported on four wheels hung in roller bearings on each end of the supporting shafts.

Conveyor Belt Used as a Picking Table

While the dump has a capacity of four cars per minute, it is rarely called on to operate at this speed, as the storage hopper into which the coal falls is not constructed to discharge its contents as rapidly as it may be filled. Usually about a minute is consumed in discharging a single car. That is, this amount of time is used in the entire operation, which includes moving the car into and out of the dumper. This speed allows the coal to be removed from the hopper at a rate that is consistent with the capacity of the preparation equipment on the tipple.

After leaving the dump cars the coal passes into a steel hopper having a capacity of 50 tons, which it leaves over a reciprocating feeder, by means of which it is evenly distributed upon a 48-in. belt. The coal travels on the belt for a distance of about 190 ft. before it reaches the tipple. As is shown in one of the illustrations, a section of the belt surface is used as a picking table. Two men at this point stationed on either side of the conveyor remove foreign material, which is tossed into wooden chutes leading away from the sides of the conveyor shed.

The tipple, which is constructed of wood, as are all of the plant units, is admirably equipped to prepare the stripped product thoroughly. A 10-hp. motor operating on 240 volts alternating current moves the conveyor belt at a speed of about 100 ft. per min. This is an efficient rate of travel for delivering the coal to the screening apparatus. Since the belt moves on an incline, no great amount of power is required to keep it in operation, which accounts for the small capacity of the motor used to drive this 386-ft. conveyor.



STRIPPING AND COAL-LOADING SHOVELS WITH LOADED TRIP OF SOLID CARS
The larger shovel has a 90-ft. boom and a 6-cu.yd. bucket, while the one in the foreground has a shovel only one-third as capacious and is mounted on a caterpillar truck.

As the coal leaves the belt within the tipple it enters a second hopper. By means of revolving grizzlies suspended from a truck that moves on a track in turn suspended from the roof trusses of the building, either a 1¼ or ¾-in. separation may be secured. When it is desired to load coal of a definite size, the truck supporting the revolving steel plates is moved by hand at right angles to the hopper until the grizzly giving the desired size is in place under the lip of the hopper-discharge plate. Although there are two tracks beneath the building it is possible to load only any one special size of coal at a time. This arrangement provides for the loading of a special size into one car and either run-of-mine or screenings into the other car.

The tipple is actually composed of two buildings: the screen house and the crusher house, the two being connected by a conveyor shed. When the company has orders for crushed sized coal, the product in the hopper, which is cleaned run-of-mine, is directed onto a 36-in. belt that is approximately 100 ft. in length. By this the coal is conveyed to a rotary crusher built by the Robins Conveying Belt Co., which furnished the rest of the tipple equipment.

The crusher, which is operated by a 75-hp. motor through a belt connection to a flywheel on the crusher shaft, can be so set as to give any size from 1 to 7 in. Coming from the crusher the coal may either be loaded as crushed run-of-mine or a definite size or both, as two loading chutes are provided. If the coal is sized it passes over a grizzly. While only two tracks pass beneath the tipple buildings, it is possible to load three distinct sizes simultaneously, or to load four separate railroad cars. Both tipple buildings are well lighted, as is also the conveyor shed. This is a detail that is highly desirable where stripped coal is being handled, as this product should be kept under careful scrutiny.

Boiler House Supplied by Side-Dump Car

Power for the operation of the preparation plant and the rotary dump is generated in a brick building situated near the dumphouse. This building is divided by a brick partition so that the steam-producing apparatus may be separated from the electrical equipment. In the boiler house a 100-hp. Erie City boiler has been installed, whereby steam is supplied to the dump and the electrical generating equipment.

Belt Conveyor

Coal is conveyed from a 50-ton hopper at the dump house to the preparator building on a 48-in. belt, the travel being about 190 ft. This travel gives opportunity for picking out the refuse material. As the belt moves on an incline a 10-hp. motor operating on 240 volts, alternating current, readily keeps it in motion at a speed of about 100 ft. per min. Belt conveyors are coming quite generally into use, especially where the travel is long. They have long life and give little or no trouble.

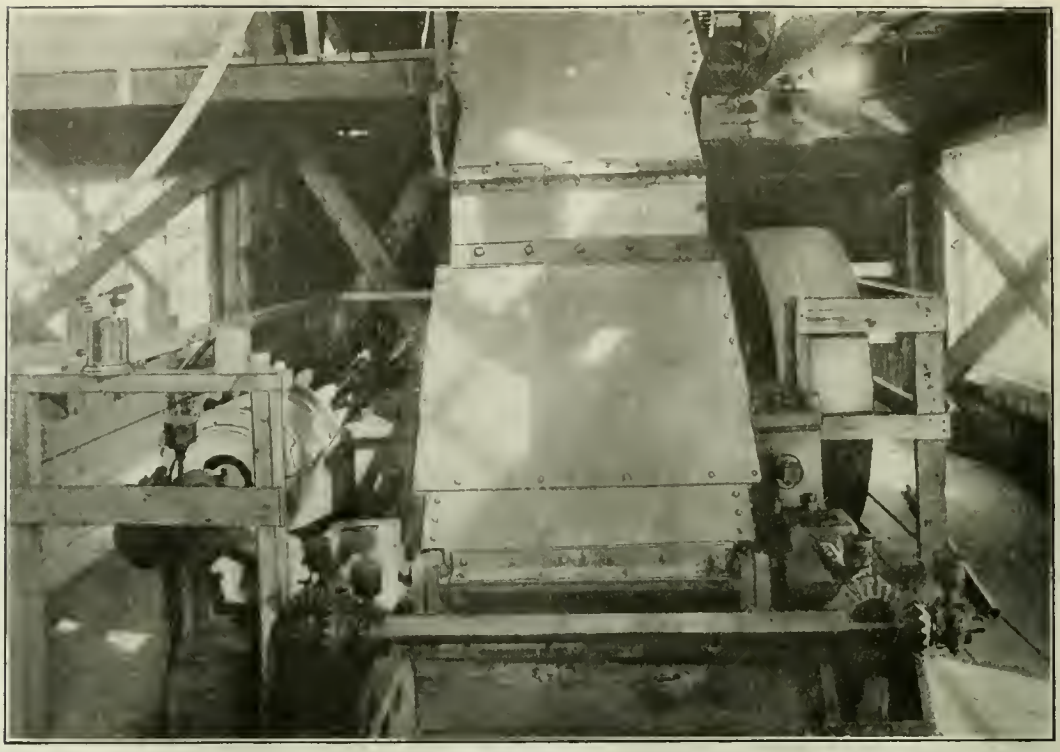
Under the Tipple

From elevated walk ways the trimmers closely inspect the coal. No strip-pit coal can, in normal times, go to market just as it comes from the loading shovel. After all has been said about the miner he is more scrupulous than the steam shovel, which picks up all it finds. Careful picking and preparation, however, overcome this difficulty, and there is no reason why stripped coal should not be as well-prepared a product as underground coal that has been over a picking belt and better than coal that has not been thus selected.

Coal is delivered to the bunkers by means of a 4-cu. yd. side-dump car. This is taken into the strip pit along with a trip of the solid cars when coal is needed at the power house. Ashes are removed from the building through a pipe line extending underneath the concrete floor and reaching to the dump pile, which contains the refuse from the picking table. The ashes are carried through the pipe by a jet of water.

In the second compartment of the power house a 100-kw. Curtis steam turbine is direct-connected to a 125 kva. 240-volt alternating-current generator. With this inexpensive installation sufficient energy is produced to operate all the motors which drive the preparation machinery.

The plant of the Culbertson company is one of the most up-to-date of its kind. While the tipple has a capacity of 1,600 tons daily, it is seldom that over 1,000



Discharge to Crusher

Crusher is operated by a 75-hp. motor, belt-connected to the crusher shaft. It can be set to deliver any size from one to seven inches.

tons are loaded in a single day. The car shortage has hit this operation quite as hard as any other in the bituminous fields, and curtailment of production has resulted.

In comparison with larger stripping operations where standard-gage railroad equipment is run directly into the pits for loading the solid type of dump car has its advantages. In the first place by it a more uniform supply of coal may be delivered to the tipple, where it is desirable to maintain steady operation. In cold weather the dump is operable quite as readily as in the warmer months. The method of feeding the tipple by dropping the bottom gates of standard-gage rolling stock and permitting the coal to enter the hopper to be fed by flight conveyor to the tipple cannot be said to be readily workable in all weathers. Such gates are liable to freeze shut in the winter and cause delay in unloading the coal. This is especially true around stripping operations since at such plants considerable water is almost always encountered. Where dump cars are employed no great amount of attention need be paid to the laying of track, or at least not as much as where the rails must support heavier equipment.

It is the common practice to locate the railroad tracks upon the berm of coal left by the smaller shovel. While such a foundation is perhaps a solid one, yet operation is made safer when the equipment running over the tracks is of a size that allows a greater area for the sustention of the weight. This is accomplished through the use of solid-dump cars.

Coal Mining Institute Proceedings Issued

THE ANNUAL volume of Proceedings of the Coal Mining Institute has been issued and is being distributed among its members. It is an attractive volume 10½ x 7 in stiff cover, 188 pages, and contains much valuable coal-mining information. This volume may be obtained through application for membership in the Coal Mining Institute by addressing Secretary H. D. Mason, Jr., 911 Chamber of Commerce Building, Pittsburgh, Pa.

Indiana Coal Production Recedes

PRODUCTION of coal at 191 mines in Indiana during the week ending Sept. 11 is reported as 493,629 net tons as compared with 532,882 net tons at 192 mines the week preceding. These mines worked 75.48 per cent of full time. Car shortage was responsible for 16.77 per cent of the time lost, while labor trouble and mine disability accounted for 3.45 and 4.30 per cent, respectively.

Urge Establishment of International Office For Coal Distribution

THE Twenty-fifth International Congress of the International Miners' Federation has requested the International Labor Office of the League of Nations to undertake to find the best method of establishing an International Coal Office for the purpose of acquiring a more equitable distribution of coal throughout the world, according to a statement given out by the International Labor Office.

M. Albert Thomas, Director General of the International Labor Office, who was present at the session during which the creation of an International Coal Bureau was decided upon, made it clear that the distribution of coal in accordance with needs of various nations would in no way modify or alter existing agreements arrived at by virtue of the Treaty of Peace or of the Spa Conference and that such a task could only be carried out in co-operation with other branches of the League of Nations. He stated, however, that subject to these reservations he was ready to respond to the appeal made by the miners' congress and agreed to bring the matter before the governing body of the International Labor Office at its meeting on Oct. 5.

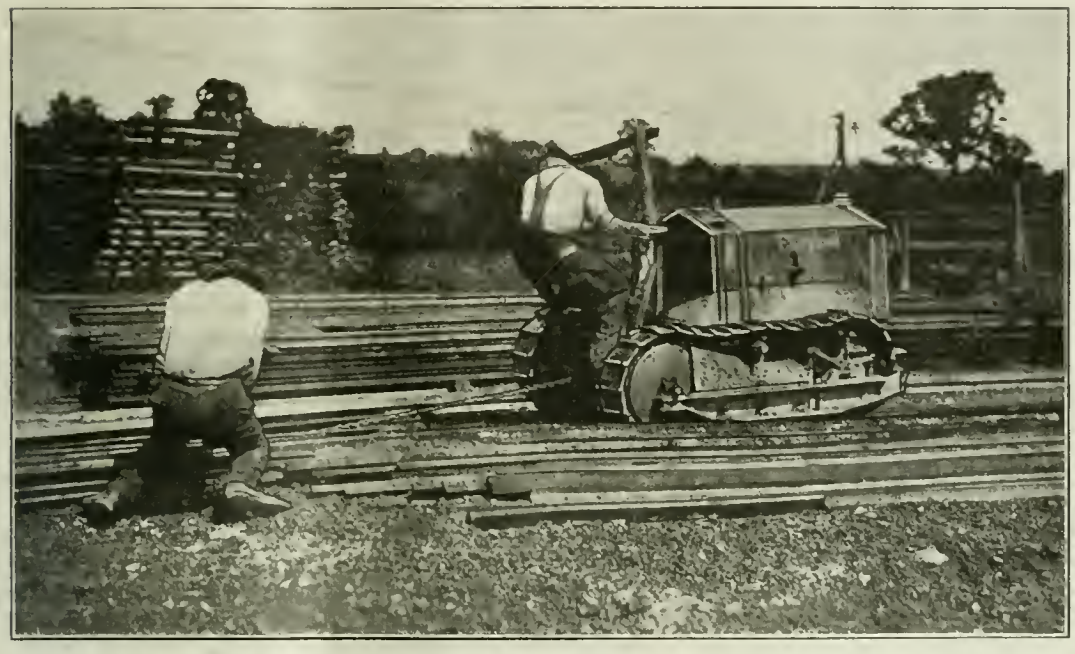
It is thought that such an international coal bureau will eliminate much of the present loss and waste involved by defective organization of distribution and transport of coal throughout the world.

Caterpillar Tractor Supplants Team at Pennsylvania Coal Mine

Handy Device Gathers Mine Timbers, Hauls Rails and Props, Pulls Railroad Cars and Performs in General Work of Mine Team at Clarion County (Pennsylvania) Mine

BUILDING engines of destruction for war-time purposes is an experience not without its advantage in the times of peace that ultimately follow. The war taught us many things about tractors of the caterpillar type. The modern version of beating our swords into ploughshares is to remodel our tanks into tractors.

Few coal operators have yet realized the thorough practicability of utilizing small caterpillar tractors to replace teams in general haulage work around the mines. The ability of these machines to traverse exceedingly rough country is well illustrated by war-time photographs of tanks lumbering over trenches on the Somme and breaking down trees in the Argonne forest. A caterpillar tractor will not recognize a hill.



Tractor "Snaking" Rails

Around a mine there are usually good roads and bad. For delivery of coal the motor truck is to be favored, but for "snaking" rails and logs and for hauling props from the woods the tractor is supreme. A tractor will haul cars on the railroad track or logs in the woods. It is at home everywhere, and disregards grades.

At the mine of the Hamler Coal Co., in Clarion County, Pennsylvania, a 3-ton tractor of the caterpillar type has proven itself so versatile that the company officials are prone to wonder how they were ever able to get long without it. This concern is operating in the lower Kittaning bed of coal and has a daily output of 1,000 tons.

Goes Eight Miles to Gallon of Gasoline

The machine, which was built by the Cleveland Tractor Co., has four cylinders each having a 3¾-in. bore and a 5½-in. stroke. The speed of the motor is 1,200 r.p.m. Either gasoline or kerosene may be used as fuel, and approximately eight miles may be traversed on a single gallon of gasoline. The Hamler officials, who purchased the machine more or less as an experiment, have found that the above-mentioned mileage may be realized on all kinds of grades and roads and in all sorts of weather.

Before the tractor was purchased, a team was maintained for hauling at this company's operation. It was costing the firm about $6 a day for feed alone, to say nothing of the driver's wages. Inclement weather often suspended the activities of the team, though there was almost continuous need of its services.

Since the tractor has been in use, no regular driver has been required, as a man from the tipple may be pressed into service as an operator. It has been found that the tractor is able to haul as much as the team and do it in a much shorter length of time, while the cost of maintenance is materially less.

Props Hauled as Much as Fifteen Miles

At the Hamler mine the tractor furnishes the motive power for the dragging of rails and heavy timbers from the railroad siding to the surface plant or to points near the mine cars when the material has eventually to be taken underground. The tractor may be hitched to one or two spring wagons when supplies have to be moved for long distances on the surface. Props have been transported by this method over as much as fifteen miles. The machine has been used to retrieve railroad cars that have been inadvertently allowed to pass beneath the tipple before being completely loaded.

This company owns much of the surface rights to its coal land, and much of the territory owned is wooded and furnishes excellent mine timber. The country is rough, however, and quite difficult for teams to operate over. This natural resistance of the land is overcome when the tractor furnishes the means of moving the wagons. As is well known, this machine is able alone to surmount almost any kind of hill.

If the grade is too steep, which is seldom the case, a cable may be used to advantage by extending it from the wagon to the tractor, which has first been moved to the hilltop. By pulling on the cable the machine is capable of exerting greater tractive effort without an appreciable degree of slippage, as it is aided by gravity in moving down the opposite side of the hill. It is almost impossible to stall even on wet ground.

Another point in favor of the tractor as compared to a team is that it is literally able to "turn on a ten-cent piece." It makes little difference whether the tractor is attached to the front or the rear end of a wagon, since the tongue in any case is removed.

It would appear that there is an excellent opportunity for some wide-awake conveyance manufacturer to build a specially-designed cart to be used with a tractor. A wagon provided with two "fifth" wheels, either of which could be locked, also should prove advantageous.

Factors To Be Considered in Calculating Proper Hoist for Specific Conditions*

Nine Cases Are Considered as a Means of Arriving at the Duty That Will Be Required of a Mine Hoist—Author Gives Information as to Correct Methods of Handling Hoist

By M. A. Whiting†
Schenectady, N. Y.

IN PROVIDING power for many classes of work the proper types and capacities of the motors to be provided are determined most suitably by comparison with similar, and in many cases duplicate, drives. In mine hoisting, however, the form and depth of the mineral deposit, the daily output desired, the arrangements of the shaft bottom and tipple, underground haulage conditions and various other factors all affect the hoist duty. It is the exception therefore to find two hoists working under practically identical hoisting conditions.

In one list of installations comprising 217 equipments of 200 hp. and larger, of 99 different motor ratings, the only duplicate hoisting conditions are two groups each of five duplicates, one group of three, and six groups of two each. In all but one of these cases the openings having duplicate hoisting conditions are located on the same property.

It is therefore necessary in nearly every case to calculate a duty cycle based on the data covering proposed hoisting operation. If the conditions are known, the duty cycle for mine hoisting can be predetermined more closely than for almost any other complex operating service. The duty consists principally of accelerating and retarding masses and hoisting and lowering weights, both of which can be calculated definitely in accordance with the fundamental laws of physics. The principal variable element, the friction, fortunately is a minor consideration, so that even a considerable percentage of error in its assumed value will affect the total result only slightly.

Calculation Answers Following Problems

The following conclusions can be drawn from a properly-calculated duty cycle:

(1) Whether the project as proposed is practicable—i.e., whether the number of trips per hour desired can be made for the depth, load, cage weights, caging time and other determining conditions.

(2) Whether changes in drum shape or other mechanical features are necessary or desirable.

(3) Type and capacity of drive, whether by direct-current or induction motor; continuous and momentary capacity of motor; in a direct-current Ward-Leonard equipment, the capacity of the generator and its driving motor; in a flywheel set, the capacity of the flywheel required for a stated degree of equalization of input.

(4) Details and special features required. (For example, if with an induction motor, an extremely short acceleration period is used, a liquid rheostat will not be fast enough.)

(5) Ease of operation—i.e., whether the operator can to all practical purposes meet the cycle; whether the wear and tear will be reasonable or excessive.

(6) Energy consumption and input peaks. From time to time a number of papers have been published covering methods of calculating duty cycles and the selection of drum shapes. This paper will not take up these topics but will consider a hoist equipment that has been installed to work under certain conditions but which actually may be operated in any one of several different ways.

Where Calculations Belie Practice

In actual operation duty cycles may differ in a number of respects from those calculated, most of these divergencies falling under the following heads:

(1) Small differences will occur because of the manner in which the electrical apparatus functions. For example, where an ordinary calculated diagram shows, during acceleration and retardation, a uniform input or one varying in a certain manner, the operation of the control equipment does not cause the input to vary at exactly this rate.

(2) Small differences will occur because of variations between the actual and the assumed mechanical conditions. For example, in hoisting a long trip of cars up a slope of varying grade, the duty cycle is commonly drawn as if the load passed abruptly from one inclination to the next, whereas actually the transference is gradual.

As the purpose of the calculated cycle is to insure the application of the proper drive, all differences under the two headings immediately preceding are immaterial

*Paper entitled "Mine Hoisting Duty Cycles," presented before the Engineers' Society of Western Pennsylvania.

†Power and mining engineering department, General Electric Co.

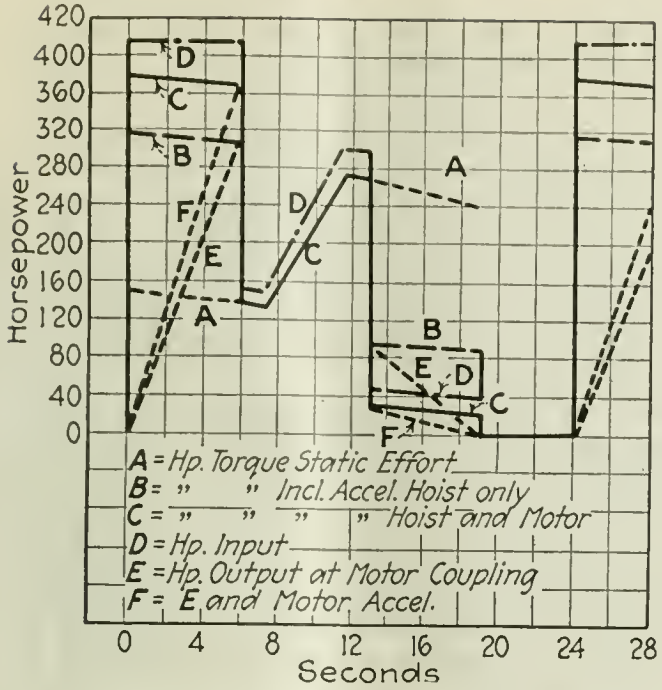


FIG. 1. CALCULATED DUTY CYCLE

Dotted line A, solid line C and dotted line A show combined static effort for the example selected for comparison. Adding algebraically the efforts for accelerating and retarding all parts except the motor, assuming uniform rate of acceleration, gives the line B-C-B. Including effort of accelerating rotor you get the line C-C-C. Other lines are clearly designated in legend.

so long as their effects are negligible. The engineer who works up the requirements should be able to recognize whether any of these effects are sufficiently important to influence the results, and if so he should accordingly modify his deductions from the original calculated cycle.

(3) Differences, from the figures assumed often important, occur by reason of the variation in the load. These include not only a change in the weight of the material moved per trip but changes in the mass of the drums and cages which have to be accelerated.

(4) Differences, often appreciable, occur because the time available for hoisting is greater or less than originally calculated. This variation in time available for hoisting may arise from a difference in time necessary for caging or from a difference in the number of trips per hour required.

(5) In some cases, even where the conditions to be met are as favorable as those originally assumed, the operator may handle the hoist with poor judgment, and obtain corresponding results, either from indifference or because the best method of operation has not been impressed upon the hoistman.

The subject is extensive and cannot be covered completely in a paper of reasonable length. Only a few of the most important possibilities will be discussed.

Most of the differences between assumed and actual conditions have their effect principally during the accelerating and retarding periods. In an induction-motor hoist approximately one-half the electrical energy drawn from the incoming line during acceleration is wasted in the resistor; likewise one-half or more of the energy drawn from the line during retardation is similarly wasted. Partly on this account differences between assumed and actual operating conditions are of greater importance in an induction-motor hoist than in a direct-current machine provided with Ward-Leonard control.

Example Selected as Basis for Comparison

The example chosen is one which is near the limit for which an induction motor is physically practicable, but for which in many cases such a motor would be the proper selection. (Under some conditions of power supply this case would require a direct-current hoist with flywheel equalization.)

CONDITIONS OF OPERATION TO BE MET

Weight of coal per trip	4,500 lb
Weight of car	3,000 lb.
Weight of cage	9,000 lb.
Rope	1¼ in.
Vertical shaft, lift	245 ft.
Trips per minute	2½
Trips per hour	150
Time required for caging and dumping	5 sec.

Balanced operation only.
Equalization of input not necessary.

To meet these conditions the following details have been selected:

PROVISIONS SELECTED TO MEET CONDITIONS

Accelerate 6 sec., run 7 sec., retard 6 sec., rest 5 sec.
Drums cylindro-conical:
Four turns (plus holding turns) at 6 ft. diameter.
Four turns, on cone.
Four turns at 7 ft. diameter.
Assume drums 180,000 lb. ft.²
Assume 8 ft. head sheaves, each weighing 2,700 lb.
Assume a mechanical efficiency of 80 per cent.
Rope speed, at full speed of motor, on small cylinder = 1,045 ft. per min.
On large cylinder = 1,220 ft. per min.

This drum shape and the assumed values for acceleration, etc., may not be exactly those best suited to meet

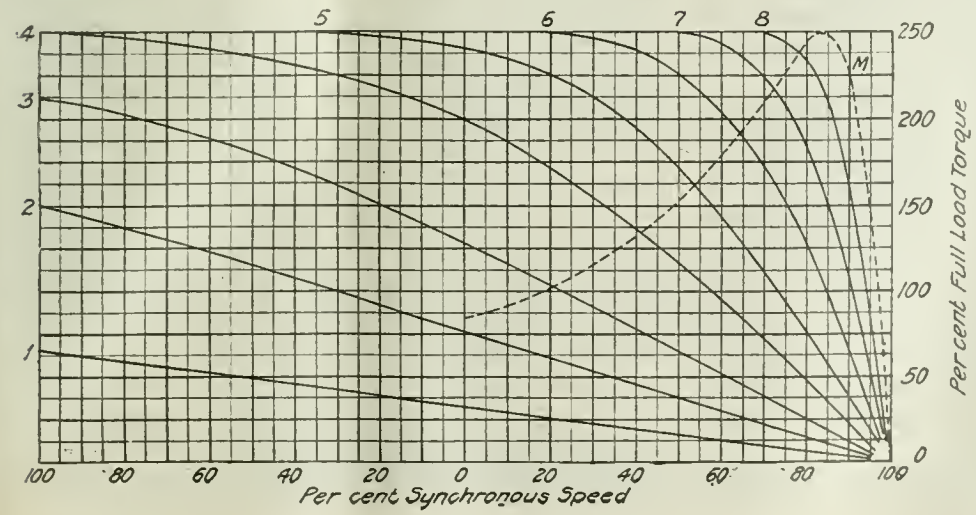


FIG. 2.

Torque-Speed Characteristics

Hoist has typical induction motors with eight-point mine-hoisting control.

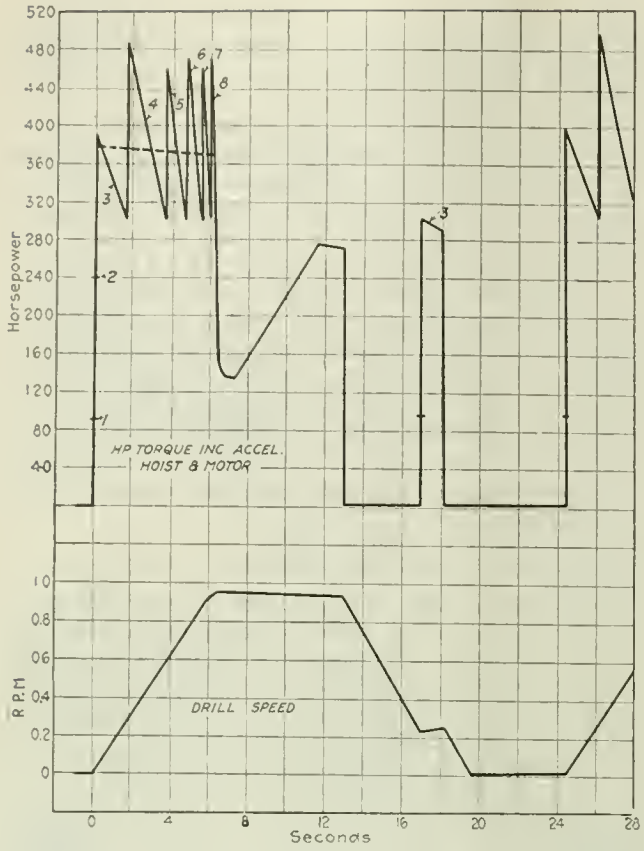


FIG. 3. CALCULATED CYCLE APPLIED TO PRACTICE
Current-limit relay settings have been adjusted to notch up at 300 hp. Trip is started by throwing master controller to full-speed position. Retardation begins at 13 sec. by cutting off power and coasting. After four seconds of coasting, resulting in a loss of 25 per cent of normal speed, the operator throws on his controller for 1.1 sec. and cuts off again so as to coast in. Drum speed at various points in the hoist is given at the foot of the diagram.

the stated hoisting requirements, but they approximate that condition. For specifications of this kind a number of drum shapes may be found, differing to some extent but providing nearly identical over-all results.

Original Uncorrected Calculated Cycle

Fig. 1 shows the theoretical cycle in accordance with the foregoing data. The combined static effort (i.e., total effort except acceleration) is shown by the dotted line A, the solid line C, and the dotted line A. The efforts for accelerating and retarding all parts except the motor were calculated for a uniform rate of acceleration. Adding these during acceleration to the static effort and deducting them during retardation, the total effort, excluding that involved in the acceleration of the motor, is shown by lines B-C-B.

Using the standard 16-pole 300-hp. 450-r.p.m. 2,200-volt motor and adding a suitable amount for its rotor acceleration, the root-mean-square of the cycle (i.e., the continuous load that will give approximately the same heating effect) is 285 hp. As the maximum torque requirements, both for the duty cycle and for purposes of construction and maintenance, also are within its capacity, the 300-hp. motor mentioned is suitable. Having selected the motor the duty cycle can be completed by adding to the diagram the effort for accelerating its rotor and deducting similarly that for retarding its rotor. The total diagram, including effect of motor rotor, is shown by line C-C-C.

All the efforts referred to in the foregoing are plotted in Fig. 1 as "horsepower torque" (i.e., as torque expressed in terms of the horsepower output to which at full speed these turning efforts are equal). Inclined lines E show the actual or "brake horsepower" output at the motor coupling during acceleration and retardation. Inclined lines F show the actual horsepower output including armature acceleration and retardation.

The motor efficiency is practically 90 per cent throughout except during the period of extremely light load when the hoist is slowing; for the latter condition a no-load loss of 5 per cent of rating is assumed. This determines the input from the power system, shown by line D (plotted in horsepower to compare readily with the output diagram).

SUMMARY FOR THE ORIGINAL CYCLE

Root mean square = 285 hp. input per trip = 4,325 hp. sec. = 0.90 kw.-hr.
Electrical efficiency of cycle, per cent 58
Over-all efficiency of cycle (at 80 per cent mechanical efficiency), per cent.. 46

The deviations encountered in actual practice can best be studied and compared with the original cycle by means of calculated cycles. These will serve as a general guide to engineers in charge of operation, in studying the possibility of improving the operation of actual installations.

I—Calculated Cycle Applied to Practice

The hoist we are considering will naturally be controlled magnetically rather than by a liquid rheostat. The standard equipment has an 8-point acceleration, and its speed-torque characteristics are approximately as shown in Fig. 2.

Fig. 3 shows approximately how an actual duty cycle will look when operating substantially in accordance with the original assumed duty cycle. In order to develop an average accelerating torque equal to 379-369 hp., as required by Fig. 1, the current limit relay settings have been adjusted to notch up at 300 hp. The trip is started by throwing the master controller to full-speed position.

Since at a standstill the current inrush on the second point is less than the setting of the relays, the third point (i.e., second resistance contactor) closes immediately and the acceleration proceeds on the various points as shown by the correspondingly numbered parts of the horsepower curve. Since the torque available for acceleration fluctuates, the rate of acceleration is not strictly uniform. In this case, however, the minimum is so high a percentage of the average that the effect on the rate of acceleration is negligible.

The curve of drum speed in Fig. 3 shows a maximum of 0.945 r.p.s. instead of the rated speed of 0.923 r.p.s. This is because the motor load during full speed running is less than rated load.

In Fig. 3 the operator begins to retard at 13 sec. (as in the theoretical cycle) by cutting off power and coasting. After four seconds of coasting, when the hoist has dropped to about 25 per cent of normal speed, realizing that he will fall short, he throws on his controller to the third point, cuts off again and coasts in. If he holds the power on for 1.1 sec. the hoist will then just coast to the mark in 1.4 sec. additional.

SUMMARY FOR CASE I

Root mean square = 296 hp. Input per trip = 4,432 hp. sec. = 0.92 kw.hr.
Input is 2½ per cent higher than for original cycle.
Time per trip is ½ sec. longer than for original cycle.
Possible trips per hour are 2 per cent less than for the original cycle.

II—Coast to Rest Too Soon, Making a Re-start Necessary

To show how the skill of the operator in retarding affects the operation the following case will be of interest. It represents an operator who is either overcautious, new on the job or improperly trained. Refer to Fig. 3 as far as 13 sec. only. Assume that the operator cuts off power at 13 sec., coasts to rest before realizing that the trip is not coming in, then throws on his controller to pick up enough speed to coast in.

The hoist coasts to rest in 5.25 sec. and stops 0.26 revolutions short of the mark and with the loaded cage 5¾ ft. below the dumping position. The operator then jogs the hoist by throwing the controller over several points, but the current limit system prevents contactors from closing beyond the third point. The inrush of current amounts to 390 hp., which drops to about 330 hp. during the jog. Assuming that this time the operator's judgment is correct, he cuts off after 2.4 sec. with a speed of 0.16 r.p.s. and coasts in to the mark in 0.9 sec. more.

SUMMARY FOR CASE II

Root mean square = 306 hp. Input per trip = 5,016 hp.-sec. = 1.04 kw.-hr.
Input is 16 per cent higher than for original cycle.
Time per trip is 2.55 sec. longer than for original cycle.
Possible trips per hour are 9.5 per cent less than for original cycle.

The considerably increased input required for this case possibly is surprising. It is accounted for by the fact that the power used to finish the trip is applied between zero and 17 per cent of full speed. The electrical efficiency during this period (motor and resistor losses included) is therefore only 8 per cent, and since the ascending rope is on the large cyinder the torque required is high.

I once witnessed a striking example of operation somewhat along the line of case II but much worse. In a large induction-motor water hoist the overwind and overspeed device (of the governor type) had originally been set to work too soon, so that, unless the operator retarded unreasonably early in the trip, the hoist would be stopped short by this device. After it was properly adjusted the operator continued to retard too early. To make matters worse, instead of holding his controller on a low-torque point or jogging on and off, he brought his controller only a little more than half-way back and slowed down by dragging the hoist brake heavily. In finishing the trip the motor crawled along for 10 to 15 sec. at about 50 per cent overload and below one-quarter speed. The waste of energy was, of course, great, with nothing to show for it except larger power bills, increased wear and tear on apparatus and a slower rate of unwatering a flooded level.

III—Cut Off at Exact Point from Which The Trip Will Coast In

The ideal operation is obtained by shutting off at a point from which the hoist will just coast to the mark. Thus there are no partial-speed rheostatic losses except while accelerating, and the entire stored energy of the moving system is utilized in finishing the lift, so that the power consumption is a minimum. Obviously the wear and tear on equipment is least by this method.

To meet this condition exactly the hoist is run at full speed 0.375 sec. longer than in the original cycle. Current is cut off at 13.375 sec. and it takes 5.25 sec. more to coast in.

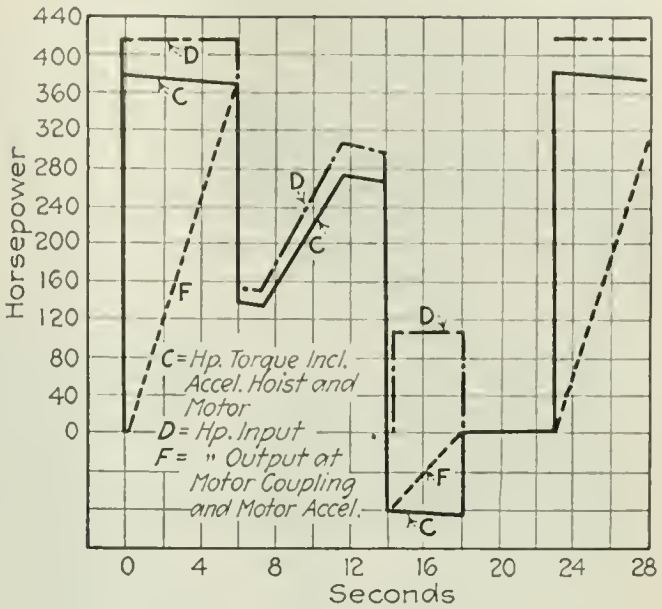


FIG. 4. PLUGGING TO SHORTEN RETARDATION

Cycle in this diagram is same as in Fig. 1, only full speed is held in this case 14 instead of 13 sec. The input necessary to develop plugging torque is shown by the line D between 14 and 18 sec. Energy between F and D in that period of time is wasted in resistor.

SUMMARY FOR CASE III

Root mean square = 284 hp. Input per trip = 4,183 hp. sec. = 1.16 kw hr
Input is 3 3 per cent lower than for original cycle.
Time per trip is ½ sec. shorter than for original cycle.
Possible trips per hour are 1½ per cent more than for original cycle.

It is evident that even a good operator cannot cut off as accurately as this, but if the loads are substantially constant he can cut off at a depth-indicator mark from which on the average the hoist will somewhat more than coast in. The final stop is then made easily by applying the brake at a low speed. Thus the ideal cycle, coasting to rest, is nearly realized; since the brake is applied only at a low speed the percentage of the stored energy wasted is low, and will not materially increase the energy consumption over that of the ideal cycle.

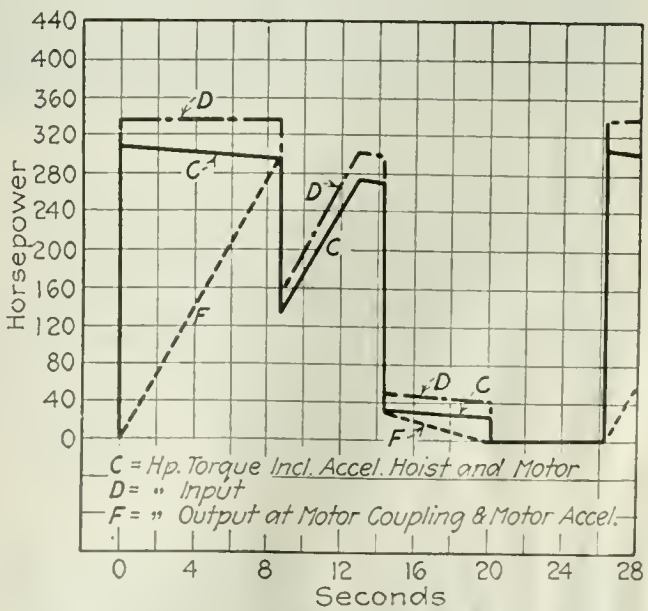


FIG. 5. WITH ACCELERATION OCCUPYING 8.7 SEC.

Retardation begins at same point—14 sec.—and is accomplished in 6 sec. Condition shown may result from throwing over control too slowly, too low a setting of current-limit relays or low voltage.

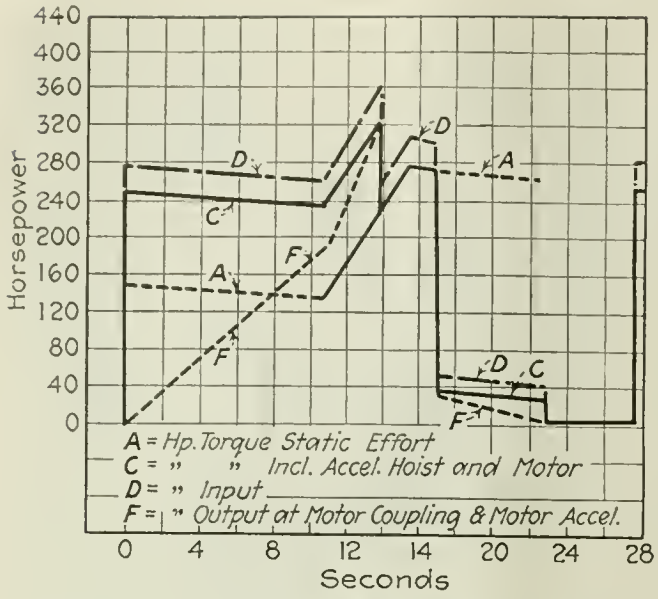


FIG. 6. ACCELERATION TIME FAR TOO LONG

Acceleration in this cycle occupies 14 sec. Some men, if hoist is not busy, may operate in this manner, believing that it is less severe on the equipment. As, owing to the drum shape, the static torque increases before the resistor is all cut out, this causes additional loss of energy.

Good Average Operation, Cases I and III

An adaptable man should be capable of learning by himself, or at least should be capable of being taught to operate much better than in case II. Since loads vary somewhat and the operator's reaction-time will sometimes vary a fraction of a second, a good operator will bring in some of his trips by coasting to the exact dumping point; he will come in with a little to spare and use the brake slightly to stop many of his trips; he will tend to stop short and will put on power again to bring in a few trips. The average performance will therefore closely approximate the ideal.

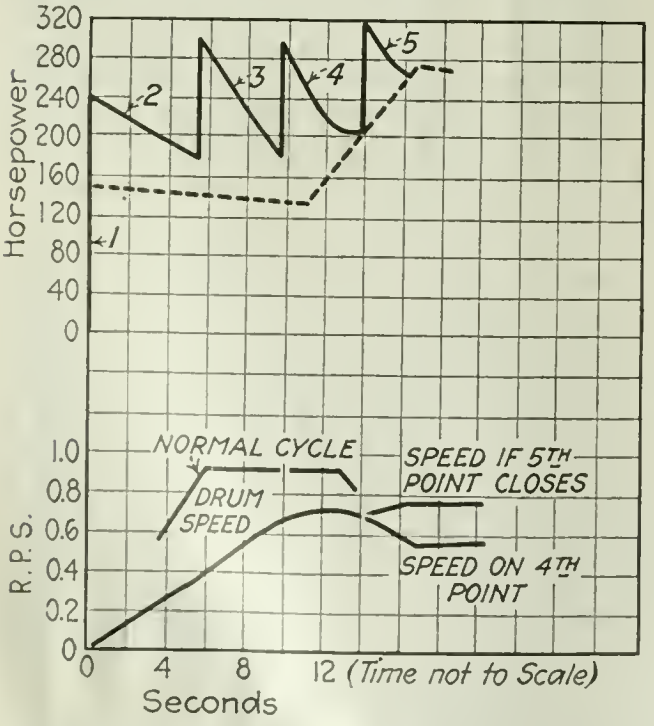


FIG. 7. CURRENT-LIMIT RELAYS SET FAR TOO LOW

These relays cut out at 180 hp., thus maintaining during acceleration an average total effort of 240 hp. While the ropes are winding on cylinders the relay settings do not prevent acceleration but afford an acceleration at one-half the normal rate for the original cycle. However, the ropes are on the respective cones when accelerating on the fourth point and the static effort shown by the dotted line rises rapidly, using up the margin of torque available for acceleration, so that the hoist reaches a uniform speed at 13 sec. This results in loss of time and waste of energy.

IV—Plugging to Shorten Retardation

If necessary to gain about 1 sec. per trip so as to keep ahead of the cars on the bottom, the method most directly available to the operator is to run later at full speed and "plug" the motor or use the brake to secure rapid retardation. Assuming a uniform rate of retardation in each case, for each second by which this period is shortened the full-speed running time must be increased ½ sec. to cover the required distance, so that the time saved per trip is one-half the time by which the retardation is shortened.

Fig. 4 shows a cycle identical with the original cycle (Fig. 1) except that full speed is held 1 sec. later and the hoist is then brought to rest in 4 sec. The input necessary to develop the required plugging torque is shown in Fig. 4 by line D between 14 and 18 sec.

In plugging, only part of the stored energy of the hoist is utilized in finishing the lift, and the balance is wasted in the resistor. In Fig. 4, the triangle (representing energy) contained between the sloping line F and the zero line from 14 to 18 sec. is wasted in the resistor. Likewise the input while plugging, between line D and the zero line, is wasted, chiefly in the resistor but partly in motor losses.

SUMMARY OF CASE IV

Root mean square = 296 hp. Input per trip = 4,788 hp. sec. = 0.99 kw.hr.
Input is 10 per cent higher than for origioal cycle.
Time per trip is 1 sec. shorter thao for original cycle.
Possible trips per hour are 4 per cent more than for origioal cycle.

V—Hoist Brake Used to Shorten Retardation

The same speed-time cycle as in case IV may be obtained by using the hoist brake in place of plugging. In this case the plotted cycle will be the same as that shown in Fig. 4 except that the input, line D, will be zero between 14 and 18 sec. Part of the stored energy of the hoist, shown by the triangle between inclined line F and the zero line from 14 to 18 sec. (which in the plugging cycle was wasted in the resistor) will now be wasted in the brake. This cycle is evidently more economical of power than the corresponding plugging cycle under case IV.

SUMMARY OF CASE V

Root mean square = 292 hp. Input per trip = 4,368 hp. sec. = 0.905 kw.hr.
Input is 1 per cent higher than for original cycle.
Time per trip is 1 sec. shorter than for original cycle.
Possible trips per hour are 4 per cent more than for original cycle.

VI—Faster Rate of Acceleration

If the power system will take the peak it will be possible to save one sec. by a faster acceleration instead of by a faster retardation as in case IV. This will impose a peak of 545 hp. (plus the fluctuations due to contactors closing). Assuming a retardation in 6 sec., as originally, the summary for this case is as follows:

SUMMARY OF CASE VI

Root mean square = 302 hp. Input per trip = 4,177 hp. sec. = 0.87 kw.hr.
Input is 3 4 per cent lower than for or ginal cycle.
Time per trip is 1 sec. shorter than for original cycle.
Possible trips per hour are 4 per cent more than for original cycle.

VII—Increased Time to Accelerate

Fig. 5 shows a cycle like the original cycle except for a slower rate of acceleration, occupying 8,7 sec. and ending at the beginning of the cone. The retardation is

assumed to begin at the same point in the trip as in the original cycle, being accomplished in 6 sec. A condition such as this may result from the operator moving the controller over too slowly, or from too low a setting of current-limit relays. Low voltage has the same effect as too low a setting of this relay.

Observe that the root mean square for case VII is less than for the original cycle. This is by no means always true for an increased time of acceleration. In an installation in which the static effort during the accelerating period is itself considerably greater than the continuous motor capacity the lengthening of the accelerating period will increase the root mean square instead of decreasing it.

SUMMARY FOR CASE VII

Root mean square = 275 hp. Input per trip = 4,535 hp. sec. = 0.94 kw.hr
Input is 4.8 per cent higher than for original cycle.
Time per trip is 1.3 sec. longer than for original cycle.
Possible trips per hour are 5 per cent less than for original cycle.

In a hoist installation of a given design an increased time of acceleration always increases the consumption of energy. This will be evident from the following: The work during acceleration consists of two elements, one of which—the acceleration of the mass—is (generally speaking) a constant quantity and is accomplished at one-half the full-speed efficiency of the motor—i. e., at approximately 45 per cent electrical efficiency averaged throughout the acceleration. The other element, the hoisting of the load against gravity during the accelerating period, is likewise accomplished at an average electrical efficiency of about 45 per cent, but the distance hoisted at this low average electrical efficiency increases with an increase in the time of acceleration.

It follows therefore that for the lowest conceivable energy consumption per trip the acceleration period should be reduced to practically zero. In any ordinary case this would increase the momentary accelerating peak so greatly as to require an excessively large motor to develop the accelerating torque, and would place a prohibitive load on the transmission line. A further limitation is imposed by the necessity of keeping shocks and stresses on ropes and cages within reason.

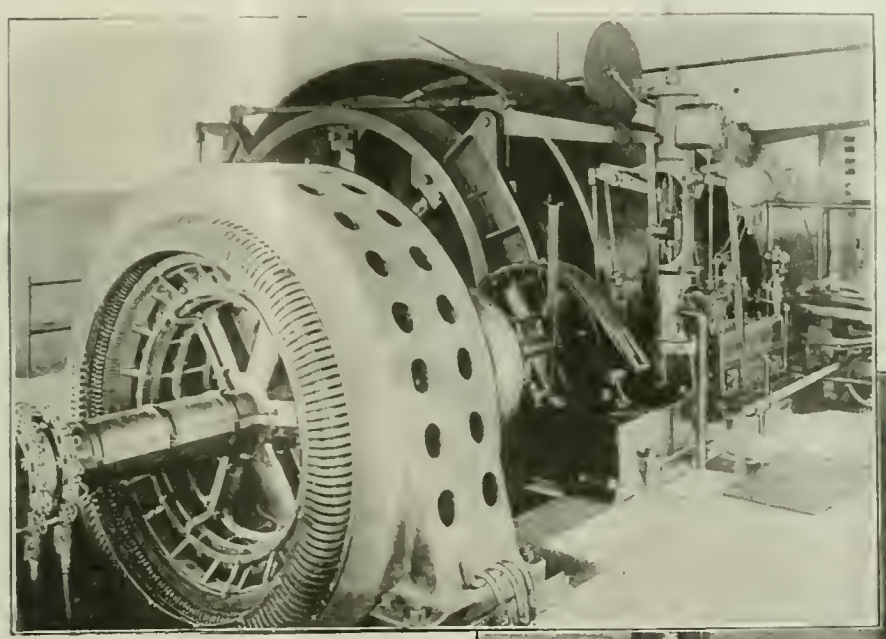


FIG. 8

Lansford Water Hoist

Cylindrical-drum hoist for Lehigh Coal & Navigation Co., at Lansford, Pa., lifting 30,000 lb. of water per trip. Induction motor is 1,200 hp., 300 r.p.m., 25-cycle machine.

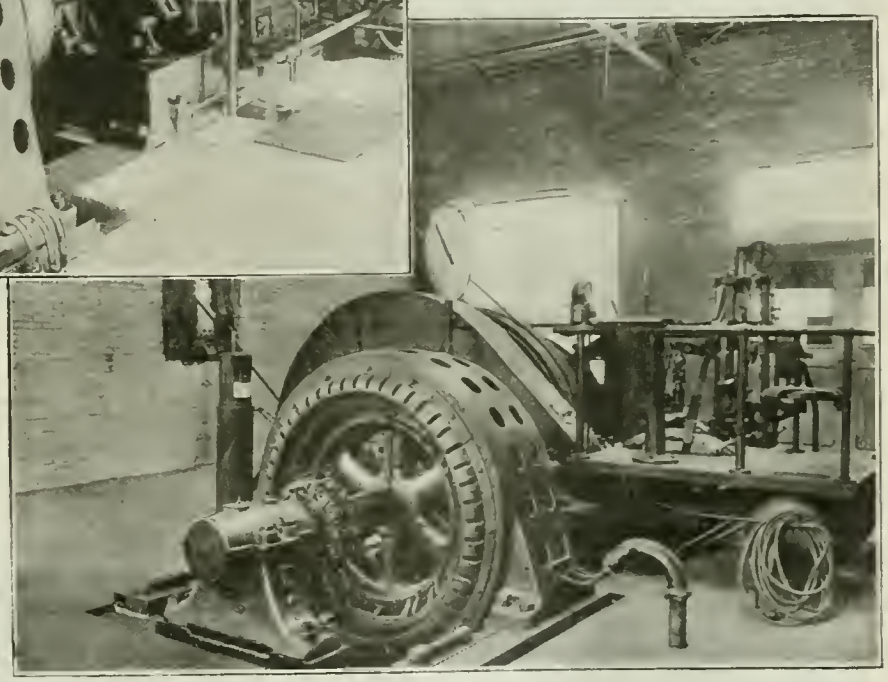


FIG. 9

Russelton Coal Hofst

Built for Republic Collieries Co., Russelton, Pa., to lift 6,000 lb. of coal per trip, 540 tons per hour, lift being 290 ft. Has cylindro-conical drum and 700-hp., 400-r.p.m. induction mtor.

VIII—Acceleration Time Far Too Long

Fig. 6 shows a cycle in which the acceleration occupies 14 sec., assumed to be at a constant rate in revolutions per second. Beyond this point the operation is assumed to follow the original cycle. This extremely slow acceleration is entirely unreasonable, but some men, when a hoist is not busy, may operate in this fashion under the mistaken impression that they are favoring the electrical equipment. The acceleration is not completed until the ascending rope has wound 2.4 times on the cone and the descending rope has unwound 2.4 turns from the other cone. Since the static torque increases (on account of the drum shape) before the resistor is all cut out, this causes an additional element of energy loss.

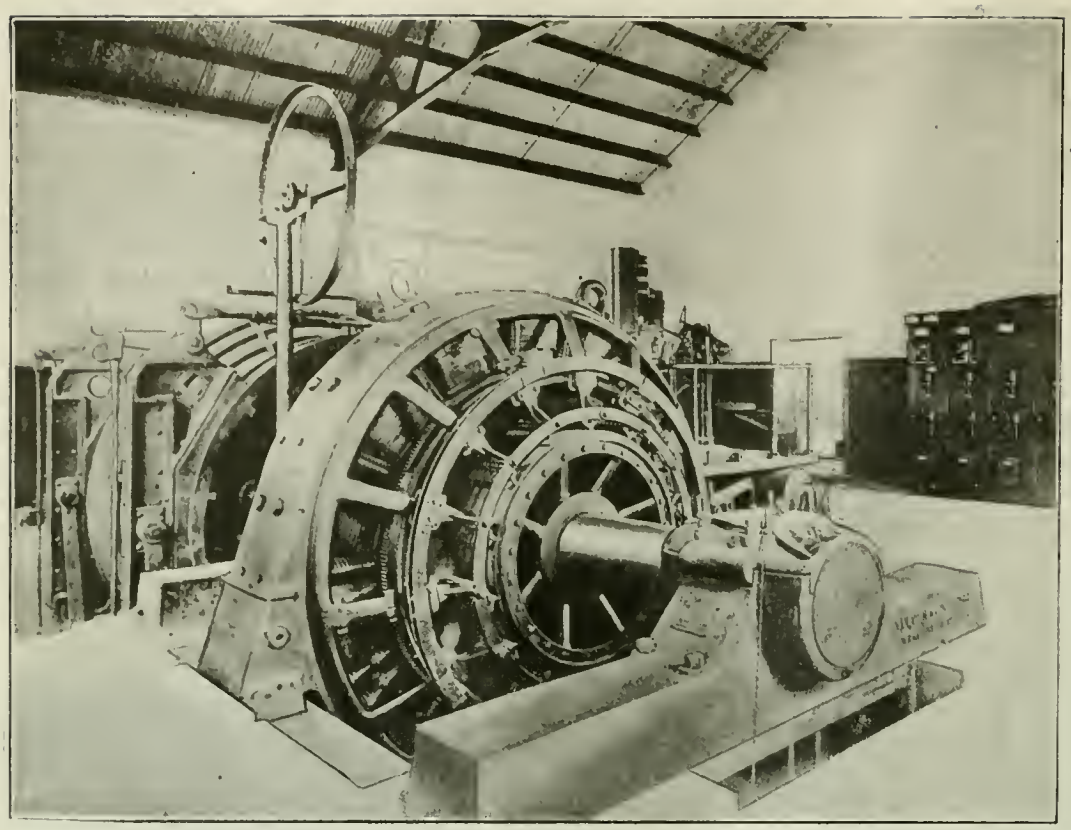


FIG. 10

Shaft Hoist

A 1,400-hp. 90-r.p.m. first-motion direct-current hoist at Shaft No. 86 consolidation coal Co., Fairmont, W. Va. Cylindro-conical drums 8 to 11 ft. in diameter; three feet of slack rope used. Coal brought up each trip, 6,500 lb.; lift, 550 ft.; maximum rope speed, 3,120 ft. per min.; 2½ trips per min.

SUMMARY FOR CASE VIII

Root mean square = 276 hp. Input per trip = 4,950 hp. sec. = 1.02 kw.hr
Input is 14½ per cent higher than for original cycle.
Time per trip is 3.9 sec. longer than for original cycle.
Possible trips per hour are 14 per cent less than for original cycle

IX—Current-Limit Relays Set Far Too Low

The case where the current-limit relay is set too low illustrates a condition which cannot ordinarily arise except in a conical or cylindro-conical drum hoist with magnetic control. Fig. 6, discussed under case VIII, shows a cycle whose approximate equivalent might be obtained with a magnetic control if, while the current-limit relays were set high enough, the operator notched up his master controller too slowly, or it might be obtained with a liquid rheostat control which has a time-limit acceleration.

Assume, however, a magnetic control equipment whose current-limit relays are set so low as to cut out at 180 hp., thus maintaining an average total effect of 240 hp. while accelerating. The effect is shown approximately in Fig. 7. While the ropes are winding on the cylinders the relay settings do not prevent the acceleration of the hoist (at about one-half the normal rate for the original cycle). But while accelerating on the fourth point the ropes start up and down their respective cones, so that the static effort (the dotted line) increases. The margin of torque available for acceleration drops so rapidly that the acceleration practically stops at 13 sec.

If the operator lets the hoist run in this manner on the fourth point the further increase of load (due to the cones) will cause the motor to slow down because it is running on resistance, approximately as shown by the lower branch of the speed curve. But a maximum torque push button usually is provided (primarily for other purposes) by which the operator may close the contactor for the fifth point irrespective of the current limit. If the operator uses this push button as soon as the speed becomes constant on the fourth point the effect of the fifth point will be about sufficient to meet the increased load due to drum shape, and beyond the cones the hoist will run at about 80 per cent of normal speed.

The cycle is not shown carried to completion, as the calculations can be made only by the "cut and try" method and are quite laborious. It is evident, however, that the loss of time and the increase in energy consumption are quite appreciable.

Deviations from Original Conditions

Change in rest period.—If the rates of acceleration and retardation are unchanged a variation of time at rest will of course change the number of trips per hour. It will not change appreciably the energy consumption per trip, but will have a slight effect on the motor heating. Following the approximate rule that an induction motor at rest dissipates its heat at only one-quarter of the normal rate, if the rest period in the original cycle, Fig. 1, would be reduced to zero the root mean square would be increased 5 per cent.

Low voltage.—If the reduction in voltage is approximately constant and not extreme, so that it is possible (after changing the current-limit settings) to obtain the requisite accelerating torque and accelerate in the normal time, the efficiency will be only slightly affected and the time of trip will not be affected appreciably. But if the voltage reduction is extreme, or if the relays are not set for the reduced voltage, the time of acceleration will be considerably increased, and efficiency and production will be reduced accordingly. An extreme reduction of voltage will increase the motor heating about as in ordinary application.

Increased mass of system.—If drums or cages are considerably heavier than originally assumed, this may

be met during acceleration by increasing either the time or the horsepower peak, either of which decreases the efficiency; it may be met during retardation either by increasing the time to permit coasting in (thus avoiding further lowering of efficiency) or by plugging or braking, which lessens the efficiency.

The following general principles may be laid down. Some of them are contained in the various illustrative cases, while most of the others are based on an extension of the same reasoning.

As far as practicable the power of the motor (except when plugging) should be used at full speed—i. e., as much of the hoisting work as practicable should be done with the resistor cut out. The ideal cycle has a short period of acceleration (limited by the effect of the peak and the operation of the cages, etc.), while power is cut off at a point from which the trip will just coast to place.

Where it is necessary for any reason to retard at a higher rate than the natural coasting rate, the power required during retardation should be used at as high a speed as is practicable, so as to avoid unnecessary resistor losses and loss of time. Where not unsafe, it is best to coast in and to approach the mark with a little speed to spare, which can be checked with only a slight loss by plugging or braking at the very end of the trip.

When rapid slowing of the hoist is desired the energy consumption and motor heating are less when this retardation is effected by braking rather than by plugging. With a good electrical equipment and reliable power, plugging is considered more dependable than heavy braking. When a hoist is not busy, the operator should accelerate at the normal rate, coast in as nearly as possible, and take the extra time in longer rest periods. It needs to be impressed on some operators that in handling extra heavy loads or in breaking in a new equipment they are not making it easy for an induction-motor drive by running at partial speed.

The foregoing analysis applies particularly to induction-motor hoists. For the limited class of direct-current hoists which are fed from an ordinary direct-current feeder and controlled by an ordinary armature resistance control, the same considerations apply almost without change.

For the typical direct-current hoist, with its own motor-generator set and Ward-Leonard control, these conclusions apply only in part. Since acceleration and retardation are accomplished by voltage control, not by a resistor in the armature circuit, and since a rapid retardation regenerates energy which is returned to the motor-generator set, considerable variations in the time necessary for starting or coming to rest introduce relatively small variations in actual losses.

West Virginia Holds Initial First-Aid Meet

Winner Is the Team of the Prudence Coal Co.—White Oak Fuel Co. Obtains Second Place—Collins Colliery Co. Leads in Artificial-Respiration Contest—Mine Inspection Active in Planning Meet and Fostering First Aid

FIRST OF A SERIES OF ANNUAL FIRST-AID MEETS TO BE HELD IN WEST VIRGINIA
Eleven teams are competing under the careful inspection of the judges, who are members of the Bureau of Mines and other safety experts. D. J. Parker is their director and Dr. August F. Knoefel, chief judge.

WEST VIRGINIA held a first-aid meet at Charleston on the afternoon of Aug. 28, the State Department of Mines co-operating with the various district coal operators' associations in the promotion of the event. It was one of the most noteworthy affairs that the coal-mining industry of West Virginia has ever celebrated. It is to be the first of a series of such affairs and is to be held annually. The West Virginia Department of Mines, under its new chief, R. M. Lambie, is evincing a keen interest in first-aid activities.

Only eleven teams entered in the state's initial first-aid contest; however, quality rather than quantity was represented by the participants. By company and inter-

Treatment for Burns

Problem 5 being answered by a team of mine workers. Gas has been ignited by an open light and the patient has been burned all over the upper part of his body. His head has been carefully covered by the first-aid team with picric-acid gauze, holes being cut for eyes and nose.

company elimination contests held during July and August the number of teams competing for the state championship was reduced to that number. This fact raised the caliber of the teams finally participating. Of the eleven on the field when the horn sounded for the first problem, one was from the West Virginia Coal & Coke Co., and two were from the operations of the Davis Coal & Coke Co., one each from the mines of the Prudence Coal Co., the White Oak Fuel Co., the Collins Colliery Co., the Harvey Coal & Coke Co., the Hitchman Coal & Coke Co., Rachel mine of the Consumers' Fuel Co., and Gary mines of the United States Coal & Coke Co.

Following an address by Governor Cornwell, five full-team events were contested. These were as follows:

(1) An unconscious man is found lying on his back, over a live electric wire. Rescue and give artificial respiration for one minute. Treat burns on back and upper right arm. Carry 30 ft. on an improvised stretcher.

(2) Treat the broken knee-cap of the right leg of the patient, his dislocated right shoulder, his fractured jaw and a dislocated forefinger on the right hand. Improvise a stretcher and carry the patient 25 ft.

(3) A brakeman is caught between the side of a car and the entry. He sustains the following injuries: The eighth, ninth and tenth ribs on the left side are broken, the back is badly lacerated at the waist line, the left arm has sustained simple fracture, and the flesh has been torn from the back of the right hand. Treat and carry 50 ft.

(4) Compound fracture of middle left thigh with profuse arterial hemorrhage; compound fracture of right forearm; cut from outer corner of right eye to top of right ear, with bleeding. Treat.

(5) Miner ignites gas with open light and receives burns of entire body above waist line; this includes head, face, neck, upper extremities, chest and back. He is unconscious and there is evidence of shock. Treat.

The directors of the meet were: J. W. Paul, chief mining engineer of the U. S. Bureau of Mines, and R. M. Lambie. Dr. August F. Knoefel, Terre Haute, Ind., surgeon, and one of the foremost authorities in the country on first-aid methods, was chief judge. The judges were drawn from officials of the Bureau of Mines, being headed by D. J. Parker, chief safety engineer, and from men of the Mine Safety Appliances Co. Field men were composed of state operators and A. C. Callen, professor of mining engineering at West Virginia University, was chief recorder.

The team representing the Prudence Coal Co. emerged from the final problem with a percentage of 97.4 and won first place. This team was captained by R. B. Overton and was composed of the following men: James Martin, Walter McVey, William Cheek and Silas Hall with Jesse N. Ames, patient. Second place was captured by the team from the Scarbro mine of the White Oak Fuel Co., showing a final percentage of 96.3. Members of the White Oak team were: Lewis Roncaglione, captain; Andy Vargo, Fred Lamb, Adam Bomdzo, Charles Sablosky and Walter Miller.

In a special artificial respiration contest, which was held on the heels of the first-aid demonstration, the team from the Collins Colliery Co. proved itself most adept. The same team also had the best captain, the judges decided in a feature contest. A team from the Davis Coal & Coke Co. had the second best captain. Following the working off of ties for third and fourth places an exhibition in mine-rescue work was given by the state department team in a burlap-constructed gallery filled with formaldehyde fumes.

Prof. A. C. Callen presented the prizes to the various winners. The Prudence team received a check for $1,100 donated by the state operators associations and a silver loving cup awarded by the state. The same team received individual prizes in the shape of gold and enamel watch fobs donated by *Coal Age*. The team winning second place was made the recipient of six baby Wolf safety lamps, awarded by the Mine Safety Appliances Co., and six ten-dollar gold pieces. As a result of the generosity of various manufacturing interests there were prizes for all contestants.

In the evening the West Virginia Mine Inspectors' Association was host to a number of prominent mining men at a banquet in the Ruffner Hotel, approximately seventy-five being present. V. E. Sullivan, president of the association, made the address of welcome. The proceedings were then turned over to J. W. Paul, who organized the West Virginia Mine Department as a state activity and was its first director. Mr. Paul called on the following speakers for five-minute talks: Prof. A. C. Callen; J. T. Ryan, general manager of the Mine Safety Appliances Co.; Dr. August F. Knoefel; D. J. Parker; D. J. Baker, of the editorial staff of *Coal Age;* John I. Absolom, general manager of the Sewell Valley Coal Co.; Lawson Blenkinsopp, chief mine inspector of Kentucky; Carl Scholz, general manager of the Raleigh-Wyoming Coal Co.; Lee Ott, state compensation commissioner; R. P. Maloney, general manager of the Davis Coal & Coke Co., and R. M. Lambie.

Discussion by Readers

Edited by
James T. Beard

Piecework on a Contract Basis Stimulates Production

ALTHOUGH piecework is uncommon in coal mining I am of the firm opinion that it could be employed with great advantage on a contract basis similar to that described by M. L. O'Neale, *Coal Age*, Aug. 12, pg. 348, which has interested me greatly. My idea is that the form of payment should be such as to insure a good wage for a fair day's work.

Such a method not only insures a maximum production by stimulating the activity of the worker but stabilizes the market value of the product. The results obtained are therefore the best possible for both the producer and the consumer. The worker is practically his own master, shows a greater interest in the work and develops more pep than is possible when working for a stipulated wage. He knows that his earnings depend on the amount he can produce and he naturally does his best.

No one will deny that the amount of energy put into a man's work and the interest he takes in its performance are the two factors that determine his success. At present there are at least two classes of work in the mine that may be termed "piecework." Most of the coal is undercut on this basis and loaders are paid by the ton for the coal they load. As a result, these two classes of workers are the most independent among mine employees.

Co-operative Mines in Indiana

The contract system described by Mr. O'Neale is somewhat similar to what is termed, in Indiana, "Co-operative Mines" of which there are quite a few. The men working such mines are shareholders and as such are interested in the successful operation of the mine. By this plan I understand that good miners often make over $200, each pay, besides taking extra work by loading their own coal. There are, moreover, other advantages in the co-operative plan as it insures a more complete extraction of the coal and the conservation of this natural supply that is of prime importance today.

Mines that were shut down prior to the year 1914, being considered unprofitable, have since been reopened and are being worked on a co-operative basis. If I am rightly informed there is such a mine, in Dugger, Ind., where the shareholders are making good wages and are content. They have shown deep interest in the operation and boast of the fact that they have not had a fatal accident since they started the undertaking. I am told that they pay their daymen the desired wage of $8 a day. It is a union mine, the shareholders being members of the U. M. W. A. and they employ only union men.

My chief purpose in writing is to illustrate the fact that better results are obtained whenever work is based on the principle that a man's earnings are determined by the amount he produces. In other words, the greater the production the greater the award to the producer (employee). It goes without saying, however, that such a system must be safe and sound. It must afford a maximum amount of stability to the industry, and care must be taken to avoid undermining methods.

Speaking of the miners' union, it has been my misfortune when holding a union card and having to earn a living for myself and family, to feel that my work (such as I desire) must always be subject to the adjudication of the union. I regret to say that it has been my lot to go without butter on my bread for myself and family while acting as a committeeman for the union and living up to the dictates of my conscience. Again, the organization has taken money from my statement fraudulently and, on appeal, has allowed perjured evidence to sustain their act. I have wondered if such work is sanctioned by the order. W. H. Luxton.

Linton, Ind.

Men Make the Mine

SPEAKING of maintaining a steady output of coal by a proper distribution of the men in a mine, let me say that it is my experience that no rule or method can be laid down that will solve the question for every mine. Each mine has its own peculiarities and the same is true of the men working in the mine.

Some men are born miners; they have a regular method of going about their work; they are never in a hurry; their place is always clean, well timbered and they always have coal ready to load when their cars are placed. It is a pleasure for the coal-cutter to cut their places, as the face is clear, the track well laid and the coal squared up, so that there is nothing to hinder the progress of the machine. It is likewise a pleasure for the mine foreman or one of his assistants to enter such a place. He can find no fault and with a few cheery words passes on thinking how well it would be if all men were alike efficient.

Miners Who Work Hard But Accomplish Little

Contrast the foregoing with another class of miners who are always in a hurry. In preparing to blast the coal, they do not take time to ascertain the best place to drill their holes. These are either too deep or too shallow or they are drilled too tight on the rib. The same lack of care is had in charging the hole and tamping and firing the shot. As a result, there is often a misfire; the coal is badly shattered and much fine coal and dust is trampled under foot and lost, to say nothing of the increased danger owing to such work. Much trouble is caused by the machine and cars constantly getting off the track, which has been poorly laid. This class of men generally work hard, but accomplish less than if they had more system in performing their work.

Again, there is always a class of miners who are given to laying off two or three days after payday, spending their time idling and drinking where drink can be found. When they do show up at the mine, they are often unfit for work. As a rule they want the best places in the mine and grumble at everything that goes wrong. They are always asking for allowances and are prone to find fault with their statements.

Another equally poor class of miners is made up of men who are lazy. These are best satisfied when the cars come slow and they can idle away their time in the mine. Such a one will gladly trade three empty cars for a single loaded one, though he is prone to boast of how much coal he can load when the cars are on hand. Each of these classes of miners is typical. The men described are to be found in every mine. Take them as a whole, miners are good, bad and indifferent and it would be an impossibility to find a heading with 15 or 20 men possessing equal capabilities.

A Mine Is Known by Class of Men Employed.

The class of men employed make a mine what it is and give it a character that becomes well known and demonstrates the ability of the foreman in charge to select and deal with his men. My experience is that it is impracticable to attempt to sort out men, as has been suggested. It is far better to concentrate the work by placing such a number of men in one section or heading as will insure a full trip, but adding three or four extra ones to allow for some of them not being able to load their turn. I remember working in a mine in the old country, however, where a certain section was set aside for the old and unable men. It was called the "old man's flat" and the idea appeared to work satisfactorily.

In closing, I will mention one important point in maintaining a uniform output of coal. In a large mine where there is a motorboss it will always be an advantage if the assistant in charge of each several section will confer with the motorboss every night or morning, telling him how many men there are in his section and the number of cars that will be needed. Good motormen soon find who are the best loaders and know where to place any extra cars they may have. The proper distribution of cars is a big man's job, as it is constantly changing and requires careful study and observation to secure the best results. Any contemplated change in the mine should first be taken up with the motorboss so that he can place the cars where they will be most needed and arrange the order of trips so as to keep the coal coming to the tipple regularly.

McIntyre, Pa. Thomas Hogarth.

Where Center Posts Serve Better than Double Timbering

SOME time ago I was attending an examination for mine foremen. Two of the questions asked struck me with interest. They were the following: "How would you timber an airway having a good roof and good floor?" "How would you timber an airway having a bad roof and bad floor?"

To the majority of the men present in that examination, I presumed these questions would appear simple enough; but in actual practice a good miner knows that there is no hard-and-fast rule. His judgment must be his best guide.

A short time after this I was timbering an airway where the floor was of a very hard sandstone and the roof a hard, sound shale. The airway was 3,000 ft. in length, straight and free from any trouble, except towards the face where it had caved for a distance of 50 yd. so badly that no attempt had been made to clean up the fall.

This airway had been timbered with crossbars or booms resting on two legs. In that part of the entry where the fall had taken place the pressure had, for the most part, come on the center of the crossbars and broken them down. The frames had been set 2 ft. 9 in. apart, and a large amount of timber had been used.

In turning over the matter in my mind, I decided that if the same timber had been used for center posts with good cap-pieces over each post there would have been less danger and the timber would have been used to better advantage, as it would have given a stronger support where the pressure was most felt. My thought is that an airway should be supported in the most practical manner, regardless of the appearance of the timbers.

At another time, I worked in a room 10 ft. wide and where the coal was 7 ft. thick. The roof was a good hard shale, as was proved when the pillars were drawn and it was difficult to get a good fall to relieve the weight on the entry pillars. Notwithstanding these conditions we were instructed to use double timbers consisting of a boom 10 ft. long resting on two legs, one at each end.

I often thought that this was a great waste of timber, where little support was needed save an occasional post set near the center of the place. Indeed, almost the entire expense of timbering the place could have been saved. But let me say in conclusion, what every good miner knows, there are roofs that require booms and there are roofs where these are an unnecessary expense.

———, Nova Scotia. Mac.

The Trolley-Wire Menance

SPEAKING of dangers in coal mining, attention has recently been called in these columns to the need of safeguarding the trolley-wire on mine haulage roads, in two letters, one by John Buggy, *Coal Age*, July 22, p. 176, and the other by W. H. Noone, p. 178. Both of these writers have referred to the danger of the trolley wheel jumping the wire and causing a serious accident by tearing down the guardboard put up to protect men from accidental contact with the wire.

This is a matter that most of our mining laws do not touch, while others fail to define clearly how trolley wires should be hung and guarded. It goes without saying that an exposed trolley wire or any other conductor of electricity is a menace in the mine, unless proper precautions are taken to prevent persons coming inadvertently in contact with the wire. Indeed, many accidents can be attributed to the slipshod manner in which electrical conductors are often hung.

While the difficulties of installing electrical wires on the surface are less than those in the mine, it would appear that greater care is exercised to insure the safety of the public than is taken to safeguard the miner underground. Drivers, motormen, timbermen, trackmen and others who are accustomed to working on the roads and air-courses realize the danger of coming in contact with live wires. But the miner who works in the face and is compelled to travel to and from his work has not the

same consciousness of this danger, and contact is often made with a live wire by the tools or powder can he carries.

To erect guardboards the entire length of a trolley line would be a needless expense and impracticable. For this reason, the safety of miners can only be insured by providing a separate traveling way for their use in going to and from their work. At the shaft bottom where a greater headroom is available, the trolley wire should be hung high or properly guarded. In South Wales a separate traveling way is always provided. The same is true in our anthracite mines opened by a slope or drift.

Where the Men Must Travel Haulage Roads Use Every Means To Make Them Safe

While these openings are intended to keep men off the haulage roads and give them a safe means of reaching their work, the extra road is often found convenient for transporting supplies and taking mules into and out of the mine. In mines where the conditions are such that a separate traveling way cannot be provided, the haulage road should be wide enough to afford a good clearance of three or four feet, on the opposite side of the road from the trolley wire.

The suggestion made by Mr. Noone of hanging the guardboards on hinges appeals to me as a good one; but I am afraid that, unless the hinges are riveted to the board, half of them would be missing in the morning and the guardboards taken down. It is my experience that, at crossovers and on shaft bottoms where guardboards are required, a single board protecting the wire hung close to the rib gives better results than where the wire is hung nearer the center of the track and two boards are used.

The jumping of the trolley wheel from the wire and the damage resulting thereby is a common complaint and is due chiefly to a wornout wheel or a misplaced hanger. Of course, it is important to hang the guardboards as uniformly in line as possible. This is a simple matter where the trolley wire is a straight line; but in any event, the ends of the boards should not protrude so as to catch the harp of the wheel.

Pittston, Pa. MOTORMAN.

Mechanical Equipment the Solution

INTRODUCING mechanical equipment in coal mining has proved the actual solution of the growing difficulties of the industry. As is clearly shown in the letter of W. H. Noone, *Coal Age*, Aug. 5, p. 294, the idea has not been to reduce the number of men required, or to lower the standard of their wages. The real purpose is to supply the only means possible to lighten the labor of getting out the ever-increasing amount of coal needed. Long since it became clear that this amount could not be produced by the pick-and-shovel method of mining and then hauling the coal from the mine with mules.

Instead of miners expressing a sentiment opposed to the introduction of coal-cutting machinery and other forms of mechanical equipment, their cry should be: Out with the picks and shovels and give us mechanical loaders. Replace the mine mules with motor haulage that will be able to handle all the coal we can load. Some of us well remember the time when we used to drive a three-mule team on a haul a mile long in the mine and, in order to keep the coal moving, were compelled to stay in the mine ten or twelve hours a day.

Miners should indeed be glad that employers are willing to lend their efforts to expedite the work and make the men's tasks less laborious. Today the electric locomotive hauls out of the mine, in a single trip, as many cars as a mule would haul in an entire shift. The work of a motorman and brakeman today, as compared with that of a driver and runner of yesterday, is like taking a holiday. Yet, these changes have brought no decrease in the number of men or the wages paid them.

Speaking of coal-cutting machines, the only objection that can be offered to their use is the dust they create in operation. I have often wondered why some means cannot be designed that would take care of this dust. It would go a long way toward overcoming the objection to their use. It is true that coal cutting with machines has not proved altogether a success in the anthracite region; but this has been owing to the pitch of the coal often being such as to make the machines difficult to handle.

In loading coal, particularly in thin seams that would average three feet in thickness, good results have been accomplished in the use of the scraper system designed by Cadwallader Evans and described in *Coal Age*, Vol. 14, p. 92, 371 and 611. I have seen this loader in operation in a three-foot seam pitching 8 deg., where it was operated with good results for distances of from 300 to 600 ft. The coal was cut by a Morgan-Gardner chain cutter; but it was difficult to hold the men owing to the dust made by the coal cutter.

Proper Use of Powder Is Even More Important Than Merchanical Equipment

The best of the coal in the anthracite region is fast being mined out, and production now depends largely on the mining of coal from three to five feet in thickness, which requires greater skill on the part of the men working at the face. What is needed is the use of powder that is adapted to shooting the coal, which is of varying hardness. It is shameful to see the amount of coal that is blown to pieces through the excessive use of powder that is often ill-adapted to the quality of the coal. For the most part, at present, the miners are permitted to use whatever kind of powder they please and little is done to improve the situation in this respect.

In view of the agreement with the men that the cost of supplies shall remain the same, there is little inclination on the part of operators to demand of the manufacturers that they furnish a better grade of powder than what is often dumped into our magazines. It would seem that the only answer to the question, "How is the production of coal to be maintained," is, By the introduction of mechanical equipment that will reduce the labor of mining and hauling the coal. At the same time, it is important to teach the men to be more skillful in the performance of their work.

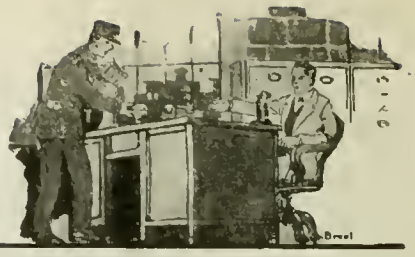
It has been suggested that the men will claim their inability to load more coal is owing to the shortage of cars; and it must be admitted that there is much truth in that argument. Another statement is made that men are frequently held in the mine all day to load one or two cars when they could load five or six if they had them. It is certainly high time that something should be done to provide a more adequate supply of cars at the working face. This would result in greater satisfaction on the part of the men and help to maintain a more uniform output of coal in mines.

Plains, Pa. RICHARD BOWEN.

Inquiries of General Interest

Answered by

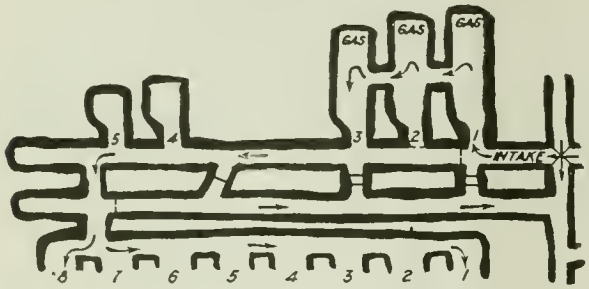
James T. Beard



Finding Gas on Intake of an Air Split Working Fifteen Men

BEING up against a condition in our mines, I have a proposition to present to the practical readers of *Coal Age*, asking their opinion in respect to what procedure they would abvise. It represents an actual condition that came under my observation in the operation of a mine in this state. Let no one suppose that the matter is taken from a book. It is as follows:

In making his rounds in the morning, a fireboss came to an entry where seven men were at work in the five rooms and the two headings shown in my sketch. Be-



PLAN OF AIR SPLIT SHOWING GAS

sides these seven men, who were practically all working on the intake of that air split, there were eight other men at work on the same split in another section of the mine not fully shown in the sketch. As I have indicated, the fireboss found gas filling the faces of the first three rooms on the intake.

The question I want to ask is: What should have been his method of proceeding, and should he have permitted any of the fifteen men working on this air split, to have proceeded to their work? Also, how should the gas be cleared from the three rooms so that all the places will be made safe for work? J. M. NICHOLS.

Denning, Ark.

The fireboss having found a considerable accumulation of gas at the face of each of the first three rooms on the intake of this air split, he should have withdrawn and placed suitable danger signals at the mouth of each entrance to that section of the mine. He should then finish making his examination of any other portion of the mine in his charge and enter a full report of the same in the book kept for that purpose, specifying where danger of any nature has been found.

Having done this, the fireboss should take from the board at the mine entrance the checks of the fifteen men working on the air split found to contain gas. He should give these checks to the mine foreman, whose duty it would then be to prevent these men from entering the mine and proceeding to work. The section of the mine in question must now receive the immediate attention of the foreman, who must make sure that no one enters the place, until the fireboss and one or two competent helpers can clear away the gas.

Assuming that the seam lies fairly level, it may be necessary to erect brattices to deflect the air current in stronger volume against the face of each room, starting with the first. The brattice should start from the outby corner of the breakthrough between the first two rooms and be extended gradually to the face of Room No. 1, in such a manner that it will sweep the entire face of the coal. Safety lamps should be used exclusively in this work. Having cleared the gas from the face of No. 1 room, the same process must be continued in Room No. 2, and then in Room No. 3, until all the gas has been removed.

If it has been possible to examine Rooms No. 4 and No. 5, nearer the face of this entry, before disturbing the gas in the first three rooms mentioned, it would be well to hang a canvas so as to prevent the air from passing into rooms Nos. 4 and 5 or to the head of that entry. The gas should be conducted in as direct a manner as possible to the main return airway. When the work of removing the gas has been completed each working face and passageway on this air split must be carefully examined and pronounced safe before the men are permitted to enter for work.

Instructions to a Miner

KINDLY state what instructions should be given to a miner who is to work in a mine generating some gas but where open lights are used. What is necessary for the miner to observe in respect to his laborer, and what is required before and after firing his shots.

————, Ind. SAFETY INSPECTOR.

Instruct each miner to examine his working place in the morning before he starts to work. Until that is done he must not allow his laborer to approach the place. He must examine carefully the condition of the roof and coal to see that no timbers have been discharged by the blast fired in the place, and where loose coal or roof is found he must see that this is pulled down or made secure before starting to work.

In blasting coal miners should not be permitted to fire their own shots. This should be done by competent shotfirers after the men have left the mine. However, where shotfiring is performed by the miners they should only be permitted to fire after the mine foreman has been notified and he or his assistant has examined the place and given permission for firing. The miner should be instructed to examine his place for gas before starting to work in the morning. After a shot had been fired in his place the miner should examine to see that no gas feeder has been ignited. He should be instructed, also, to see that the brattice is kept up and the air current is sweeping the face of the coal. He should be told to load out his fine coal and dust, which must not be thrown back into the waste. Should it happen that a gas feeder has been ignited, which he is unable to extinguish, he must notify the mine foreman or his assistant at once.

Examination Questions

Answered by

James T. Beard

Mine Foremen's Examination Held at Pittston, Pa., May 4, 1920

(Selected Questions)

Ques.—If a water gage placed in a door 6 x 8 ft. shows a reading of 2 in., what is the total pressure on the door?

Ans.—In this case, the unit pressure is $2 \times 5.2 = 10.4$ lb. per sq. ft. The area of the door being $6 \times 8 = 48$ sq. ft., the total pressure on the door is $10.4 \times 48 = 499.2$, say 500 lb.

Ques.—What safety appliances should be kept and maintained in proper working order, at the surface and at every shaft landing where persons are being lowered and hoisted from the mine?

Ans.—At the head of every shaft and on each landing, there should be maintained safety blocks, to prevent cars from being run into the shaft by accident. On the surface, there should also be a derailing switch that will deflect a car to one side of the shaft, except at times when it is desired to take needed supplies into the mines. At all landings there should be provided and maintained in good working order safety gates, which are raised and lowered automatically by the movement of the cage in the shaft. At all underground landings, there should be provided, a good light.

Ques.—How many apertures to a linear inch and how many to a square inch in the gauze of a properly constructed safety lamp?

Ans.—The standard wire gauze used in this country and Great Britain consists of a mesh of twenty-eight wires to the inch, which provides $28 \times 28 = 784$ openings per square inch.

Ques.—What do the symbols CO_2 and CH_4 indicate? Where would you expect to find each of these gases and how would you discover them?

Ans.—The symbol CO_2 stands for carbon dioxide, and the symbol CH_4 for methane, or marsh gas. Carbon dioxide, being heavier than air (sp.gr. 1.529) may be generally expected to be found at the floor and in the lower portions of mines that are poorly ventilated; also in abandoned sections where the air current is deficient. It accumulates at the face of dip workings and in swamps or other low portions of the mine.

On the other hand, methane or marsh gas being lighter than air (sp.gr. 0.559) is usually to be found at the roof, or at the face of steep pitches and other rise workings, in mines generating this gas. In the working of a gaseous seam, there is generally an accumulation of gas to be found at the face of advanced headings and other live workings where the air current is not properly conducted so as to sweep the face clear of this gas.

The presence of carbon dioxide is generally observed by the dim burning or complete extinction of the lamp, and by its effect on the system, producing headache and nausea. Methane is discovered by the flame cap observed on the flame of a safety lamp, the height of the cap varying with the percentage of gas.

Ques.—What duty does the mine law impose on the owner, operator, or superintendent of a mine relative to props and timber.

Ans.—The Anthracite Mine Law requires the owner, operator, superintendent or mine foreman of a mine to furnish to the miners all props and timbers necessary for the safe mining of the coal and protection of the workmen. Such props and timbers must be properly prepared and delivered to the workmen as near to the working face as they can be carried in cars. (Art. 11, Sec. 1.) The law further requires (Art. 12, Rule 12) the mine foreman or his assistant to examine every working place at least once each alternate day to see that it is properly secured with props or timber and that all loose rock or coal is taken down or made secure. Rule 13 requires the mine foreman or other competent person to examine the timbering in all slopes, shafts, main roads, and travelingways, and see that they are in safe condition. Rule 55 forbids the cutting of any prop or timber that is in position supporting the roof or sides. When necessary such posts or timbers must be removed by blasting.

Ques.—How should an injured person be cared for in the mines? What are the duties of the mine foreman in this matter?

Ans.—When a person is injured first-aid workers should give prompt attention to the man, examine to see how badly he may be hurt and send for a doctor if that is necessary. If the wound is bleeding freely, the first-aider must stop the flow of blood by applying the usual means for that purpose. If bones are broken he must place the injured limb in as comfortable a position as possible, handling it with care to prevent any unnecessary laceration of the flesh by the broken portion of the bone. If practicable he should apply the necessary splints and remove the injured person to a place where he can have better air, using every precaution to prevent collapse resulting from the shock.

The mine foreman must examine the place of the accident, ascertain its cause, examine any witnesses and make a full report of the occurrence to the inspector of the district. This must be done without delay, following the accident.

Ques.—Explain the safest and most effective way of circulating the air current through a mine.

Ans.—The first essential in the circulation of air in a mine is the continuous operation of a type and size of fan that is capable of supplying the required quantity of air in the mine in question. The circulating system throughout the mine should be such as to provide a separate air split for each section where not more than seventy-five men must be employed, in order to comply with that requirement of the anthracite law. Each air split must be conducted to the face of each working place in that section, by means of the necessary air bridges, doors, stoppings and brattices, so that the air shall sweep the face of the coal in each place and prevent the accumulation of gas. By this means the ventilation of the mine is made most effectual.

Achievement in Price Determination by a Consulting Economist*

Announcing That Anthracite Price Should Be Reduced Because of Commission Award Lauck Continues Issuance of Interesting but Unconfirmed Statistics—Report of $15,000,000 "Clean-up" by Operators Disproved by Trade Commission Report

THE "consulting economist" dies hard. It would naturally be supposed that an advocate or expert who had been so completely discredited as was W. Jett Lauck before the Anthracite Commission would have kept quiet. Not so Lauck, who, true to his nature, "rushes in where angels fear to tread." Hardly was the ink of the President's signature dry on the letter in which he accepted the majority report of the commission than Lauck was out in a statement—mimeographed, ready for the press—in which he presented his views and indulged in some additional perversion of the facts. A considerable portion of this "interview" was given publicity by the newspapers on the mailing list of the Bureau of Applied Economics, and Lauck himself given a few more hundred dollars' worth of gratuitous advertising.

Misses a Fact by About Six Weeks

Replies to a few of the misstatements and comments made by Lauck will suffice to show the utter disregard he has for the truth when pleading his cause or when seeking additional notoriety. In the first place, he announces that "the price of anthracite to the consumer should be reduced as a result of the award of the Anthracite Coal Commission. *Let there be no mistake, no misrepresentation, about that.*" He then states that when the case was submitted to arbitration, with an agreement that the wage award would be retroactive to April 1, the anthracite operators advanced the price of coal $1 a ton, effective April 1. The statement is false. No general advance in price was made in April. The first advance was made about the middle of May and the advances made were based on close estimates of what the increased labor cost would be, figured on the advance in wages offered by the operators and rejected by the miners.

Deductions from Home-Brewed Statistics

Lauck says that the increased labor cost provided by the commission's award was barely 50c. a ton, and that the advance in price netted the operators 50c. a ton, by which a "clean-up" of $15,000,000 had been realized during the four months of negotiations—another deliberate falsehood. The report of the Federal Trade Commission, June, 1919, shows that the labor cost of producing fresh-mined coal in November and December, 1918—after the wage increase granted in November—was $3.41 a ton. There has been no decrease in the wage scale and, consequently, in the labor cost since that date, though Lauck says, without any warrant or authority therefor, that available figures on the labor cost of anthracite production range from $2.71 to $3.10 per ton. No such figures are available, since no report on the cost of anthracite has been made since the one made by the Federal Trade Commission in June, 1919.

Gives Only One Source of Increased Cost

Applying to the labor cost of $3.41 per ton the 17 per cent increase awarded by the commission, an addition of 58c. per ton is made to the labor cost of production of *all sizes of anthracite produced*. The increased cost, however, cannot be spread over the entire production, but has to be borne by the prepared or domestic sizes, and as these constitute about 70 per cent of the total, the added cost to that portion of the product is 83c. a ton. But labor is not the only factor entering into the increased cost of production. The cost of timber for props and of all kinds of supplies has increased in even greater proportion than has the cost of labor, so that as compared with November and December, 1918, the total cost of domestic coal has increased considerably more than $1 per ton. The charge that the anthracite operators have "soaked away" $15,000,000 is pure figment on the part of W. Jett Lauck.

Lauck's tergiversation are no more clearly exampliñed than in his careful avoidance of reference to, and drawing of conclusions from, the investigations conducted by the U. S. Fuel Administration and the report of the Federal Trade Commission. The latter cannot be charged with exhibiting any undue partiality to the anthracite industry or to other large interests, the conduct of whose affairs has been the subject of its investigations.

A Difference Between "Margin" and Profit

Its report for June, 1919, already referred to, shows that the operators' margin on fresh-mined coal in the last two months of 1918, after the wage increase of November was in effect, was 36c. a ton, which was less than half of what it had been during the year 1917. And, as distinctly stated in the report, the term "margin" must not be translated into "profits," as the costs shown by the Federal Trade Commission are not intended to and do not include reserves for non-insurable hazards, selling expenses, interest on investment or borrowed capital, or Federal taxes. The sum of these items probably would amount to as much as 20c. so that the amount per ton applicable to the payment of dividends could not be much in excess of 15c., or, say, about 3c. on the dollar turnover. The trouble that developed in the anthracite region in the form of "vacations" in protest against the award of the Anthracite Coal Commission was unquestionably due in large part to propaganda engineered by Lauck. To him and to his organization is the public indebted for any inconvenience it may experience through shortage of

*This is the fourth and last of a series of articles on the consulting economist in wage controversies. The third appeared in *Coal Age*, Sept. 16, page 601

anthracite that has followed as a result of the mine-workers' vacations. He has posed before the public as the friend and advocate of the anthracite-mine workers, but for his services and those of his organization the miners were assessed in the sum of about $40,000, which netted them absolutely nothing—in fact, worse than nothing, for it is highly probable that but for the injection of Mr. Lauck and his theories into the controversy the wage conference would have come to an agreement months before; there would have been no need for a Presidential commission; the men would not have waited six months for their back pay, and there would have been no concerted action in the taking of vacations. Lauck in his valedictory says "No one should be fooled, or be a fool in this situation." He should take his own advice.

Estimate of Coal in the Hands of Consumers

Bituminous Stocks Held by Commercial Plants in the United States June 1, 1920, Calculated at 20,000,000 Tons—Decrease of 4,000,000 Tons, or 17 Per Cent, Between March 1 and June 1

COMMERCIAL stocks of bituminous coal in the United States on June 1, 1920, according to F. G. Tryon, of the U. S. Geological Survey, are estimated at 20,000,000 net tons. This was considerably less than the stocks carried on Oct. 1 of the years 1916 and 1917 and was very much less than the stocks accumulated at the close of 1918. In the three months from March 1 to June 1, 1920, stocks decreased 4,000,000 tons, or 17 per cent.

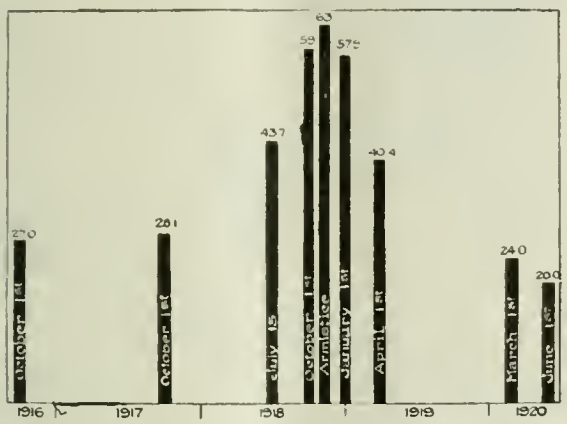


FIG. 1. COMMERCIAL STOCKS OF BITUMINOUS COAL OCT. 1, 1916, TO JUNE 1, 1920

Figures represent millions of net tons and include coal in hands of railroads, industrial consumers, public utilities and retailers. Coal for steamship fuel, on Lake docks, and in transit is not included.

Rail, Industrial, Utility and Dealers' Fuel

These figures are estimates which attempt to account for coal in the hands of railroads, industrial consumers, public utilities and retail dealers. They do not include coal in the cellars of domestic consumers, coal in stock for steamship fuel, or coal in transit. The stocks on the Lake docks are not included, because they are properly to be regarded as coal in transit and because naturally they vary greatly from winter to summer.

Information available concerning stocks of coal in the past is summarized in the following table:

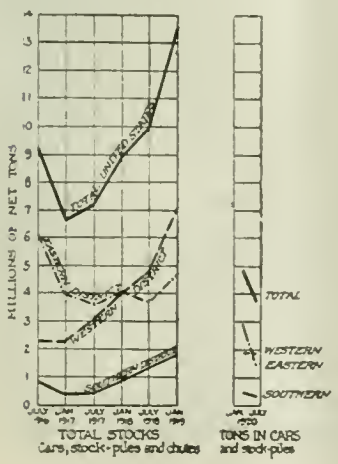


FIG. 2

Coal Held by Railroads July 1, 1916, to June, 1920

Although the figures for 1920 are not exactly comparable with earlier years, they show that stocks were lower in the first half of 1920 than at any other time for which records are available.

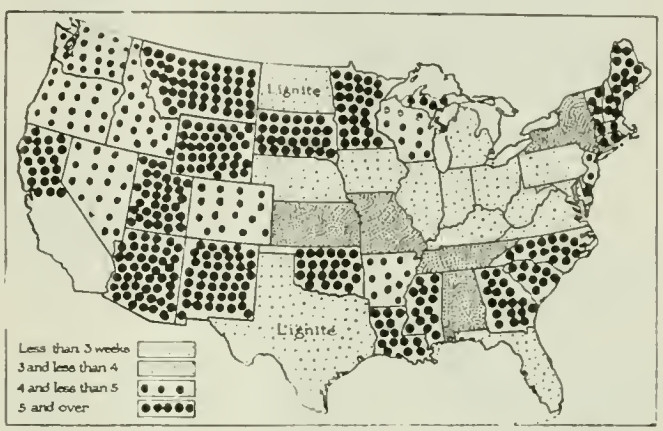


FIG. 3. COAL STOCKS AT INDUSTRIAL PLANTS, MARCH 1, 1920

Stocks of bituminous coal at industrial plants other than steel and byproduct eleven weeks after the coal strike. The West Northwest, Northeast and South were better supplied than such coal-producing states as Pennsylvania, Virginia, West Virginia Kentucky, Ohio, Indiana and Illinois.

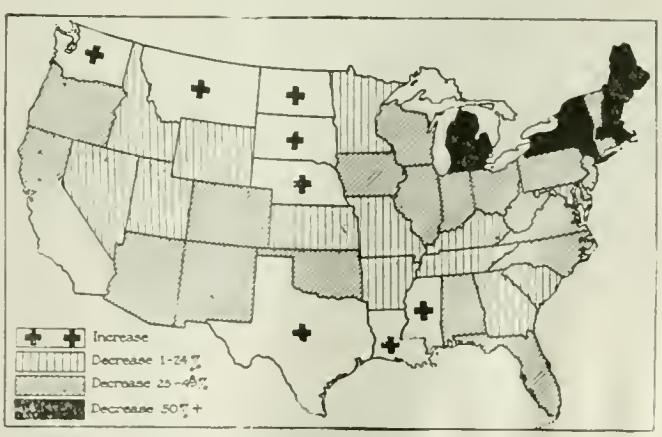


FIG. 4. HOW COAL STOCKS ON MARCH 1, 1920, COMPARED WITH THOSE ON APRIL 1, 1919

Increase or decrease in stocks of bituminous coal at industrial plants other than steel or byproduct. Stocks at the close of the coal year ended April 1, 1919, were admittedly very large. Eleven months later, on March, 1920, they were still larger in seven states west of the Mississippi. East of that river they increased in only one state, and in six states decreased more than 50 per cent.

COMMERCIAL STOCKS OF BITUMINOUS COAL IN THE UNITED STATES

Oct. 1, 1916, to June 1, 1920.
(Net tons)

Oct. 1, 1916	27,000,000	Jan. 1, 1919	57,900,000
Oct. 1, 1917	28,100,000	April 1, 1919	40,400,000
July 15, 1918	39,700,000	March 1, 1920 *a*	24,000,000
Oct. 1, 1918	59,000,000	June 1, 1920 *a*	20,000,000
Day of the armistice	63,000,000		

a Subject to revision.

The record of stock does not extend back far enough into the past to make it possible to state just what constitutes normal on June 1. The fact that stocks on that date were less than a third of the war-time maximum does not prove that they are dangerously low, because the reserve built up during the war was admittedly very large. Furthermore, the reserve needed on June 1 is not as great as that required on the approach of winter. It is clear, however, that seven or eight million tons must be put in storage between June 1 and Oct. 1 in order to bring stocks up to the standard of 1916 and 1917. Yet in neither 1916 nor 1917 were the stocks adequate. The stocks in 1916 were not sufficient to prevent increases of price ranging from 100 to 200 per cent in the winter of 1916-17. The stocks in 1917 were not sufficient to prevent physical suffering and widespread closing down of plants in the severe winter of 1917-18.

SOFT COAL IN HANDS OF VARIOUS CLASSES OF CONSUMERS

(Figures expressed in weeks and days at current rate of consumption at time of stock taking)

	Oct. 1 1916	Oct. 1 1917	July 15 1918	Oct. 1 1918	Nov. 11 1918	Jan. 1 1919	Apr. 1 1919	Mar. 1 1920	June 1 1920
By product coke plants	No data	No data	4-0	4-4	5-0	4-4	3-2	2 1	1 1*a*
Steel plants			3-6	6-3	6-3	6-0	5-0	1 2*a*	1-4*a*
Other industrials	3-4	3-6	6-6	10-1	10-1	9-2	6-5	3 6	3 3
Artificial gas	No data	No data	10-2	12-0	12-1	11-4	8-2	4-3	3-1
Other public utilities	No data	No data	4-3	5-6	6-2	7-1	7-1	3-0	3-1
Coal dealers	No data	No data	2-1	4-0	5 2	5-4	3-4	1-6	1-3
Railroad fuel	2	2 4	3-4	4-1	4-3	4-6	No data	1-4*a*	1-3*a*
Totals	(*b*)	(*b*)	4 3	6-1	6 3	6 0	4 3	2 4	2 1

a Estimated from incomplete data, subject to revision *b* Data incomplete. Probably 3-1 for 1916 and 3-0 for 1919

The reserve on March 1, 1920, shown in the foregoing table was sufficient for 2 weeks 4 days, and that on June 1 for 2 weeks and 1 day. Not only was the average for all consumers low, but, as the table shows, the stocks of each of the seven great groups of consumers were lower than on any of the seven preceding dates for which records are available. Like all averages these figures may be misleading. Some localities are better off than others. Individual plants will have much more than the average, and many plants may have virtually no stock when the average shows an adequate supply.

Fields Covered in Estimate of Stocks

Railroad Fuel.—Stocks of railroad fuel were far below those held by the railroads at any time during the last four years, the period over which records extend (Fig. 2). The decrease was most marked in the Eastern district, particularly New England. Depleted stocks of railroad fuel are significant because they indicate that the roads may have to confiscate coal or assign cars freely, measures which necessarily interfere with regular deliveries to other consumers.

Byproduct Coke Plants.—Incomplete figures indicate that stocks at byproduct plants averaged 15 days' supply on March 1. During the switchmen's strike the stocks of byproduct coke decreased sharply in New England, New Jersey and the six states north of the Ohio and west of Pennsylvania dependent on shipments from the Appalachian region. The average stock on June 1 was exceptionally low—eight days' supply.

Steel Plants.—Stocks at steel plants, estimated from incomplete data, averaged nine days' supply on March 1, but little more than the stock in January, 1918. Steel plants were able to increase their stocks slightly during the switchmen's strike and had on June 1 an average of about eleven days' supply.

Electric Utilities.—Stocks of coal at electric-utility plants averaged three weeks' supply on March 1. This was 58 per cent less than on April 1, 1919, eleven months before. Individual plants held stocks much below the average. Like the steel plants, electric utilities were able to increase their average holdings slightly from March 1 to June 1.

Artificial Gas Plants.—Gas coal was in particularly short supply during the switchmen's strike, and the average stocks at coal-gas plants decreased from thirty-one days' supply on March 1 to twenty-two days' supply on June 1. These stocks were only about a third or fourth of the war-time maximum, and the decrease was very uneven. Plants in the Northwest and Northeast, on the whole, were in a less favorable position than plants in the West and South.

Retail Coal Dealers.—Retail stocks of bituminous coal averaged one week six days' supply on March 1, less than half the supply on April 1, 1919, eleven months before. From March 1 to June 1 stocks increased in the South and Southwest but decreased in the North (Fig. 8). The Far West and Southeast were in relatively favorable position. In the Northeast and territory served by the Lake docks the situation was relatively unfavorable.

Anthracite Stock Larger Than Bituminous

Retailers' stocks of anthracite on June 1, 1920, were in better condition than their reserves of bituminous coal. Pennsylvania anthracite averaged fourteen days' supply, as against ten days' supply of soft coal.

General Industrial Consumers.—Industrial plants other than steel and byproduct plants dropped from an average of twenty-seven days' supply on March 1 to twenty-four days' supply on June 1. In comparison with those shown by past records these stocks were low. Quite as significant as the general average of stocks was the distribution of stocks from state to state, which had been profoundly affected by two disturbing factors—the bituminous coal strike of November-December, 1919, and the railroad switchmen's strike beginning April 1, 1920. The distribution of industrial stocks is the best index to the abnormal features brought about by these causes. (Fig. 3 to 7.)

On March 1 two and one-half months of large production had not entirely overcome the effect of the coal miners' strike. West of the Mississippi and south of the Ohio and Potomac stocks compared not unfavorably with those of the preceding year; in eight states they had increased and in only eleven states had they decreased more than 25 per cent. North of the Ohio and Potomac, in the great industrial section of the country, stocks had been greatly depleted and in general ranged from 33 to 68 per cent lower than the year before.

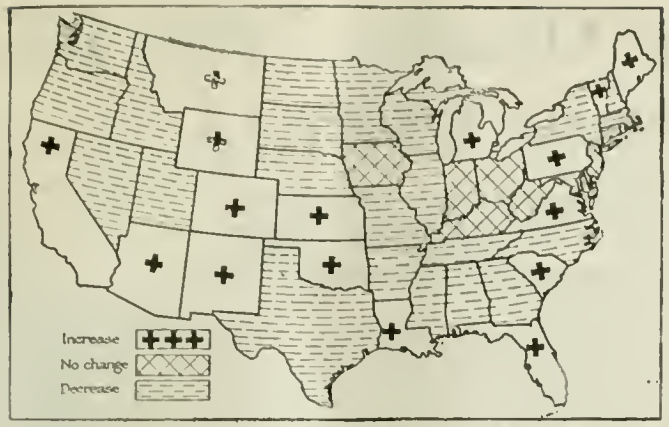


FIG. 5. CHANGES IN INDUSTRIAL COAL STOCKS FROM MARCH 1, TO JUNE 1, 1920

Increase or decrease of bituminous coal at industrial plants other than steel and byproduct coke plants.

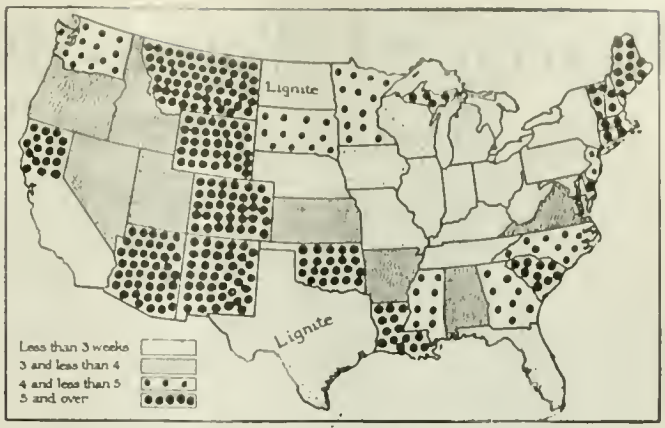


FIG. 6. COAL STOCKS AT INDUSTRIAL PLANTS, JUNE 1, 1920

Bituminous coal at industrial plants other than steel and byproduct nine weeks after the switchmen's strike began.

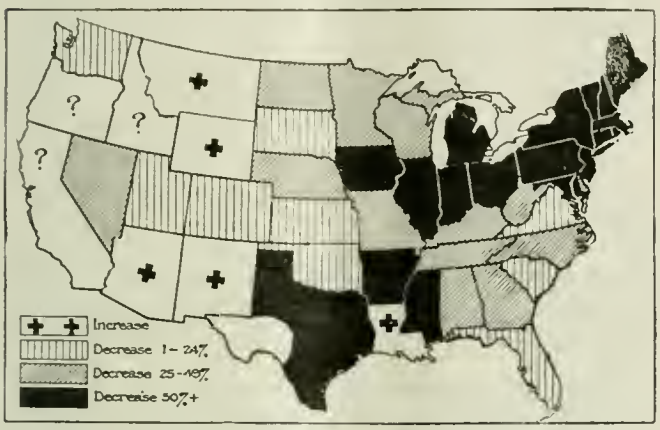


FIG. 7. HOW COAL STOCKS ON JUNE 1, 1920, COMPARED WITH THOSE ON JULY 15, 1918

Increase or decrease in stocks of bituminous coal at industrial plants other than steel and byproduct. In only five states did industrials have larger stocks on June 1, 1920, than in the midsummer of the war year, 1918. In 18 states the stocks decreased more than 50 per cent; all but four of these states were east of the Mississippi and north of the Ohio and Potomac.

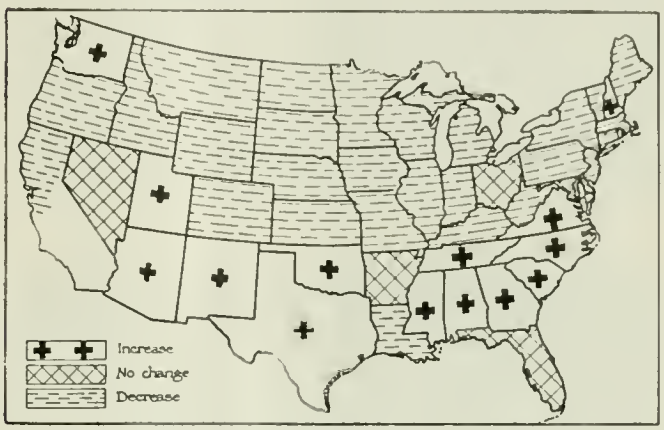


FIG. 8. STOCKS OF COAL IN THE HANDS OF RETAIL DEALERS

Increase or decrease in weeks' supply of bituminous coal from March 1, 1920, to June 1, 1920. No change was made during that interval in four states. These were Ohio, Florida, Arkansas and Nevada. The West and Southwest were in a relatively favorable position compared with the situation in the Northeast and territory served by the Lake docks.

From March 1 to June 1 stocks increased in states not dependent on fields that were affected by the switchmen's strike. In the far West stocks increased, except in Washington and in states dependent on Utah, which had felt the strike. In the South stocks generally decreased. In the industrial Northeast consumers at short-haul destinations received a larger proportion of the total output than usual and either maintained or increased their stocks. At the long-haul destinations—New England, New York, and territory served by the Lake docks—stocks generally decreased.

The switchmen's strike emphasized the inequalities in distribution which had been created by the coal miners' strike. On June 1 stocks in the Great Plains, Rocky Mountain and Pacific Coast States compared not unfavorably with those of midsummer of even the war year, 1918. In the Southeast stocks showed a consistent decrease as compared with the war year, but in only one state did the decrease amount to 50 per cent. In the region north of the Ohio and Potomac, from Illinois to New England, the decrease exceeded 50 per cent in every state except Delaware. In parts of New England and the southern peninsula of Michigan the decrease amounted to 65 per cent.

These facts show clearly that although the stocks at some places in the West and South were low the territory of depleted reserves is the industrial section north of the Ohio and Potomac and east of the Mississippi, together with Missouri and Iowa and that part of the Northwest which is supplied from the Lake docks.

July Exports Increase $3,500,000 Per Day Over One Year Ago

THE latest figures of the exports of manufactures give further evidence that the big gains in exports of manufactures have "come to stay." Manufactures exported in the dull export month of July, says a statemen of the National City Bank of New York, average $11,000,000 a day against $7,500,000 per day in July of last year, and for the seven months ending with July average $11,500,000 per day against $9,333,000 in the same months of last year.

The total exports of manufactures in July 1920, including the two groups, "manufactures ready for use" and "manufactures for further use in manufacturing," aggregated $343,000,000 against $234,000,000 in July of last year, and in the seven months ending with July were $2,451,000,000 against $2,000,000,000 in the same months of last year.

The chief increase occurred in the group "manufactures ready for use" of which the exports in July were $264,000,000 against $167,000,000 in July of last year.

Hearing of Wagon-Mine Operators' Plea for Modification of Service Order 14

Indiana Representative Says 4,800 Small Operations in Middle West Produced 60,000 Carloads of Coal Daily During Recent Strike—Prompt Handling of Cars and Large Output Per Man Also Cited

In opening the hearing on the application of wagon-mine operators for modification of Service Order No. 14, Commissioner Aitchison called attention to an opinion of the commisison in April, 1918, in which the action of the Baltimore & Ohio R.R. was attacked because it placed a condition in the tariff that open-top cars for wagon mines would not be furnished on its public team tracks. The carrier continued to furnish that class of equipment to tipple mines and to wagon mines where the loading was done on private or industrial tracks. The carrier did furnish box cars for team track loading. Despite the fact that this constituted a discrimination between shippers, the commission held that it operated in the interest of the public as a whole, and was not an unjust discrimination.

Service of Wagon Mines During Strikes

James B. Filbert, representing wagon-mine operators in Indiana, estimated that there were 4,800 wagon-mines in the Middle West. He emphasized the fact that wagon mines are the chief reliance during strikes, as they do not employ union labor and are not governed by union hours of work. During the recent strike of the daymen in Indiana the wagon mines in the Middle West produced 60,000 carloads of coal, he declared. He stated that the cost of loading coal in box cars is prohibitive. He denied any delay of open-top equipment at the wagon mines and stated that all cars placed are loaded the same day. In case one man is late in getting his coal to the car, it is a uniform practice that other loaders assist him so as to prevent the piling up of demurrage charges.

Representative Kincheloe, of Kentucky, made a plea for the wagon-mine operators in his district. He suggested that the Interstate Commerce Commission undertake a survey of car handling at wagon mines. If such a survey should show that wagon mines are not handling cars as expeditiously as do the tipple mines the wagon-mine operators will cease any contention in the matter, he declared.

Says That I. C. C. Has Been Misled

J. F. Gordon, an attorney of Madisonville, Ky., appeared on behalf of the western Kentucky wagon-mine operators. He declared that the Interstate Commerce Commission has been misled just as the "Fuel Administration was misled by selfish interests." A wagon-mine order issued by the Fuel Administration, he said, was drafted by certain big coal nterests .n Pennsylvania. He declared the production of coal per man at wagon mines was between five and six tons daily, whereas the larger operators were not getting more than three tons daily per man employed. He said the wagon mines aro maintaining a record of over 90 per cent in the matter of car handling efficiency, as against 70 per cent fficiency by the tipple operators. Mr. Gordon suggested the following amendment to Service Order No. 14:

Service Order No. 14 is hereby revised and qualified so that no carrier is required to refuse open-top cars on any day to any wagon mine heretofore engaged in loading open-top cars on sidings, except in cases where such mine has, within the thirty days previous, failed to load and bill, within twenty-four hours after placing, 90 per cent of the number of cars received during such thirty days. Any new mine not heretofore shipping shall be served with cars when reasonably possible for the first thirty days without application to it of the conditional embargo above authorized. In determining the percentage above referred to, the percentage shall be calculated upon the basis of the highest number of cars furnished that is evenly divisible by ten.

Advocates New Basis of Car Rating

Ernest S. Ballard, of counsel for the National Coal Association, objected to Judge Gordon's proposal because "it would have to be administered by the local railroad employees—the local freight train crews and the local agents. It could not be handled from the executive offices and I think it would be subject to all sorts of collusion."

In the course of Mr. Ballard's testimony Commissioner Aitchison said: "I am rather inclined to think the tipple mines ought all to have a new basis of car rating. I think we have a fictitious arrangement which puts that car rating of 100 per cent entirely too high." Mr. Ballard replied by stating that he never had heard anyone suggest that the ratings are not relatively fair, and he characterized this as the important thing.

Wagon Mines Spring Up Like Mushrooms

J. B. Fisher, the general superintendent of transportation of the central region for the Pennsylvania R. R., presented figures to show that in the district under his jurisdiction the number of wagon-mine operators increased from 243 in April to 966 in July, as follows:

Division	April	July
Allegheny	36	243
Renovo	2	12
	38	255
Pittsburgh	75	151
Conemaugh	40	106
Monongahela	29	251
	144	508
C. & P.	7	19
E. & A.	7	17
Akron	0	6
	14	42
Eastern	1	2
Pan Handle	43	89
Marietta	0	28
Wheeling	3	42
	47	161
	243	966

Since the restrictions were placed on open-top cars for wagon mines fifty-seven ratings have been assigned to former wagon-mine operators, Mr. Fisher said, in speaking of his own district. "Wagon mines are adapt-

ing themselves quickly to tipple loading and a regular mine rating," he said. As examples of slow loading, the following was submitted:

J. C. Heckman, loader, Indiana, Pa.
Conemaugh Division.

P. R. R. car No. 152,492 placed 4:00 p.m., June 23 released 4:30 p.m. June 29
24th—17 hours—counting from 7:00 a.m. 28th—24 hours
25th—24 hours 29th—16½ hours
26th—24 hours
27th—Sunday Total, 105½ hours

Snaden Coal Co., loader, Connellsville, Pa.
Monongahela Division.

P. R. R. car No. 413,524, placed 2:00 p.m., June 18 released 4:00 p.m., June 25
18th—10 hours 22nd—24 hours
19th—24 hours 23rd—16 hours
20th—Sunday
21st—24 hours Total, 98 hours

Gibson Coal Co., loader, Connellsville, Pa.
Monongahela Division.

P. R. R. car No. 19,823, placed 2:00 p.m., June 21; released 6:00 p.m., June 26
21st—10 hours 25th—24 hours
22nd—24 hours 26th—18 hours
23rd—24 hours
24th—24hours Total, 124 hours

C. P. Reed, loader, West Monessen
Monongahela Division.

P. R. R. car No. 165,892, placed 8:00 a.m., June 21; released 4:00 p.m., June 25
21st—16 hours 24th—24 hours
22nd—24 hours 25th—16 hours
23rd—24 hours
Total, 104 hours

V. J. Connelly, loader, Nanty Glo, Pa.
Cresson Division.

P. R. R. car No. 300,913, placed 9:35 a.m., June 24 released 2:00 p.m., June 29
24th—14 hours 28th—24 hours
25th—24 hours 29th—14 hours
26th—24 hours
27th—Sunday Total, 100 hours

By being allowed to supply box cars to wagon mines, Mr. Fisher stated, it now is possible to increase the distribution of cars to tipple mines to the point where full car supply could be furnished.

Another interesting point made by Mr. Fisher is the difficulties which arise with priority orders. He took a typical week as an illustration. During that week the daily loadings were 4,100 cars. Of that number, 2,200 were assigned cars. Over 800 of the 2,200 were assigned cars for public utilities. The Lakes and Tidewater took 900 cars, while 500 of those loaded were privately-owned cars. This left few cars to be distributed among other commercial users.

Tipple- and Wagon-Mine Loading Compared

R. C. Morse, superintendent of freight transportation in the eastern Pennsylvania region, submitted exhibits showing that in April there were 512 wagon-mine operators in his region and in July there were 1,211. Throughout Pennsylvania the average time required by wagon-loading operators to load cars was 1.29 days, whereas the loading average at tipple mines is shown to be two-tenths of a day, according to exhibits submitted by Mr. Morse.

[*Later news of the result of the hearing will be found in News from the Capitol, page 651.*]

Mine Safety Engineers to Meet with Safety Council in Milwaukee

Hubbell to Speak on Nursing, Mitten on Shaft Safety Devices, Allen on Cage Signals, Shields on First-Aid Judges, Walter and Walsh on Gas Explosions, Kudlich on Roof Falls

THE Ninth Annual Safety Congress of the National Safety Council will be held in the Auditorium, Milwaukee, Wis., Sept. 27 to Oct. 1, 1920, inclusive. On Monday morning, Sept. 27, at 10 o'clock, in Plankinton Hall will be held the annual members' meeting, with R. C. Richards, president, acting as chairman.

In the afternoon, at 3:30 o'clock, in the Arena on the first floor, will be held a public mass meeting. The chairman will be George P. Hambrecht, of the Industrial Commission of Wisconsin. The program will be as follows: (1) "Safety Service," by Marcus A. Dow; (2) an address by a speaker of national prominence, who will discuss the importance of safety to industry and the national welfare.

On Tuesday morning, Sept. 28, at 8 o'clock, in Plankinton Hall on the second floor, will be held a General Round Table. The chairman will be Frank E. Morris, secretary of the Syracuse (N. Y.) local council. The topic for discussion will be "New Ways of Keeping Up Interest in Safety: (a) no-accident week, (b) competitive departmental records, (c) moving pictures, (d) talks by the manager and (e) other methods."

On Tuesday afternoon, Sept. 28, at 2:30 o'clock, the mining section will hold a session, when the reports of the officers will be read and the nominating committee appointed. The following papers will be read: (1) "Vocational Training as Influencing Safety and Efficiency in Mining," by A. C. Mitke, consulting mining engineer, Bisbee, Ariz.; (2) "Industrial Nurses in Mining Communities (metal mining)," by George Martinson, safety inspector, Hibbing, Minn.; (3) "Industrial Nurses in Mining Communities (coal mining"; (4) "Getting the Safety Message to the Individual Miner," by N. D. Hubbell, general manager, Davis Automatic Cradle Manufacturing Co., Uniontown, Pa.

On Wednesday morning, Sept. 29, at 9:30 o'clock, the Mining Section will hold a second session. The program will be as follows: (1) "Safety Devices on Hoisting Engines," by L. F. Mitten, Vulcan Iron Works, Wilkes-Barre, Pa.; (2) "Signaling from Moving Cages" by Carl A. Allen, district mining engineer, U. S. Bureau of Mines, Salt Lake City, Utah; (3) "The Standardization of First-Aid Contests" by Major M. J. Shields, of the American Red Cross, Washington, D. C.

On Thursday morning, Sept. 30, at 9:30 o'clock, the program will include: (1) "General Rules for Gas-Explosion Prevention (bituminous coal mines)," by R. A. Walter, general superintendent, Wisconsin Steel Co., Benham, Ky.; (2) "General Rules for Gas-Explosive Prevention (anthracite coal mines)," by Joseph J. Walsh, district state mine inspector, Nanticoke, Pa.; (3) "Requirements of Safety Training for Metal Miners" by O. Woodburn, director of the Globe-Miami District Mine-Rescue and First-Aid Association, Globe, Ariz.

On Friday morning, Oct. 1, at 9:30 o'clock, the report of the nominating committee will be made and the following papers presented, each to be followed by discussion: (1) "Accidents from Falls of Roof and Ground (metal mines)," by John L. Boardman, of the Anaconda Copper Mining Co., Butte, Mont.; (2) "Accidents from Falls of Roof and Ground (coal mines)," by H. A. Kudlich, chief safety inspector, of the Delaware & Hudson Coal Co., Scranton, Pa.; (3) "Hazards Met in Open-Cut Mining," by D. E. A. Charlton, managing editor of the *Engineering and Mining Journal*, New York City; (4) "Hazards Met in Anthracite Stripping" by F. S. Gallus, district superintendent of strippings, Lehigh Coal & Navigation Co., Lansford, Pa.

Foreign Markets and Export News

Reported Exports of Coal and Coke During July

Exports of coal and coke, as reported by the Bureau of Foreign and Domestic Commerce, for July, 1920, and the figures for July, 1919, as finally revised, are as follows:

EXPORTS OF COAL AND COKE

(In Net Tons)

	July, 1919	July, 1920
Anthracite	487,653	659,095
Bituminous	2,027,206	3,556,802
Exported to:		
France	None	261,555
Italy	167,559	126,069
Netherlands	77,812	134,212
Sweden	23,494	281,418
Switzerland	96,866	60,297
Canada	1,338,108	1,684,722
Panama	None	9,899
Mexico	5,824	16,683
British West Indies	16,528	14,156
Cuba	75,085	94,019
Other West Indies	5,147	9,179
Argentina	28,712	130,393
Brazil	54,595	83,468
Chile	None	53,767
Uruguay	7,775	25,158
Other countries	129,701	571,807
Coke	37,703	80,112

EXPORTS DURING JULY, 1920, BY CUSTOMS DISTRICTS

(In Net Tons)

	Anthracite	Bituminous	Coke
Maine and New Hampshire			100
Vermont	2,587	6,874	112
Massachusetts	54		
St Lawrence	204,248	196,487	3,097
Rochester	97,943	82,919	
Buffalo	260,610	278,097	24,975
New York	30,204	6,581	1,658
Philadelphia	36,458	143,884	807
Maryland	669	290,912	6,536
Virginia		1,293,700	
South Carolina		64,826	
Georgia		20,927	
Florida	3,009	19,426	
Mobile		13,275	
New Orleans		1,344	22
Sabine			117
San Antonio		829	50
El Paso	242		5,714
San Diego	17	6	
Arizona		4,804	11,312
San Francisco		10	373
Washington	56	2,488	795
Dakota	217	12,472	1,409
Duluth and Superior	1,419	2,030	139
Michigan	141	236,991	18,313
Ohio	21,221	877,611	4,575
Porto Rico		309	8
Totals	659,095	3,556,802	80,112

BUNKER COAL

Customs Districts	Net Tons
Maryland	80,871
New York	262,925
Philadelphia	40,606
Virginia	259,536

June Coal Output in the Ruhr Is Highest Since the War

Production of coal in the Ruhr in June, according to *The Iron and Coal Trades Review*, was higher than in any month since the revolution. It amounted to 7,454,000 tons, as compared with 7,092,000 tons in May, although the average daily output receded from 305,043 tons in May to 304,246 tons in June as a consequence of the slight falling off in the extra half-shifts worked. The total production in the first half-year reached 41,019,000 tons as contrasted with 31,560,000 tons in the corresponding period in 1919, being an increase of 9,459,000 tons. The daily output averaged 277,161 tons and 213,972 tons in the two half years respectively.

In considering the figures, it has to be borne in mind that a loss in production of nearly 4,000,000 tons took place through the strike in April, while the loss was much less in the previous month when unrest was created by the Kapp disturbances. As compared with the first half of 1914, when 56,060,000 tons were raised in the Ruhr, the production in the first six months of 1920 shows a reduction of about 27 per cent.

It is reported that Hugo Stinnes is endeavoring to acquire possession of coal merchant undertakings both in Denmark and Sweden.

Bolshevik Occupation Hampers Coal Production

Discussing the present state of the Donetz coal mining industry, the *Economiste Européen* states that whereas before the Bolshevik occupation the output had attained the pre-war level, it has since relapsed to a quarter or a fifth of that figure. The decline is not attributable so much to transport defects as to a reduction in efficiency at the pits. An official inquiry instituted by the Bolshevik Government finds that this is due to a very defective organization of food supplies, the workmen being badly nourished, and, as a consequence, apathetic. A similar situation exists in the Moscow basin, which has been in the hands of the Bolshevik since 1917.

Foreign Freight Rates Manifest Firmness for Prompt and Advance Loading

W. W. Battie & Co.'s coal trade freight report announces that the freight market to West Indian destinations during the past week has shown slight advance while to South American destinations rates have been steady to firm at about the previous week's level. To European destinations a firm tone has been maintained both for prompt and forward loading.

Freight rates by steamer are as follows:

	Sept. 13	Tons Discharged Daily	Sept. 6	Tons Discharged Daily
Malmo	About 15 00 —	1,000	14 50/15 00 —	1,000
Copenhagen	About 15 00 —	1,000	14 50/15 00 —	1,000
Stockholm	About 15 50 —	800	15 00/15 50 —	800
Gothenburg	About 15 00 —	1,000	14 50/15 00 —	1,000
Antwerp/Rotterdam	About 12 50 —	1,000	12 00/12 50 —	1,000
Hamburg	About 14 50 —	1,000	About 14 50 —	1,000
French Atlantic ex Rouen	13 00/13 50 —	700	12 50/13 00 —	700
Algiers	15 00/15 50 —	800	About 15 00 —	800
West Italy	About 15 00 —	1,000	14 00 14 50 —	1,000
Marseilles	About 15 00 —	1,000	About 14 50 —	1,000
Piraeus	About 16 50 —	1,000	About 16 00 16 50	1000
Trieste Venice	About 16 00 —	1,000	About 15 50 —	1,000
Port Said	16 00 16 50 —	1,000	16 00 16 50 —	1,000
Constantinople	17 00 17 50 —	500	16 50 17 00 —	500
Gibraltar	About 14 50 —	1,000	About 14 00 —	1,000
Pernambuco	About 16 00 —	500	15 00 —	500
Bahia	15 00 16 00 —	500	15 00 —	500
Rio	15 50 16 00 —	1,000	15 00 —	1,000
Santos	16 00 16 50 —	600	16 00/16 50 —	600
Buenos Aires or Montevideo or La Plata	14 50 15 50 —	750	14 50/15 00 —	750
Para	About 15 00 —	500	About 15 00 —	500
Rosario	16 00/16 50 —	750	16 00/16 50 —	750
To Nitrate Range	10 00/10 50 —	750	About 9 00 —	750
Havana	About 6 50 —	500	About 6 00 —	500
Sagua or Cardenas	7 50/ 8 00 —	300	7 50/ 8 00 —	300
Cienfuegos	7 50/ 8 00 —	500	About 7 00 —	500
Caibarien	7 50/ 8 00 —	300	7 50/ 8 00 —	300
Guantanamo	7 50 8 00 —	500	7 00 7 50	500
Manzanillo	About 9 00 —	300	About 9 00 —	300
Bermuda	About 7 00 —	300	6 50 —	300
	Bermuda p. c. and dis. free			
Kingston	About 8 50 —	400	About 8 00 —	400
Barbados	9 50 10 00 —	500	About 9 50 —	500
St. Lucia	9 50 10 00 —	500	About 9 50 —	500
Santiago	7 00 7 50 —	500	7 00/ 7 50 —	500
Port of Spain, Trin	9 50 10 00 —	500	About 9 50 —	500
Curacao	About 10 00 —	500	About 8 50 —	500
	Free p. c. Curacao			
Demerara	About 13 00 —	400	About 13 00 —	400
St. Thomas	8 50 9 00 —	500	About 7 50 —	500

All above rates gross form charter

News from the Capital

By Paul Wooton

Court Upholds Right of Railway to Dismiss Employees Who Join Labor Union

"JUSTICE SIDDONS of the Supreme Court of the District of Columbia in a decision rendered Sept. 3, denied the application of Local 418 of the Brotherhood of Trainmen for an injunction to restrain the Washington & Old Dominion Ry. from discharging employees who joined the union. The Court held that the railway's "right to dismiss its employees for becoming members of a labor union is supported by the judgment of the highest judicial tribunal in the country."

Wagon Mines to Get Open-Top Cars If Able to Load in Twenty-Four Hours

AS a result of the protest of wagon-mine operators that they had been discriminated against in being denied open-top cars, although in many instances their operations caused no more delay in car movement than properly equipped tipple mines, the Interstate Commerce Commission on Sept. 17 modified the order. The order now provides that wagon mines not equipped with tipples or elevations may receive open-top cars from the surplus supply if able to load the cars within twenty-four hours.

The new wagon-mine order came as a surprise. There was no intimation that the former order was to be changed. It is believed, however, that the 24-hour feature of the order will eliminate inefficient wagon mines, which were the only ones against whom complaint had been made.

The order as modified is known as Service Order No. 17. The new provision is embodied in the following paragraph from the order:

It is ordered that . . . Upon any day when a common carrier by railroad is unable to supply any mine upon its line with the required open-top cars, open-top cars shall not be furnished or supplied by it to any other mine which customarily does not load or is unable to load such open-top cars with coal within twenty-four hours from and after the time of placement for loading by the carrier, until all other mines have been fully supplied with open-top cars.

Modified Service Orders Are Issued to Prevent Abuses

SERVICE orders issued by the Interstate Commerce Commission on Sept. 17 separate the open-top car priority from that giving assigned cars to public utilities. Abuses of the public-utility order led to the embodiment of additional restrictions in the new order. The new orders are known as Service Orders Nos. 15, 16 and 17. Nos. 15 and 16 supersede Service Orders Nos. 7, 9 and 12 as amended. No. 17 relates to wagon mines, noted elsewhere. Extracts from Order No. 16 are as follows:

It is ordered that common carriers furnish open-top cars suitable for the loading and transportation of coal in preference to any other use, supply, movement, etc., unchanged or return of such coal cars, provided that such coal cars may be used in service, move in the direction of the mines to be supplied in the return movement, upon a route not materially out of line and to points not beyond such mines; and provided further that the phrase "coal cars" as used in this order shall not include flat-bottom gondola cars with sides less than 38 in. in height inside measurement, cars equipped with racks or cars which on June 19, 1920, were retired from service for the transportation of coal and stenciled or tagged for other service.

It is further ordered that all non-coal-loading carriers deliver daily to connecting coal loading carriers, empty or loaded coal cars up to the maximum ability of such non-car-loading carriers to make such deliveries and each such connecting coal loading carriers will receive and use the coal cars so delivered for preferential purposes.

It is further ordered that all common carriers discontinue the use of coal cars for commodities otherwise than as hereinbefore specified, (a) as to each coal-loading carrier so long as any coal mine remains to be served by it with coal cars, and (b) as to each non-coal loading carrier so long as deliveries of any coal cars to connecting carriers may be due or remain to be performed in the terms of this order.

It is further ordered that carriers shall place an embargo against the receipt of coal or other freight in open-top cars suitable for coal loading as hereinbefore defined, by any consignee, and against placements of such cars for consignment to any consignee who shall fail or refuse to unload such cars placed for unloading within 24 hours after such placement, until all coal or other freight so placed has been unloaded by such consignee, provided this shall not interfere with the movement of coal to any coal pool when authorized heretofore by the commission, or coal consigned to Tidewater or the Lakes for transshipment by water, nor shall it apply where the delay in unloading is attributed to the railroad.

The abuses under Service Order No. 9, which has been superseded by Service Order No. 15, had become so frequent that serious inroads were being made on car supply. Various enterprises serving public utilities are understood to have been receiving coal supply in assigned cars on the alleged ground that they formed a necessary part of public utility activities. It is believed that the restrictions placed in the new order will make its policing much easier.

A determined effort was made to limit the open-top car priority order so as not to include cars with sides less than 42 inches in height. This would have released 25,000 cars for general loading. The commission, however, continued the 38-inch provision.

In declining to change the open-top car order so as to limit its application to cars with sides 42 inches high, the commission took into consideration the fact that a great deal of domestic coal still has to be moved. Retailers have been delaying their orders in expectation of lower prices. In addition, it will be necessary to take away from the coal industry enough cars to handle the sugar-beet crop. The beets produced in Michigan, Indiana, Ohio, Illinois and Wisconsin already are beginning to move. The movement in the states west of the Missouri River will begin Oct. 1. A considerable number of cars also are in service transporting road materials and other essential commodities under permit. In view of these various reasons, the commission could not see its way clear to grant the 42-inch specification despite the very urgent demand which exists for these cars.

It also is believed that the commission regarded prices as the best indication that the need for car priority had not passed. When coal is sufficiently plentiful to give reasonable assurance that the winter's needs will be cared for it is believed that the situation will be clearly reflected by prices.

Forbids Passing Increase in Coal Price to Users of Electric Power

PERMISSION to pass on increases in the cost of coal to wholesale users of electricity has been denied by the Public Utilities Commission of the District of Columbia. The Potomac Electric Power Co. had requested permission to insert a coal clause in its contracts with large users of power. The commission took the position that the coal clause "is objectionable because there is less incentive to secure coal at the most advantageous price when it is known that the cost is passed automatically to the consumer. As the increase in the cost of coal affects all consumers, such an increase should be borne as nearly as possible by each class in its proper proportion."

Advocates Bureau for Purchase of All Government Coal Supplies

COAL for all governmental departments will be purchased by one central bureau if a recommendation of E. J. Ayres, chief executive officer and superintendent of buildings of the Interior Department, to Secretary Payne, is approved. Mr. Ayres says it would result in a material saving and eliminate duplication of supplies as well as reduce the personnel of the various purchasing offices from 25 to 50 per cent.

Mr. Ayres refers to the successful operation of the Government fuel yards in Washington, which were established in 1918, and which furnish fuel for Government departments in the District of Columbia, excepting the Navy Yard. During the year ended June 30 last 275,000 tons of coal were delivered to 725 distributing points, with a material saving as compared with the former practice of purchasing and handling coal under separate contracts by different branches of the service.

G. S. Rice Advocates Super-Power Plants In North Appalachian Coal Fields

A NUMBER of suitable locations in the North Appalachian coal fields are available in which super-power plants can be established, in the opinion of George S. Rice, chief mining engineer of the Bureau of Mines. Mr. Rice believes there are a number of important reasons why the plants should be located in coal-mining regions in the development of the Boston-Washington super-power scheme, rather than at tidewater. He is of the opinion that a number of plants developing from 30,000 to 60,000 electric horsepower could be used. He suggests Mount Union, Clearfield, Tyrone, Johnstown, Cumberland and Fairmont as locations which would meet the requirements.

Reported Movement of Coal by Rail During First Three Months of 1920

COAL tonnage handled by the railroads of the country during the first three months of 1920 is shown in the first summary of freight commodity statistics of Class 1 roads issued by the Interstate Commerce Commission on Sept. 16. These roads represent 91.8 per cent of the total tonnage originating on all roads, exclusive of switching and terminal companies.

The report shows that for the United States 639,894 carloads of anthracite coal, totaling 30,374,695 tons, were handled as revenue freight; 3,399,164 cars of bituminous, aggregating 166,016,366 tons, and 341,816 cars of coke, aggregating 12,197,243 tons.

For the Eastern district the revenue freight coal carried was: 605,310 cars of anthracite, aggregating 29,137,711 tons; 1,981,182 cars of bituminous, aggregating 100,459,698 tons; 264,064 cars of coke, aggregating 9,639,425 tons.

Coal carried as revenue freight in the Pocahontas district amounted as follows: Anthracite, 1,443 cars, aggregating 50,487 tons; 283,345 cars of bituminous, aggregating 15,184,856 tons; 13,971 cars of coke, aggregating 525,570 tons.

Revenue freight handled in the Southern district: Anthracite, 1,565 cars, aggregating 64,510 tons; bituminous, 410,931 cars, aggregating 19,226,453 tons; coke, 24,363 cars, aggregating 803,001 tons.

Revenue freight handled in the Western district: Anthracite, 31,576 cars, aggregating 1,121,987 tons; bituminous, 723,706 cars, aggregating 31,145,359 tons; coke, 39,418 cars, aggregating 1,229,247 tons.

Lackawanna Submits Segregation Plain: Also Wants to Increase Capital

THE Interstate Commerce Commission has announced the plan of the Delaware, Lackawanna & Western R.R. for the segregation of its coal properties from its railroad operations. In the petition submitted to the I. C. C. permission was asked to increase the capital stock of the railroad in order to facilitate the wider distribution of its profits. The high dividends paid by the company on its limited capital stock has led to the conclusion that its earnings were excessive, and the assertion was made that an increase of capital would prevent this inference.

The present surplus of the company exceeds $90,000,000, the application to the commission stated, while its capitalization is less than $43,000,000. Investments in road and equipment in Pennsylvania exceed $87,000,000, and total investments in controlled lines are reported to exceed $224,000,000. Expansion of capitalization, it was said, has been prevented by the company's ownership of coal properties.

With the segregation of its coal properties the company will hereafter conduct only a transportation business.

The petition stated that since early in its history the Delaware, Lackawanna & Western has been operating in the dual capacity of a coal company and of a transportation company operating a system of railroads. Such operations have subjected it to laws preventing the expansion of its capitalization to keep pace with the growth of its assets. The Interstate Commerce Commission is requested to issue an order authorizing the company to increase its capital stock to the full amount of its surplus, or such part thereof as the commission may approve.

Government Leases Coal Lands in Alaska

A COAL-MINING lease covering 1,397.28 acres in the Cook Inlet field of Alaska has been granted by the Interior Department to Edward T. McNally, of Anchorage, Alaska, under the act of Oct. 20, 1914. The lease calls for an investment of $140,000 in actual mining operations on the part of the lessee, who will also pay the Government a royalty of 2c. a ton for the coal mined and rentals per acre as follows: 25c. for the first year; 50c. for the next four years and $1 yearly thereafter.

The Alaska Coke & Coal Co., of Seattle, Washington, has obtained a lease on blocks 26 to 31 inclusive, a total of 2,040 acres of land, in the Bering River coal field of Alaska. The lease is for a term of fifty years and calls for an investment of $75,000 by the lessee and the same royalty and rental terms as the preceding lease.

Army Coal Buyer Goes Shopping

WITH the intention of purchasing $2,000,000 worth of coal, Colonel J. P. Barney, in charge of coal purchases for the Army, left Washington Sept. 13, with a tentative itinerary as follows: Philadelphia, Sept. 13, 14 and 15; New York, Sept. 16, 17 and 18; Chicago, Sept. 20, 21 and 22; Atlanta, Sept. 24, 25, 26, 28 and 30; Charleston, Sept. 27; Birmingham, Sept. 29, and Norfolk, Oct. 2.

Colonel Barney will make contracts for spot coal with leading operators in the districts to be visited, including both bituminous and anthracite coal. This coal is for Army posts in the Northeastern, Eastern, Southeastern and Central departments to meet the requirements for the fiscal year ending June 30, 1921, which have not already been purchased by department quartermasters or the Washington office. The coal is to be purchased for delivery prior to June 31, 1921.

Hearing on Chicago Coal Supply Postponed

WHEN the hearing scheduled by the Public Utilities Commission at the instigation of the Chicago Real Estate board to determine why the railroads cannot carry sufficient coal into Chicago to supply the local need, came up Sept. 13 before Examiner Slater of the commission, a continuance was granted at the request of Lewis Orr, representing the real estate board, the case being placed on the calendar for Sept. 22.

Mr. Orr, in asking a continuance, said that certain information of an important nature was lacking, and while it was of vital importance that the case be heard before the date for starting furnaces in public buildings, it was equally necessary that he be given time to secure the information now lacking.

Indiana Commission to Fix Coal Prices. Levy Tax and Require Licenses

COAL operators, wholesalers and dealers in Indiana have been summoned to appear Sept. 27 before the special State Coal and Food Commission and give information on coal-production costs in Indiana, the Federal court recently having decided that the state was within its rights when it took action to regulate the coal business.

The information obtained probably will be considered by the commission together with the data that it has been assembling, principally from records in the State Mine Inspector's office. The information will provide the basis for the fixing of coal prices in Indiana. Jesse Eschbach, chairman of the commission, announces that prices will be fixed within a few weeks.

The notices read:

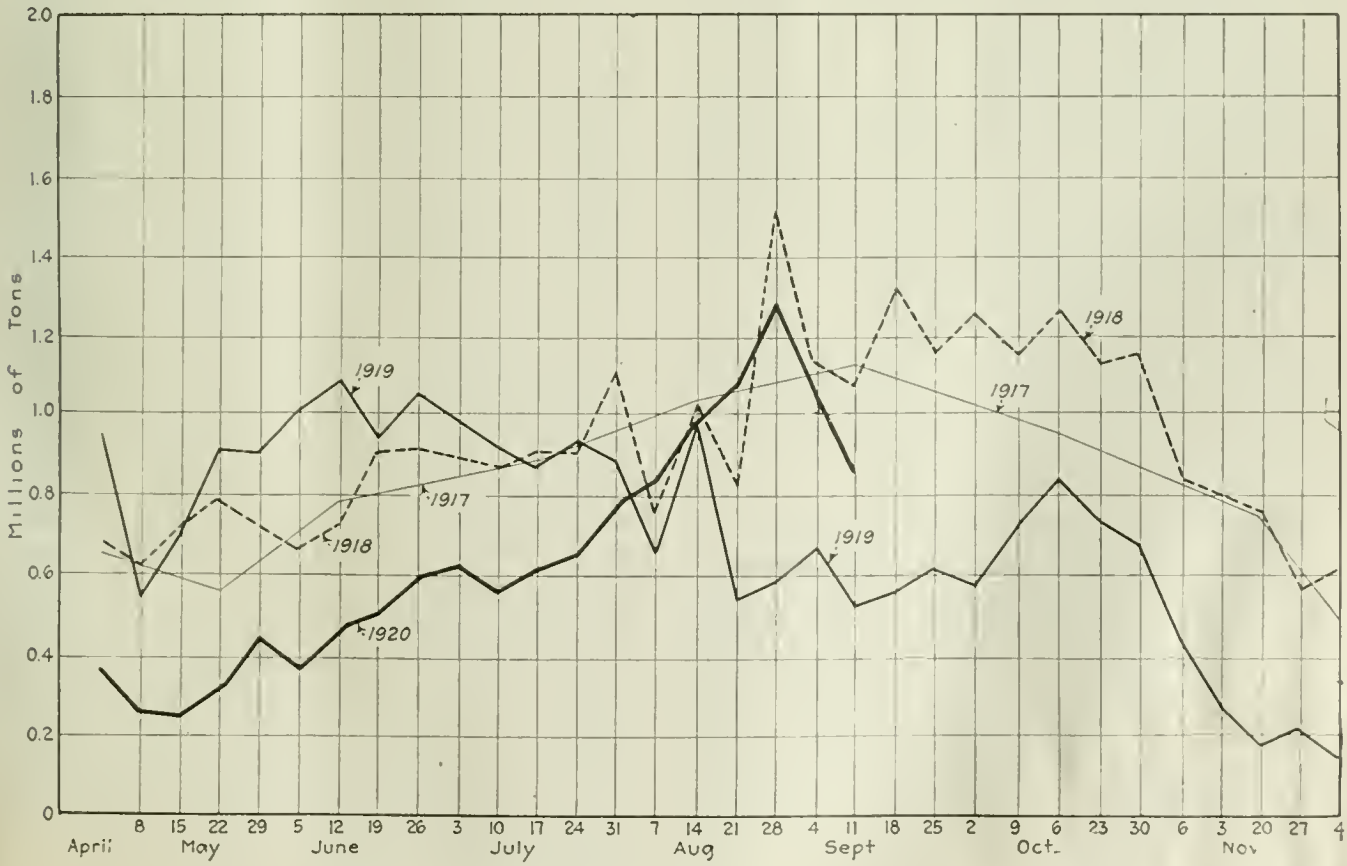
"You are hereby notified that the special coal and food commission of Indiana will, on Monday, Sept. 27, 1920, at 9 o'clock a.m. at the office of said commission, Room 332, in the Statehouse, in the City of Indianapolis, begin a hearing for the purpose of regulating and fixing the maximum price at which all coal moving in intrastate commerce in the state of Indiana shall be sold, both to jobbers, wholesale and retail dealers."

Organize Coal Exporters' Association to Check Irresponsible Dealers

A NEW organization to be known as the Association of American Coal Exporters was formed in New York City on Sept. 14. It starts out with a membership of eighteen, has fixed its initiation fee at $5,000 and annual dues at 1c. per ton. Officers will be chosen at another meeting to be held soon. Temporary offices have been established in the office of the Wholesale Coal Trade Association of New York, Inc., at 90 West St.

The object of the organizers of the new association is to stabilize the business and check the activities of irresponsible exporters, as well as to foster and increase the prestige of that vast number of American coal exporters whose conduct is governed by the highest business ethics. It is proposed to appoint the following committees at the outset: Membership, legislation, ocean transportation (charters), inland transportation, pier facilities and publicity.

Weekly Dumpings of Bituminous Coal (Cargo and Fuel) at Lake Erie Ports*



From reports of Geological Survey.

The Labor Situation

Edited by
R. Dawson Hall

Block-Coal Miners of Indiana Want Tonnage Scale Revised; Daymen Get $1.20 Advance

ALTHOUGH the coal miners and operators of the block-coal district of Indiana, centering in Brazil, have agreed that the daymen shall receive the standard increase of $1.50 per day, the mine workers still are not satisfied and want the tonnage scale also revised upward. The operators have refused even to discuss the matter, and the officers of District 8, by which number the block-coal district is designated, are appealing to John L. Lewis for this further revision of the contract now in force.

Policy Committee Advises Anthracite Mine Workers to Return to Work

APPARENTLY the policy committee of the United Mine workers decided on Sept. 13 to advise the striking men in the anthracite region to go back to work and so notified Secretary of Labor Wilson. As he was away from Washington the policy committee took no further action till the evening of Sept. 16, when they issued a proclamation calling on the men to take up their tools. On the following day Mr. Wilson answered the telegram, saying "I shall be glad to meet the committee and carefully consider any claims of the mine workers which it may have to present."

As there remained only two days in the week the reaction of the men to the notice was not immediate, and the outcome was uncertain. In the Shamokin region the pumpmen, firemen and monthly men quite generally quit work in sympathy with the miners, and the question of reinstatement arose, the companies refusing to allow them to go back to work, arguing that according to the agreement to do this constituted a violation of the contract even when the contract has expired for other men.

The mine workers in two districts, Nos. 1 and 7, will certainly go back to work, but in District 9, though 45,000 mine workers voted to resume work Sept. 20, 10,000 will remain idle until the operators reinstate the monthly men, mine bosses and clerks, who quit in sympathy with the miners.

Operators of Pocahontas Region Obtain an Injunction Against Union Interference

APPLICATION having been made to I. C. Herndon of the Mercer-McDowell Circuit Court for an injunction to restrain interference with the non-union labor basis now prevailing in the Pocahontas field, Judge Herndon on Aug. 25 gave officials and organizers of District 17, United Mine Workers, until Sept. 1 to file affidavits in support of their answer to the petition of coal operators for the injunction. The injunction was applied for on behalf of forty-seven of the large companies in the Pocahontas field. It is asserted by the operators in their application that fully 75 per cent of the employees of the companies, numbering about 12,000 men, have individual non-union contracts and that any attempt to cause such men to join the union is an interference with the non-union contract.

When the court met on Sept. 1 it afforded each side time in which to submit short briefs citing the authorities on which it based its contentions. The defense is relying for its authority on a portion of the decision in the Hitchman case so long in the courts. The plaintiffs have cited in support of their contention the decision in the case of the Atlantic Smelting & Refining Co. vs. Structural Iron Workers Union handed down by Vice Chancellor Backus of New Jersey; the case of Thacker Coal vs. Burke, handed down by the West Virginia Supreme Court, and the famous Hitchman case. The Pocahontas case, however, may become equally famous. Inasmuch as the injunction sought by the Pocahontas operators is attracting widespread attention, a portion of the decision in the Hitchman case is herein quoted:

> Respecting the sweep of the injunction, we differ somewhat from the result reached by the district court: So far as it restrains (1) interfering or attempting to interfere with plaintiff's employees for the purpose of unionizing plaintiff's mine without its consent, by representing or causing to be represented to any of plaintiff's employees, or to any person who might become an employee of plaintiff, that such person will suffer or is likely to suffer some loss or trouble in continuing or in entering the employment of plaintiff, by reason of plaintiff not recognizing the union, or because plaintiff runs a non-union mine; (2) interfering or attempting to interfere with plaintiff's employees for the purpose of unionizing the mine without plaintiff's consent, and in aid of such purpose knowingly and wilfully bringing about the breaking by plaintiff's employees of contracts of service known at the time to exist with plaintiff's present and future employees; (3) knowingly and wilfully enticing plaintiff's employees, present or future, to leave plaintiff's service on the ground that plaintiff does not recognize the United Mine Workers of America or runs a non-union mine, etc.; (4) interfering or attempting to interfere with plaintiff's employees so as knowingly and wilfully to bring about the breaking by plaintiff's employees, present and future, of their contracts of service, known to the defendants to exist, and especially from knowingly and wilfully enticing such employees, present or future, to leave plaintiff's service without plaintiff's consent; (5) trespassing on or entering upon the grounds and premises of plaintiff or its mine for the purpose of interfering therewith or hindering or obstructing its business, or with the purpose of compelling or inducing, by threats, intimidation, violent or abusive language, or persuasion, any of plaintiff's employees to refuse or fail to perform their duties as such; and (6) compelling or inducing or attempting to compel or induce, by threats, intimidation, or abusive and violent language, any of plaintiff's employees to leave its service or fail or refuse to perform their duties as such employees, or compelling or attempting to compel by like means any person desiring to seek employment in plaintiff's mine and works from so accepting employment therein—the decree is fully supported by the proofs.

On Sept. 16 the injunction as requested was granted by the court, requiring the plaintiffs, however, to execute a bond for $5,000 to insure all costs and damages which may be sustained by the defendants should the injunction be dissolved later.

The injunction forbids attempts on the part of union officials to induce miners in this field to break what the companies allege is a contract of employment. It restrains union men from entering on the property of the coal companies, but does not forbid public meetings or meetings on property not owned by the coal companies.

Companies represented in the Pocahontas Coal Operators' Association which applied for the writ operate in an area of 109,000 acres and produce approximately 25,000,000 tons of coal a year.

Central Pennsylvania Miners Dissatisfied With Standard Advance Given Daymen

ON SATURDAY, Sept. 11, the executive committee of the Central Pennsylvania Coal Operators' Association met in Clearfield to act on a request made by the policy committee of the mine workers of the district. That committee sought to have a joint conference called to adjust the scale for mining in accord with the demands made at the recent Du Bois conference.

The meeting was presided over by President B. M. Clark and, after the matter was thoroughly discussed, it was decided "to stand pat." President Clark announced that the action of the central Pennsylvania association was in line with the general policy of bituminous coal producers throughout the country. The increase allowed gives daymen $1.50 per day additional and to boys 82c. a day. These increases became effective on Aug. 16 and will continue during the balance of the contract period.

Representatives of 60,000 miners of District No. 2, United Mine Workers, met in convention in Du Bois, Pa., on Sept. 17, to discuss the course of action they would take in consequence of the refusal of the operators of the district to confer with the policy committee. Sentiment in favor of stopping work until wages are increased has grown since the demand was made in August and it is likely that drastic action will be taken. Owing to car shortage the miners are losing much time and they allege that they cannot make a living. Their contention seems to be not so much that the wage scale is too low but that the amount of money they are actually receiving is inadequate to meet living expenses.

Kentucky Miners Strike for Advance Above Central Competitive Wage Increase

THREE days of conference between mine operators and mine union officials at the Seelbach Hotel, Louisville, Ky., closed on Sept. 4 without result. The mine workers asked for an increase of $2 per day for daymen and 10c. a ton for miners with the same amount to be divided between loaders and machine men. The union finally offered to compromise for $1.75 for daymen if 10c. per ton was allowed the tonnage men.

This the operators would not grant though they were willing to give the $1.50 per day to the daymen, provided no increase was given to men working on a tonnage basis. They were, in short, willing to conform with the advance given in the Central Competitive field, but this did not satisfy the union leaders, who alleged that Kentucky operators were not paying the full Central Competitive scale and could afford to meet the wage paid by their competitors.

As a result 4,000 men laid off on Sept. 7. The strike is unauthorized and the men deny it is a strike. They term their "vacation" by the euphonious term "laying off." On Sept. 7 many mines that had been idle on the previous day shut down and some that had worked became idle. The strike, of course, is only in the union territory, which is known as District 23. This is in the western part of the state and includes Muhlenberg, Ohio, Henderson and Union Counties.

In Muhlenberg County approximately 2,000 workers failed to report, closing fifteen mines producing 14,000 tons of coal daily. Only two mines were operating in Henderson County, where 1,200 men were on strike. Approximately 1,000 were out in Ohio County, where only one mine was running. Reports from Union County are that half of the miners were on duty.

Black Diamond No. 1, in Muhlenberg County, which was closed down on Sept. 7, resumed the day following, the strikers returning, but Black Diamond No. 2, operated Sept. 7, was not running the next day, the men failing to show up. The miners who failed to report at the Hillside mine on Sept. 7 returned the next day. The Powderly mine was working but the Martmeick mine, owned by the same company, was closed.

Other Muhlenberg mines idle were Graham, Pacific, Mercer, Midland, Madison, Nelson, Browder and Kirk. Those working were Luzern, Powderly, Black Diamond No. 1, Crescent and Roger Brothers.

The Henderson County mines where the men were out were the two Southland plants, Backett, Jennings and Dixie. Lonnie Jackson, president of District 23, says that the men are justly dissatisfied, having always been paid about 20 per cent less than the Central Competitive scale. He declares that four of the larger operators are willing to accept the union's revised demands and that this has increased the discontent of the other men.

Alabama Commission Finds Mine Workers And Operators Equally to Blame

REPORTING on the dispute between mine workers and operators, the Alabama Strike Commission finds both parties equally responsible for present conditions in the mining districts of the state and that the public has been the only sufferer, the output having been limited by the dispute and prices having increased accordingly.

The report suggests control of the mining industry by the state and offers a bill creating a commission of three members to be chosen by the state Supreme Court, the commission to have legal power to summon witnesses and examine records. The decisions of this body, if created, would have the same weight as the verdicts of a circuit court.

This verdict was rendered on Sept. 18 and Governor Kilby has announced his intention to have the bill introduced to the State Legislature now in session and promises to use his influence to have it enacted.

Alabama Manager and Two Deputies Shot: National Guard Is Called Out

GENERAL Manager L. M. Adler, of the Corona Coal Co., Corona, Ala., was shot from ambush and instantly killed, Sept 16, while traveling with Deputy Sheriffs Edgel and Brown in an automobile. The deputies were so severely injured that they will probably die. Sheriff Clark Guthrie, reporting that armed bands were gathering at Corona, Townley and other mining camps, said the situation was beyond his control and called on the governor to send troops. The governor complied and the same day six companies were called into service for duty in Walker and Jefferson counties under command of Brigadier General Robert E. Steiner, making his headquarters at Birmingham, with the expectation of shifting later to Jasper. On Sept. 18 five companies were on duty and two more were ordered to the scene of disorder.

Production and the Market

Weekly Review

Bituminous Production Declines—Labor Day Accumulation of Cars Enables Record Daily Loadings—Prices Are Firmer—Labor Situation Is Slightly Improved—Anthracite Miners Are Returning

PRODUCTION of bituminous coal shows a decrease for the week of Labor Day, 10,566,000 net tons being the figure given by the Geological Survey. This is a decline of 605,000 tons as compared with the preceding week. Observance of the holiday period caused an accumulation of empties on resumption of work. The per-day output rose accordingly to 1,994,000 tons, the highest attained since last January. Beehive coke production was the largest of any week since May. The total production is estimated at 439,000 tons, an increase of 11 per cent. Anthracite shipments for the week ended Sept. 11 were 546,000 tons, only about 70 per cent of capacity.

Car placements are better in some sections, but the general improvement was not up to expectations. Late reports indicate that more satisfactory conditions prevail and production is increasing.

Labor in the bituminous fields is showing more inclination to get down to business, due to recent local wage increases. The Alabama field, however, is badly crippled by the fight for recognition of the union, and western Kentucky also is handicapped by labor trouble. Prices have rallied somewhat, especially in the larger market centers. The slump in production, anthracite shutdown and a general buying for reserve stock are given as the causes for this advance.

All-rail movement to New England increased to 5,044 cars, while shipments via Tidewater dropped to 261,000 tons. Exports also declined, 439,000 tons being the figure for the week. Cargo and fuel dumpings at the Lakes for week ended Sept. 18, were 1,007,833 tons, an increase of 122,000 tons over the preceding week.

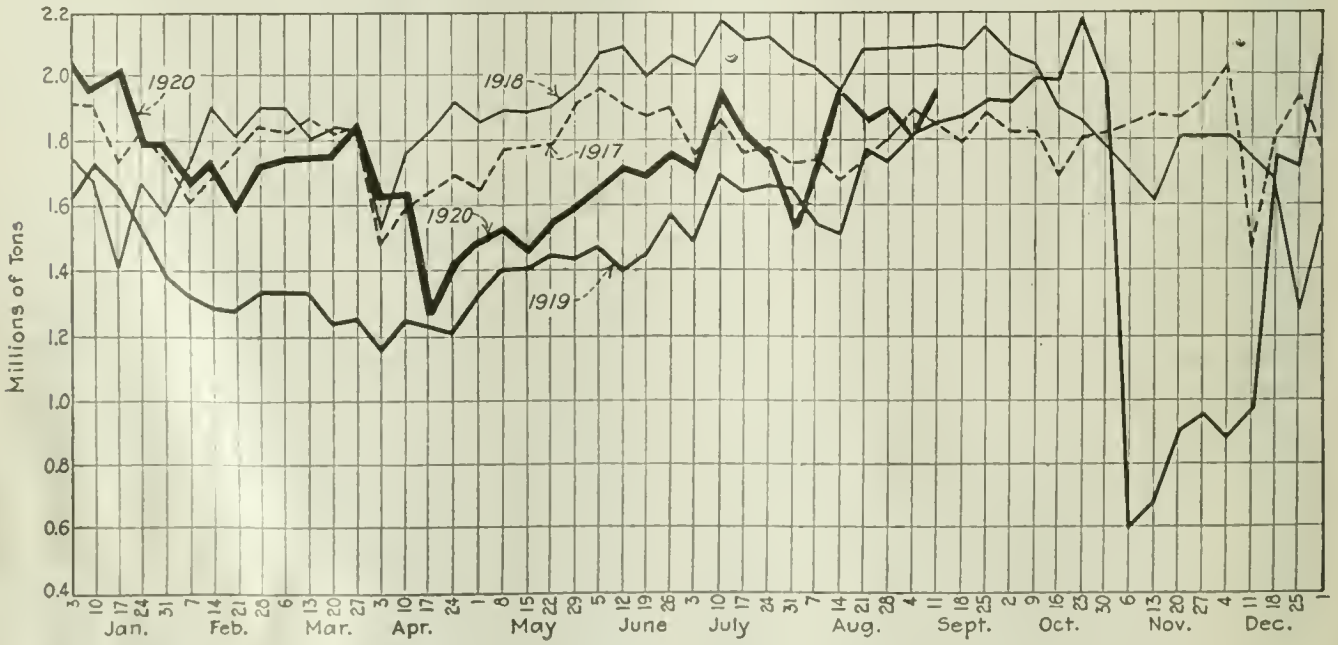
Anthracite "vacationists" have largely returned. The Pittston and Shamokin strikers still number about 18,000 but other sections report a general return to work.

Lake Coal Dumped Season to Sept. 18

(NET TONS)

	Cargo	Fuel	Total
1919.....	16,906,106	789,472	17,695,578
1920.....	13,513,621	784,600	14,298,221

Average Daily Production of Bituminous Coal*



*From weekly report of Geological Survey.

Reports From the Market Centers

New England

BOSTON

Demand Is Distinctly Easier — Prices Governed by Other Markets—All-Rail Receipts Fall Off — Slow Loading at Hampton Roads—Retailers Far in Arrears on Anthracite Orders.

Bituminous—The trade is settling down to a dull market. There is very little request for spot coal. Buyers are willing to accept deliveries as long as they are on contracts made early in the year but otherwise there is lack of interest. Reserves have been accumulated to such extent and there continues so unfavorable an outlook for general business that no further upward swing in prices is looked for.

While prices are maintained on an average level well over $8 at the mines in Central Pennsylvania, it is clear that for the present they are being governed by markets other than New England.

Movement on contract, both all-rail and by water is keeping up to July and August levels. A good many orders placed at high prices have been cancelled, partly because shipment was not made within the time stipulated but also because contract coal has been coming forward in sufficient volume to meet requirements.

Car-supply in the regions is adequate for all needs. The shut-down in anthracite has had its effect here and there has not been a time in months when spot purchases could be shipped so fast. The New England roads are now in better shape than was the case in the spring and if rail movement is no greater than at present there will be fewer embargoes than heretofore.

It is understood here that the Interstate Commerce Commission will shortly cancel Order 11, but that Order 9, in favor of utilities, etc., will be renewed. In the face of present car-supply it is hard to see why the latter is necessary, but doubtless there is a good deal of pressure on the part of municipalities and government departments in order to keep down prices.

Loading at the Virginia terminals has not proceeded so smoothly the past week. Congestion at the piers due to heavy receipts of high-volatiles has interfered with despatch of boats coastwise. This will result in higher coal for New England manufacturers just at a time when market condtions are really much easier. Current receipts are of coal bearing the advanced tolls from the mines to Tide and the two items together, in many instances, may easily amount to $1.75 per ton. On top of this, the Shipping Board is seriously urging an advance of 75c. in rates coastwise, this largely on the ground of increased cost of coal. The new rate, if carried through, would mean $3.75 from Hampton Roads to Boston where but a few years ago there was offered a contract rate for a year that figured approximately 50c.

Current quotations of bituminous at wholesale range about as follows:

	Clearfields	Cambrias and Somersets
F.o.b. mines, net tons	$8 00@ 9 00	$8 75@ 9.50
F.o.b. Philadelphia, gross tons	11.60@12 72	11.35@13 25
F.o.b. New York, gross tons	12.10@13 00	11.80@13.75

Anthracite—The "vacation" of the mine-workers has a serious aspect for New England. The trade is eager to get news from the region, for stocks are extremely light and cool weather is coming on. Retail dealers in all parts of the territory are most apprehensive. With few exceptions, they have taken orders far in advance of their ability to deliver, unless mining is resumed in good volume the next 60 days.

Tidewater

NEW YORK

Anthracite Shipments Slow — Supplies Dwindle and Situation Looks Gloomy— Independent Quotations Advance — Bituminous Becomes Active Because of Anthracite Troubles—Prices Stiffen.

Anthracite—The shortage is becoming more pronounced daily. A negligible quantity of coal is coming forward and most of the docks are nearly cleaned out. The yards of the retail dealers are also showing the effects of the strike and already there is considerable study being devoted to the situation and as to what might be expected late this fall and winter.

The lack of shipments was extremely noticeable last week. Wholesale dealers had little to do except to tell customers they had no coal to sell. The little tonnage that did come forward was for the most part from the independent operations or from the northern coal fields where some mining was being done.

Even when the mines do resume operations it will be nearly two weeks before this market will receive coal. Meantime the retail dealers are delivering their remaining supplies in small lots. Reports received here at the end of the week were to the effect that the workers are gradually returning.

Some of the smaller independent operators are quoting their domestic as high as $15.25 and in order to get these sizes the buyer must place an order for some of the steam coals.

Steam is in strong demand and the stoppage of production has increased this. Birds-eye, which is seldom offered in this market is now being heard of. Buckwheat No. 1 was offered here at $6@$7.50 f.o.b. mines, quality considered. Quotations for rice were around $4.25 and barley close to $3.

Quotations for company coals, per gross tons at the mine and f.o.b. New York Tidewater, lower ports, are as follows:

	Mine		Tidewater	
Broken	$7 60@	$7 75	$10 21@	$10 36
Egg	7 60@	7 75	10 21@	10 36
Stove	7 85@	8 10	10 46@	10 71
Chestnut	7 90@	8 10	10 51@	10 71
Pea	6 10@	6 55	8 57@	9 02
Buckwheat	4 00@	4 25	6 47@	6 72
Rice	3 00@	3 50	5 47@	5 97
Barley	2 25@	2 50	4 72@	4 97
Boiler	2.50@	2 75	4.97@	5 22

Bituminous—The market has taken a spurt and prices are advancing. Several reasons have been given for this sudden change but the most general opinion seems to be that it is due to the "vacation" taken by the anthracite miners and the increased demand for bituminous.

Shippers in this city sending orders to operators in the coal fields at fixed prices have been informed that better prices are being made on the ground. This has naturally had a tendency to advance prices. The return of the anthracite workers will, however, have a tendency to send prices down.

There is plenty of coal at the piers to meet all immediate needs. Shipments are coming in quite steadily, but in no great volume. Considerable coal is being taken by the public utility corporations some of which have good-sized tonnages in their bins.

Loaded boats are not so numerous. Alongside prices range from $14.50@ $16. There is a demand for Order 11 coal at $8.75 f.o.b. mine, while Pool 18 was quoted $13@$13.50 and Pool 10 at around $15.

Car supply was reported as improving, most mines getting 60 per cent or better of their requirements. Labor was better satisfied, having been assured that most operators would grant them increased wages.

PHILADELPHIA

Hard Coal Retail Trade Has Vanished — Little Coal Is Expected for 10 Days — Price Investigator in City — Bituminous Prices Very Firm, Despite Increased Car Supply — Tide Business Grows — Local Demand Fairly Well Supplied — Gas Coals in Strongest Demand.

Anthracite—Receipts about reached the zero mark this week. The dealers on the Reading Ry. have a little pea coal on hand, but deliveries of this have not been heavy enough to cover their overhead. The Pennsylvania R.R. dealers still have a fair amount of prepared sizes. Like all the other dealers they have no stove at all.

It is quite likely that the summer weather has tended to ease the public mind and the pressure on the retail

trade has not been at all strong. Orders are taken subject to price in effect when delivery is made, although it is not thought that there will be any change from the following schedule, which is fairly representative of trade prices: egg $14.50, stove and nut $14.80, and pea $12.50.

With the miners agreeing to return to work on the 17th there was really little production on that date, as it was believed that the men would finish out the week in idleness.

One of the Government departments called on the trade this week for information as to prices. Visits were made to both wholesalers and retailers for information as to the maximum prices now being charged. Most of the trade co-operated fully and it was quite common for them to invite the closest investigation of their records just as they stood in the offices.

Activity in steam trade is centered on rice and buckwheat. Of the former there is only a fair amount offering, although of the latter the big companies seem to be willing to accept orders freely. The prices ranged on rice from company $3.75@$4, and barley ran $2.25@$2.75 at mines per gross ton.

Bituminous—Despite better distribution of cars prices on all grades have persistently held up, and in some instances have shown an advance. Pool 9 is still out of the market and is not readily obtainable. Pool 10 has been moderately available at $9.50@$10. Pool 11 has been offered in somewhat heavier volume $8.75@$9.75, with major portion of sales around $9. Pool 18 is $8@$8.50, but with actually little demand.

The market is fairly well supplied with coal, at least consumers are able to go along without ordering much at the market price. A visit through the territory shows that industries are storing contract coal. Shipments of this kind seem to be on the increase.

In the iron trade the call is heavy, particularly for gas coals. Fairmont started out strong $9.50@$9.75, with little to be had, and advanced later at $10@$10.25. The market production of this coal is much reduced by heavy tonnages used by the railroads.

With domestic trade fairly well supplied it was natural that export business would increase. This week had seen a heavy tonnage loaded, with prices at Tide $14@$15. If the present rate of export continues, September will show better than 300,000 tons.

There has been a strong call by the glass trade, with the screened Pennsylvania gas coals bringing $12@$12.50 at the mines. For similar mine run the price is about $1.00 less. There is also the strongest kind of demand from the furnace trade for puddling coal running about 30 per cent volatile and the price has shown a tendency to soar, with most quotations from $10.25@$10.50.

In the spot coke trade Connellsville foundry is moving from $18.50@$19 per net ton at the ovens, with furnace about $18, and at times 50c. less.

BALTIMORE

Prices Advance Despite Counter Predictions—Car Supply Again Falls Off and Demand Increases—Hard Coal Very Scarce—Export Movement Is Fair.

Bituminous—After an excellent car supply since Labor Day, in which the run was at times around 100 per cent on both the Baltimore & Ohio and the Western Maryland R.R., there has come a new falling off in the supply. With the drop in car supply to around 65 per cent on the B. & O. R.R. came an increase in demand that has put new strength into the trading.

This has upset the many predictions that low prices of a few days ago were to be cut still further by the increased production which was meeting all demands promptly. The lighter run of cars on the Pennsylvania R.R. had made the market for those coals higher than for B. & O. R.R. coals, but recent events have put them back more on a level.

Prices have stiffened about $1 a ton for most of the B. & O. steam coals, with prospects of further raise. Best steam fuels, such as Pools 9 and 71, are quoted $10.25@$10.50, as against about $9.50 a week ago. Pool 10 coals are readily commanding $9.50@$9.75 a net ton f.o.b. mines, Pool 11 $9 and Pool 18 $8.50 and in some cases better.

The permit regulations are holding the Tidewater situation clear of congestion, and New England and export coals are moving fairly promptly, the number of ships astream being kept down to between 15 and 20 daily. The reserve in the pool is also held at between 1,400 and 1,700 cars daily for the most part. The export loading under permit is slower than during the big jam of a few weeks ago, but even at that around 140,000 tons were loaded on foreign bound ships here the first half of September, indicating that 300,000 tons or better would be the figure for the month in export movement.

Anthracite—Hard coal is becoming more and more scarce here. There is hardly any reserve in local yards and receipts are negligible. Coal men are growing more restive as consumers, many with orders long on the books, are now pressing them for coal.

No one is satisfied, although coal men assure their customers that they will take care of them in some way, even if apportionment of the coal to come through has to be resorted to.

Lake

BUFFALO

Bituminous Prices Slowly Sagging—Cancellations Show Consumers Have Supply—Cars Are Fairly Plentiful—Anthracite Supply Is Cut—Lake Dumpings at Minimum.

Bituminous—The market is weak. Shippers report lower prices and are now confronted with cancellations of high-priced orders. Consumers now have much coal offered $8@$8.50.

There is still some coal jobbed at big prices that was obtained as low as $3.50 on contract at the mines. The consumer is getting a good stock on hand as a rule. Shippers predict prices of $6@$7 in six weeks or so. Slack is hard to get, but mine run readily takes its place as a rule and prices do not differ as to size.

The miners are still seeking the operations that pay big prices and it will take a stand on the part of consumers to send them back to the mines that cannot now pay these prices for labor. They will come back as soon as prices drop a little further. The increasing piles of coal in consumers' yards make that readjustment certain before long, if other conditions do not forbid.

The car supply is no longer a menace to the trade. The anthracite shut-down has helped the bituminous car supply. Still the fall grain movement is just setting in and that may affect the car supply.

Anthracite—Supply has run down to less than half what it was before the miners went out. The Lake shippers continue to do a little loading. There are many published predictions of famine, but as a rule the trade looks for things to go on as before. The miners are apparently not in a mood for a determined fight.

Shippers generally refuse to buy the high-priced independent anthracite, though it is still offered at about $3 premium. A readjustment of prices to the consumer has been made by most retailers, which makes grate and egg to the curb $12.90, stove and chestnut $13.15, pea $11.10 and buckwheat $8.50.

Lake—Shipments have dropped to 42,300 net tons for the week and are now about at a standstill. The clearances were 23,800 tons to Duluth and Superior, 7,500 tons for Green Bay, 7,000 tons for Milwaukee, 3,000 tons for Portage, and 1,000 tons for Port Huron.

Freight rates are 60c. to Duluth, 70c. to Green Bay, 75c. to Milwaukee, $1.25 to Portage, and $1.50 to Port Huron.

Coke—Demand is good, but jobbers are not able to obtain much. The report is that furnaces are not getting what they want out of their contracts, the larger consumers being in the open market freely. Quotations are: $18 for 72-hr. foundry, $17 for 48-hr. furnace and $13.50 for low grades at the ovens.

CLEVELAND

Receipts for Lakes Decline—Chamber of Commerce Works Out Plan for Distribution—Utilities Board of Ohio Seeks Modification of Order 10.

Bituminous—Under the plan for coal distribution now being placed in operation by the Cleveland Chamber of Commerce Coal Committee, householders and other users of domestic coal are to continue to order the winter's supply in the usual manner. The committee proposes to see that retailers

obtain sufficient fuel to supply immediate needs of the city until the close of the lake season, when coal will be more plentiful. If sufficient coal is not obtained by dealers, they will be assisted in getting cars into their yards.

Under the recently adopted allocation plan which is retroactive to Sept. 1, the city will require 115 cars of coal daily. Receipts so far, however, show that the average is much less than that figure. Even if the full quota were to be delivered by operators, it is believed the city would not be saved from a severe shortage next winter. Each dealer will report daily the amount of coal received for heating purposes. These figures will be totaled by the committee to see if the minimum of 115 cars is being maintained.

Although Northern Ohio cities have decided to give the operators a chance to make good on their assurance that sufficient coal would be provided to handle the fall demand, the Ohio Public Utilities Commission is still urging the modification of Order 10. The Michigan commission has refused to join the movement, believing that coal supplies of that state would not be improved by changing the order.

Lake—Notwithstanding the stimulus of Order 10 and many evidences of better freight movements, coal receipts for the Lakes are lagging behind the record established prior to Labor Day. Shortage of cars and labor at the mines is the cause. Stocks at the Lake front are low. At the rate shipments are now coming forward receipts for September will fall short of those for August when the total was 4,408,788 tons. Shipments for the season up to the 11th of the month were less than 13,000,000 tons as compared with 16,331,581 tons for same period last year and 18,327,706 tons in 1918.

Retail prices of coal per net ton delivered in Cleveland are:

Anthracite—Egg $16@$17.50, chestnut and stove $16.25.

Pocahontas — Shoveled lump $16, mine run $12.50.

Domestic Bituminous—West Virginia splint $13.25, No. 8 $12, Millfield lump $14.50, cannel lump $15.

Steam Coal—No. 6 and No. 8 slack $12.60@$12.75, No. 6 and No. 8 mine run $13.60@$14.25, No. 6¾-in. lump $14.45.

MILWAUKEE

Increasing Receipts Encouraging Trade —Anthracite Outlook Good, but Soft Coal Supply Causes Anxiety — Prices Unchanged.

Receipts by Lake during the first half of the month exceeded those for the same period last year, but increase by rail is not as satisfactory as could be wished, and commercial bodies are making effort to secure a betterment of the rail supply.

The hard coal situation is fairly good and deliveries are being made freely. There has been a tendency on the part of heavy consumers to hoard anthracite, but nothing has been done to check the evil thus far, owing to the assuring supply and the fact that fully 60 per cent of the city's hard coal consumers have received their needs.

The bituminous outlook is causing considerable anxiety. It is asserted that there is plenty of soft coal being offered, but wholesalers are loathe to stock up, because of a lack of confidence in the maintenance of present prices.

There has been no change in the price schedule since the last report, and it is almost safe to assume that the peak has been reached. The outward movement of coal by rail keeps pace with the car supply. Between this steady drain and local deliveries the dock yards are not accumulating adequate stock piles.

Receipts by Lake for the season up to the middle of September aggregate 562,046 tons of hard coal and 1,286,670 tons of soft, against 617,780 tons of the former and 2,335,964 tons of the latter during the same period in 1919.

Inland West

CINCINNATI

Artificial Wave Brings Relief — Demand Continues Strong — Car Supply Shows Improvement — Profiteering Investigation Continues.

Coal men are getting enough fuel to satisfy all demands. What coal was denied the local trade by reason of the car shortage was partly made up by the arrival of large tows down the Ohio River, made possible by the creation of the second artificial wave of the season.

There continues a great demand for coal from all sources. It is next to impossible to get large supplies of hard coal and the finer grades of bituminous, due to the export business and the zoning system now in vogue.

As the cool days draw nearer, the public is placing orders for large amounts. Industrial plants are trying to get a reserve supply to stall off any possibility of shutdown.

The car supply continues to grow a little better, but is far from normal. Towns adjacent to Cincinnati are still short of fuel and likely will be unless there is a marked improvement in car supply.

The trade is interested in the talk of investigating alleged profiteering in coal sales and the trials to be held in the near future of coal men who have been indicted under the Lever Act. In Covington the Eastern Kentucky operators have brought suit against the Government to prevent prosecution under this law.

CHICAGO

Local Organizations Undertake Solution of Coal Problem—Heavy Demand Maintains Prices — New Firms Enter the Field.

The Chicago public is kept in a continual state of agitation over its coal problem. During the week, a statement appeared in the press to the effect that L. T. Orr, Chairman of the Chicago Real Estate Board Coal Committee, had said that unless heavy supplies of fuel are shipped into Chicago many homes and apartment buildings will be without coal during the coldest months of the season. The committee also recommends that the Interstate Commerce Commission continue for the time being the priority in favor of open top cars for coal mines. The Chicago Association of Commerce is also undertaking a campaign, aiming to arouse the public to a realization of its coal problem.

The market showed practically no signs of change during the past week or 10 days. The demand for all kinds of coal keeps up without abatement and the local market is flooded with anxious purchasing agents.

The usual wide range of prices prevailed during the week. Domestic is selling anywhere from $4.75@$8.50, while steam coals on the open market are $6.50@$8, all f.o.b. mines. The demand continues without any signs of weakening, except in the Northwest. Shipments from Kentucky and West Virginia, via Lakes, have been so satisfactory that the demand for Illinois and Indiana coals in the Northwest has weakened considerably.

COLUMBUS

Slight Decline in Production in Ohio Fields — Prices Are Still High as a Result of Bidding for Free Tonnage— Lake Trade Is Progressing Satisfactorily.

Little change has taken place in the Ohio coal trade during the past two weeks. Production is still largely restricted by car shortage although an improvement has taken place.

The output in the Hocking Valley and Pomeroy Bend fields is now estimated between 60 and 75 per cent. Eastern Ohio production declined to not much over 55 per cent of normal. Cambridge and Crooksville still report approximately 65 per cent car supply.

As a consequence of the Lakes priority a considerable tonnage is moving from Ohio and West Virginia to the Northwest. A slight falling off in dumpings at the Toledo docks as compared with previous weeks is reported, but this is due to congestion and lack of vessels. Lake bidding for tonnage ranges from $5.50 to $6.50 at the mines.

Retail dealers are hard pressed for tonnage to care for urgent orders. Quotations show a wide range. Hocking lump retails $8.50@$10.25, while Pomeroy lump is $9@$10.75. West Virginia grades retail $10@$11.50 and Pocahontas when obtainable sells from $12@$13.50 and even higher. Some Kentucky coal is also being sold from $10@$11.25.

Steam trade is becoming more active as a larger tonnage has been available during the past few weeks. Most of the larger users have sufficient coal to continue operations but have not been able to stock up. Public utilities are receiving sufficient fuel under priority rulings. Railroad demands are heavy.

Some labor troubles are reported from the Hocking Valley field. Loaders are now agitating for a higher scale to equalize them with day laborers, who were recently increased $1.50 a day. So the circle goes around and production continues to suffer.

Prices at the mines, of the principal coals used in Central Ohio are:

Hocking lump	$5.50@$8.50
Hocking mine-run	5 00@ 8.25
Hocking screenings	4.75@ 8.00
Pomeroy lump	5.50@ 8.50
Pomeroy mine-run	5.25@ 8 25
Pomeroy screenings	5.00@ 8.00
West Virginia splints, lump	6.00@ 8 75
West Virginia splints, mine-run	5.50@ 8.50
West Virginia splints, screenings	5.00@ 8 00
Pocahontas lump	7.50@ 9 00
Pocahontas mine-run	7 00@ 9.00

INDIANAPOLIS

Uncertainty Rules Local Market — Little Purchasing Being Done — Operators Contract for Outside Delivery— Free Coal Is Scarce.

Because of the uncertainty of just what price the Indiana coal commission will fix on the various grades of Indiana coal, the market throughout the state is somewhat shaky. The larger industries are buying on a short market and so far have shown little inclination to build up reserves against winter use. Domestic consumers are following the lead of the large users and the demand for the little quantity of free coal on the market has slowed up considerably.

In the meantime, operators are making all the outside contracts possible since the law, it is thought, will not be able to affect contracts made outside the state nor the distribution of contract coal. The contracts are being made at about the same prices that have ruled in the Indiana field for the past two months.

Jobbers state that because of embargoes, coal is not coming in from the East. They are also unable to get Kentucky coal because of strikes in that field, leaving the Indiana district about the only one left to work and in the Indiana field there is scarcely any free coal. There will be even less available if operators continue making outside contracts.

DETROIT

Bituminous Receipts Adequate for Current Requirements Only — Modification of Priorities Urged—Demand Is Active for All Fuels.

Bituminous — Supply of bituminous shows no improvement. Shipments are just about sufficient to meet requirements for current consumption of public utilities and industrial plants. Little or no excess supply is available for increasing the steam reserves or for stocking up retailers' yards.

The movement from West Virginia and Kentucky mines is limited almost wholly to consignments applying on long time contracts. Ohio mines are sending in a small amount of coal and termination of labor difficulties in Illinois and Indiana districts is making possible a larger supply from those fields.

Unless the Lakes and New England priority regulations are modified in the near future, there will be a troublesome shortage in Michigan this winter. This aspect of the problem was given consideration Sept. 15, at a conference in Columbus, Ohio, between public utility commissioners from Michigan, Ohio and Indiana. The course of action has not been fully decided, though an appeal to the Interstate Commerce Commission in behalf of the Middle-Western states is being considered.

Anthracite—Supplies of anthracite are very low and receipts are small. It will be necessary to substitute bituminous or coke as a winter fuel in many Detroit homes, as conditions encourage no hope that hard coal will be available in adequate supply. Some of the dealers report that a small amount of anthracite is coming from mines of independent operators. The price to consumers ranges as high as $20 on prepared sizes.

ST. LOUIS

Labor Situation Is Better—Car Supply Tightens—Little Coal Being Accumulated—Prices Are Firmer—Outside Demand Is Strong.

Very little storage coal is being accumulated and dealers experience difficulty in supplying their trade. Steam situation outside the city is in bad shape. Public utility plants are running short, while receipts from west of the river continue to decline.

Labor troubles are quieting with the exception of small local disturbances, but the outlook is not good. Car supply is tightening again, 30 to 50 per cent placements being obtained during the past week.

Railroads are absorbing heavy tonnage. Contracts have recently been made for shipment to southern market as far as New Orleans, while northern and eastern points continue to take everything available. It is understood the City of Chicago has just contracted for a large tonnage from a concern here.

There is no change in domestic prices. Standard and Mt. Olive prices for St. Louis shipment are $4@$5. For outside delivery, prices are $6@$8.50 on all sizes. Carterville prices range $4.50@$5.50 among the big operators, but some are getting as high as $8@ $9. Similar conditions obtain in the Duquoin field, though most of that coal is going on the open market.

There is no anthracite coming in, but a little smokeless is moving through, with some coke from Alabama. No Arkansas coal is available.

South

BIRMINGHAM

No Improvement in Spot Coal — Production Increases with Better Car Service—Labor Conditions Are Better.

There has been no improvement to meet the demands of spot buyers. Some small utilities that depend on the spot supply are in somewhat straightened condition. Railroads are confiscating heavily.

The demand for domestic is strong, there not being enough of this grade mined to meet contract obligations of the mines. No stocks have been accumulated and consumers are making heavier inroads on the supply in yards.

Up to the last few days the car supply on the Southern Ry. has been very poor, but some relief has been noted this week. Other coal-carrying lines have furnished a fair car supply.

Coal production for the week ending Sept. 11 (the first period affected by the general strike) shows a loss of only about 8 per cent as compared with the previous week. Pay days and Labor Day were responsible for a heavy loss in production in addition to the car shortage.

Reports indicate that very few miners have joined the union since the general strike call, the greatest loss of labor being due to intimidating practices of union sympathizers. The indications are that next week will bring about a noticeable break in the ranks of the strikers. The organizations at practically every large mine in this field are intact and no interest is being manifested toward affiliation with the union.

LOUISVILLE

Market Slightly Softer on Eastern Kentucky Coals—Demand Is Strong— Better Prospects for Retailers' Supplies—Car Supply Is Still Poor.

The market is easier on Eastern Kentucky coals due to lighter buying for export and low prices quoted by utilities. It is claimed that assigned-car coal has slumped from $9.50@ $5.50 for gas mine run.

Some Eastern Kentucky coal is moving through Savannah, but practically none through Charleston or the Virginias at this time. There is a much better Southern movement, due to the Alabama strike, some big industrial consumers in that district placing large orders in the Kentucky fields.

With by-product plants and general utilities filled up with Eastern Kentucky coal it is claimed that the market will again be in shape to take care of domestic and general industrial business. However, operators are not inclined to screen coal at this time.

Reports have been received of Eastern Kentucky gas mine run being offered at $8 a ton, but none can be had at the price. It is claimed that New England is now offering but $5, and some Southern districts $8.

Local coal men doubt that coal will sell for any such low prices, in view of the export situation and the fact that retail yards are empty, along with a continued shortage of cars. However, it is pointed out that much of the long hauling has been handled, and that cars will make better time on shorter hours to the central districts.

Quotations on Eastern Kentucky coal at mine are, gas mine run $9.25@ $9.50, block $10.25@$10.50, non-gas or steam $9@$9.50.

News From the Coal Fields

Northern Appalachian

PITTSBURGH

Car Supply Little Increased — Buyers Are Eager, and Market Is a Shade Higher—Lake Shipments Are Ample.

Production of coal in the Pittsburgh district continues to be limited by car supply in general, though in the case of not a few mines the limiting factor is the number of hours per week the men are willing to work. Car supplies have improved but little since the first of the month, and there certainly has not occurred as much improvement in the period as was expected. Other lines of industry report very decided improvement in transportation conditions since Sept. 1, the date on which the railroads began to earn their revenues themselves.

At this writing no formal order has been received continuing the Lake coal priority, but it is understood that the necessary formalities will occur. Operators express the opinion that the Northwest will be sufficiently coaled for the winter, although the movement will not equal what was asked for.

Coal consumers show remarkable willingness to pay high prices for coal, and the market has stiffened a trifle further in the past week. A theory proposed is that while coal deliveries have been increasing somewhat, the progress of the season has curtailed the expectations of some consumers that materially lower prices were about to prevail, thus bringing them into the market for coal for storage.

While prices cannot be quoted very closely, sales being made at so wide a range, the market in general may be regarded as about 25c. higher than a week ago. Spot coal ranges $8.25@$9 for steam grades and $9@$10 for gas and by-product, per net ton at mine, Pittsburgh district.

CONNELLSVILLE

Closer Bargaining on Spot Coke—First-Half Contracts Offered — Quotations Show a Wide Range.

Furnacemen are making a more determined effort to get such spot coke as they need at lower prices, while operators are making an equally determined effort to hold prices up. Some of the operators are in better position than others to hold their coke or apply it on contract, the result being usually rather a wide range of quotations, with consumers nibbling only at the lower offers. On most days of the past week limited quantities of spot furnace coke have been available at $16.50, and all such offerings have met with heady sales, but coke held at $17 and higher has generally been neglected. Spot foundry coke has held up somewhat better, but both grades may be reported off 50c. from a week ago.

Interest in first-half contracts for furnace coke is beginning to be manifested, but buyers and sellers who have shown their positions are far apart and it is doubtful whether any business will be closed in the near future. A large producing interest has been approaching regular customers with an offer of first-half furnace coke at $14, a quotation that has not aroused much interest. So far as can be ascertained no counter bids have been made. There is reason to think that some consumers would cover at least part of their requirements if they could do so at $10. In general, the theory of furnaces seems to be that the pig-iron market is going to show less favorable signs soon and may thus tend to temper the price views of coke operators.

The spot market is quotable $16.50 @$17 for furnace and $18@$18.50 for foundry coke, per net ton at ovens. On contract coke there are asking prices of $14 for furnace and $15 for foundry, but no quotable market.

The *Courier* reports coke production in the Connellsville region in the week ended Sept. 11 at 217,680 tons, an increase of 21,090 tons.

UNIONTOWN

Embargo Closes Eastern Market—Foreign Market for Coke Develops — Car Placements Show Improvements—Some Congestion at Yards.

Coke in furnace grades is selling in the local market from $16.50@$17.50 per ton. Byproduct coal commands $10, with Pool 34 listed at $10.50 on the Pennsylvania and $9.50@$10 on the Baltimore & Ohio. Pennsylvania R.R. and Baltimore & Ohio R.R. steam grades are $9 and $8.50 respectively.

Coke price was depressed by the Western Maryland embargo of Lake Erie car shipments via its lines. This arbitrarily closes the Eastern markets to coke originating as Lake Erie loads and forces diversion of the now considerable Lake Erie tonnage into the valley markets of the West and Northwest. Here the prevalence of the by-product oven necessitates a price reduction. Lake Erie coke is running $16.50 @$17 while that on other roads is $17@17.50.

Brokers this week had inquiry for a large cargo tonnage for export. This added instant tone to a flagging market and it is likely the new export field will be at least partially explored by local producers. Policy has been to ignore inquiries for foreign destination as long as blast furnace customers were buying. As domestic needs approach full supply the foreign market is hailed as a distinctly favorable factor in price fixing.

Car placements were good last week. Supply of cars for coke exceeded those for coal loading. Lack of Pennsylvania R.R. motive power continues the congestion of yards and tracks. Rainey had been cleared during the week to less than 100 loads, but Youngwood continues with an average of 1,500.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

BITUMINOUS COAL

	1920 Week	1920 Calendar Year to Date	1919 (a) Week	1919 (a) Calendar Year to Date
August 28b	11,383,000	347,406,000	10,443,000	297,713,000
Daily average	1,897,000	1,698,000	1,741,000	1,455,000
Sept. 4b	11,171,000	358,577,000	9,651,000	307,364,000
Daily average	1,862,000	1,703,000	1,821,000d	1,459,000
Sept. 11c	10,566,000	369,143,000	11,046,000	318,410,000
Daily average	1,994,000d	1,710,000	1,841,000	1,475,000

ANTHRACITE

	1920 Week	1920 Calendar Year to Date	1919(a) Week	1919(a) Calendar Year to Date
Aug. 28	1,818,000	57,530,000	1,941,000	54,619,000
Sept. 4b	1,084,000	58,614,000	1,349,000	55,968,000
Sept. 11	546,000	59,160,000	1,408,000	57,376,000

BEEHIVE COKE

United States Total

Week Ended Sept. 4 1920 c	Week Ended Aug. 28 1920 b	Week Ended Sept. 13 1919	1920 to Date	1919 a to Date
439,000	396,000	445,000	14,890,000	13,692,000

(a) Less one day's productioo during New Year's week to equalize number of days covered for two two years. (b) Revised from last report. (c) Subject to revision. (d) Week of Labor Day holiday.

Coke production is increasing, last week a total of about 220,000 tons being made. Recent liquor raids in Uniontown promise to suspend the depressing influence of sale of intoxicants to labor. Had not the embargo cut off Lake Erie cars from Eastern markets the production of coke would have been extremely satisfactory.

FAIRMONT

Car Supply Is Excellent—Lake and Tidewater Shipments Are Heavy—Further Price Decline Is Seen.

Time lost due to Labor Day holidays was largely made up during the balance of the week because of a very excellent car supply. By the middle of the week more miners were at work and a big dent was made in the supply of cars that had accumulated on Wednesday.

The increased car supply made for a larger movement of coal, although so many operators had failed to fill their quotas of Lake shipments that toward the end of the week the Baltimore & Ohio R.R. was confiscating coal for Lakes. As soon as that was resorted to, however, some shippers began to send more tonnage to the Lakes. Consignments to Tide were running larger in volume than during previous weeks, some of the coal so shipped, however, being for New England under Order 11. While export permits were rather hard to secure yet toward the end of the week this movement was growing in volume.

There had been no further softening of prices in northern West Virginia during the week but larger production and a somewhat limited export business rather presaged lower prices.

NORTHERN PAN HANDLE

Production Decreases—Lake Shipments Are Heavy—Prices Slightly Lower—Labor Conditions Are Better.

Production for the period ending Sept. 11 was somewhat less than during the previous week. Mining of coal was generally suspended on Labor Day so that operators had only five days of production during the week. Car supply in the district was not equal to that of the previous week. As a result, very little coarse coal was left for commercial shipments after Lake requirements were met.

While the general scale of prices was somewhat lower than during preceding weeks the heavy Lake demand and the scarcity of coal for commercial shipment tended to stabilize prices.

Such coal as was produced was moved without serious delay, no congestion being reported at any point. Labor conditions were considered as being generally satisfactory, although mines were still short of enough men.

Eastern Ohio mines were laboring to some extent under a transportation handicap, the supply hardly being up to that observed during the period ending Sept. 4. The Lake movement was large, however, and most mines were meeting this requirement.

Middle Appalachian

KANAWHA

Labor Day and Poor Car Supply Curtail Production — Lake Shipments Are Heavy — Market Softens — Shippers Protest New England Priority.

So far as reported no coal was mined in the Kanawha region on Labor Day. Production was much under that recorded during previous weeks, not only because of Labor Day but also due to an extremely poor car supply. While it is true that loadings in the region were fairly large on the two days following Monday, that was only because there had been no occasion to use cars supplied on that day. After that, the car supply dropped to about 45 per cent and remained there for the balance of the week.

While there was a movement to Tidewater for export there was said not to be so heavy a demand as obtained during a part of August. Producers were very reluctant to make shipments to Tidewater for account of New England. Lake movement reached fairly large proportions for a time during the week. Kanawha operators urged a further suspension of Order 11 but received no encouragement from the Interstate Commerce Commission.

Not more than $9 was offered for export and coal for inland points was about $7. While eastern buyers for the most part were out of the market, yet there was ample market for all the coal produced, owing to numerous priority orders and to heavy contract requirements.

LOGAN AND THACKER

Logan Makes Record Production for the Year—Williamson Labor Situation Quiet—Better Car Supply Is in Prospect—Prices Are Lower.

Production was affected to a less extent in this territory by a holiday than in any other part of the state, largely because fields are still operating on a non-union basis.

Not only was there six full days of production in the Logan field in the period ending Sept. 11, but this was the banner week of the year, the output reaching a total of 250,000 tons.

There was a promise that production would be even better for the week ended Sept. 18, indications pointing to an increased car supply. Lake shipments were running much larger, reaching almost 30,000 tons during the first half of the week. It was possible to ship to Tidewater during only the first part of the week as high-volatile coal from points west of Logan was embargoed during the latter part. Prices were not quite so high as they had been during the previous week, the average quotation on export and inland coal being $7 and spot market about $9.

While one coal company, dominated largely by Columbus capitalists, is said to have signed the union scale in the Williamson field, yet there were no other defections from the ranks of the operators and conditions remained practically unchanged. There were no disturbances during the week, due to the continued presence of Federal troops. Production continued at the rate of between 50,000 and 60,000 tons.

The strike loss was still running over 100,000 tons a week. It is estimated that since the beginning of the strike there has been a loss in production of approximately 1,000,000 tons in the Williamson field alone.

NEW RIVER AND THE GULF

Car Supply Continues Inadequate — Much Coal Goes to Tide — Market Declines Further — Export Prices Are Leading.

A poor car supply in both the New River and Winding Gulf regions and idleness incidental to Labor Day reduced the output much below that obtained in preceding weeks. Prices also had declined somewhat.

While of course the Labor Day idleness caused a loss in production in New River field, yet the loss was not more serious than that caused by an acute shortage of cars throughout the week. There was not a production of more than 15,000 tons a day during the last four days of the week.

Tidewater terminals claimed the larger part of the production. Although Order 11 was again in force, New England shipments were not resumed to any appreciable extent. At the same time Lake shipments and consignments to inland west points were rather slim.

There was less avidity on the part of buyers to secure coal at any price, owing to the general downward trend of the market. However, there was an outlet for all coal mined, much still being exported.

Difficulty in securing cars also curtailed production in the Gulf region during the greater part of the week. Mines dependent upon the Chesapeake & Ohio R.R. had only a 50 per cent supply during most of the week. Conditions were little better on the Virginian Ry.

VIRGINIA

Production Slumps — Prices Recede Further, Although Output Is Easily Marketed — Wagon-Mines Obtain New Ruling.

A production of 117,596 tons for shipment was the best the mines in Southwest Virginia were able to do in the period ending Sept. 11, owing to a partial cessation of operations on Labor Day. The tonnage represents 67 per cent of full time capacity, in addition to which 30,000 tons were produced for use in the ovens. There was a total loss of 56,000 tons, 27,000 of which were lost because of an inadequate car supply. In addition, there was also a loss of 13,000 tons or 7 per cent because of a labor shortage. Power disability cost 15,000 tons or 9 per cent, the power shortage, however, being confined to mines on the C. C. & O. R.R.

Production had entirely ceased at

wagon mines, owing to the continuance of Order 14, wagon mines under this order being unable to secure any open top cars. The issuance of Service Order 17 providing for car placements where facilities enable 24-hr. loading of empties will materially help the wagon-mine operations.

While miners were working with a fair degree of regularity, few mines had a full complement of men, that being responsible in part for the loss from a labor shortage.

There was a further recession of prices in the Virginia fields though the demand was still more than sufficient to take care of all the coal produced.

POCAHONTAS AND TUG RIVER

Production Again Declines—Car Supply Is Poor—Delay at Ports Curtailing Future Car Supply.

Labor Day made a perceptible difference in the production of mines on Norfolk & Western R.R. in both the smokeless fields for the week ended Sept. 11. At the same time a car shortage in evidence throughout the week cost mines about one-fifth of their usual working time and the indications were that the car shortage would be more acute during the next week.

There was a reduction of 84,350 tons of coal in the Tug River region. Mines as a whole lost about 20 per cent working time because of car shortage. Owing to lack of boats at Lambers Point and Sandusky Lake docks there was considerable delay in unloading cars, that being responsible in part for the inadequate transportation facilities available.

The recent modification by the Interstate Commerce Commission of the order relating to the use of open-top cars, which permits 38-in. open-top cars to be loaded with commodities other than coal, is also contributing to the car shortage.

Labor Day idleness at many mines was responsible for a rather material reduction of output in the Pocahontas field during the week ending Sept. 11, fully half the mines being idle on the legal holiday. To the decrease caused by holiday idleness should also be added that caused by a growing scarcity of cars manifest during the week. It is estimated that not more than an 80 per cent car supply was furnished. Prospects were not as encouraging for a good supply of cars for the next weekly period as has been the case during the preceding weeks.

While there was a large movement of coal to Tidewater, much of it for export, yet dumpings there were rather slow, so that equipment was not being released for use again as promptly as was necessary in order to keep up the supply of cars.

EASTERN KENTUCKY

Car Supply Improves Slightly — Production Loss Attributed to Labor Day — Export Is Embargoed— Good Movement Westward.

But for the intervention of a holiday it is believed that there would have been increased production in the Eastern Kentucky fields. With miners in many instances observing Labor Day, not so much coal as usual was mined. Production at Chesapeake & Ohio R.R. mines in eastern Kentucky remained at 110,000 tons or 47 per cent, there being a loss of 122,000 tons. Car shortage counted largest in the loss, cutting down production to the extent of 102,000 tons or 44 per cent. In that respect, however, losses were no heavier than had been the case during the previous week. There was an increase of 3 per cent in the loss from general causes.

Inasmuch as all high volatile mines west of St. Albans, W. Va., were debarred from the export market, no coal was shipped to Tidewater, nearly all of the output finding its way to western markets, including Lake points though there appeared to be less coal shipped for Lakes than had been the case during the previous week. On Labor Day no coal was shipped to the Lakes, either from the Big Sandy Division of the C. & O. R.R. or from the Sandy Valley & Elkhorn mines.

Middle Western

WESTERN KENTUCKY

Strikes and Car Shortage Holding Down Production — Labor Situation Is Very Unsatisfactory — Prices Are Slightly Higher.

There has been a deadlock for the past few days between Muhlenberg County operators and the miners union, resulting in practically all mines in that county being down, with an additional number in adjoining counties. Production of the field has been reduced about 33 per cent on the capacity basis of figuring. Operators agreed to an increase of $1.50 a day for day workers, as in Indiana and Illinois, but the union is holding out for increase to tonnage men. The operators, after several conferences, have taken the matter up with President Lewis, asking that the men be sent back to work, as the tonnage argument is held to be unauthorized.

Reduced output in these counties has not affected production of the field as a whole, as other mines that are working are able to take all cars offered, resulting in 76 to 80 per cent car supply.

The Frankel Coal Co., one of the smaller operating companies and one other, are reported to have given in to the strikers, resulting in their being ousted from the West Kentucky Operators' Association. Other operators are standing firmly.

There is a good demand for production, and mines are finding a ready market in various districts. Prices are slightly higher in the field in spite of the softness in other fields.

Quotations show lump coal at prices ranging from $8@$8.75; mine run, $7.50@$8; screenings, $7@$7.75. In fact some screenings are reported to be selling at $8 a ton, f.o.b. mine.

MIDWEST REVIEW

Market Is Strong—Railroad Fuel Market Is in Queer Position—Labor Situation Is Not Satisfactory.

The market has been very strong for some time past and unless all surface indications are wrong, it will continue in this condition for the balance of the season.

Nearly all the big industries are in the market, and buying steam coal in small lots at prices varying from $6.25 up to $8.50, according to grade and quality. No new contracts have been let, nor have any large orders been placed.

Those railroads who are fortunate enough to have subsidiary coal corporations are getting all they need and are in a position to produce more than they require, almost any time. These roads are not able to dispose of their surplus to the railroads in actual need, because of a ruling or law put into effect some time ago which prohibits a railroad from disposing of its coal to anyone but itself. It is understood the Chicago & North Western R.R. is in a position to produce much more coal than it actually uses, but on account of this ruling it is unable to come to the assistance of some of its competitor railroads, who are actually in need of coal, and who are buying daily on the open market.

The labor situation does not show any sign of great improvement. Small and unimportant strikes are reported nearly every day. For instance, one of the larger mines in the Peoria district is out on a strike over some trivial matter.

Southern

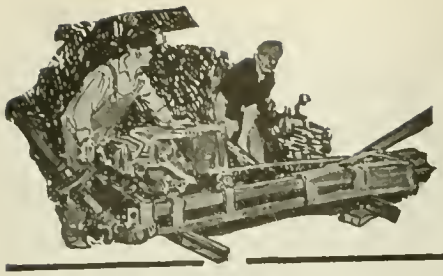
ALABAMA

Union Organizers Are Very Active—Intimidating Tactics Used — Strike Losses Are Reported Small.

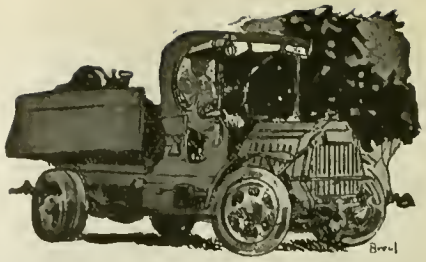
The United Mine Workers of Alabama District 20, who were called out on general strike in an effort to force recognition of the union and negotiate the so-called "Blue Book" contract, are very active in their efforts to organize this field. However, it is claimed by coal operators that not more than 2,000 additions have been made to the ranks of union men already on strike—many since March—and that the total now out will not exceed 7,000 in the entire field.

The places of many of the strikers have been filled and production would closely approximate normal if cars were available for loading. With the exception of possibly two or three small mines, every colliery is running and a steady gain is being shown in production and working forces.

The action of union mine workers or sympathizers in firing upon trains transporting workers to and from the mines, the dynamiting of houses, and other incidents of lawlessness are tending to intimidate labor to some extent.



Mine and Company News



ILLINOIS

Minonk—Fire has destroyed the tower at the W. G. Sutton coal mine, entailing a loss estimated at $25,000. Besides the tower, considerable machinery was destroyed.

Springfield—Transfer of the property of the Pittsburgh Coal Co. in Sangamon, Macoupin, Montgomery and Bond counties, to the Illinois Coal and Coke Co., has been announced. The consideration is said to have been one million dollars. The Montour mines, north of Springfield, and those at Virden and Girard, together with all equipment and 25,000 acres of coal land adjoining, are included in the transfer. The present output of about 30,000 tons a month will be increased by the new company, it is said, and the shaft at Auburn, which has been sealed for several years, will be reopened.

Marion—After being closed down for sometime, the plant of the Vulcan Coal Co. will be opened up and operated by new owners. The mine was recently purchased by Noah Payne of Marion and Thomas Doyle of Benton, two well known coal men. This is a slope mine and the new owners announce that owing to the high price which is being paid for coal of the grade mined at this place, they will remodel and repair the plant and make it into one of the most uptodate slope mines in the state.

Duquoin—Mine No. 5 of the Jupiter Coal Co., which formerly operated at this place, was recently bought by the Boehmer Coal Co., of St. Louis, and is rapidly being re-equipped with new machinery. The plant was operated for several years and at one time was one of the large producers in this part of the country. Soon after the deal had been made, William H. Greenwood, a well known coal operator, was appointed superintendent of reconstruction work. A new switch is being laid from the Illinois Central R.R. to the mine, and new hoisting engines, shakers-screens, boilers, etc., are being rushed to the site as fast as possible. Several of the buildings which were old and useless were torn down and rebuilt. When this mine is again in operation, a miners' train will be operated daily to convey the miners to and from their work.

INDIANA

Shirkieville—Articles of incorporation have been filed by the Vermillion Coal Co. The company is capitalized at $500,000 and will do a general coal mining business. The directors are A. D. Spears, Albert R. Milward and Henry S. Pinson. All three directors are well known men in the western part of Indiana and all have had experience in operating mines.

Sullivan—A deed for $1,032,775, one of the largest ever recorded in Sullivan County, was filed recently, transferring all the coal property of the Consolidated Indiana Coal Co. to the Templeton Coal Co. The deed contains 213 descriptions and includes the Peerless and Glendora mines and all the coal land, buildings, tipples, track and equipment owned by the Consolidated company in the county. The Temple corporation is composed principally of Terre Haute persons.

KENTUCKY

Louisville—Recent incorporations include the following: Forks Elkhorn Coal Co., at Pikeville, with a capital of $32,000, by W. B. Taylor, Luther Damron and J. H. Adkins; Holley Collieries Co., at Ashland, with a capital stock of $150,000, by S. S. Porter, Dr. M. M. Collins and Edward Holley; Elmer-Elkhorn Coal Co., at Allen, capital $50,000, by Elmer E. George, Gilbert V. George and Arthur D. George; Big Buck Coal Co., at Middlesboro, with a capital stock of $25,000, by J. T. Evans, Shelton Evans and Arthur Gent; Adamson Coal Co., at Jenkins, capital of $60,000, by H. L. Burpo, J. M. Moore and John W. Adams; Brooking Coal Co., of Pineville, with a capital stock of $25,000, by A. H. Brooking, John M. Green and P. T. Cairns.

The Frankfort Elevator Coal Co., at Frankfort, has filed amended articles of incorporation increasing the capital stock from $18,000 to $100,000.

Reports from Whitesburg are to the effect that the Old Colony Smokeless Coal Co., of New York, has paid a half million dollars for the new mining plant of the Dwale Coal Co., on Beaver Creek, Letcher County, and that the company plans additional purchases.

McDowell—The Liberty Coal Corporation increased their capital stock from $100,000 to $300,000. Extensive improvements will be made. Already the construction of many houses has been started.

MARYLAND

Pekin—The Maryland Coal Co., Munsey Building, Baltimore, Md., is planning for extensive operations in coal lands in this vicinity. It is reported that three mines with necessary airways will be opened.

Frostburg—The tipple of the Hillcrest Coal Co., near Kantnet, broke down recently under a heavy load of cars and the side track was crushed. The accident will interfere with loading two weeks. The damage is about $2,500.

MONTANA

Helena—With reduced carload rates on coal from Red Lodge, Bridger, Joliet, Fromberg, Bear Creek, Belfry and Golden, Montana coal operators will stimulate production and go after business in Minnesota and Wisconsin, according to officials of the Montana railroad commission.

The new rate was sought by the Northern Pacific R.R. and was approved by the Interstate Commerce Commission. The new tariff gives a thorough rate instead of a combination of local rates.

NEW JERSEY

Newark—The Burnrite Coal Co. has filed articles of incorporation, with a capital of $3,000,000, to manufacture fuel briquettes and kindred products. Property has been acquired and plans are being prepared for the erection of a new building. The company has also incorporated a subsidiary organization, to be known as the Burnrite Coal Securities Corporation.

NEW MEXICO

Gibson—The Gallup-American Coal Co. have decided to develop their coal properties by means of shafts sunk in the basin, discontinuing the present slope operations when the shaft mines are producing the desired tonnage. The new shafts will be approximately 800 feet deep. Sinking operations have already commenced. The Allen & Garcia Co. of Chicago have been selected to design and construct the plant.

NEW YORK

Buffalo—Capital stock of the North American Coal & Coke Co., W. E. Auld, president, is to be increased from $50,000 to $150,000. Branch offices have been established in Montreal and Pittsburgh. The company has an option on a coal mine in the Pennsylvania bituminous district and official inspection of it is in progress.

OHIO

Columbus—The Pittsburgh Coal Co., through its Columbus office, has opened a mine in the Big Sandy district of Kentucky under the name of the Pike-Floyd Coal Co. The mine is being op-

erated and the coal is being stored as the switch from the C. & O. R.R. has not been completed.

The Morrisdale Coal Co. has been chartered with a capital of $200,000 to develop a mining property in West Virginia. The incorporators are E. F. McManigal, R. B. Cuthbert, E. M. Marquard, E. H. Davis and D. A. Evans. The company will be organized in the near future.

Pomeroy—The Pomeroy & Hocking Coal Co., which was chartered several weeks ago with a capital of $250,000, has been organized by the election of Calvin Essex, president; J. A. Stalter, vice-president and Fred Essex, secretary. Completed plans for the company's operation of a large tract in the Pomeroy Bend field will be announced in a few weeks. The product will be sold through the Essex Coal Co., of Columbus.

Cleveland—The Buckhannon Valley Coal Co. has been incorporated with a capital of $100,000 by J. H. Cox, R. B. Burnside, R. S. Rogers, G. R. Johnson and C. W. Sutton.

Steubenville—The United States Coal Co., one of the largest in Jefferson County, is planning for the development of its coal property, comprising about 5,000 acres of land, in the vicinity of New Alexandria. Two or three shafts will be sunk and a 3-mile spur from the Wabash-Pittsburgh Terminal R.R. will be built.

OKLAHOMA

North McAlester—The North McAlester Coal Co. has increased the capital stock from $50,000 to $100,000. This company plans to greatly enlarge its business.

Henryetta—The McGennis Coal Co. has been organized with a capital stock of $75,000. The company will conduct a wholesale and retail coal business.

PENNSYLVANIA

Greensburg—Three men were killed, two seriously and a score of others slightly injured in a fall of slate in the Whitney mine of the H. C. Frick Coke Co. at Whitney, 10 miles northeast of here. All were miners.

Scranton—Plans are being considered by the Scranton Coal Co., for the rebuilding of its Briggs breaker engine and fan houses, recently destroyed by fire, with loss estimated to be $200,000.

Pittsburgh—The Hillman Coal & Coke Co. of this city is preparing to electrify its Isabella, Thompson No. 2 and Tower Hill coal and coke plants in Fayette county, all the power to be furnished by the West Pennsylvania Power Co. The Isabella plant, at Hillcoke on the Monongahela River and Monongahela R.R. is now equipped with electricity on the inside for hauling, cutting and pumping, the power being furnished by their own steam and power plant at the mine. The boilers and engines will be replaced by motors. The Thompson and Tower Hill plants, near Republic on the Monogahela R.R. are operated by steam and compressed air. These plants which are among the largest in the Connellsville coke region, will get their supply of current from the Connellsville station of the power company. It will probably take a year or more, to complete the installations, which are expected to be modern in every respect and the best of their kind.

TENNESSEE

Nashville—The Slate Creek Coal Co., a Delaware corporation, has filed notice of a change in name to the Buffalo Cove Coal Co., and has increased its capital from $1,500,000 to $3,000,000, for increased operations.

TEXAS

Dallas—The City Fuel Co. has been organized to conduct a retail coal business. The company is capitalized at $50,000 and the incorporators are L. G. Waskom, E. D. Balcom and B. J. Jones.

WASHINGTON

Centralia—Mining engineers, who have been employed for several months in making surveys of the coal deposits adjoining Bucoda, estimate that there are close to 20,000,000 tons of high grade lignite coal in the immediate vicinity. Operations will shortly be under way for the reopening of these mines.

Miles—An 8 to 10-ft. vein of solid coal was struck by the incline shaft of the Chinook Coal Co. on the west side of the former Spokane Indian reservation near Detillon Bridge. This newly opened field is about 55 miles northwest of Spokane in the Spokane River Valley, and judging from this discovery with the outcroppings in other parts the coal deposits extend westward from the foot of the Deer Trail Mountains to the Columbia River, and from Miles on the Spokane River to Hunter, or above, in the upper Columbia Valley.

WEST VIRGINIA

Beckley—Instead of having been sold to New York interests the Ingram Branch Coal Co. is under option to a coal concern with headquarters in Sweden. So far, the deal for the purchase of the company has not been closed and even if it should be it is understood that the present management would remain in charge probably for another year.

Purchase has been made by C. H. Mead and associates of the plants, property and assets of the Lick Fork Coal Co., operating near Thurmond. The purchasers thus have available for development about 2,000 acres of coal in the Sewell seam. Production will be increased by numerous improvements and the addition of new equipment. The plant acquired ranks as one of the oldest established in the New River field. It was at one time operated as the Thurmond Mountain Coal Co.

J. Ennis McQuail of New York has taken over the Alpha Pocahontas Coal Co., an operation at Alpoca, Wyoming county, on the Virginian Ry. The purchase price was $750,000. This company's mines have had an average production of 1,000 tons per day. Included in the deal were 1,500 acres of coal land. In the last few months, Mr. McQuail and his associates purchased the Fire Creek Smokeless Coal Co. and the Laurel Coal Co., the plants of which are on the Virginian Ry., also the American Coal Co. and the Algonquin Coal Co., with mines on the Norfolk & Western Ry.

Fairmont—Work at the new plant of the Chesapeake Coal Co. at Barrackville in the Marion County field has progressed to a point where electrical machinery is being installed. The company is putting in a substation and in connection therewith is installing three transformers and a motor-generating

Morgantown — Sale of 285 acres of coal land by Albert G. Titus to John H. Moffit of Charleroi, Pa., believed to represent the Lilly Coal & Coke Co. for the sum of $500,000, ranks as one of the largest sales ever made by an original owner of coal lands in Greene County, Pa., according to word received here.

Huntington — Huntington business men are behind a new coal-selling agency just organized and to be known as the American Export & Inland Coal Corporation, which has a total capitalization of $100,000. General offices of the company will be in Huntington. Chiefly interested in the new concern are: L. W. Blankenship, S. S. McNeer, Harry S. Irons, R. T. Neel and E. C. Wilson, all of Huntington.

Charleston—That owners of the timbered surface of lands the coal rights of which have been sold to coal companies or others cannot remove the timber which might be considered as a necessary adjunct to the mineral development was in effect the decision of Judge Prichard of the U. S. Circuit Court of Appeals rendered in connection with the issuance of an injunction asked for by the United Thacker Coal Co. against L. D. Varney and others. That the timber on coal lands was needed in connection with the development of the coal land was the contention of the United Thacker Co.

BRITISH COLUMBIA

Victoria—Twelve hundred acres of coal lands comprising the properties of the Cedar Mountain Coal Co. and the Indian Mine, near Renton, have been purchased by the Pacific Coast Coal Co. of Seattle.

Some litigation has developed, involving title to some 237 acres of coal bearing land on Vancouver Island, now held by the Granby Consolidated Mining & Smelting Co., Ltd., and being a part of the area now exploited by what is known as the Cassidy Collieries. The result of the first hearing was a judgment for the plaintiffs, the Esquimalt & Nanaimo Ry. Co. The defendants immediately applied for a stay of execution, which was granted.

Traffic News

Utah Public Utilities Commission has refused to grant an increase of 25 per cent in freight rates on coal and ore moving wholly within the state, in accordance with the changes permitted by the Interstate Commerce Commission. The Utah commission holds that, provided the state rates are reasonable and proper in themselves, the amended act gives the interstate body no authority to order them changed. The present freight rates in this state consume 20@25 per cent of the amount obtained for coal from the householders of Salt Lake City

Panama Canal Freights. Westbound steamer rates between the Atlantic and the Pacific via the Panama Canal were advanced Sept. 5, Williams, Dimond & Co., operators of the European Pacific Line, sailing from Boston and New York, announce. The new rates will be equivalent to 85 per cent of trans-continental rates in effect prior to the advance of Aug. 26.

I. C. C. Decision 10197. Case of seven coal operators in Pennsylvania and West Virginia in Avella district vs. Pittsburgh & West Virginia Ry. Co. and Director General. Coal car distribution found to have been unduly prejudicial to complainants. Record held open to afford opportunity for proof of amount of damages sustained.

Industrial News

Monongahela, Pa.—The Home Coal Co. announce that on account of confusing names encountered in its registration in the State of West Virginia, it is necessary to change the name of the company. It will hereafter be known as "The P V & K Coal Company."

Pittsburgh, Pa.—The War Memorial Scholarship Committee of the Westinghouse Electric & Manufacturing Co. has announced as the winners of the four scholarships for the coming college year, 1920-21, Alva C. Corrao, small motor drafting department; Henry Gardiner Symonds, son of N. G. Symonds, manager industrial sales division, Chicago office; J. Dale Seabert, transformer engineering department; and Herbert R. Hillman, son of William A. Hillman who has been a machinist in the works of the R. D. Nuttall Co. for 27 years.

These war memorial scholarships were established in 1919 as a means for perpetuating the memory of those employees of the Westinghouse Electric & Manufacturing Co. and its subsidiary companies, who took part in the war. Each scholarship carries with it the annual payment of $500 for a period not to exceed four years. The payment is to be applied toward an engineering education in any technical school or college selected by the successful candidate and approved by the scholarship committee.

New York, N. Y.—The Mesta Machine Co. of Pittsburgh, Pa., has opened an office in the Singer Building, New York, from which point all its foreign business will be handled. All foreign correspondence should be addressed to the company at New York. The New York office will also be the sales office for the New York and eastern states territory. M. M. Moore, the export sales manager, who has just returned from a several months European trip, will be in charge.

Trade Catalogs

Water Softening and Filtering Apparatus. The Permutit Co., New York, N. Y. Bulletin 101. Pp. 30. Illustrated. Discussion of water rectification or conditioning problems. Advertiser.

Hewlett Link Insulator. General Electric Co., Schenectady, N. Y. Bulletin 49400. Pp. 12. Illustrated. Describes perfected insulator for power cable transmission. Advertiser.

Blueprinting. The B. K. Elliott Co., Pittsburgh, Pa. Wall poster. Pp. 1; 21 x 28 in.; illustrated. Descriptive of papers and machines for making prints—brown and blue.

G. E. Insulating Fabrics. The General Electric Co., Schenectady, N. Y. Bulletin 48,715. Pp. 12; 8 x 11 in.; illustrated. A list of standard insulating fabrics with a brief description of each.

Synchronous Condenser. The General Electric Co., Schenectady, N. Y. Bulletin 41,311. Pp. 10; 8 x 10½ in.; illustrated. Covers power-factor correction and control through synchronous condensers.

Pendential Steel Buildings. The Blaw-Knox Co., Pittsburgh, Pa. Catalogue 21; pp. 32; 7½ x 11 in.; illustrated. Covers the Blaw-Knox line of galvanized sheet-steel buildings, made in nearly every commercial size for a variety of uses. Advertiser.

Association Activities

Harlan County Wagon Coal Operators' Association

The Harlan County Wagon Coal Operators' Association, Harlan, Ky., was recently formed, with J. W. Nolan as president and Virgil Eversole, secretary-treasurer. The object of the organization is to fight for a fair division of open top cars, it being held that the order prohibiting other than tipple mines to load open cars is working an injury on the small operator.

Publications Received

Data Book for Engineers. Locomotive Superheater Co., 30 Church St., New York, N. Y. Pp. 79. Pocket size. Contains tables and data for everyday work. Free copies may be obtained on application to the company.

Fuel Briquetting in 1919. Department of the Interior. Geological Survey publication, by F. G. Tryon. Mineral resources of the United States, 1919—part 2. Pp. 33-36. 6 x 9 in.

Casing Troubles and Fishing Methods in Oil Wells. By Thomas Curtin. Department of the Interior, Bureau of Mines. Bulletin 182. Petroleum Technology 57. Illustrated, pp. 48; 6 x 9 in.

Personals

A. C. Silvius, State Forester, Mifflinburg, Pa., has resigned from the state forestry department, to become secretary-treasurer of the Anthracite Protective Association, an organization of coal land owners in Schuylkill County, who desire to protect their timber from forest fires. He will have his headquarters at Pottsville.

Thomas E. Mulhall of the Central Coal and Coke Co., Salt Lake City, has been appointed general sales manager of the company. Mr. Mulhall has been with the concern since May, 1914. The Central Coal and Coke Co. is one of the largest in the inter-mountain country. It maintains a large retail yard in Salt Lake City and its selling territory covers twelve states.

W. Woodward Williams, Vice President of the Reading Iron Company, Reading, Pa., has resigned and will become assistant to the president of the Pittsburgh Gage & Supply Co., Pittsburgh, Pa. It is understood that Mr. Williams has acquired a substantial stock interest in the Pittsburgh Gage & Supply Co., large jobbers of mill, mine and railway supplies.

J. Lawrence Ferrell has severed his connection as superintendent of the Bailey Fuel Co. at Toler, Ky., to become identified with a Pittsburgh concern for whom he will go on the road.

John J. Pollock, a resident of Lorain, O., and former mayor of that city, will be associated with his brother R. A. Pollock and Peter D. Pollock hereafter in connection with their operation near Rivesville, W. Va.

The Northern West Virginia Coal Operators' Association has secured the services of **J. O. Caldwell** of Washington, D. C., as chief clerk. Mr. Caldwell, who has been in the office of the National Coal Association at Washington, D. C., succeeds **C. M. Stubbins,** the latter having become associated with the Blair-Parke Coal & Coke Company.

Charles Whiting Baker, for many years editor-in-chief of *Engineering News* and, since 1917, consulting editor of *Engineering News-Record*, announces his resignation and the establishment under his direction of The Engineering Business Exchange, 30 Church St., Room 347, New York City, an agency to bring together those desiring to sell any sound engineering or technical business—manufacturing, constructing, selling, or professional—and those seeking opportunities to purchase.

Obituary

Warren Delano, who was killed at Poughkeepsie recently when a horse he was driving became unmanageable, was well known in the coal trade. He was chairman of the Board of Directors of the Vinton Colliery Co. and the Mill Creek Coal Co.; a director in the following: Atlantic Coast Line Co., Atlantic Coast R.R. Co., Chicago, Indianapolis & Louisville Ry. Co., Louisville & Nashville R.R. and the Union Mining Co. of Allegheny County, Maryland. Mr. Delano was 68 years old. His sister, Mrs. James Roosevelt, is the mother of Franklin D. Roosevelt, the Democratic candidate for the vice-presidency.

John Mallergren, Sr., a well known coal operator in southern Illinois died recently in his home at Petersburg, Ill. He was 72 years of age at the time of his death.

John Smythe Richardson, III, said to be a descendant of a former governor of North Carolina and assistant secretary of the West Virginia Coal Association, died of rabies on a Chesapeake & Ohio train at Thurmond, W. Va., en route from Huntington, to a Baltimore hospital for pasteur treatment. He was recently bitten by a pet bulldog and the wound which had been cauterized, had seemingly healed. Symptoms, which doctors said plainly indicated rabies, developed. His wife, Mrs. Marion Richardson, who has been ill six weeks, is at the point of death and cannot be told of her husband's death. Mr. Richardson was 33 years of age.

Daniel S. Jones, died at his home, 131 Madison Ave., Flushing, Long Island, recently, in his seventy-ninth year. Prior to his retirement ten years ago, he was the head of one of the largest coal companies in the section, with yards at Long Island City and Flushing. He was vice president of the Long Island City Savings Bank and a director of the Corn Exchange Bank.

Richard Theodore Davies, general coal agent of the Lehigh Coal & Navigation Co., died on Sept. 3 in Roslyn, L. I. Mr. Davies was born in Buffalo, Oct. 3, 1850. For more than 40 years he had been connected in various capacities with the "Old Company." He was at the time of his death a vice-president of the New York Chapter of the Sons of the American Revolution and secretary and treasurer of the General Society of Mechanics and Tradesmen of New York City.

Coming Meetings

National Safety Council will hold its 1920 congress on Sept. 27 to Oct. 1, inclusive, at Milwaukee, Wis. General Manager, C. W. Price, Chicago, Ill.

Coal Mining Institute of America will hold its annual meeting Dec. 8, 9 and 10, 1920, in the Chamber of Commerce Auditorium, Pittsburgh, Pa. Secretary, H. D. Mason, Jr., Chamber of Commerce Bldg., Pittsburgh, Pa.

The Sixth National Exposition of Chemical Industries will be held in the Grand Central Palace, New York City, Sept. 20-25. The Fuel Economy Division has been added this year.

American Mining Congress will hold its annual meeting at Denver, Col., Nov. 15. Secretary, J. F. Callbreath, Munsey Building, Washington, D. C.

The National Association of Purchasing Agents will hold its annual convention at the Congress Hotel, Chicago, Ill., Oct. 11, 12 and 13. Secretary, L. F. Boffey, 25 Beaver St., New York City.

The Canadian Institute of Mining and Metallurgy will hold its second annual Western meeting at Winnipeg on Oct. 25, 26 and 27; the headquarters of the meeting will be at the Hotel Fort Garry. Local secretary, W. W. Berridge, 905 Union Trust Building, Winnipeg, Canada.

COAL AGE

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Pulverize Your Own

ANNOUNCEMENT has been made that a company is to be formed for the pulverizing of coal and the delivery of the fuel thus pulverized to the cellars of homes. The company proposes to put its energies into developing a market for domestic pulverized coal in and around Kansas City. A capacity of 180 tons a day will be provided at once, and this will be increased to 360 tons in a short time. Steel tanks will be located in the basement of each house as close to the furnace as possible and their contents will be doled out to the burner by an electrically-driven "syncronator."

Other companies of a similar character will be organized soon in Omaha, Buffalo and Salt Lake City. The coal will be delivered by tank wagons, from which it can be unloaded much in the same way as fuel oil. The success in the West of the sale and delivery of pulverized coal demonstrates clearly that this pulverized fuel is well suited for all kinds of heating purposes and that it can be delivered pulverized without difficulty.

Are the coal producers going to let this chance to enter into a manufacturing business pass out of their hands? Why should the fuel be prepared anywhere but at the mines? From that point it could be delivered by specially-constructed railroad cars or by motor trucks, according to the distance to be traversed. Mines that are making an excessive quantity of slack and the coal from which is not the best kind of boiler fuel could enter this business with assurance of success, if, of course, the pulverized fuel they make is not unduly subject to spontaneous combustion. Especially would it be advantageous to avoid mixing coal and thus producing a product of uncertain quality and one more likely to ignite spontaneously.

The project is worthy of the serious consideration of coal operators. Why should the making of pulverized coal be allowed to slip away as has the generating of electric power and the manufacture of byproduct coke and carborundum? Nowhere can power be obtained cheaper than at the mine, where the poorest kind of fuel can be used advantageously for its generation, either pulverized or by means of automatic stokers, and where the costs of living are lower to the workmen than in cities and where land values for plant and storage are at a low limit.

Perhaps within ten years houses will be quite generally fitted to burn coal as dust, for there is no question that this method of combustion, if properly controlled, will give a minimum of smoke and a maximum of efficiency. Is it too much to surmise that the use of such coal may be made obligatory by municipal ordinance? If this is so, it will be a great pity if the work of pulverization is so controlled by non-producers that the producing firms will be unable to enter the business and will then receive from these public-utility fuel pulverizers the same kind of pressure now being brought by present-day public utilities to have the price regulated by Federal and state boards. Surely then will be appreciated the advice "Pulverize your own."

Building Up Foreign Trade in Coal

TO FACILITATE and promote their efforts in the foreign trade members of the Wholesale Coal Trade Association of New York have organized a corporation called the Association of American Coal Exporters. The step is propitious and certain to be beneficial if carried out in the spirit set forth in the official announcement. The bulk of our foreign trade in coal today is on an unstable basis and it behooves the coal men of the East to establish secure and permanent relationships with the demand abroad if the business is to be maintained. So dire is Europe's need for fuel today that any coal can be sold and prices and terms to suit the seller be had.

Within a few years equilibrium will be re-established in the world fuel market and past service will be all important in determining the allocation of business thenceforth. The new association has as part of its program the inspection of coal to insure to the foreign buyer the grade and quality of coal he desires and has purchased, and also to bring pressure upon the American exporter to see that his conduct with those in this country and abroad is such as to reflect nothing but credit upon the business integrity of the trade.

The well informed have recognized the temporary character of the present export market and far-sighted concerns with ambitions for the future of their foreign business have been laying plans for years ahead. The older and larger coal-exporting companies already have foreign connections and several of the younger companies in this trade have the best men available abroad, not to sell coal but to study and become acquainted. Whole-hearted co-operation through the new export corporation will give to members the combined experience of all and will the sooner afford that fund of data so essential to successful operation in so large a field.

More than a year ago a determined effort was made to organize the export trade under the Webb Act, but nothing came of the venture. The prime movers then were the larger companies, most of which had been in the foreign trade in the past, and one of the problems they were considering was how to give the smaller shipper equality of opportunity in such an organization. The smaller concerns appear now to be solving that for themselves, for the new corporation, in the beginning at least, is made up of those who because of lack of strength and experience find a need of mutual co-operation.

Where Is That Book of Ethics?

WHEN the employer decided, on the simple basis of supply and demand, what wages should be paid the employee, there was little difficulty in determining what that rate should be. Whatever would induce the working or the professional man to enter into a verbal or written contract of employment was considered the correct compensation for the employer to pay.

Just recently when a wage controversy was being arbitrated a decision was rendered allowing a certain electric railroad to continue to pay the wage it had been paying, the arbitrators declaring that the electric road must have been paying a fair wage or it would not have been able to induce men to leave other employment to enter its service. It seems a decision not without its elements of justification.

The public has decided that the law of supply and demand must be laid aside, yet it has elaborated no basis by which it may be replaced. We are henceforth to look to ethics for a determination of wages. But we have no ethical standards, no definitions of what is ethical economically. Shall there be a graduation of pay to suit gradations in intelligence and effort? Shall wages be advanced by flat or by percentage increases? Shall the steady worker get more or only as much as the one whose opportunity is irregular? Shall increases be based on the rates paid in the past or shall the status before the last revision be determinative? Shall the man working in a difficult place get more than the man working in an easy one for the same quantity of product? The solution arrived at is sure to be seriously upset by the law of supply and demand, which is thought to be dead but is only sleeping.

An article is usually worth what people will pay for it. The ethical price concerns no one. The man who cannot pay an ethical price for it, or can buy the article cheaper from some one who can produce it at less expenditure of effort, will not pay the figure demanded, and hence the poor fellow who would have made it is unethically laid idle. A man working in a mine with coal hard to drill, shoot or break, by all *prima facie* elements of ethics should be paid more wages per ton, and even per day, than a man working in a soft seam. The man selling a coal of slaty consistency, having to pay more wages, should get a price accordingly.

According to ethics, he should, but will he? Only if the hard material is worth more than the softer. Natural laws have a way of paying little attention to what we poor mortals call ethics. The laws of survival of the fittest may not be ethical on their face, but they wipe out the needless industry, the concern which is making what the public does not want or what the public is unwilling to buy at the price at which it must be produced.

Jett Lauck's Dangerous Suggestions

IN A recent article written for a New York daily, W. Jett Lauck, protagonist for the coal-mine workers, proposes that three boards be formed. He would have an "Industries Board, which would determine through its various divisions, corresponding to the several basic industries, the cost of production of commodities and the quantities of basic articles such as iron ores, copper, cotton and wool, etc., which should be allocated to other industries and the price at which they should be sold. This board should also through its divisions such as clothing, shoes, textiles, coal, sugar, etc., control the distribution and prices of articles throughout their manufacture and their entrance into the retail trade and ultimate consumption."

Other boards which he would advocate are a Food Administration, which "should have control of the production, distribution and price fixing of all foodstuffs from the producer through the jobber to the retailer and the consumer," and a Finance Administration, which, "working in co-operation with the Treasury and the Federal Reserve Board, should determine how the capital and credit of the country should be apportioned until a return of normal conditions. It would thus make sure that credit and capital were not being used for speculative or luxurious uses at a time when they are so grievously needed for essential industries."

"We hold," says the Declaration of Independence, "these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty and the pursuit of Happiness." It has long been recognized that the equality was not of natural gifts, for men are of quite equal mental, moral and physical endowments. W. Jett Lauck must have believed in this inequality or why did his bureau charge so liberally for his defense of the anthracite mine workers?

It refers most evidently to equality before the law, to the equal rights of Americans and British to engage in the manufacture of iron without restriction as well as to other legal equalities. Mr. Lauck would have us believe that those who make clothes, shoes and textiles and who produce coal, sugar, iron ore, cotton, copper, wool and foodstuffs and who trade in these things are of other stuff than men who make "speculative or luxurious products." They are men who may not be allowed the freedom that is granted to the manufacturer of organs, pianos, phonographs, motion pictures, toys, firecrackers and the like.

In fact, to judge by Mr. Lauck, the business of the law is to divide citizens into two groups, useful and ornamental, making the first serfs of the second. The first group must sell to the second group at cost plus a reasonable profit, yet this latter group is allowed to charge what it will for the product made available by the labor and industry of the first.

One cannot pass over his obvious attempt to class the first-mentioned industries as not speculative. One cannot imagine what else he can term the copper and clothing industries, and even the soft-coal business in normal times. Wall Street brokers always so regard them.

However, passing up that consideration, Mr. Lauck believes that the only way to help the staple industries is to deny money to those which are speculative and manufacture luxuries. Does he really expect that money will flow into the staple industries, crippled and regulated as he would have them? The railroad industry, trimmed in the precise manner in which Mr. Lauck would trim the other useful industries, does not find investments moving its way, though the Federal Reserve Board, in the way Mr. Lauck approves, is looking with disapproval on the automobile and the luxury trades generally and is limiting their loans. Loans to the essential industries would be even more closely limited by the crippling restrictions put upon them than they ever could be by any legal limit short of an entire denial of credit.

Railway Traffic Makes a New Record for August

Traffic handled by American railroads during August, according to reports compiled by the American Railroad Association, were larger in volume than ever before during that month. During the four weeks ended Aug. 28, 3,853,822 cars of commercial freight were loaded, compared with 3,580,367 cars in the same period of 1919 and 3,849,026 cars in 1918, reports showed. During the week ended Aug. 28 the total car loading was 985,064, as against 951,653 for the corresponding week in 1919.

Cancels Delinquent Taxes for Prompt Payment of This Year's

Mining companies of Mexico owing taxes for periods before Jan. 1, 1920, may have them canceled if they will pay taxes levied upon them for 1920 before Nov. 1, according to a presidential decree issued Sept. 13. Another decree issued by the presidential office extends the time for filing claims for damages on account of revolutionary activities in Mexico, until Feb. 6, 1921.

Commission Orders Additional Reconsignment Charges

Orders of the Interstate Commerce Commission provide that shipments reconsigned where back hauls or out-of-line hauls are concerned will be subject to the regular rates plus a reconsignment charge of $5 a car. The order is designed to curtail the reconsignment practice with a view of facilitating movement of freight and making available more cars.

Rail Rates May Be Corrected on One Day's Notice

An order of the Interstate Commerce Commission provides that where railroads have made errors in increased rates recently allowed, the same may be corrected on one day's instead of five days' notice.

Mine-Compensation Rating To Drop

The Rating Bureau of the Workmen's Compensation Board of Pennsylvania is expected to announce, before long, a reduction of about 10 per cent in the coal-mine rates for both anthracite and bituminous regions. The new rates will take into account wage increases as well as experience during the year. The final tests and inspections are now being made.

Ohio Mine Fatalities Increase This Year

More fatalities in the mines of Ohio have been recorded this year than during any year since 1913, according to Jerome Watson, state mine inspector. There have been 73 deaths thus far this year and nine out of every ten were due to falling slate. This is said to be due to the reopening of abandoned mines which were in bad condition.

Factory Wages Receding

Average weekly earnings of $28.71 in August for New York factory workers, as compiled for the State Industrial Commission from the reports of 1,648 manufacturers employing 600,000 workers, while marking an increase of 22c. per capita over July, show in analysis that the factory hands did not directly benefit for the month, but the average was raised by the increase in the railway shop payrolls. General factory averages were slightly below July's. Factory reductions in August occurred in the following lines: Automobiles, paint and varnish, cotton goods, men's clothing, men's furnishings and in canning. Gains for the month were noted in the glass, firearms, heating apparatus, railway supply and repair, shipbuilding, fur goods, women's clothing and women's furnishing industries.

NEWS BRIEFS

Terse Items Chronicling Events of Interest to the Industry

France Fixes Prices for Coal Imported from America

The Minister of Public Works of France has fixed the following prices on American coal, according to advices to the Department of Commerce from Paris: C.i.f., French ports, September contracts, $30; three months delivery, $28; six months to one year delivery, $25; for delivery at Mediterranean ports a differential of $2 additional is allowed.

Supreme Court to Decide Validity Of Lever Act

The validity of the Lever Act will be the subject of arguments before the U. S. Supreme Court on Oct. 11. While the case which brings the matter before this tribunal is that of the Oglesby Grocery Co., the arguments will be applicable to several coal cases.

International Union Radicals Beaten for Nomination

The radical element in the United Mine Workers of America has failed in its efforts to nominate national officers of the organization. The board of international tellers announced Sept. 21 that President John L. Lewis, conservative, had been renominated by a vote of 926 to 484 over Robert H. Harlan of Washington for International president. Vice President Philip Murray of Pennsylvania, defeated Alexander Howat of Kansas, for the nomination for International vice president, 740 to 667. William Green, International secretary and treasurer, was renominated without opposition.

Blames British Miners for Fall In Exchange Rate

Discussing reasons for the fall in the American rate of exchange, the London *Chronicle's* financial editor says the action of British miners is largely responsible. Continental countries, he adds, fear, in view of the threatened strike, that they will be unable to get British coal, and realize they may have to buy it in New York. They therefore bought American exchange through London and depressed the rate thereby.

Kansas Miners Lose 28 Per Cent Of Wages in August

Kansas coal miners lost 28 per cent of their wages and the state lost nearly 200,000 tons of coal as a result of strikes in Kansas during August, according to a report issued by James Sherwood, state mine inspector. The figures cover the actual loss of time in every mine in the state. The total number of men involved in strikes was 5,340.

Iowa Union Miners Accept New Wage Scale

Iowa union miners in session at Des Moines Sept. 22 reversed their decision of Sept. 21 and voted to accept the wage contract signed by their representatives and Iowa operators Sept. 7.

Traffic Record Made in Panama Canal During August

All traffic records since the opening of the Panama Canal were broken during the month of August. Three hundred ships passed through the waterway, the toils aggregating $936,209.

J. D. Battle Joins National Coal Association Traffic Section

J. D. Battle has been added to the personnel of the traffic section of the National Coal Association. Mr. Battle has been employed by the Commission on Car Service of the American Railroad Association.

Where Darkness is Turned to Daylight

EVERYONE who has had experience in rush construction work knows the difficulties and dangers under which the night shift labors. In his everyday work man depends more upon his sight than upon any other sense. Destroy or render this useless and the average man is practically helpless. A workman can do only what he can see how to do.

When emergency demands night work, particularly if this be construction where heavy weights must be dealt with and scaffolds of various heights employed, ample illumination is a requisite to both efficieney and safety. The illustration above shows the start of construction of the Loree breaker of the Delaware & Hudson Co., after the destruction of the original building by fire.

The output of several mines passed through this breaker. When the wooden structure burned it was determined to rebuild of concrete and steel to avert any possible repetition of the catastrophe. Since interruption to operation meant heavy losses both to the company and the men the greatest possible speed in construction was desired. Accordingly work was prosecuted day and night without interruption.

As a result of the excellent distribution and volume of light employed the night shift was enabled to accomplish almost as much as either of the other two shifts, three shifts being worked daily. Because of continuous prosecution of the work and the whole-souled co-operation of all concerned, the new structure was completed and coal was being prepared several days sooner than had been thought possible when construction was started.

Simplicity, Labor Economy and Freedom from Vibration Mark the Alliance Breaker

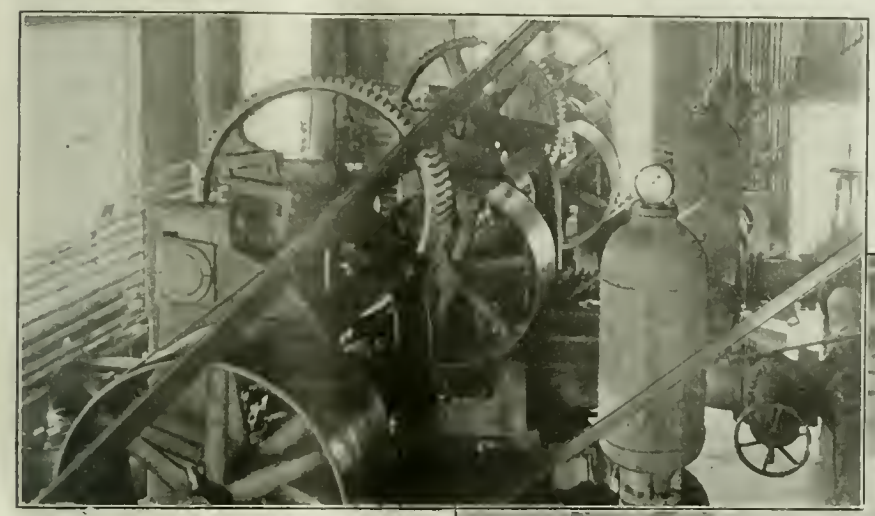
Only the Lip-Screen Material and Waste Rock Are Re-elevated — Rotary Dump Empties Mine Cars—Compressed-Air Uplift Gates Are Used on Hopper—Pockets Are Ranged at Right Angles to Railroad—Belt Delivers Coal to Railroad Cars

By Dever C. Ashmead
Wilkes-Barre, Pa.

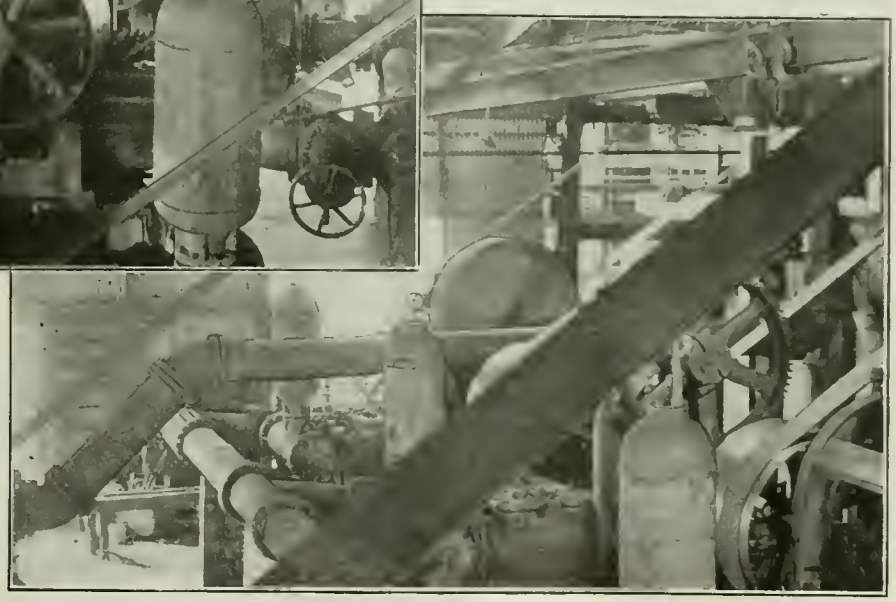
As time progresses there is a steady improvement in the construction of breakers as well as in the methods followed in the preparation of anthracite coal. The trend of the times is toward simplicity of preparation so long as such simplicity lends itself to thoroughness. In the design of a breaker as well as the processes followed in and about the mines, the human factor must now be considered carefully. This is because of the existing shortage of labor and its increased cost. Every device that can be installed to reduce the number of men employed is now a distinct aid to the coal-mining and all other industries. Such devices release workers to more productive employment and tend to increase the output per man.

The designers of the Alliance breaker of the Alliance Coal Mining Co., at Kaska, Pa., have kept constantly in view the idea of reducing to the lowest possible point the number of men necessary to operation. It appears as if they had reached an almost irreducible minimum in this respect although they probably have not, because each time such a condition seems to have been attained some other designer comes along and reduces the "irreducible" still further.

Other factors must be considered beside a reduction in the number of men employed. Among these is accessibility of machinery so that in case of breakdown it can easily be reached and readily repaired. Any delay, regardless of its cause, reduces output and to some extent lessens yield per man. Another factor requiring careful consideration is fire protection, for when a breaker is burned a big mine is closed down until such time as either a new building can be erected or a temporary one provided. This danger is now being met by steel construction.



Pumproom Interior
Room contains six Aldrich pumps each with a capacity of 1,500 gal. of water per minute. Three are used for pumping mine water and three for fresh water.



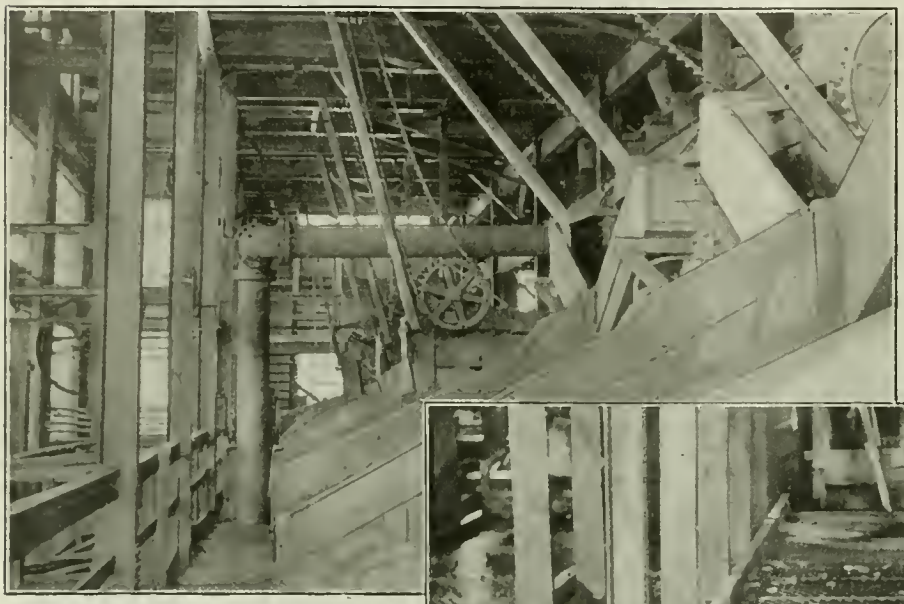
Another View of Pump Room
By means of two lines of shafting each set of three pumps is driven by one 150-hp. General Electric motor.

Unnecessary Re-Elevation of Coal Avoided

Because the cost of producing coal has mounted without a corresponding increase in the selling price, the question of breakage must be carefully considered. Extra or unnecessary handling of the mine product must be avoided so far as possible in order to decrease degradation. This can be accomplished by constructing the breaker of such a height that the flow through it is in the downward direction throughout with no unnecessary re-elevating of the coal. Furthermore, when it is necessary to pass material from a high to a much lower point,

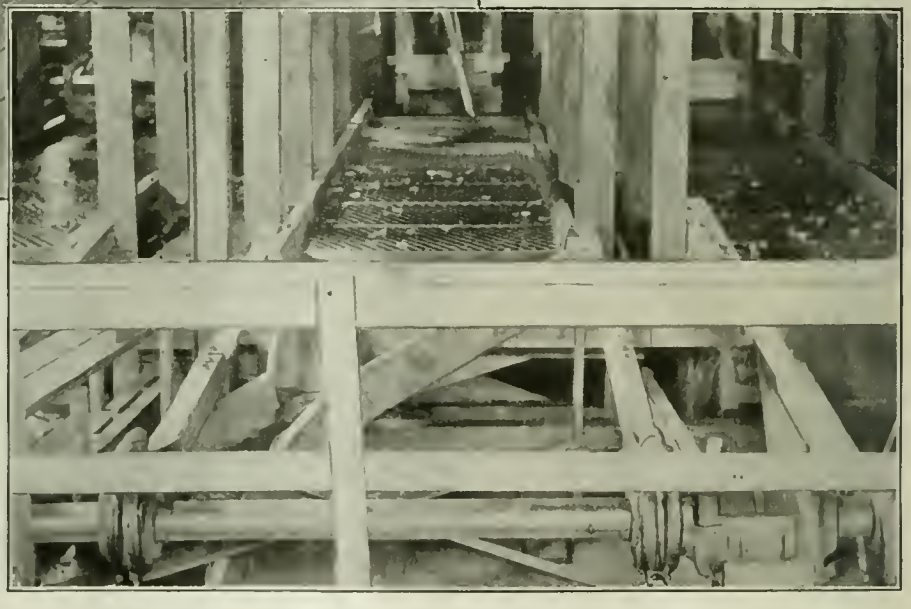
means must be devised to avoid unnecessary free drops, and chutes should be placed at such inclinations that the coal will not attain great sliding velocity. The corners of the chutes also should be rounded so as to avoid breakage as far as possible. Coal may be easily broken down from larger to smaller sizes, but the reverse process, of course, is impossible.

One feature that must be carefully watched in breaker design and construction is the avoidance of vibration. Nothing can wreck a building so quickly or throw machinery out of line, causing continual repair, as unnecessary vibration. This may be guarded against by proper arrangement of machinery so that the periodic oscillation of one piece of equipment may counteract that of another. Thus far generalities have been discussed. Let us now consider the Alliance breaker and see how far it fulfils the conditions outlined.



Jig Floor in Kaska Breaker

In the background are the Elmore jigs, which are used for preparing the larger sizes of coal, egg coal being jigged in the one furthest from the camera. In the foreground are German jigs which clean the smaller sizes.



Egg, Stove and Chestnut Screens

Shaker screens that separate the egg, stove and chestnut coal. Like all of the rest of the machinery, these shaker screens are readily accessible, making it easy to repair them. Note the safety railing in front of the eccentrics.

Enough Wood to Need Fire Protection

The building itself is of steel construction with siding of corrugated sheet iron, making the structure fireproof. Of course, some small quantity of wood has been used. To protect it against fire, sufficient standpipes and hose connections are provided so that in case it should become ignited the fire could not gain headway against the streams of water that could be turned upon it.

Ample height is provided at the start so that in no case is it necessary to elevate the coal during the process of preparation. The material moves by gravity from the top of the building to the bottom. The only elevator is that which handles the condemned material and the screenings from the lip screens below the pockets. Accessibility to all parts of the machinery is provided and the machines may be readily repaired.

The breaker drive is divided into two main units, both of which are controlled from one central switchboard. The shaking screens are driven in one direction while the jigs are driven in another. To a large extent this arrangement tends to counterbalance vibration so that even at the very top of the building it is not particularly noticeable.

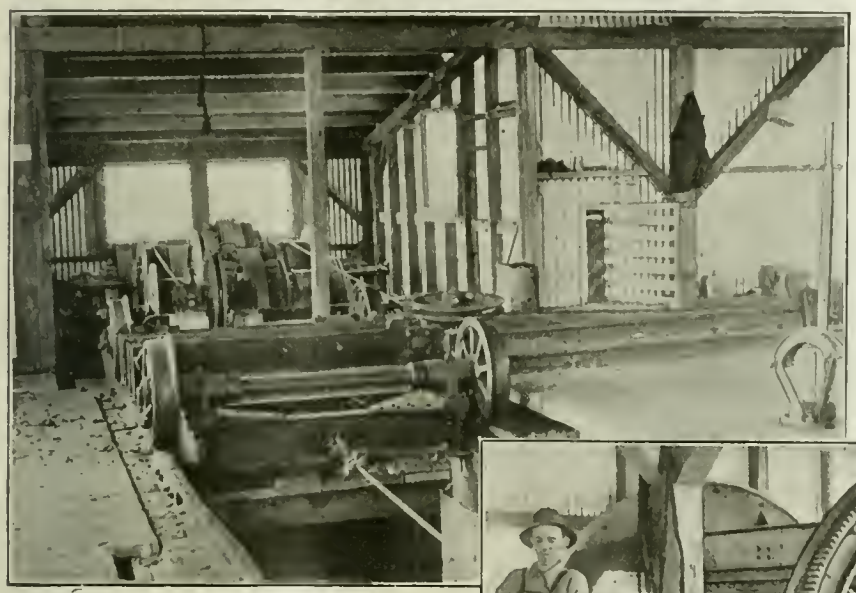
On page 674 is a photograph of the Alliance breaker. Coal is brought from the various shaft and drift mines by trolley locomotives to the dumphouse to the left of the building. Here the loads are released and allowed to move by gravity to a point just outside the building, whence a go-devil, operated by a man inside the dumphouse, brings each car to a dog that stops and holds it until such time as it is released. The car then moves by gravity to a transfer table, shown on page 673. This illustration also shows the four-drum electric engine that operates both the go-devil and the transfer table.

Coal Is Discharged by Rotary Dump

The transfer table moves the car across the room and delivers it to the track that leads to the rotary dump. The car moves off this table and into the dump by gravity, kicking off the empty. Heyl & Patterson, Inc. furnished the dump, which accommodates one car at a time and can operate at the rate of four cars a minute.

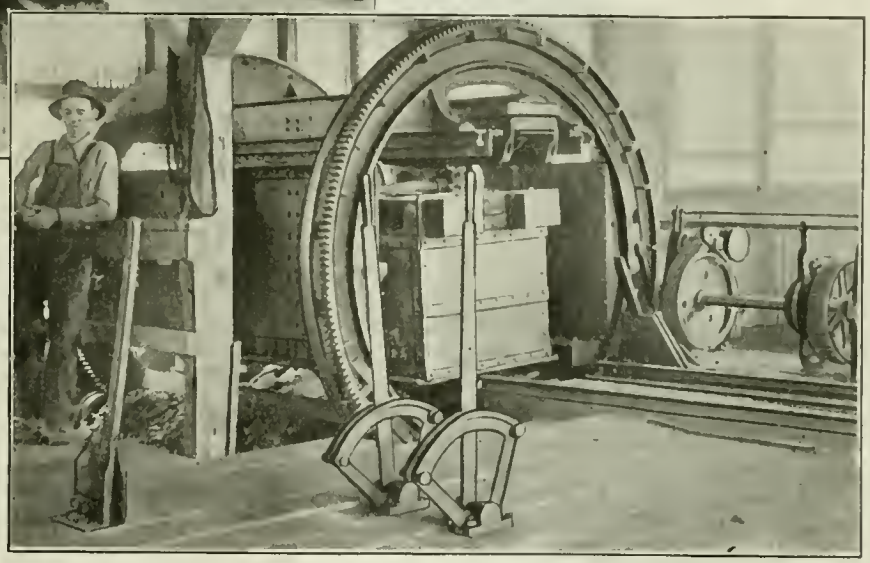
Each empty car runs off the dump to the foot of a car haul which raises it to a sufficient height for it to move by gravity to the locomotive siding. Three men are required to operate this dumping outfit. One is necessary to manipulate the go-devil and the transfer table, another operates the dump and releases the car from the table, while the third man uncouples the cars and couples them up again when they have been discharged and returned.

The rotary dump discharges the coal into a large concrete bin, into which material reclaimed from the coal banks also can be dumped. Since the track from the culm banks is of standard gage the bin also may be used, if necessary, to receive coal from railroad cars. Thus, should the emergency arise, coal might be brought from some other mine to this breaker for preparation. The entire pocket is of concrete and steel, making it fireproof. The gates are operated by compressed air.



Transfer Carriage

This is used to transfer cars from the load-track to the track which leads to the rotary dump. In the rear is a four-drum electrically-actuated engine which operates the transfer carriage and go-devil. In the immediate foreground it will be noted that the track on which the transfer operates takes an abrupt rise. This raise tilts the table so that when the car is released it will run by gravity to the dump.



Rotary Dump

A Heyl-Patterson rotary dump with mine car in dumping position. The coal in the pit is run into gunboats and hoisted to the top of the breaker. In the foreground will be noted two levers which operate the transfer carriage and go-devil. The levers of the rotary dump are not shown, nor is the motor by which the dump is rotated.

The gunboat plane is prominently shown on page 674. The top of this plane is 188 ft. above the ground level. The gunboats are made entirely of steel and have a capacity of 240 cu.ft., equal to about two and one-half mine cars. They are operated by a Nordberg single-drum hoist driven by a Westinghouse 400-hp. 440-volt motor operating on 60-cycle 3-phase current at 500 r.p.m. Gunboats may be hoisted at the rate of 100 per hour. They discharge into a large hopper at the head of the breaker, which has a capacity of six gunboat loads.

From this hopper the coal is fed to a bull shaker and thence to a picking table. The automatic feed that regulates the speed with which the coal goes to the shaker is interesting. Formerly this was operated by a compressed-air cylinder that raised and lowered a gate. This, however, was not found to be entirely satisfactory and a new feed was designed.

This takes the shape of a feed gate similar to the one formerly used but operated by a crank attached to a crosshead which in turn is attached to the upper end of the gate. The crank is actuated by a large gear wheel driven by a pinion. As the large wheel revolves it raises and lowers the gate automatically, allowing the coal to pass from the hopper to the bull shaker. Since the flow of coal is stopped by raising the gate, less breakage is occasioned than if the gate was lowered for that purpose, as such a motion would have a tendency to crush the material. The raising gate simply pushes its way up through the coal, shoving the material to one side without any crushing effect.

On the accompanying flow sheet, for the sake of convenience figures will be found corresponding with those in the text. Thus each step through which the coal passes during preparation is successively numbered upon the flow sheet, making it an easy matter to follow the preparation from start to finish.

After the coal has been raised by the gunboat hoist (2) from the rotary pocket (1) to the top of the breaker and dumped (3) into the large hopper (4) it is fed by the automatic feed (5) onto the bull shaker (6). Here it is separated on two decks, the lump coal being taken off the upper deck. From the lower deck steamboat and broken are removed together, while the finer coal passes through.

Kaska Williams Breaker

This breaker is built of steel and covered with corrugated sheet iron. As will be noted in the pictures of the interior of the breaker, plenty of light is provided at the proper points. At the extreme left of the breaker is the house over the rotary dump, while the extension at the right is the rock house. The bottom of this breaker cannot be seen, as the rock dump in the foreground hides it. The building is 188 ft. high.

The lump coal then passes over a picking table (7), from which the cleaned material goes to a set of No. 1 rolls (11). We will now leave the lump coal for a few minutes and take up the preparation of the steamboat and broken sizes. This material likewise goes to a picking table (8), where the rock is removed by hand, while the cleaned material passes on to a pair of No. 2 rolls (12). This crushes to egg size and smaller this material as well as that which has been passed through the No. 1 roll, to which reference has already been made.

The coal that passed through the lower deck of the shaker (6) goes to a hopper (9) and thence to a set of shakers (10). The coal from the No. 2 rolls (12) likewise is delivered to this same shaker and three preparations there made. The coal larger than pea size passes over the upper deck, while pea coal passes over the second deck, and the fine coal goes through. The egg, stove and chestnut coals then go to another set of shakers (13) and are all separated on two decks. The egg coal then goes to the egg jigs (15), from which the cleaned coal passes to the egg pocket. Two types of jigs are employed in this breaker—Elmore machines are used for the larger sizes while German types treat the smaller grades, such as No. 1 buckwheat, barley and rice. The stove and chestnut coals are treated in a manner exactly similar to that accorded the egg. In all three of these cases the coal after being jigged is hand picked and the rock that the jig failed to take out is removed.

Small Coal Prepared by Jigs and Shakers

The pea coal from shaker 10 goes directly to the pea (23), from which the coal proceeds to its pocket. This size as well as smaller sizes is not hand picked. The fine coal from shaker 10 goes to another shaker (14), having three decks, where No. 1 buckwheat, rice and barley coals are taken off, while the finer size passes through. The three sizes above mentioned pass to their respective jigs (18, 19 and 20), while the rock separated from the coal in the jigging process goes to the rock pocket. The fine coal from shaker 14 then goes to the mud shaker (21) where the culm is separated from the coal. This coal is delivered to the elevator (29) and taken to hopper 9, under the bull shaker, for re-treatment. The culm goes to the pump house and is pumped to the mud dam.

As the coal is loaded into railroad cars it passes from the pocket over a set of screens, which remove the undersized material. This is delivered to the large elevator (29) mentioned above. In jigging the coal some degradation, of course, takes place and the fine material is separated from the sized coal and taken back by this elevator for re-treatment.

If for any reason no orders should be on hand for egg or stove coal, arrangements are made whereby both or either of these sizes can be passed to a set of rolls (30) and be crushed. From here they are sent to the elevator and taken back for re-treatment. Furthermore, if the coal is of poor quality and full of refuse it is sent from the last set of rolls (30) and crushed finer and then sent to the big elevator (29).

Rock Chute Protected by Rock Cushion

The rock from the two picking tables (7 and 8) is sent to the rock chute, which extends from the upper picking table to the rock pocket near the bottom of the breaker. There is a right-angled turn and a drop of about 5 ft. at one point in this chute, and it was found that the rock in sliding down the chute gained such velocity that it struck the side of the chute violently and wore out the bottom of the chute at the point of fall. In order to overcome this a piece of 12 x 12 timber was placed across the chute just below the turn and at the bottom of the drop.

The first rock that came down the chute lodged here and made a bed for the rest of the material to fall upon. In other words, a cushion of rock was placed for the material coming down the chute to drop onto, and instead of wearing out the bottom of the chute and the sides, all the wear incurred came upon the rock itself, which was replaced by fresh material automatically.

Pockets Deliver to Belt and Belt to Car

The rock from the jigs likewise is sent to the rock pocket, whence it is loaded out and taken to the rock dump. The building containing the rock pocket may be seen at the extreme right of the cut on page 674.

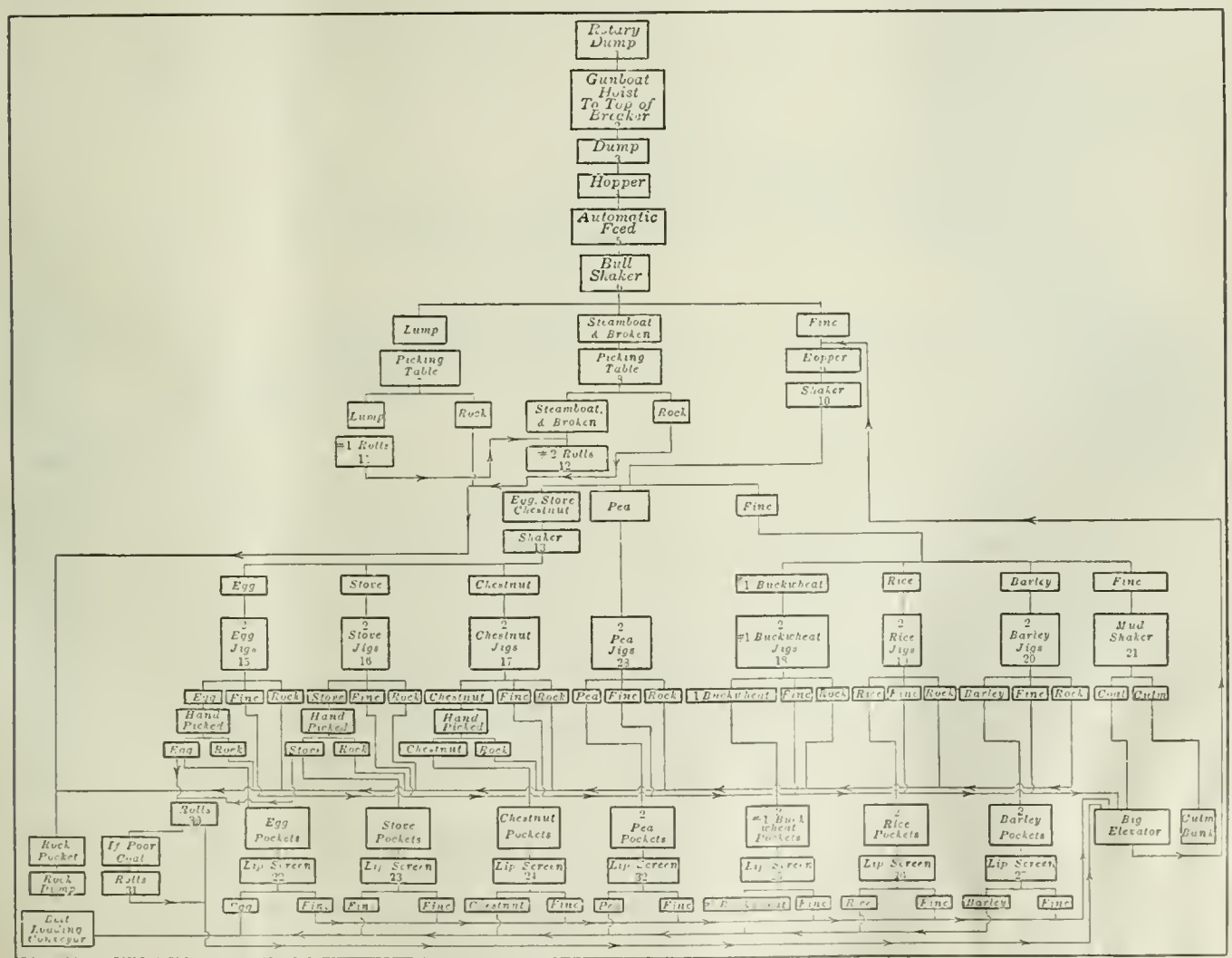
A somewhat interesting and rather unusual detail is the method employed in loading the coal into the railroad cars. The coal pockets are at right angles to the railroad track instead of being parallel to it. When it is desired to load a given size of coal, the proper pocket gate is opened and the coal discharged onto a 48-in. belt conveyor, which delivers it into a chute, which in turn discharges to the railroad car. The gate to the pocket and the operation of the belt conveyor are both under the control of one man.

This breaker is unusual by reason of the fact that the entire equipment is driven by one breaker engine, an electric drive being employed. Two main and two auxiliary units are installed. One 250-hp. General Electric motor operating on 3-phase 60-cycle alternating current at 440 volts is used to drive the jigs. Another motor of 500 hp. of the same make is employed to drive the main breaker machinery. These two drives are placed at right angles to each other, thus reducing vibration somewhat. In addition to these units there is a motor driving the gunboat hoist and one driving the pumps, also a small 40-hp. machine driving the loading conveyor belt.

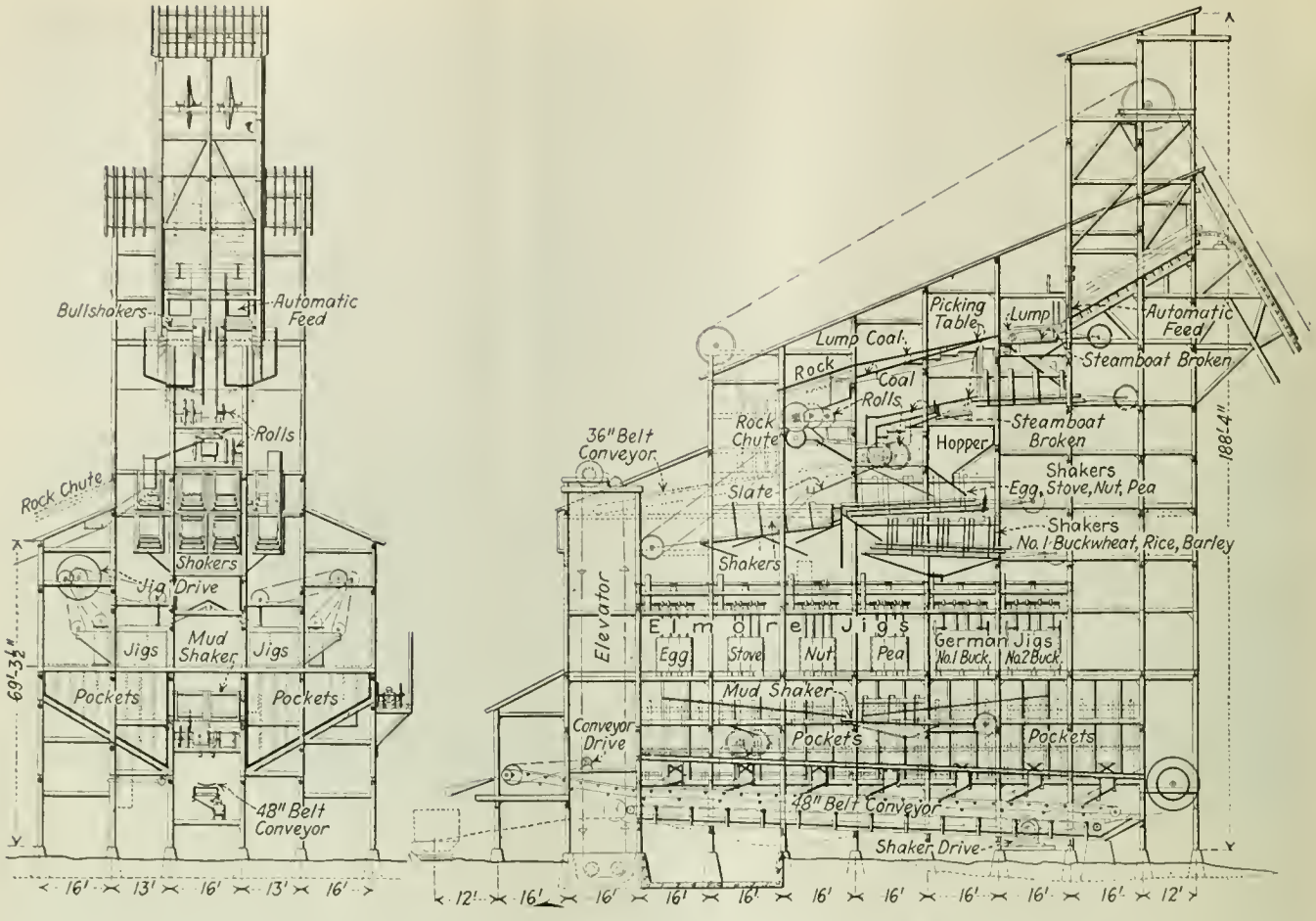
The control of the jig and breaker motors is from one switchboard in charge of one man, whose duty it is to attend this board and nothing else, so that in case of accident the whole machinery in the breaker can be stopped almost instantly. This arrangement tends toward safety.

Pumps for Fresh and for Slush Water

The pump room in this breaker is rather interesting. Here are installed six Aldrich pumps having a capacity of 1,500 gal. of water per minute each. Three of these are used for fresh water and the other three for slush water. The first group furnishes water for use in the breaker. Two 150-hp. General Electric motors are used to drive these pumps, one on each side of the room. Each motor drives three pumps from a countershaft. This is a somewhat peculiar but doubtless a convenient arrangement.



FLOW SHEET FOR THE BREAKER OF THE ALLIANCE COAL MINING CO. AT KASKA
The numbers on the various elements in the sheet are referred to in the article and thus the feeder can follow in detail the operation of the breaker.



CROSS-SECTION OF ALLIANCE BREAKER, SHOWING INTERESTING METHOD OF LOADING

A long 48-in. conveyor line receives the coal from the various pockets and deposits it in the waiting cars. Another conveyor takes care of the lip-screen rejects, and carries them to an elevator booth, whence they are lifted toward the top of the breaker, where they are further transferred and reach the shaker screens by a long 36-in. belt conveyor.

Coal Age hopes to print shortly a description of the town in which the plant above depicted is situated. This town is in process of remodeling and dwellings of an excellent type of construction that will compare favorably with residences in some of the most prosperous cities in the land are taking the places of the crude type of houses that formerly served to shelter mine workers and their families throughout the coal regions.

Alabama Governor Will Prohibit Interstate Sale of Coal Mined by Convicts

AN SEPT. 8 Governor Kilby, through the board of control, notified the four coal-mining corporations using convict labor at their mines that no part of the coal mined should be exported and that they should be ready to receive an order at any time forbidding interstate shipment. The convict-labor contracts are revocable at the will of the state authorities without notice.

Public institutions, schools and utilities have been unable to obtain adequate supplies for the ensuing winter, and the action is taken in their behalf. About 1,200 convicts are engaged in mining coal, their output running about 3,000 tons per day. The companies employing convicts are the Sloss-Sheffield Steel & Iron Co., operating the Banner mine; the Pratt Consolidated Coal Co., operating Flat Top; the Bessemer Coal, Iron & Land Co., operating Belle Ellen; and the Montevallo Mining Co., operating Aldrich. Banner and Flat Top produce daily about 1,000 tons each while the Belle Ellen has an output of 450 tons per day and the Aldrich puts out 500 tons a day.

Southern Illinois Now Willing to Work

ACCORDING to the best information obtainable all the mines in Franklin, Williamson and Saline counties, Illinois, have at last got all labor troubles adjusted, for the present at least, and the only thing now that is preventing full production is the continued short car supply. The Rendville mine of the W. P. Rend Collieries Co. was among the last in the Franklin field to adjust differences with the men, which arose over the price of powder. It is said that one mine in the Saline field where the drivers went out settled the trouble by the simple expedient of discharging sixteen drivers in a body and putting other men in their places.

Washington Mine Workers Called Out by Ben Ferrimond, District President

MINE workers to the number of nearly 3,000 were ordered to strike on Sept. 23, by an order issued by Ben Ferrimond, president of District 10 of the United Mine Workers of America, which district comprises the State of Washington.

Temperatures at Which Ash from Western Coals Fuses to a Sphere*

Coals of the Western States Show a Wide Range, Varying All the Way from Anthracite to Lignite—The Low-Fusibility Temperature of Lignites Apparently Not Due to Presence of Pyrite, for Sulphur Content Is Low

By W. A. Selvig, L. R. Lenhart and A. C. Fieldner
Washington, D. C.

ALASKA WITH MATANUSKA, BERING-RIVER, NENANA AND OTHER COAL FIELDS

Some of the larger areas, as that on the Kenai Peninsula, are relatively unimportant. Candle is situated on the north of the Seward Peninsula, on the inlet from Kotzebue Sound, just north of the "1" in Peninsula. Iditarod lies north of the Kuskokwim River not far from one of its headwaters. The relative importance of the Alaska fields is a matter for further determination and will depend not alone on quality, thickness or quantity, but on the nearness of markets, which markets are by no means definitely determined at present.

THIS is next to the last of a series of papers[1] covering "fusing" or "softening" temperatures of ash from American coals. The papers previously published gave a description of the standard gas-furnace method used by the Bureau of Mines in making ash-fusibility tests, a discussion of the relation of fusibility to clinker formation, and complete tables giving results obtained for Eastern and Mid-Continent coals.

In this paper and the one to follow are given the results obtained for Western coals, including those from Alaska, California, Colorado, Idaho, Montana, Nevada, New Mexico, North Dakota, Oregon, South Dakota, Utah, Washington and Wyoming.

In recent years there has been a growing demand for information concerning the fusibility of ash from various coals. This led the Bureau of Mines to make a general survey of ash fusibility of typical American solid fuels. This series of papers should be of considerable interest to all large consumers of coal, as they give the most complete information on the fusibility of ash from American coals that has ever been published.

All tests were made on standard mine samples collected by representatives of the Bureau of Mines or the U. S. Geological Survey, according to the standard

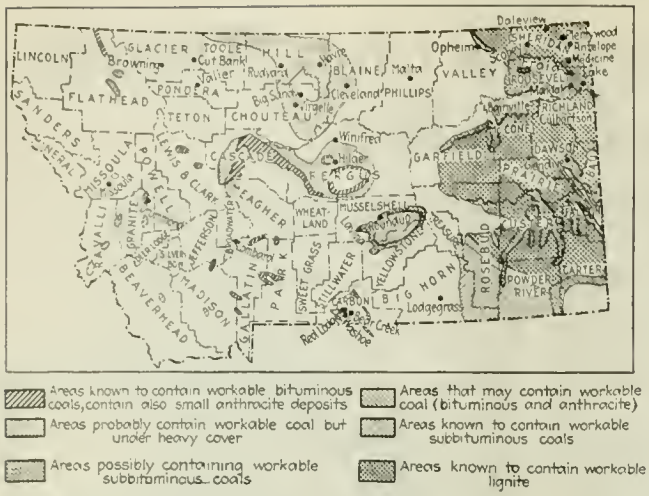
*Published by permission of the director U. S. Bureau of Mines.

[1]Selvig, W. A., "Fusibility of West Virginia Coal Ash," *Coal Age*, vol. 15, No. 1, 1919, pp. 12-16.

Selvig, W. A., and Fieldner, A. C., "Fusibility of Ash from Pennsylvania Coals," *Coal Age*, vol. 15, No. 24, 1919, pp. 1086-1089.

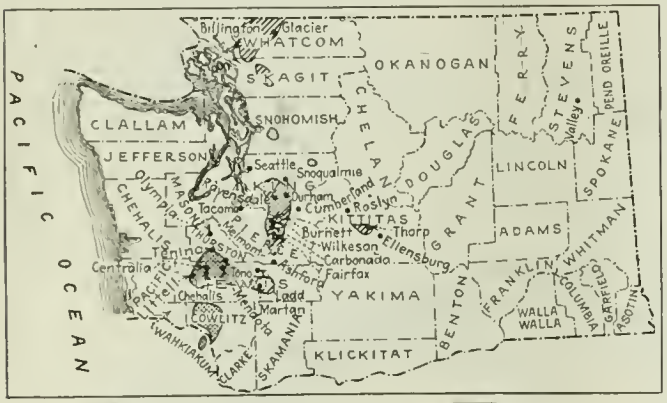
Selvig, W. A.; Ratliff, W. C., and Fieldner, A. C., "Fusibility of Ash from Coals Found in the Interior Province," *Coal Age*, vol. 15, No. 16, 1919, pp. 698-703.

Selvig, W. A., Brown, O. C., and Fieldner, A. C., "Fusibility of Coal Ash from Eastern Coals," Part I, *Coal Age*, vol. 17, No. 4, 1920, pp. 177-180. Part II, *Coal Age*, vol. 17, No. 5, 1920, pp. 225-230.



MONTANA COAL FIELD

Montana produced 4,532,505 tons during 1919. The principal fields are the Judith Basin field in the center of the state, principally in Fergus and Cascade counties; the Assinniboine field, Hill being one of the counties; the Missoula field, in the county by that name and adjacent counties; the Bull Mountain field, in Musselshell County; the Red Lodge field, in Carbon County, and the Trail Creek field, in Gallatin and Park counties.



WASHINGTON'S FOUR COAL AREAS

Washington's output in 1919 was 4,082,212 tons. In the north is the Northern Puget Sound field, in Whatcom and Skagit counties. Near the city of Seattle is the South Puget Sound field, in King and Pierce counties. Further south comes the Lewis County field and still further south that named after Cowlitz County.

methods which the Bureau has prescribed for this work.[2]

Because of the lack of correlation between the coal beds in most of the Western States, the arrangement in the table of the coals tested has been made according to state, county, town, mine and coal bed. The number of samples from each mine, the lowest, highest and average softening temperatures in deg. F., and the per cent of ash and sulphur in the dry coal are tabulated for each mine tested. As a great variety of coal is found in the West, ranging from lignite to anthracite, the rank of each coal tested is given.

In order to attain brevity this rank is abbreviated. Thus A. signifies anthracite; S.-A., semi-anthracite; S.-B., semi-bituminous; B., bituminous; Sb.-B., subbituminous; N.C., natural coke, and L., lignite.

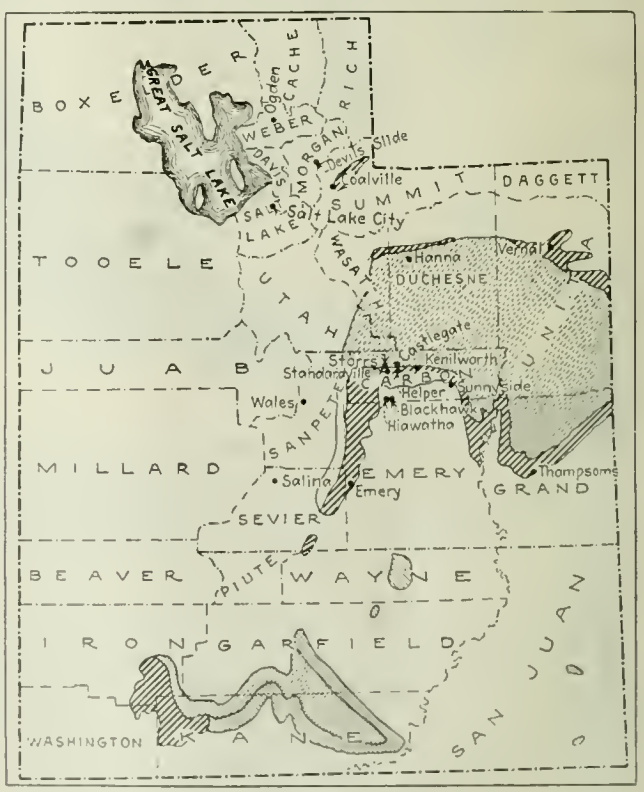
The point taken as the softening temperature, as shown in these tables, is that at which the ash when molded into solid triangular pyramids $\frac{3}{4}$ in. high, $\frac{1}{4}$ in. at the side of the base and mounted in a vertical position, will fuse down to a spherical or hemispherical lump. Samples remaining unfused at 3,010 deg. F., which was the highest temperature attained in the tests, were marked plus 3,010 (+3,010) and used as such in figuring the average values for the mine.

It has been found that the softening temperature of coal ash from the various fields of the United States range, in general, from 1,900 to 3,100 deg. F. This range of softening temperature for convenience in discussion is subdivided into the following groups: Class 1, refractory ashes, softening above 2,600 deg. F.; class 2, ashes of medium fusibility, softening between 2,200 and 2,600 deg. F.; and class 3, easily fusible ashes, softening below 2,200 deg. F.

From the tables it will be noted that almost all of the coals tested from Alaska gave ash ranging from refractory (class 1) to that of medium fusibility (class 2). Most of the Alaska coal samples listed were taken from outcrops or prospects.

The coals listed from Washington show all three classes of fusibility, the majority of the samples, however, came in class 1 and class 2. These coals have a high ash content, which is, however, in many instances quite refractory. Only a little coal occurs in Oregon and California and these states are of no commercial importance as producers of this fuel.

The coals tested from Colorado and New Mexico ranged from refractory (class 1) to easily fusible (class 3) ash, the majority of the samples tested coming in class 1 and class 2. The Colorado coals will be



UTAH HAS THREE COAL FIELDS

However, practically it has more, for the large field in the eastern part of the state is divided by an area having such heavy cover that it splits the field in two. This field covers parts of Emery, Carbon, Duquesne, Uinta and Sevier counties. Another field is the Coalville district, near Salt Lake City. The Kane County field, in the southern part of the state, is but little developed. In 1919 Utah produced 5,136,825 tons.

[2] Holmes, J. A., "The Sampling of Coal in the Mine," Technical Paper 1, Bureau of Mines, 1911, 18 pp.

Softening Temperatures of Coal Ash from Western Coals

ALASKA

Field or District	Location	Mine	Coal Bed	Type of Coal	No. of Samples	Softening Temperature, Deg. F. Lowest	Highest	Average	Average Analysis of Dry Coal, Percentage of Ash	Sulphur
Bering	Wardall Ridge	Outerop	Unnamed	S.-B	1			2,820	7 27	0 68
Bering	Wardall Ridge	Outerop	Unnamed	S.-B.	1			2,410	1 27	0 70
Fairhaven	Candle	Kugruk	Unnamed	S.-B.	1			2,410	6 44	1 51
Iditarod	Iditarod	Prospect	Unnamed	A.	1			2,380	7.35	1 12
Iditarod	Tramway	Prospect	Unnamed	A	1			2,710	5 27	0 80
Kenai Peninsula	Port Graham	Outerop	Unnamed	Sb.-B	1			2,490	15 80	1 06
Matanuska	Anthracite Ridge	Outerop	Unnamed	S.-A.	1			2,250	26 23	0 20
Matanuska	Anthracite Ridge	Outerop	Unnamed	B	1			2,960	8 02	0.50
Matanuska	Boulder Creek	Outerop	Unnamed	B	1			2,910	9 14	0 45
Matanuska	Chickaloon	Chickaloon	No. 8	S.-B.	2	2,370	2,840	2,600	11 94	0 43
Matanuska	Chickaloon River	U.S.N.A.C.I.E., Tunnel B	No. 5	B.	1			3,000	9 55	0 58
Matanuska	Chickaloon River	U.S.N.A.C.I.E., Tunnel B	No. 5½	B.	1			2,040	8 14	0 62
Matanuska	Chickaloon River	U.S.N.A.C.I.E., Tunnel B	No. 6	B.	1			2,270	3 07	0 69
Matanuska	Chickaloon River	U.S.N.A.C.I.E., Tunnel B	No. 9	S.-B.	1			+3,000	20 54	0 55
Matanuska	Chickaloon River	U.S.N.A.C.I.E., Tunnel D	D	S.-B.	1			2,980	12 23	0 54
Matanuska	Chickaloon River	U.S.N.A.C.I.E., Tunnel D	E	S.-B.	1			2,250	11 13	1.51
Matanuska	Chickaloon River	U.S.N.A.C.I.E., Tunnel I	No. 8	S.-B.	2	2,420	2,890	2,650	10.19	0 64
Matanuska	Chickaloon River	U.S.N.A.C.I.E., Tunnel 2	Upper No. 5	S.-B.	1			2,980	7 89	0 57
Matanuska	Chickaloon River	U.S.N.A.C.I.E., Tunnel 3	No. 3	S.-B.	1			2,640	5 78	0 69
Matanuska	Chickaloon River	U.S.N.A.C.I.E., Tunnel 3	No. 4	S.-B.	1			2,230	9 49	0 65
Matanuska	Chickaloon River	U.S.N.A.C.I.E., Tunnel 4	D	S.-B.	1			2,980	11 03	0 51
Matanuska	Coal Creek	Outerop	C	B.	1			2,380	3 47	0 33
Matanuska	Coal Creek	Outerop	No. 2	S.-B.	1			2,490	4 65	0 41
Matanuska	Coal Creek	Outerop	No. 2	S.-B.	1			2,660	9 77	0 43
Matanuska	Coal Creek	Outerop	No. 3	S.-B.	1			2,890	10 31	0 36
Matanuska	Coal Creek	Outerop	No. 3	B.	1			2,510	5 93	0 40
Matanuska	Coal Creek	Outerop	No. 4	S.-B.	1			2,270	6 82	0.52
Matanuska	Coal Creek	Outerop	No. 5	S.-B.	1			3,000	9 88	0 40
Matanuska	Coal Creek	Outerop	No. 6	S.-B.	1			3,000	11 94	0 45
Matanuska	Coal Creek	Outerop	No. 6	S.-B.	1			2,980	9 65	0 46
Matanuska	Coal Creek	U.S.N.A.C.I.E., Tunnel A	No. 8	S.-B.	3	2,290	2,520	2,390	5 62	0 47
Matanuska	Coal Creek	U.S.N.A.C.I.E., Drift 1	No. 1	S.-B.	1			2,950	9 21	0 52
Matanuska	Coal Creek	U.S.N.A.C.I.E., Drift 2	No. 4	B.	1			2,820	13 44	0.62
Matanuska	Emery	Kelly	Kelly	B.	2	2,210	2,660	2,440	8 27	0.50
Matanuska	Eska	David	David	B.	1			2,280	5 79	0.55
Matanuska	Eska	Emery	Emery	B.	1			2,740	10.26	0.35
Matanuska	Eska	Eska	Eska	B.	1			2,690	18 39	0.39
Matanuska	Eska	Maitland	Maitland	B.	1			2,150	7 62	0 46
Matanuska	Eska	McCauley Prospect	McCaluey	B.	1			+3,010	9 96	0 57
Matanuska	Kings River	Outerop	No. 1	B.	1			2,570	11 18	0 51
Matanuska	Kings River	Outerop	No. 1	B.	1			2,310	8 73	0 58
Matanuska	Kings River	Outerop	No. 1	N. C.	1			2,610	12 76	0 20
Matanuska	Kings River	Outerop	No. 2	B.	1			2,620	16 47	0.54
Matanuska	Matanuska River	Outerop	Unnamed	B.	1			2,680	20 72	0 31
Matanuska	Moose Creek	Outerop	Unnamed	B.	1			2,300	9 37	0 36
Matanuska	Young Creek	Outerop	Unnamed	B.	1			2,450	5 66	0.26
Nenana	California Creek	Outerop	Unnamed	L.	1			2,350	25 56	0 58
Nenana	California Creek	Outerop	Unnamed	L.	2	2,350	2,390	2,370	34 71	0 27
Nenann	Fault Gulch	Outerop	Unnamed	L.	1			2,450	7 18	0 22
Nenana	Healy Creek	Outerop	Unnamed	L.	1			2,450	6 10	0 22
Nenana	Healy Creek	Outerop	Unnamed	L.	1			2,400	7 53	0 32
Nenana	Igloo Creek	Outerop	Unnamed	L.	2	2,500	2,540	2,520	4 78	0 14
Nenana	Lignite Creek	Outerop	B	L.	1			2,340	13 30	0 24
Nenana	Lignite Creek	Outerop	No. 5	L.	1			2,150	9 93	0 21
Nenana	Lignite Creek	Outerop	Unnamed	L.	1			2,370	16 42	0 26
Nenana	Lignite Creek	Outerop	Unnamed	L.	1			2,450	5 52	0 18
Nenann	Lignite Creek	Outerop	Unnamed	L.	1			2,210	11 07	0 25
Nenana	Lignite Creek	Outerop	Unnamed	L.	1			2,390	8 01	0 35
Nenana	Lignite Creek	Outerop	Unnamed	L.	1			2,300	15 43	0 54
Nenana	Nenana River	Outerop	Unnamed	L.	1			2,370	5 07	0 21
Nenana	Tatlanika River	Outerop	Unnamed	L.	1			2,670	22 55	0 32
Yakataga	Duktoth Valley	Outerop	Unnamed	S.-B.	1			+3,000	23 69	0.67

CALIFORNIA

County	Town	Mine	Coal Bed							
Mendocino	Dos Rios	Outerop	Unnamed		1			2,220	6.91	2 98
Monterey	Stone Cañon	Stone Cañon		B.	2	2,210	2,470	2,340	11.26	4.62

IDAHO

Boise	Horse Shoe Bend	Henry	Unnamed	Sb.-B.	2	2,480	2,810	2,640	30 90	0 49
Cassia	Oakley	Worthington	Worthington	L.	1			2,130	27 54	0.96
Fremont	Driggs	Bellent	Unnamed	B.	1			1,950	4 91	0.58
Fremont	Haden	Brown Bear	Unnamed	B.	1			2,090	4.86	0.61
Fremont	Haden	Horseshoe	Unnamed	B.	1			2,010	2 36	0.41
Fremont	Monida	Scott-Buey	Unnamed	Sb.-B.	1			2,270	12 80	0.87
Teton	Victor	Pine Creek Pass	Unnamed	Sb.-B.	1			2,160	38 40	1 41

MONTANA

Big Horn	Lodgegrass	Local Prospect	Carney	Sb.B.	1			2,180	6 52	0 39
Big Horn	Sanders	Prospect	"M"	Sb.B.	1			2,250	7 75	0.66
Blaine	Cleveland	Cook	Unnamed	Sb.-B.	1			2,240	11 51	0.90
Broadwater	Lombard	Western	Unnamed	B.	2	2,350	2,470	2,410	24 38	8 22
Carbon	Bear Creek	International	No. 3	Sb.-B.	3	2,010	2,090	2,040	9 44	1 99
Carbon	Bear Creek	No. 2	No. 2	Sb.-B.	5	2,050	2,100	2,080	10 46	1.79
Carbon	Bear Creek	North Side	No. 3	Sb.-B.	1			1,930	9 87	1 73
Carbon	Bear Creek	South Side	No. 3	Sb.-B.	3	2,040	2,110	2,080	12 50	2 47
Carbon	Red Lodge	Red Lodge No. 4	No. 4	Sb.-B.	4	2,120	2,170	2,150	13 20	1 13
Carbon	Washoe	Washoe	No. 3	Sb.-B.	4	2,090	2,190	2,150	12 57	1 25
Chouteau	Big Sandy	Mackton	Mackton	Sb.-B.	2	2,230	2,230	2,230	14 62	0 70
Choteau	Virgelle	Deda	Unnamed	Sb.-B.	1			2,290	13 84	0 99
Choteau	Virgelle	Price Sexton	Unnamed	Sb.-B.	1			2,200	13 54	0 74
Custer	Westmore	Prospect	Unnamed	L.	1			2,170	15 02	0 49
Custer	Terry	Cameron	Unnamed	L.	1			2,460	22 15	0 38
Dawson	Glendive	Prospect	"B"	L.	1			2,420	9 24	0.95
Dawson	Glendiv	Snyder	Unnamed	L.	1			2,030	11,92	2.00
Dawson	Jordan	Foster Prospect	Unnamed	Sb.-B.	1			2,240	16 17	0 63
Fallon	Camp Crook	Horner	Kerr	L.	1			2,180	12 25	1 06
Fallon	Camp Crook	Kerr	Kerr	L.	1			2,000	23 73	2.62
Fergus	Hilger	Stone	Unnamed	Sb.-B.	1			2,220	16 66	1 40
Fergus	Winifred	Calderwood	Unnamed	Sb.-B.	1			2,270	15 25	1.06

Softening Temperatures of Coal Ash from Western Coals—Continued

MONTANA—Continued

County	Town	Mine	Coal Bed	Type of Coal	No. of Samples	Softening Temperature—Deg. F. Lowest	Highest	Average	Average Analysis of Dry Coal. Percentage of Ash	Sulphur
Fergus	Winifred	Millsop	Unnamed	B.	1			2,750	20 15	1 10
Fergus	Winifred	Prospect	Unnamed	Sb.-B.	1			2,530	12 58	0 70
Fergus	Winifred	Prospect	Unnamed	Sb.-B.	1			2,200	19 48	0 88
Fergus	Winifred	Prospect	Unnamed	Sb.-B.	1			2,240	19 33	2 47
Fergus	Winifred	Prospect	Unnamed	Sb.-B.	1			2,360	18 83	0 69
Fergus	Winifred	Prospect	Unnamed	Sb.-B	1			2,150	12 58	0 87
Fergus	Winifred	Prospect	Unnamed	Sb.-B.	1			2,170	14 91	1 61
Fergus	Winifred	Prospect	Unnamed	B.	1			2,370	18 09	0 80
Flathead	Flathead River	Outcrop	Unnamed	Sb.-B.	1			2,210	11 41	2 92
Granite	Drummond	Prospect	Unnamed	Sb.-B.	1			2,370	20 99	1 70
Hill	Havre	Prospect	Unnamed	Sb.-B	1			2,250	22 68	0 92
Hill	Havre	Prospect	Unnamed	Sb.-B.	1			2,010	9 46	1 03
Hill	Havre	Prospect	Unnamed	Sb.-B.	1			2,060	14 25	0 79
Hill	Havre	Prospect	Unnamed	Sb.-B.	1			2,220	26 72	1 64
Hill	Havre	Wheatman	Unnamed	Sb.-B.	1			2,130	20 15	1 00
Hill	Rudyard	Banks & Severn	"No. 1"	Sb.-B.	1			2,020	12 23	1 52
Hill	Rudyard	Outcrop	"No. 1"	Sb.-B.	1			2,060	20 95	1 97
Hill	Shelby	West Butte	Unnamed	B.	1			2,320	8 97	1 91
Missoula	Missoula	Hell Gate	Unnamed	Sb.-B.	2	2,230	2,260	2,240	26 28	1 08
Musselshell	Lavina	Bennett	Unnamed	Sb.-B.	1			2,220	16 79	1 97
Musselshell	Lavina	Caldwell	Unnamed	Sb.-B	1			2,910	17 91	1 92
Musselshell	Paited Rock	Shalz	Unnamed	Sb.-B.	1			2,310	18 37	1 13
Musselshell	Roundup	Davis No. 4	Roundup	Sb.-B.	1			2,290	7 60	0 53
Musselshell	Roundup	Keene	Roundup	Sb.-B.	1			2,420	8 99	0 59
Musselshell	Roundup	Republic No. 2	Roundup.	Sb.-B.	1			2,290	7 60	0 45
Musselshell	Roundup	Roundup A	Roundup.	Sb.-B.	4	2,070	2,310	2,230	9 17	0 88
Musselshell	Roundup	Roundup No. 3	Roundup.	Sb.-B.	1			2,290	8 15	0 67
Phillips	Malta	Spencer	Unnamed	L.	1			2,450	34 25	0 78
Rosebud	Bighorn	Prospect	Unnamed	Sb.-B.	1			2,240	17 89	1 87
Sheridan	Daleview	Ranous	Daleview	L.	1			2,120	15 61	0 38
Sheridan	East Scobey	Coal Creek	Coal Creek	L.	1			2,240	15 74	0 90
Sheridan	Plentywood	Pierce	Richardson	L.	1			2,340	11 42	0 22
Teton	Browning	Stone Prospect	Unnamed	B.	1			2,790	13 53	1 09
Teton	Cut Bank	Allison Prospect	Unnamed	B.	1			2,590	30 08	1 93
Teton	Cut Bank	Prospect	Unnamed	B.	1			2,230	21 54	0 71
Teton	Valier	Blair	Unnamed	B.	1			2,140	14 87	3 30
Valley	Antelope	Richardson	Richardson	L.	1			2,120	10 43	0 44
Valley	Bainville	Red Bank	"G"	L.	1			2,470	8 11	0 42
Valley	Culbertson	Bruegger	"E"	L.	1			2,170	13 50	1 90
Valley	Culbertson	Butterfield	"DD"	L.	1			2,290	9 70	0 51
Valley	Culbertson	Depmsey	"E"	L.	1			2,350	10 19	1 23
Valley	Culbertson	Prospect	F	L.	1			2,350	11 95	1 75
Valley	East Scobey	Fisher	Unnamed	L.	1			2,210	14 86	0 49
Valley	Froid	Astrope	"F"	L.	1			2,220	10 51	1 22
Valley	Froid	Prospect	"F"	L.	1			2,280	8 85	1 20
Valley	Medicine Lake	Belgon	Unnamed	L.	1			2,390	8 23	0 61
Valley	Medicine Lake	Coal Ridge	Coal Ridge	L.	1			2,250	12 60	0 65
Valley	Medicine Lake	Jones	Jones	L.	1			2,390	9 54	0 69
Valley	Medicine Lake	Young	Young	L.	1			2,360	9 46	0 87
Valley	Mondak	Open Pit	"G"	L.	1			2,230	6 99	0 63
Valley	Opheim	Baldwin Bros	Opheim	L.	1			2,080	15 21	0 96
Valley	Opehim	Dawson	Unnamed	L.	1			2,150	13 11	0 54
Valley	Plentywood	Pierce	Richardson	L.	1			2,340	12 31	1 00

NEVADA

Esmeralda	Coaldale	Darnis	"C"	B.	1			2,480	31 16	7 33
Esmeralda	Coaldale	Nevada	"C"	B.	2	2,200	2,570	2,380	23 88	7 14
Mineral	Yerington	Prospect	Unnamed	Sb.-B.	1			2,190	38 31	4 21

NEW MEXICO

Bernalillo	Albuquerque	Holmes	Unnamed	B.	1			2,330	31 65	3 29
Colfax	Brilliant	Brilliant	Tin Pan	B.	1			2,870	16 51	0 57
Colfax	Dawson	Dawson No. 2	Raton	B	7	2,530	2,910	2,800	13 67	0 72
Colfax	Dawson	Dawson No. 6	Dawson	B.	1			2,850	14 95	0 58
Colfax	Gardiner	Gardiner No. 1	Raton	B.	1			3,000	15 60	0 66
Colfax	Koehler	Koehler	Raton	B.	1			2,940	11 16	0 73
Colfax	Koehler	Koehler No. 1	Raton	B.	4	2,710	+3,000	+2,880	12 45	0 65
Colfax	Koehler	Koehler No. 2	Raton	B.	1			3,040	11 72	0 72
Colfax	Sugarite	Sugarite No. 1	Sugarite	B	1			2,740	9 29	0 58
Colfax	Sugarite	Sugarite No. 2	Sugarite	B.	1			2,660	8 96	0 53
Colfax	Van Houten	Van Houten No. 1	Raton	B.	1			3,000	11 22	0 85
Colfax	Van Houten	Van Houten No. 4	Raton	B.	1			+3,000	12 18	0 58
Colfax	Yankee	Yankee	Yankee	B.	1			2,440	13 02	1 16
Colfax	Yankee	Yankee No. 3	Yankee	B	2	2,800	2,850	2,820	13 89	0 58
Lincoln	White Oaks	Old Abe	Ole Abe	B.	1			2,380	15 07	0 85
Lincoln	White Oaks	Wild Cat	Unnamed	B.	1			2,730	17 30	0 78
McKinley	Allison	Coal Basin	Coal Basin No. 1	Sb.-B.	2	2,000	2,180	2,090	7 19	0 54
McKinley	Allison	Diamond	Aztec (?)	Sb.-B.	3	2,150	2,440	2,270	9 68	0 55
McKinley	Allison	Diamond	Diamond No. 1	Sb.-B	1			2,210	7 75	0 53
McKinley	Allison	Diamond	Diamond No. 2	Sb.-B	1			2,380	9 97	0 52
McKinley	Blackrock	Zuni Indian School	Unnamed	Sb.-B.	1			2,890	10 34	0 93
McKinley	Gallup	Bartlett	Black Diamond ?	Sb.-B.	1			2,950	11 79	0 74
McKinley	Gallup	Beddow	Aztec (?)	Sb.-B	1			2,120	5 86	0 73
McKinley	Gallup	Carreto ( )	Otero (?)	Sb.-B.	1			2,540	4 92	0 66
McKinley	Gallup	Defiance	Defiance	Sb.-B.	1			2,460	7 93	0 88
McKinley	Gallup	Gallup Southwestern	Black Diamond	Sb.-B.	1			2,490	7 35	0 85
McKinley	Gallup	Heaton	No 2	Sb.-B.	1			2,370	6 68	0 70
McKinley	Gallup	Henton	No. 3½	Sb.-B.	1			2,070	3 93	0 62
McKinley	Gallup	Jones	Defiance	Sb.-B	1			2,400	6 04	1 09
McKinley	Gallup	Myers	Myers	Sb.-B	1			2,490	8 56	0 82
McKinley	Gallup	Navajo	No 1	Sb.-B.	1			2,670	10 49	0 49
McKinley	Gallup	Navajo	No. 2	Sb.-B.	1			2,150	4 65	0 67
McKinley	Gallup	Navajo	No. 5	Sb.-B.	2	2,350	2,610	2,480	8 30	0 54
McKinley	Gibson	Navajo No. 1	No. 5	Sb.-B.	1			2,350	7 58	0 65
McKinley	Gibson	Navajo No. 2	No 5	Sb.-B.	4	2,600	2,700	2,650	9 02	0 54
McKinley	Gibson	Weaver	No 2	Sb.-B.	1			2,060	5 64	0 57
McKinley	Gibson	Weaver	No. 3	Sb.-B.	2	1,950	2,060	2,000	3 92	0 58
McKinley	Gibson	Weaver	No 3½	Sb.-B.	1			2,120	7 21	0 42
McKinley	Gibson	Weaver	No 5	Sb.-B	2	2,340	2,720	2,530	8 43	0 64
McKinley	Heaton	Heaton	No 2	Sb.-B.	1			2,150	5 31	0 48
Rio Arriba	Lumberton	Prospect	Unnamed	B	1			2,420	10 27	2 28
Rio Arriba	Monero	Old Simms	Upper	B	1			2,340	5 68	0 70
San Juan	Durango	Colarado-New Mexico	"A"	B	1			2,550	14 06	0 71
San Juan	Farmington	Bill Thomas	Carbonero	B	1			2,940	11 68	0 67
San Juan	Farmington	Blake	Unnamed	Sb.-B	1			2,220	6.68	1 14
San Juan	Farmington	Government	Hogback	B.	1			2,230	3 46	0 72
San Juan	Farmington	Jones	Carbonero	B.	1			2,870	12 80	1 42
San Juan	Farmington	Local	Unnamed	Sb.-B	1			2,860	8 34	0 82
San Juan	Farmington	Marcelius	Carbonero	Sb.-B.	1			2,850	9 13	0 68
San Juan	Farmington	Prospect	Carbonero	Sb.-B	1			2,150	14 02	2 61
San Juan	Farmington	Prospect	Carbonero	Sb.-B	1			2,290	7 68	0 53
San Juan	Farmington	Ship Rock Indian School	Unnamed	Sb.-B	1			2,270	4 64	0 95
San Juan	Fruitland	Black Diamond	Carbonero	Sb.-B	1			2,340	11 19	0 68
San Juan	Fruitland	Hendrickson	Carbonero	Sb.-B	1			2,220	10 33	0 67
San Juan	Pueblo Bonita	Pueblo Bonita	Unnamed	Sb.-B.	1			2,650	8 28	1 80
Santa Fe	Madrid	Anthracite No. 4	White Ash	A	1			2,210	10 08	0 82

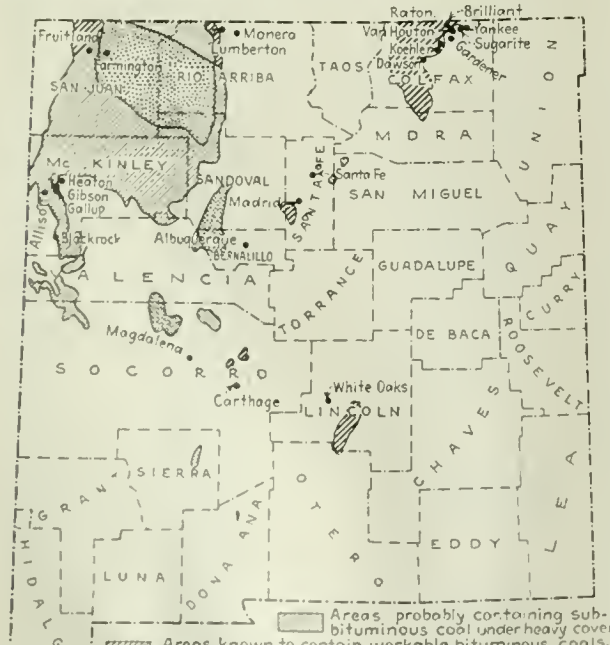
Softening Temperatures of Coal Ash from Western Coals—Continued

County	Town	Mine	Coal Bed	Type of Coal	No. of Samples	Softening Temperature, Deg. F. Lowest	Highest	Average	Average Analysis of Dry Coal Percentage of Ash	Sulphur
NEW MEXICO—Continued										
Santa Fe	Madrid	Blacksmith	Peacock (?)	B	1			2,500	7 97	1 33
Santa Fe	Madrid	Peacock Prospect	Peacock	B	1			2,130	11 37	1 64
Socorro	Carthage	Government	Carthage	B	2	2,760	2,960	2,860	14 35	0 85
Socorro	Magdalena	Prospect	Unnamed	Sb.-B	1			2,250	12 24	0 53
Socorro	Magdalena	Prospect	Unnamed	Sb.-B.	1			2,680	13 26	0 53
Socorro	Magdalena	Prospect	Unnamed	B	1			2,220	7 58	0 53
OREGON										
Clackamas	Wilhoit	Prospect	Unnamed	B	1			2,890	22 04	0 53
Coos	Beaver Hill	Beaver Hill	Newport	Sb.-B	1			2,060	11 59	0 94
Coos	Henryville	Henryville	Newport	Sb.-B	1			2,060	9 79	0 86
Coos	West Fork	Cabin Prospect	Unnamed	B.	1			2,780	16 86	1 46
Coos	West Fork	Donnell Prospect	Unnamed	B.	1			2,790	29 71	1 14
Coos	West Fork	Everett Ass'n Prospect	Meyer	B.	1			2,500	23 93	1 52
Coos	West Fork	Hillis Prospect	Anderson	B	1			2,280	16 92	0 70
Coos	West Fork	Meyers Prospect	Meyers	B	1			2,490	26 69	1 85
Coos	West Fork	Pulford Prospect	Anderson	B	2	2,480	2,690	2,580	32 26	0 93
Coos	West Fork	Reeves Prospect	Carter	B.	1			2,690	40 70	0 62
Grant	Dayville	Old Prospect	Unnamed	L.	1			2,250	47 65	2 16
Malheur	Nyssa	Honolulu Prospect	Unnamed	L.	1			2,420	45 63	3 82
Wheeler	Fossil	Dry Hollow Prospect	Unnamed	Sb.-B.	2	2,480	2,670	2,580	37 60	0 54
UTAH										
Carbon	Carbon	Panther	Castlegate	B	1			2,110	5 59	0 60
Carbon	Castlegate	Cameron No. 1	No. 1	B.	1			2,230	6 40	0 41
Carbon	Castlegate	Cameron No. 2	No. 2	B.	1			2,170	6 78	0 48
Carbon	Castlegate	Castlegate No. 1	"A"	B.	1			2,100	6 46	0 51
Carbon	Castlegate	Castlegate No. 1	"C"	B.	1			2,080	5 02	0 49
Carbon	Castlegate	Castlegate No. 1	"D"	B.	1			2,130	7 37	0 63
Carbon	Castlegate	Castlegate No. 2	"B"	B.	1			2,210	9 44	0 68
Carbon	Castlegate	Castlegate No. 2	"D"	B.	1			2,150	5 51	0 34
Carbon	Helper	Prospect	Spring Canyon No. 1.	B.	1			2,360	7 85	0 80
Carbon	Helper	Prospect	Spring Canyon No. 1.	B.	1			2,260	9 09	0 72
Carbon	Hiawatha	Hiawatha No. 1	Hiawatha	B.	2	2,140	2,430	2,280	6 16	0 74
Carbon	Hiawatha	Hiawatha No. 2	Hiawatha	B	2	2,220	2,220	2,220	7 50	0 58
Carbon	Kenilworth	Aberdeen	Book Cliffs ( )	B.	2	2,150	2,150	2,150	4 64	0 35
Carbon	Kenilworth	Aberdeen Prospect	Aberdeen	B	1			2,130	6 68	0 43
Carbon	Kenilworth	Kenilworth	Aberdeen	B.	2	2,120	2,150	2,140	5 65	0 46
Carbon	Kenilworth	Kenilworth	Kenilworth	B	2	2,130	2,150	2,140	5 52	0 50
Carbon	Kenilworth	Kenilworth	Royal Blue	B	2	2,150	2,160	2,160	4 90	0 70
Carbon	Kenilworth	Milburn Prospect	Kenilworth	B.	1			2,130	5 86	0 56
Carbon	Kenilworth	Royal Blue	Unnamed	B.	1			2,150	4 57	0 65
Carbon	Price	Jesse Knight Prospect	Unnamed	B.	1			2,220	5 06	0 61
Carbon	Standardsville	Standard	Castlegate	B.	2	2,150	2,150	2,150	6 26	0 40
Carbon	Storrs	Spring Canyon No. 1.	Spring Canyon No. 1.	B.	1			2,150	8 82	0 58
Carbon	Storrs	Spring Canyon No. 2.	Spring Canyon No. 2.	B.	1			2,110	5 25	0 90
Carbon	Storrs	Spring Canyon No. 3.	Spring Canyon No. 3.	B.	1			2,190	8 57	0 41
Carbon	Sunnyside	Prospect	Unnamed	B	1			2,620	5 58	1 11
Carbon	Sunnyside	Prospect	Unnamed	B.	1			2,210	4 20	0 52
Carbon	Sunnyside	Utah No. 1	Lower	B.	1			2,390	7 01	1 84
Carbon	Sunnyside	Utah No. 3	Lower	B.	2	2,550	2,980	2,760	8 04	1 32
Carbon	Sunnyside	Utah No. 3	Upper	B.	3	2,620	+3,010	+2,880	7 69	0 67
Emery	Black Haw	Black Hawk	Hiawatha	B.	6	20,40	2,430	2,130	6 34	0 78
Emery	Emery	Browning	"I"	B.	1			2,100	6 17	0 41
Emery	Emery	Casper	"C"	B.	1			2,430	14 90	0 85
Emery	Emery	Surface Prospect	"I"	B.	1			2,100	8 52	1 34
Emery	Emery	Williams	"I"	B.	1			2,000	12 10	4 85
Grand	Thompson	No. 1-A	"B"	B.	1			2,960	11 24	0 71
Grand	Thompson	Prospect	"A"	B.	1			2,670	11 28	0 65
Morgan	Devils Slide	Hever Robioson	Unnamed	Sb.-B.	1			2,500	23 47	0 77
Morgan	Devils Slide	Lucas & Smith	Unnamed	Sb.-B.	1			2,560	21 59	0 56
Sanpete	Wales	Coal Creek	Unnamed	B.	1			2,040	23 36	7 05
Sanpete	Wales	North Tuonel	Unnamed	B.	1			2,210	19 66	3 80
Sanpete	Wales	Thomas	Unnamed	B.	1			2,130	16 17	4 76
Sevier	Emery	Surface Prospect	"A"	B	1			2,470	6 83	0 50
Sevier	Fremont	Hogan Prospect	"A"	B.	1			2,390	13 83	3 27
Sevier	Salina	Kearns & Duggins	Duggins	B.	1			2,320	13 07	0 47
Summit	Carter	Prospect	Unnamed	B.	1			2,710	15 86	0 57
Summit	Carter	Prospect	Unnamed	B.	1			2,150	10 55	5 28
Summit	Coalville	Ress-Grass Creek	Wasatch	Sb.-B.	1			2,420	3 86	2 16
Summit	Coalville	Superior	Wasatch	Sb.-B.	1			2,130	5 72	1 85
Summit	Coalville	Wasatch	Wasatch	Sb.-B.	1			2,350	4 72	1 59
Uinta	Vernal	Blue Bell	Unnamed	B.	1			2,520	10 56	1 65
Uinta	Vernal	Green	Unnamed	B.	1			2,370	9 03	2 59
Uinta	Vernal	Reynolds	Mancos	B.	1			2,740	7 56	1 07
Wasatch	Hanna	Prospect	Unnamed	Sb.-B.	1			2,130	6 95	0 96
Wasatch	Hanna	Winchester Prospect	Mancos	L.	1			2,040	3 57	0 83
Wasatch	Heber	Cummings	Unnamed	Sb.-B.	1			2,040	7 68	0 85
WASHINGTON										
Clallam	Clallam	Fuca	Unnamed	B.	1			1,870	14 16	5 75
King	Cumberland	Rose-Marsball	Unnamed	B.	1			2,960	17 24	0 63
King	Durham	Prospect	No. 1	B.	1			3,000	17 51	0 54
King	Durham	Prospect	No. 2	B.	1			2,230	21 42	0 58
King	Grand Ridge	Grand Ridge	No. 3	Sb.-B.	1			2,610	11 38	0 58
King	Grand Ridge	Grand Ridge	No. 4	Sb.-B	1			2,400	24 44	2 69
King	Grand Ridge	Grand Ridge	No. 7	Sb.-B.	1			2,640	15 01	0 45
King	Ravensdale	Ravensdale No. 1	No. 3	B.	1			2,380	6 91	0 37
King	Snoqualmie	Niblock	No. 3	B.	1			2,950	11 65	0 51
King	Snoqualmie	Niblock	No. 4	B.	1			2,930	13 21	0 94
King	Snoqualmie	Niblock	No. 5	B	1			2,910	25 58	1 56
Kittitas	Ellensburg	Prospect	No. 7	B.	1			2,760	25 47	1 26
Kittitas	Ellensburg	Prospect	No. 9 C	B.	1			2,250	7 73	0 69
Kittitas	Ellensburg	Prospect	No. 10 d	B.	1			2,380	23 83	1 20
Kittitas	Ellensburg	Prospect	Unnamed	B.	1			2,580	17 73	1 59
Kittitas	Roslyn	Roslyn No. 1	Roslyn	B.	3	2,350	2,590	2,440	12 99	0 40
Kittitas	Roslyn	Roslyn No. 2	Roslyn	B.	1			2,320	11 94	0 49
Kittitas	Thorn	Wilsoo	Unnamed	B	1			2,250	17 52	0 42
Lewis	Centralia	Fords Prairie	Unnamed	Sb.-B.	1			2,200	11 14	0 87
Lewis	Centralia	Monarch	Unnamed	Sb.-B	1			1,990	12 16	1 37
Lewis	Chehalis	Chehalis	Unnamed	Sb.-B.	1			2,290	10 83	2 50
Lewis	Chehalis	Sheldon	Unnamed	Sb.-B.	2	2,340	2,380	2,360	8 30	0 75
Lewis	Chehalis	Superior	Superior No. 2	Sb.-B.	1			2,150	12 18	1 08
Lewis	Chehalis	Superior No. 1	Unnamed	Sb.-B	1			2,340	14 99	0 45
Lewis	Chehalis	Superior No. 2	Unnamed	Sb.-B.	1			2,170	7 12	1 80
Lewis	Chehalis	Twin City	Unnamed	Sb.-B.	1			2,270	14 04	0 39
Lewis	Ladd	East Creek Ladd	No. 2	B	1			2,240	18 05	1 31
Lewis	Ladd	East Creek Ladd	No. 3	B	2	2,570	2,670	2,620	22 54	0 73
Lewis	Ladd	East Creek Ladd	No. 4	B	1			2,910	26 78	0 93
Lewis	Ladd	Prospect	No. 1		1			2,710	28 73	1 17
Lewis	Ladd	Prospect	No. 5	B	1			2,530	50 34	0 73
Lewis	Littell	Crescent	Unnamed	Sb.-B.	1			2,150	12 79	4 36
Lewis	Mendota	Mendota	Unnamed	Sb.-B.	3	2,230	2,350	2,290	15 97	1 51
Lewis	Morton	Prospect	Edlund	Sb.-B.	1			2,760	25 06	0 84

Softening Temperatures of Coal Ash from Western Coals—Continued

WASHINGTON—Continued

County	Town	Mine	Coal Bed	Type of Coal	No. of Samples	Softening Temperature—Deg. F. Lowest	Highest	Average	Average Analysis of Dry Coal. Percentage of Ash	Sulphur
Lewis	Morton	Prospect	Unnamed	Sb.-B.	1			2,970	17 40	0.73
Lewis	Morton	Prospect	Unnamed	S.-A.	1			2,660	25 48	0 90
Pierce	Ashford	Mashel	Unnamed	S.-B.	2	2,710	2,850	2,780	33 77	0.59
Pierce	Ashford	Prospect	Nisqually Chief	S.-B.	1			2,650	25 72	0 44
Pierce	Burnett	Burnett	No. 2	B.	1			2,320	8 44	0.79
Pierce	Burnett	Burnett	No. 3	B.	2	2,350	2,420	2,380	13 74	0 39
Pierce	Carbonado	Carbon Hill	No. 1	B.	1			2,720	15 40	0 47
Pierce	Carbonado	Carbon Hill	No. 1 Coking	B.	1			2,210	18 86	3.31
Pierce	Carbonado	Carbon Hill	No. 2 Coking	B.	1			2,640	15 98	0 41
Pierce	Carbonado	Carbon Hill	No. 3 Coking	B.	2	2,640	2,840	2,740	17 54	0.36
Pierce	Carbonado	Carbon Hill	No. 4	B.	1			2,350	10 77	0.33
Pierce	Carbonado	Carbon Hill	No. 5	B.	1			2,890	16.99	0.58
Pierce	Carbonado	Carbon Hill	No 9	B.	1			2,840	16 10	0 54
Pierce	Carbonado	Carbon Hill	No. 11	B.	1			2,740	20 42	0.41
Pierce	Carbonado	Carbon Hill	Wingate	B.	2	2,180	2,190	2,180	9 66	0.82
Pierce	Carbonado	Carbon Hill No. 6	Wingate	B.	1			2,260	6 68	0 54
Pierce	Carbonado	Carbonado No. 4 N	Wilkeson	B.	2	2,610	2,730	2,670	15 04	0 34
Pierce	Fairfax	Fairfax	Blacksmith	B.	1			2,240	13 16	0 70
Pierce	Fairfax	Fairfax	No. 3	B.	1			2,740	10 51	0.54
Pierce	Fairfax	Fairfax	No. 7	B.	1			2,910	34 22	0 48
Pierce	Fairfax	Montezuma	No. 1	S.-B.	1			2,570	13 50	1.03
Pierce	Fairfax	Montezuma	No. 2	S.-B.	1			2,880	23 44	0 73
Pierce	Fairfax	Montezuma	No. 3	S.-B.	1			2,430	20 21	0 51
Pierce	Fairfax	Montezuma	No. 4	S.-B.	1			2,280	11 07	0 57
Pierce	Fairfax	Prospect	Montezuma	B.	1			2,980	35 15	0 57
Pierce	Fairfax	Prospect No. 1	No. 1	B.	1			2,370	8 46	1.19
Pierce	Fairfax	Prospect No. 2	No. 2	B.	1			+3,000	20.36	0 70
Pierce	Melmont	Melmont	No. 1	B.	1			2,880	19 49	0 73
Pierce	Melmont	Melmont	No. 2	S.-A.	2	2,850	2,910	2,880	18 28	0 43
Pierce	Melmont	Melmont	No. 3	B.	2	2,410	2,750	2,580	14.70	0 34
Pierce	Pittsburgh	Black Carbon	Black Carbon	B. (?)	1			2,760	24 19	0 57
Pierce	Pittsburgh	Pittsburgh	Lady Wellington	B.	1			+3,000	19 79	0 44
Pierce	Pittsburgh	Pittsburgh	Pittsburgh	B.	1			2,960	21 38	0 58
Pierce	South Willis	South Willis	Windsor	B.	1			2,300	21 87	0 42
Pierce	Wilkeson	Brier Hill	Unnamed	B.	1			2,700	29 91	1 21
Pierce	Wilkeson	Gale Creek	No. 1	B.	1			2,300	8 53	0 85
Pierce	Wilkeson	Gale Creek	No. 2	B.	1			2,390	6 22	1 00
Pierce	Wilkeson	Gale Creek	Queen	B.	1			2,220	9.83	1 04
Pierce	Wilkeson	Snell	Unnamed	B.	1			2,800	18 72	0 84
Pierce	Wilkeson	Wilkeson	No. 2	B.	3	2,720	2,850	2,780	17 99	0 47
Pierce	Wilkeson	Wilkeson	No. 3	B.	3	2,240	2,970	2,570	14 27	0 47
Pierce	Wilkeson	Wilkeson	No. 7	B.	1			2,380	10 38	0 44
Stevens	Valley	Valley	Unnamed	Sb.-B.	2	2,040	2,070	2,060	22 73	2 82
Thurston	Hurn	Hannaford No. 1	Upper Bench	Sb.-B.	1			2,150	7 69	0 55
Thurston	Tenino	Black Bear	Unnamed	Sb.-B.	1			2,570	27.61	1 79
Thurston	Tenino	King	Unnamed	Sb.-B.	1			2,210	14 12	3 09
Thurston	Tono	Hannaford	Unnamed	Sb.-B.	2	2,330	2,340	2,340	12 28	1 19
Whatcom	Bellingham	Bellingham	No. 1	B.	1			2,450	18 01	0.28
Whatcom	Glacier	Discovery Tunnel	Unnamed	A.	2	2,430	2,510	2,470	11 65	1 04
Whatcom	Glacier	Prospect	Unnamed	S.-A.	1			2,440	8 35	1 05
Whatcom	Glacier	Prospect	Unnamed	S.-A.	1			2,590	9 95	1 11
Whatcom	Glacier	Smith Tunnel	Unnamed	A.	1			3,000	9 56	0 97



NEW MEXICO'S SIX FIELDS

In 1919 this state produced 4,023,239 tons. In the northeast is the Raton field, mostly situated in Colfax County; in the northwest is the San Juan River field, with McKinley, San Juan and Rio Arriba the principal counties. An extension of this field into Valencia and Socorro Counties is known as the Datil Mountain field, while the two insignificant spots near Santa Fe constitute the well-known Cerrillos Field. Other fields are the Carthage fields, in Socorro County, and the Capitan field, in Lincoln.

tabulated in the second installment. Many of the coals tested from Utah showed ash of comparatively low fusibility, coming in the upper part of class 3; a considerable number of samples gave ash of medium fusibility, coming in class 2. A few samples gave refractory (class 1) ash. But little coal occurs in Idaho and Nevada and these states are of no commercial importance as coal producers. The lignites tested from North Dakota, South Dakota and Montana gave ash of rather low fusibility. The majority of the samples came in class 3 or the lower part of class 2. North and South Dakota tabulations are reserved for the second installment. The sub-bituminous coals tested from Montana and Wyoming (the tabulation of the latter state being held for the second part of this article) also gave ash of rather low fusibility, coming for the most part in class 3 and the lower part of class 2.

Most of the lignites and sub-bituminous coals tested have a fairly low sulphur content, consequently the low melting points of the ash from these fuels cannot be attributed to the presence of large amounts of iron in the form of pyrite, but rather to the presence of other mineral constituents in the proper proportion to form readily fusible mixtures.

Coalometer for Noting Coal Temperatures

SOME of our readers have drawn attention to the fact that the address was omitted of the distributor of the coalometer described in the article appearing on page 485 of *Coal Age* of Sept. 2, 1920, entitled "Device That Will Show the Temperature of the Depths of a Storage Pile." This instrument is sold by F. C. Thornley & Co., 31 West 43rd St., New York, N. Y.

Rail and River Tipple Dumps Coal Inside And Conveys Coal by Belts

First River Tipple on Allegheny—An Adverse Grade and Shortage of Tipple Space Make It Necessary to Dump and Weigh Coal Underground, Where Weighing Apparatus and Car Haul Also Are Provided

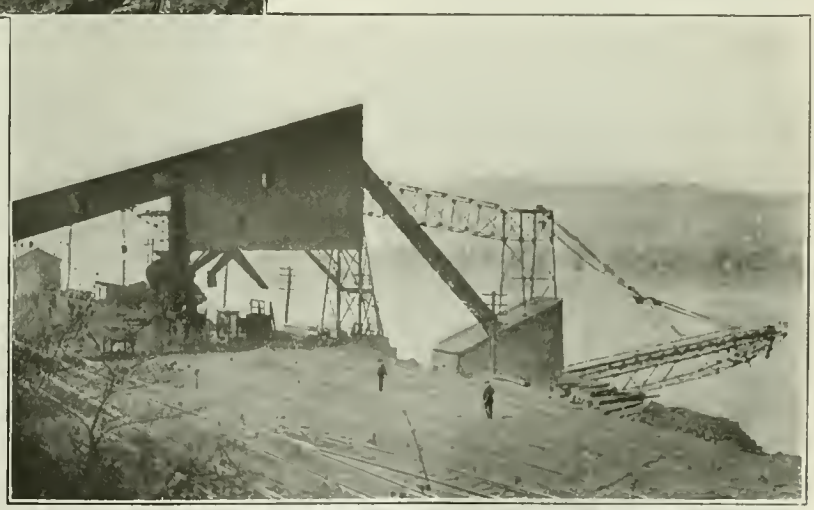
By Donald J. Baker,
Wilkinsburg, Pa.

AT RENOULF'S BEACH, which is across the Allegheny River from Tarentum, Pa., can be found one of the most original and efficient tipples in the Pittsburgh district. It is the only tipple on the Allegheny River equipped to load coal for shipment by either rail or water. It is not this fact, however, that causes this structure to be distinctive, for though it stands alone on the Allegheny there are many tipples serving both rail and river on the Monongahela where the loading of coal barges from a tipple is an old practice. Its uniqueness lies rather in its design and in the mechanical perfection of the arrangements for handling the mine output.

In many stretches of the Allegheny River the banks rise steeply from the water, leaving scant space for the construction of the buildings that are needed around a river coal dump. This fact in itself has halted many an operator who purposed to develop valuable coal acreages outcropping along the water front. The construction of this tipple suggests a probable means of development of extensive beds of Freeport coal which expose their edges along the steep Allegheny River front. The surface buildings at this operation were constructed on the fill made by the Pennsylvania R.R. for its Allegheny Division. It is but a little over 100 ft. in width as measured from the foot of the hillside out to the bank of the Allegheny River.

Crusher House and River Loading-Boom

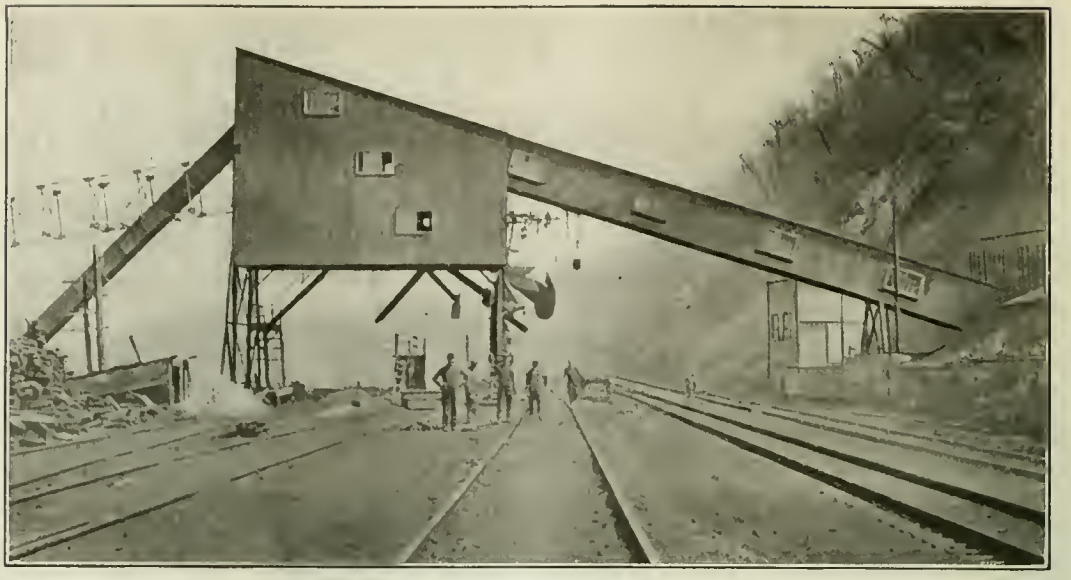
The lowest and highest stages of the river had to be provided for when this structure was designed. The steel tower and bridge are provided merely for the support of the loading-boom, which stretches, as will be noted, far out over the river.



General View of the Combination Tipple

The plant of this company had to be constructed on a railroad fill on the hillside which is only about 100 ft. wide and largely occupied by railroad tracks. Note the steep chute by which the coal descends to the crusher building.

The tipple to which reference is made is located at the mine of the United States Aluminum Coal Co., which is owned by the United States Aluminum Co. of America. At this mine are employed 125 men, 115 of whom work underground. While the tipple has been designed for dumping 800 tons daily, this figure has been exceeded by several hundred tons on several occasions. This is not a large operation, to be sure, but it is a highly efficient one. Of ten men employed on the surface only two work on the tipple, and their feat of loading 1,000 tons in one day is notable.



Where Tipple Spans Railroad

Three sizes of coal may be loaded at this tipple. The seam outcrops 1 ft. above the railroad track and dips 3 per cent into the hill. Thus it was that this queer building eventuated.

The mine is only two and a half years old. It was opened and developed by Baton & Elliott, Pittsburgh mining engineers, who designed all of the surface buildings and laid out the general plan of the mine and the scheme of development to be followed. Till the mine was turned over to the Aluminum company it was under the control of the Baton Coal Co. Approximately 1,100 acres of the Upper Freeport bed of coal will eventually be removed through a single slope opening. All the output from this mine will, of course, be utilized by the Aluminum company. A large percentage of the tonnage will be shipped only three miles to New Kensington, where some of the largest mills of the company are located.

How Adverse Grade at Portal Has Been Met

A covered conveyor belt leads from the mine to the tipple. It is set squarely in line with the main haulageway. The coal outcrops along the hillside at a level about 10 ft. above the railroad tracks and then for a distance of 800 ft. dips away from the river on a 3 per cent slope. The bed beyond that point is fairly level.

In devising a surface plant to occupy such a limited area it was necessary to dump the cars inside the mine. In order to carry out this scheme, suitable grades had to be constructed on the 3-per cent adverse grade for the rapid handling of both empty and loaded cars. To this end the bottom was lifted from the inner end of the sidetrack for a distance of about 250 ft., the depth of the cut increasing as the road approached the mine opening. At the foot of this artificial grade a trip-feeder has been installed to facilitate the handling of the loaded cars and assure the empties of a run by gravity back into a parallel heading. This heading follows the dip of the coal and leads to a kickback situated in the front of the dump. This heading was primarily driven to serve as the storage yard for the empty cars as they come off the dump.

Locomotives bring the loads to the trip-feeding mechanism and then switch off to a parallel track and pick up a string of empty cars at the head of the main landing. In case the storage track for the loaded cars is filled when a trip arrives at the landing the locomotive may cut off and run into the empty storage yard

Loading-Boom Over River

A 20-in. belt serves to convey the crushed coal to a telescopic chute at the end of the boom. Rubber belting is the usual means of transportation at metal-mining plants. Coal mines are somewhat slowly following suit.

and allow the uncoupled cars to approach the trip-feeder by gravity.

The loaded cars are uncoupled only as they pass over the trip-feeder. Each individual car then engages the car-haul by which it is drawn up a short 25-per cent slope. Motors for driving both trip-feeder and car-haul are situated in a small room off the bottom of the landing. At the head of the slope the cars are favored by a 2¾-per cent grade to the dump. Each car is weighed before being discharged.

The dumping mechanism is of the Phillips automatic crossover type and the cars discharge their contents into a 2-ton hopper. From the dump the empty cars run by gravity to a kickback, from which they enter the storage track. As has already been mentioned, the heading containing this storage track was driven through the coal and the cars are favored with a 3-per cent grade to the main haulageway.

Locomotive Returning from Main Landing

The heading to the left accommodates the empty cars from the kickback. Note that here the bottom lifting has entirely run out, as this illustration is taken at the inner end of the load tracks.

Mine-Car Haul on a 25-per Cent Grade

The slope of this haul can be appreciated by comparing it with the coal bed on the left. The coal itself is dipping 3 per cent in the same direction as the car haul, but the heavy slope of the latter produces the illusion that it dips in the opposite direction.

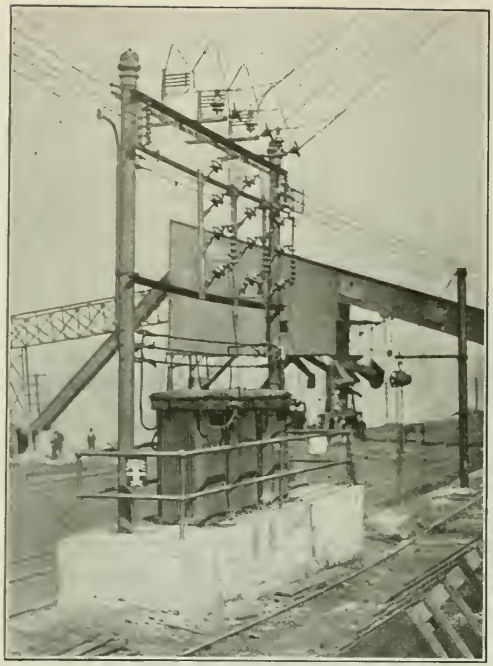
Belt in Condition After Two Years' Use

An apron conveyor beneath the dump hopper feeds the coal evenly to a belt conveyor. This apron is quite short and serves merely to receive the initial shock of the coal as it falls into the hopper. Thus the belt conveyor is never subject to wear other than that incident to transporting the coal to the tipple. This belt, which has already been in service for a period of nearly two years, is in a remarkable state of preservation. This is especially notable when it is considered that it operates on a slope of 25 per cent, which is a large angle of obliquity, making it difficult to transport the lump sizes. The belt as well as the steel members of the river loading mechanism were supplied by the Stephens-Adamson Manufacturing Co.

As the coal leaves the belt at the head of the tipple it drops into a second hopper, whence it passes by gravity over steep chutes. It may thus be sized on gravity screens and loaded into the railroad cars beneath as run-of-mine, lump, nut, or slack, or combinations of these sizes. A plate that forms a section of the chute may be removed and a perforated section put in its place. In this manner the desired separation of sizes may be attained. The tipple equipment was manufactured by the Phillips Mine & Mill Supply Co. The building itself has a steel frame covered with corrugated iron siding. It was erected by the John Eichleay, Jr. & Sons Co., of Pittsburgh. The conveyor belt is driven by a single 15-hp. motor situated at the head of the tipple.

When there is a shortage of railroad cars or it is desired to load the mine product into barges, a hinged steel door at the head of the belt conveyor is swung over and the coal is directed onto an apron conveyor instead of being allowed to pass through the railroad tipple. From this point it is lowered into a crusher and prepared for river shipment. The crusher house is situated on the bank of the river proper and rests upon concrete foundations, one member of which is a pier 12 ft. wide.

The loading-boom for the river tipple is built of structural steel. One end is supported by the pier under the crusher house, while the other is suspended by cables



AN OUTDOOR TRANSFORMER STATION
A minimum amount of space is afforded for the construction of the necessary plant units, and with purchased power this somewhat unusual difficulty has been readily met.

that reach to a framework rising above the crusher house and secured to the railroad tipple. The water level of the Allegheny River is far from constant, therefore an equalizing bar has been placed in the cables that support the boom.

Originally piles were driven into the river bed to form a pier to which the barges could be moored while being loaded. However, little penetration was possible in the river bottom at this point and these piles have since been washed out. In the near future a concrete pier will be constructed to serve the purpose which the piling was designed to fill. This pier also will act as a support for the boom during loading. The conveyor on the river boom is of the belt type and is 20 in. wide. It takes the coal from the crusher and delivers it to a telescopic chute, by which the barges are loaded.

While few men are employed on the surface at this plant, nevertheless the equipment there located is composed of the customary buildings although these are small, in keeping with the size of the mine as a whole. Included in the group of buildings that have been constructed either upon the railroad fill or at the foot of the hillside is a bathhouse and a first-aid dressing station. This operation while small is in every way complete. There is no adjoining town, most of the men employed at the mine living in Tarentum or one of the nearby river communities.

Power for operation of the plant and mine is purchased from the West Penn Power Co. The new power plant of this firm now under construction at Springdale, a few miles down the river, will, when completed, practically insure a continuous service to the mine, and no arrangements have been made to provide for an auxiliary power-generating unit. Current in the high-grade tension line comes to the mine at 33,000 volts and is then reduced through the customary outdoor transformer station, which in this instance has been built close beside the railroad tracks.

Fatal Accidents in West Virginia Coal Mines Increase

FATAL accidents in the coal mines of West Virginia during August totaled thirty-five as compared with twenty-nine in July. All but fourteen of such accidents last month resulted from falling roof and slate, there being two casualties in mine-car accidents, three through electric shock, five in motor accidents, two in railroad-car accidents, one in an outside mine-car accident and one from electricity outside the mines.

Logan had the greatest number of fatal accidents, seven. Raleigh County was not far behind with six, while Fayette County was third with five. There were four deaths in McDowell County, while Tucker and Marion counties each had three. In Kanawha and Mercer counties there were two fatalities and in Boone, Clay and Marshall, one each.

To Test Commerce Commission's Powers

A SUIT seeking to test the power of the Interstate Commerce Commission to enforce Service Order No. 9 of the Esch-Cummins Act as amended and passed by Congress Feb. 28, 1920, was filed in the U. S. Court at Covington, Ky., recently by the Arcadia Coal Co. and thirteen other producing companies in Bell, Knox and Harlan counties, Kentucky. The defendants in the suit are the Louisville & Nashville R.R., the U. S. Government and the Interstate Commerce Commission.

The complaining companies allege that they have millions of dollars invested in mining properties in the three counties named and complain that preferential assignment of coal cars is made to designated coal companies on the Cumberland Valley division of the Louisville & Nashville R.R., which makes it impossible for the complainant companies to market their coal and retain their employees. A preliminary injunction against the practice is prayed for in the petition.

West Virginia Penitentiary to Mine Own Coal from Shaft on Prison Property

A SAVING of $10,000 a year will be effected at the West Virginia penitentiary by the operation of a coal mine on penitentiary property, the entire tract of about sixty acres being underlined with coal, it is believed. By mining its own coal the state will be able to save the amount above stated, that representing the average annual expenditure for heat and power purposes. In order to be in a position to furnish fuel for the penitentiary by the beginning of cold weather, Warden Terrell had the work of sinking a shaft 80 feet deep begun some time ago, the necessary authority having been granted by the State Board of Control. The seam to be developed is 4½ feet in thickness.

Operations at the penitentiary mine, once it is in operation, should not be affected by a shortage of labor, as there are about two hundred prisoners in the penitentiary whose regular occupation has been mining.

Discussion by Readers

Edited by
James T. Beard

Two Types of Mine Officials

Of the two general types of mine officials, the man who is not pinned down to his place but can leave his job for a brief time without obstructing or hindering the work is the more efficient worker.

SOMETIME ago I recall reading an account, in *Coal Age*, of a superintendent being promoted to the office of manager of a large coal company. It was explained that he was the only superintendent employed by the company who could leave his job for a week without his absence affecting the operation of the mine. It strikes me that this is a vital factor in relation to safety in mine supervision.

The man who can leave his job temporarily and the man who must stay on the job constantly are representatives of two distinct types of mine officials, from the president down. The former is responsible for the conditions that allow him a certain amount of liberty, and the latter is responsible for the conditions that keep him a slave to his work. Each of these types of officials has built up an organization that is the controlling factor in determining his freedom of movement and action.

Characteristics That Determine the Personalities of Men

There are certain individual characteristics by which we recognize the type of official, whether we find him with a gang of men unloading supplies, or in the office directing the activities of the corporation. The man who can leave his job is genial, communicative and possessed of a fair-minded judgment. His personality has built up an organization that will stay.

On the other hand, the man who must always be on the job is either grouchy, domineering and obstinate, or he lacks the faculty of training men in the performance of their duties. His personality has developed in his men a spirit of defiance and distrust that requires his constant supervision of their work.

Mark these two men—the one has a smile, the other a frown. The one makes many suggestions and gives few orders, while the other either issues gruff orders or must do a good portion of the work himself to show how he wants it done. The one believes in his men and has inspired them with a good degree of self-confidence that makes them independent workers. The other believes in himself; has little confidence in his men whom he has grown to regard as incapable of profiting by his instructions, while the truth is the fault lies with himself. The one plans his work in conference with his men, while the other works out his own plans alone, leaving the men in ignorance of his purpose and making it impossible for them to become independent workers.

Why there is such a difference in the make-up of men may be difficult to explain. Some men seem to be born with dispositions they cannot shake off. Some make no effort in that direction, but appear to be dominated for good or ill by their environment. Opportunities that are open to them pass unimproved. It is probable that their early training has much to do with the ingrowth of such a character, which is generally difficult to eradicate.

There are many men who fail to learn by experience or observation, and there is little hope of such making efficient or safe mine officials. But, whatever the cause of the observed differences in the dispositions and abilities of men, the results are the same. The official who seeks to intelligently instruct his men by sharing with them the information he possesses and bringing them to realize his own and their responsibility, is not only training them to become independent and faithful workers whom he can trust to perform equally well in his absence as when he is near them, but he is building up a safe organization and has rendered his own service to the company invaluable.

Compare, for a moment, the attitude of such an official with that of one who is jealous of his position, keeps his men purely as subordinates and fails to share with them his responsibility, which would cause them to take an active interest in the performance of their work. Observe closely the effect produced in relation to the safety of the mine and the upbuilding of an organization that stands for success.

The official that makes comrades of his men will find that they will repay him in time. Men naturally respond in kind to the sort of treatment they receive. Let me say, then, for promotion, for salary increase, or a vacation on full pay, I vote for the man who can leave his job with the assurance that it will not suffer in his absence.

George N. Lantz.

New Straitsville, Ohio.

Why American Miners Produce More Coal Than British Miners

Conditions under which the miners work in the mines of Great Britain all tend to produce a lesser tonnage per man, per day, than in American mines.

WITH much interest I have read the various reasons given why American miners produce more coal, per man, that British miners. The last letter on this subject was that of T. J. Shenton, *Coal Age*, Aug. 12, page 350. Neither he nor previous writers, however, have given what I would say is the real cause of the surplus in favor of the American miner.

In the first place, the American miner must work eight hours or thereabouts, at least that is the time he is underground. In the counties of Durham and Northumberland, a coal miner is underground from six to seven hours, but he actually works only about four hours, as he has a long distance to walk in order to reach his place. If he rides to his work, it is at a speed no faster than a walk.

In that country the miner goes below at 10 a.m. and comes again to the surface at 4 p.m. Here, the American miner is lowered into the mine at 7 a.m. and brought to the surface at 4.45 p.m., where I am working at the High Shaft, Steubenville, O. I understand that in many nonunion mines it is not uncommon for the miner to remain underground twelve hours of the day.

Again, the British miner works for a minimum wage of about $4 per day, which is given him whether he earns it or not. He may only mine a bushel of coal, but he has the same wage as if he mined 8 or 10 tons. On the other hand, the American miner is only paid for what coal he mines, which may not be more than a ton, owing to a shortage of cars, a fall of rock or a breakdown in the equipment that throws the mine idle. When a British miner finds he will be unable to produce a good tonnage for the day he will often quit or lie down, knowing that the minimum wage is good to him.

In Great Britain, Saturday is a half holiday and the miners quit at noon but are paid for a full day. The daymen are likewise paid for a full day. This factor increases the cost of British coal per ton and reduces the production per man, as compared with that in this country.

The mining laws of Great Britain, being more strict than those in America, forbid the shooting of coal "off the solid," which is practically unknown in that country, where the miner must *kerve* (undercut) the coal before shooting. The American miner is privileged to get his coal in any manner as best he can, with or without the mining, which is often done by the use of coal-cutting machines. To my mind these are the chief reasons for the surplus American production.

Steubenville, O. H. S.

Things Often Overlooked That Increase Costs in Mining

It is the minor details, which many mine foremen are prone to neglect and postpone giving them the needed attention, that increase cost of production in mining.

MINING officials, particularly mine foremen, have the matter of costs brought to their attention more than any other item connected with the work. Every effort is made to adopt methods and schemes that will reduce the cost of operation. In the excellent letter of M. L. O'Neale, *Coal Age*, Aug. 12, p. 348, appears the heading "Contract Labor Reduces Cost."

What is on my mind at present, however, is not so much the adoption of general plans for reducing the cost of mining. My desire is to call attention to lesser details that seldom seem to worry the average foreman. It is these smaller matters that are so often overlooked but that seriously affect the cost of getting out the coal. In the hope that some mine bosses whose duty it should be to discover and remedy these smaller defects will see and read this letter, I am recounting a few of the items that affect the daily cost-sheet of the mine.

Having been through the mill myself, I realize the difficulties with which the mine foreman must contend; but experience teaches that a car derailed on a poor piece of track may cause a wreck that will mean a few hundred dollars in loss to the company before it is cleaned up and coal is again running. Even with a less serious result, the delay may mean one or more trips less in the day's run. On such an occasion, the mind of the foreman reverts at once to his cost-sheet.

Again, it is no uncommon thing to go into a mine and find the ditches on the main heading blocked with dirt and the water running down the side of the rail and often flooding the track. The foreman has been constantly passing this place, perhaps several times a day, often in an empty car. Occasionally he will send a man with a shovel to throw the dirt from the ditch to the opposite side of the track where it is allowed to accumulate, until the motor scrubs along the rubbish heap, or plunges through the water that covers the submerged rails, when making the trip in and out of the mine. For a distance, the entry is almost impassable from mud and water.

The mine foreman expects sometime that he will be able to improve this condition; but, as long as the motor can drag the cars through, the hoped for improvement is deferred. The motor comes to the tipple or the shaft bottom splashed with water and mud, and the cars are in the same condition. It is needless to remark that it is poor economy to delay the work needed to put a road in good condition. It would not have been so bad had proper attention been paid to keeping the ditches open, and not blocking the road and manholes with the dirt that should have been loaded out of the mine at the time.

To Put Off Attending to Needed Repairs Is Always False Economy

It is always false economy to pass over a bad piece of track, or a worn out frog, a loose joint, or a railbond that needs attention and think that this can be done at a more convenient time. The proper bonding of rails on a haulage road where electric haulage is employed is often overlooked, because it is something that cannot be seen; but its effects are readily apparent in the increased cost of haulage.

The experienced motorman knows when the bonding of the rails is efficient. It is common to see the headlights of a mine locomotive dim when the controller is moved, the cause being frequently due to the lack of the efficient bonding of the rails. The same defect may cause a cutting machine to stop or compel a machineman to release his clutch when the locomotive is operating in that vicinity.

In my opinion there is more time lost in a mine through the bad bonding of the rails on main haulage roads than on any other single item. Experience teaches that where a mine is electrically equipped there should be a mine electrician whose constant duty is to look after the equipment throughout. He should examine the bonding regularly and remedy all defects.

Another matter that is a constant source of expense and trouble is the handling of the water that accumulates in a mine. The average mine boss never likes to put a pump into a place, except as a last resort; and when once in place it is there to stay. Often it happens that a ditch would have served better than the pump to drain the place. The care of a pump is a great consideration, the packings, valves and suction need constant attention, which means continual expense.

Again, many a foreman fails to realize the trouble that will follow when a stump of coal or a few posts are left standing in the waste. By preventing the fall of the roof, extra weight is thrown on the entry pillars, causing the bottom to heave on the road and, possibly,

bringing on a heavy squeeze that may result in the loss of hundreds or thousands of tons of coal before it can be stopped or controlled. To arrest a good squeeze is no simple matter, as every practical foreman knows to his own sorrow.

Speaking of haulage, there comes to my mind an instance where the main headings dipped about 7 per cent. The face headings were turned to the right and left to the main road, on a grade of about 3 per cent in favor of the loaded cars, Butt headings were turned off the face headings and parallel to the main road. The rooms turned off the butts were driven parallel to the face headings.

The 3 per cent grade in the rooms made it difficult to handle the cars; and the entire arrangement, which originated in the office, cost the company thousands of dollars. I will only mention in closing, that great losses result in defective ventilation, contracted airways, leaky stoppings and doors, all of which add to the cost of operating the mine.

THOMAS HOGARTH,
McIntyre, Pa. Supt. Glenside Coal Co.

Organized Labor Not Opposed to Contract Mining

The only restriction imposed on contract mining by the union is that the contract price shall be high enough to cover the wage scale of the district at the time.

SPEAKING of the fact that most of the mines in this country are unionized, M. L. O'Neale asks, "What has the union to say as to one of its members doing something a little out of the ordinary, becoming a little boss of his own, working a little harder and earning more money? Does it sanction or permit such work?" This quotation is taken from a letter entitled "Contract Mining, the Company, the Miner and the Union," which appeared in *Coal Age* Aug. 12, p. 348.

While I am not a member of the U. M. W. A., I want to see the organization continued. Being a lover of fair play, I have often felt that there is a grievous misunderstanding of the principles of that body, which is at times unjustly criticized by the general public and by many miners who appear to be ignorant of its principles, perhaps because they have been unable to read its constitution and understand its bylaws.

Let me say, first, unquestionably the operator of a coal mine, large or small, has a right to use the cheapest means or methods of getting out the coal and putting it on the market. In satisfying his men, securing orders for his coal and selling it in the open market, he is in competition with other operators. The market price of the coal is not always in his control and the question of making a reasonable profit, after meeting all the necessary expenses for materials, supplies and labor, is frequently a difficult one.

Then if an operator enters a contract agreement with two or more men to dig, load, haul or deliver coal to a specified point, at a fixed tonnage rate that will not fall below the wage scale in the miners' agreement with the operators of that district, there can be no objection on the part of the union.

To my knowledge the United Mine Workers of America have never made an agreement with an operator in which any objection was expressed to contract work, so long as the contract price was sufficient to cover the agreed wage scale.

Contract work in coal mines should be encouraged as long as a square deal is assured to all parties. For instance, six miners are hired to draw out the chain pillars on an entry 2,000 ft. from the slope parting, at a specified rate of $1.07 a ton. It is optional whether the foreman or the men pay for the hauling of the coal. Thus, say the foreman hires a driver at $6.25 a day, reserving the right to have the driver do other work when the contractors lay off; or, the contract price may be put at $1.20 a ton and the men pay for hauling the coal, in which case the driver shares equally with the men by doing other work with them.

In reference to the contract system making a man his own boss, every miner who digs coal is practically his own boss. The harder he works the more money he earns. The only restriction placed on him is that he shall work his place in accordance with certain rules and regulations. As Mr. O'Neale has stated, there are among the miners many fine, red-blooded Americans, men who are capable of handling contract work, and every wise foreman will grasp the opportunity of contracting with such men. Let him be assured that the union has never restricted miners or curtailed their opportunities. In proof of this assertion let me quote from a union agreement with an operator, which reads as follows:

> The Company shall see that an equal turn of cars is offered each miner and loader, and that he is given a fair chance to obtain the same. . . . No individual contract shall be made if it conflicts with this agreement. . . . Any member guilty of accepting or contracting for a less compensation for his labor than the prices agreed upon in our contract with the operator shall be deemed guilty of an offense and shall be fined $25.

The foregoing shows clearly the attitude of the organization toward contract labor, the only provision being that wages are not to be reduced thereby. Let me say here that there is nothing wrong in the ideals set forth in the constitution or in the aims and purposes of the organization. Where trouble has arisen it has been due to the unjustified action of certain radical local leaders who, at times, have acted to close a mine in utter disregard of their agreement. For this they have often been censured severely by the higher officers of the organization. Bearing on this point, let me quote the following extracts from the constitution of the order:

> In case of any local trouble arising in any mine through such failure to agree with such boss or foreman and any miner or laborer, the pit committee and the pit boss are empowered to adjust it. In case of their disagreement it shall be referred to the superintendent of the company and the local executive board of the U. M. W. A. If they should fail to agree it is then referred to the president of the district and the manager of the company. In all cases the miners and the parties involved must continue at work, pending an investigation and adjustment, until a final decision is reached.

What is needed in America, today, is for every man who works around a coal mine to dig in and make as much money as he can, whether he is working on contract or employed by the company. No right-minded operator, and certainly not the miners' organization, will tolerate any disreputable profiteering of a miner against his fellow worker.

All must stand for a square deal for the company, the union and the miner, whether the miner is a member of said union or an independent worker. The question of "open shop" or "closed shop" should not come in for consideration, and no advantage should be taken because one good miner can earn more than a fellow working at the same task under the same conditions.

Farr, Colo. ROBERT A. MARSHALL.

Inquiries of General Interest

Answered by

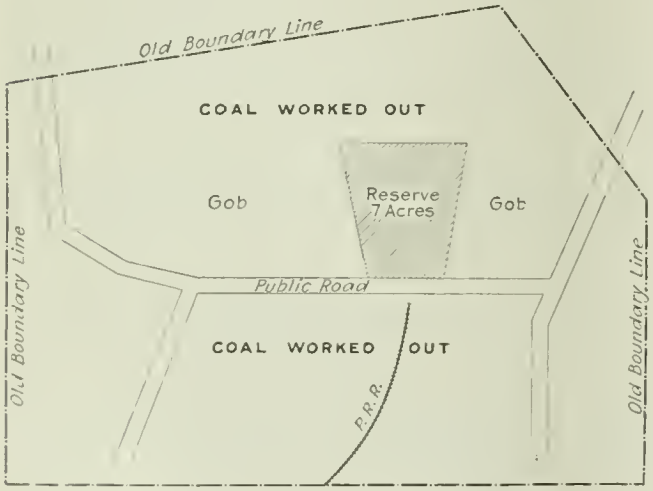
James T. Beard

Working a Coal Reserve

Does it pay to sink a shaft and install the necessary equipment for the development and working of a small coal reserve that was left when the surrounding coal properties were worked out on leases?

BEING a constant reader of *Coal Age* for several years and having noted a number of instances where helpful suggestions and valuable information have been given in answer to the requests of its readers, I am constrained to submit the following proposition, hoping to obtain similar help myself:

Sometime since I came into possession of a property on which the coal rights had been reserved by a former owner, at a time when the surrounding coal was leased to an operating company. As indicated in the accompanying sketch, practically all of the surrounding coal



PLAN SHOWING AN ISOLATED COAL RESERVE

was worked out, leaving this small reserve of seven acres, which represents the property in question. The coal is of good quality. The seam is nine feet thick and lies at a depth of 180 ft. below the surface. As further marked on the sketch, there is a stub switch of the Pennsylvania Railroad extending close to the property line. Assuming that the former openings have all caved and are unavailable at the present time, the question is, Will it pay to go after this coal and how can the matter be accomplished? OWNER.

———, Pa.

In reference to this proposition it can be stated that one would hardly be warranted in making the necessary investment to open, equip and develop such a small reserve, with a view to shipping the coal to market. We would add, however, there are a number of instances where shafts have been sunk and slopes driven to develop small properties for local trade.

Putting aside the question of possible damage to the surface by the extraction of this coal, and assuming a reliable country trade, it is quite possible to realize on such a proposition as this by securing a thoroughly reliable and competent coal miner who has had experience in sinking and developing mines and giving him charge of the work.

With good management it is possible to estimate on realizing a two-thirds extraction of the entire seam, while making ample allowance for losses in mining and handling the output. This would mean an approximate available net tonnage of 75,000 tons.

The success of the undertaking, from a financial standpoint, will depend wholly on the ability and judgment of the man in charge. A rough estimate of the cost might be made about as follows: Sinking, including labor and material, $3,500; entry driving, room turning and other allowances, $1,500; timber, rails, ties and other supplies, $2,000; shaft equipment, including a hoisting engine, cages, pump, piping, scales, screens, etc., $3,000; mine cars and mules, $1,000; repairs and renewals, overhead charges during the life of the mine $9,000; making a total expenditure of, say $20,000 for mining and marketing 75,000 tons of coal.

Finally, allowing for an average of 50 tons per day, for 250 working days a year, the mine would be exhausted in 75,000 ÷ (50 × 250) = 6 yr. To realize a profit of 10 per cent on an assumed investment of $20,000 for six years will require a net profit of 6 (0.10 × 20,000) = $12,000, which would demand a net profit per ton of 12,000 ÷ 75,000 = $0.16, or 16c. per ton.

Volumetric Capacity re Yield of a Fan

PERMIT me to refer to the inquiry of Clifford R. Clark, which appeared in *Coal Age*, Aug. 12, p. 351 where he states the 15 x 4 ft. Jeffrey fan, running at a speed of 110 r.p.m., produced 250,000 cu.ft. of air per minute against a water gage of 3.5 in. Can this be true?

According to my understanding, a fan cannot give more air than its own volume, which in this case is 110 (0.7854 x 15^2 x 4) = 77,754 + cu.ft. per min. Also, the theoretical water gage due to tip speed of 110 (3.1416 x 15) ÷ 60 = 86.4 ft. per sec. is 0.0144 (86.4^2 ÷ 32.16) 0.0766 = 3.34 in.; and the actual gage would probably not exceed 2¾ in.

Being acquainted with this mine, let me state that the mine resistance in winter is much greater than in summer, owing to the closing of the escape shaft to avoid freezing. I believe this accounts for the difference in power consumption in summer and winter.

Peru, Ill. FACE BOSS.

It is wrong to suppose that the possible yield of a fan is limited to its volumetric capacity per revolution. A good fan will often deliver from three to four times its own volume. Mention is made, in the excellent article by David W. Evans, *Coal Age*, Sept. 2, p. 487, of a fan he designed that gave over four times its own volume.

Examination Questions

Answered by

James T. Beard

Mine Foremen's Examination, Held at Old Forge, Pa., May 4, 5, 1920

(Selected Questions)

Ques.—What principle in ventilation is applied when a regulator is placed in an airway in a mine?

Ans.—The principle involved in the use of a regulator is to equalize the resisting power of two unequal airways. The airway having the least rubbing surface, per square foot of sectional area, will have the least resisting power, and when a circulation is set up will take the larger proportion of the air. But, as a rule, such airway requires less air and the other more air than is given by the natural division of the current. Therefore, it is necessary to introduce a regulator to obstruct the flow of air in the airway having the least resisting power, in order to bring about the desired proportion between the two airways. The placing of a regulator in an airway has the same effect as to increase its length or decrease its sectional area. It increases its resisting power and makes the resistance of the two airways or splits equal when each is passing its required amount of air.

Ques.—Make a classification of the accidents occurring in the anthracite mines and state how, in your judgment, they may be diminished.

Ans.—In the order of their importance, mine accidents may be classed as follows:

1. Accidents due to falls of roof or coal. The number of such accidents can be diminished by strict compliance with the mining laws and mine regulations; constant and more through supervision of the work; and maintaining a good supply of needed timber in each working place.

2. Accidents due to the movement of cars. These can be diminished in number by increased discipline in the mine; suitably punishing all violations of the mine rules and regulations; and observing strict compliance with the laws relating to the haulage, hoisting and dumping of coal.

3. Accidents arising from the handling and use of powder and other explosives. To lessen the number of accidents of this class, strict regulations should be made and enforced at the mine. Miners should not be permitted to fire their own shots, except as they are authorized by the mine foreman, after each shot has been properly placed and charged. The use of permissible powders, in place of black powder, will also reduce the number of these accidents. The degree of safety in blasting will depend largely on the character of the rules and regulations made to safeguard this work, and the discipline exercised in the mine.

4. Accidents due to the presence of gas in mines. The number of these accidents can be reduced by a more thorough inspection of the mines, which should be continued throughout the day when the men are at work. Each safety inspector or fireboss should have only such territory as he can inspect and supervise thoroughly. A proper and adequate system of ventilation is essential to eliminate the danger of gas.

5. Accidents due to the lack of safety appliances and the safeguarding of all shafts, slopes, inclines, machinery and all electrical equipment.

Ques.—In a mine where 535 men are employed how many splits of air will be required by law? What will be the minimum quantity of air required?

Ans.—The Anthracite Mine Law prohibits the employment of more than seventy-five men on a single air split at the same time. The number of splits required to comply with this law where 535 men are employed in the mine is $535 \div 75 = 7.1$, or say eight splits. The minimum quantity of air required, in this case, is $200 \times 535 = 107{,}000$ cu.ft. per min., unless the conditions are such that the mine inspector decides a larger quantity of air is necessary.

Ques.—What constitutes a second opening to conform with the mine law?

Ans.—The Anthracite Mine Law (Art. 4, Sec. 1) requires that not less than two openings shall be available for ingress and egress for every person employed underground, except in the development of a new mine, or a new lift, while the work of making connection with such an opening is in progress and not more than twenty persons are employed in the mine at one time. The two openings must be separated by strata not less than 60 ft. in breadth underground and 150 ft. in breadth at the surface.

Ques.—(a) What is the first essential in the economical haulage of coal? (b) What are the principal things to be looked after on haulage roads in mines?

Ans.—(a) The question of chief importance in securing economy in mine haulage is the adoption of a suitable system and method of hauling the coal. This includes the laying out of the haulage roads so as to facilitate the movement of cars in respect to grades and uniform distribution of work. The size and equipment of the mine cars must be such that they can be readily handled under the conditions that prevail in the mine. The main haulage road should be laid out so as to have a slight grade in favor of the loaded cars.

(b) It is important to maintain all track and rolling equipment in good condition. To insure safety separate travelingways should be provided and no person permitted on the haulage roads except those whose duties require them to be there. Where men must travel a haulage road there should be a good clearance space maintained on one side of the road and refuge holes should be provided at short intervals and kept free from all obstruction. Special attention must be given to the timbering to prevent roof falls on the roads, which endanger the lives of drivers and motormen and cause delay. Every effort must be made to provide a full trip in each section of the mine, at stated intervals, and the movement of drivers or motormen must be so arranged as to avoid delays waiting for each other.

Chemists Discuss Colloidal Fuel and New Problems in the Carbonization of Coal

Heat Produced by Devolatilization and Decomposition of Gas Cokes Coal — High Temperature Opposes Coking — Canada Is Looking to Lignite for Fuel — Texas Wants It to Make Gas — Conservation to Meet Coal Shortage — Blazing Colloidal Fuel Sinks in Water

By Staff Correspondent

IN CONNECTION with the semi-annual meeting of the American Chemical Society, the Industrial and Engineering Division held a symposium on fuels on Sept. 9 at Chicago, Ill. This program was arranged by a committee under the chairmanship of A. C. Fieldner, of the Bureau of Mines. Four major topics were discussed by the various speakers: (1) Carbonization of coal, (2) Liquid-fuel problems, particularly those of gasoline, (3) The general problem of fuel conservation, and (4) The problem of sulphur in fuels. This session aroused much interest because of the widespread attention now being given to fuel matters and the present inadequacy of the industrial fuel supply.

Parr declares products of low-temperature distillation and decomposition differ essentially from those formed at high temperature. Stansfield says a ton of dry lignite gives two-thirds of a ton of "char." Schoch obtains 2,000 to 3,000 cu.ft. of gas of 600 B.t.u. from a ton of Texas lignite. Sheppard asserts colloidal fuel is a more powerful fuel than oil. Yancey and Fraser find that no law seems to govern the relation of pyritic and organic sulphur in coal layers.

S. W. Parr presented a discussion of low-temperature carbonization, by which he meant treatment of fuel at temperatures below 750 to 800 deg. C. He indicated that up to this temperature he considered, to all intents and purposes, only the primary products of distillation; the secondary products, which are the results of high-temperature decomposition, do not make their appearance in any quantity until higher temperatures are reached. He criticized the usual method of rating the cokability of coals by the ratio of oxygen content to hydrogen content. He pointed out that conditions under which the coal is treated are of greater importance than this ratio, because if the temperature is properly controlled the oxygen compounds are prevented from interacting with those compounds by which the coke is bound together, such interaction serving to destroy the bonding power of which the coal is possessed.

Can Coke a Badly-Weathered Coal

Mr. Parr mentioned a certain badly-weathered coal which was still suitable for coke production if coked under proper temperature control and advanced the theory that those constituents which are soluble in phenol react upon heating with oxygen compounds and give compounds of variable composition which prevent coking. Particularly did he emphasize the fact that the sulphur, nitrogen and oxygen compounds formed seemed to violate the laws of definite compounds, as the percentage composition of those compounds varied by small steps in a way inconsistent with our usual concept of definite composition.

Because of the low-heat conductivity of the coke mass through which heat must be transferred by ordinary systems of coking this author has undertaken to use the exothermic heat of reaction during coal carbonization to furnish the bulk of the heat required for cooking. He refers to these reactions as proceeding "autogenously."

The main points of interest in this paper of Mr. Parr, which he presented with T. E. Layng and which was entitled "Low-Temperature Carbonization and Its Applicability to High-Oxygen Coals," are briefly summarized in the following paragraphs:

"(1) Under the conditions indicated, the volatile constituents resulting from carbonization are substantially either the primary products of decomposition or of interaction between such products, and bear but little relation to the byproducts yielded by high-temperature conditions.

"(2) The yield of condensible products in the form of tar or oils is from 20 to 30 gal. per ton of coal, depending on the carbonization method employed.

Survey of Progress of Devolatilization

"(3) By separating the coking from the non-coking constituents of high-oxygen coals, and observing the products of decomposition from each at progressive stages of temperature, a knowledge has been gained as to the order of precedence in the decomposing process and also of the character of the products at these successive stages.

"(4) In the case of high-oxygen coal, especially, interactions between certain products of decomposition may take place whereby the bonding property of the coking constituent may be partly or completely destroyed.

"(5) Heat cannot be transmitted by conductivity alone into the center of a non-conducting mass where there is a workable cross-section of 16 to 20 in., except where there is a high-temperature environment, which, of course, would defeat all the ends sought in low-temperature distillation.

"(6) It is possible to utilize the exothermic reactions inherent in high-oxygen coals in such a manner as to

secure the autogenous transmission of heat to the center of an otherwise non-conducting mass and to do it without attaining ultimate temperatures in excess of the prescribed limit.

"(7) The time for autogenous heat transmission is governed by the speed of the exothermic reactions involved and is estimated to be approximately one-fourth of the time required for heat penetration as obtained under high-temperature conditions.

"In general, it is believed that all the products of decomposition have a higher intrinsic value as delivered under low-temperature conditions, chiefly because excessive secondary decompositions are avoided. The solid residue is a smokeless fuel containing from 5 to 15 per cent volatile matter; it is free-burning and of good texture and is primarily adapted to use as a domestic or factory fuel. Whether suitable for metallurgical purposes or not has not been determined." At the present time Dr. Parr has not proposed any definite industrial processes but is working on a basis of a discontinuous operation with 35 lb. samples—i.e., on a commercial laboratory scale."

Carbocoal Furnace Lined with Carborundum

Dr. Harry A. Curtis, chief chemist of the International Coal Products Corporation, reported on the carbocoal process, which has been developed to the point of the installation of a plant having a daily capacity of 350 tons of product, using 500 tons of coal per day. The general process is described by him as follows:

"Carbocoal, as it is called, is a bituminous coal which has been changed into a smokeless fuel resembling anthracite. It is prepared by crushing the soft coal and carbonizing it at the relatively low temperature of 900 deg. F. The carbonizing is performed in a horizontal retort about 7 ft. in diameter and 120 ft. long, lined with carborundum. The coal is continually stirred and moved slowly through the retort by means of paddles mounted on two heavy steel shafts running lengthwise of the retort. Each retort has a capacity of about a ton an hour, the Clinchfield plant being equipped with twenty-four of these retorts.

"Carbonization of the coal in this manner yields about twice as much tar as is obtained from the ordinary coking process, but the semi-coke obtained is quite soft and friable. It can be used directly under the boiler of a power plant or put into a gas producer, but is not in good shape to market as a general fuel for domestic and industrial use. In the carbocoal process the soft semi-coke is ground, briquetted with pitch, and the briquets then carbonized for about six hours at 1,800 deg. F. The effect of this high-temperature carbonization is to render the briquet hard, dense and smokeless —quite unlike any other fuel on the market.

"A further substantial yield of byproducts is obtained during the second carbonization, so that the carbocoal process represents a highly economical method of producing a smokeless fuel from bituminous coal. The high yield of oils obtained also is of great importance in view of the rapidly diminishing supplies of petroleum in the United States and the enormous growth of industries which use oil products such as gasoline, motor spirits, lubricating oils and fuel oil."

A paper entitled "Carbonization of Canadian Lignites," by Edward Stansfield, was presented by Mr. French, the engineer who has been associated with this investigation, covering the work done jointly by the Department of Mines and the Lignite Utilization Board of Canada. This report described the early small-scale experiments and the later larger-scale tests which have led up to the design and construction in southern Saskatchewan of a plant which is expected to handle two hundred tons of raw lignite per day.

The lignites used are available at about $1.75 per ton at the mine. A typical analysis of the material employed, on a moisture-free basis, is as follows: Water of constitution, 31.8 per cent; volatile, 28.9 per cent; fixed carbon, 34.1 per cent; ash, 5.2 per cent. The heating value is approximately 4,260 calories per gram. From this material the following results are reported:

	Percentage of Weight of Dry Lignite	Percentage of Original Heating Value
Water	11.7	—
Gas	17.0	8.3
Crude Tar	4.1	6.0
Residue (char)	66.7	78.1
Loss	0.5	7.6

These represent yields of about 3,150 cu.ft. of gas having heating value of 385 B.t.u. per cu.ft., 5.3 gal. of tar, 910 lb. of residue and 10.2 lb. of ammonium sulphate per ton of dry lignite treated. The process is developed to a point where the tar is distilled and the pitch from this used as a binder for briquetting the char. The principal object of this work is the development of a solid fuel; thus less effort has been made to recover gas and byproducts. The commercial plant is nearing completion and it is hoped that operations will begin within a few months.

Texas Experimenters with Lignite Seek Gas

As a contribution to the discussion of this report, E. P. Schoch, professor of the department of chemistry of the University of Texas, presented a discussion upon the utilization of Texas lignites. The effort in this work was to obtain a supply of city gas, and the tendency was, therefore, along different lines from that which had been sought in the Canadian work.

Special attention has been given to the operation of the retorts under pressure. It had been found that this gave a higher yield of gas, but at the expense of a lower yield of tar. This result probably was caused by the slower elimination of the vapors from the retort, causing a greater cracking and, therefore, larger gas yield from the otherwise liquid constituents.

As a result liquid purification was adopted and favorable results are reported. From 2,000 to 3,000 cu.ft. of gas per ton of raw lignite was thus obtained, with a heating value in the gas approaching 600 B.t.u. per cubic foot. The yields of coke and tar were of the same order as those reported on the Canadian material.

The advantages claimed for this method of handling the coal were: Coke of a high thermal value, gas immediately usable for the city supply, a maximum yield of tar, the opportunity to manufacture the product in a cheap retort of large capacity operating under conditions that make for long life, and the production of a coke that can be briquetted without difficulty.

Conservation Has Already Shown Results

In discussing fuel conservation Dr. Horace C. Porter said, "During the last ten years in America, steel production has increased 60 per cent, railroad traffic has doubled, the automobile industry has multiplied itself ten times, while the population of the country has increased by only 15.2 per cent. In spite of the vastly increased industrialization thus shown, and of a much

higher present standard of living, coal consumption per capita has remained practically stationary, and the consumption of all fuels has increased by a mere 7½ per cent.

"In other words,much progress has been made in fuel economy and there has been a considerable increase in the return from a ton of coal. If this had not been so the present coal shortage would have been much greater than it now is, and our industrial development would necessarily have been restricted accordingly.

"Much coal, however, is still wasted. To make the fuel shortage still less a menace both now and in the future additional fuel conservation should be practiced. Some economy is realizable with little delay, while other forms, accomplishing more, will take time and large outlay.

"In the first class come increased boiler-furnace economy, with careful regulation of flue-gas temperatures and excess air and greater use of economizers, superheaters and feed-water heaters, the application of powdered coal and gas to industrial heating furnaces as in steel and metal-working plants, and the increased use of waste-heat boilers.

Electrified Roads to Save 120,000,000 Tons

"In the second class are many major improvements whereby immense fuel saving is ultimately possible; for example, the electrification of steam railroads, which if completely accomplished in this country would save 120,000,000 tons of coal per year. A centralization of power development in 'super-stations' is possible, either water power being used or large steam turbo-generators, by which system, if developed to the furthest extent of its application, at least one-third less coal would be required per unit of power sent out than is now used in the average small station which these super-stations would replace.

"A large saving in fuel, notably in oil, will come from the inevitable introduction of the heat standard for gas, especially if a low enough standard is set to permit of the highest thermal efficiency in its manufacture and use. Byproduct coking to replace the non-recovery coke-making still practiced in this country would save over 8,000,000 tons of coal per year, besides valuable byproducts.

"It is to be hoped that a gradual extension of these fuel-saving enterprises will reduce the ratio between our fuel consumption and our industrial output, and that as a result the apprehended fuel shortage will be avoided and a lowering of price assured." Dr. C. A. Sheppard then described those blends of oil and coal dust which are termed "colloidal fuel."

"Colloidal fuel," said Dr. Sheppard, "is a name given to a distinct class of liquid to semi-liquid blended fuels. They were developed in this country during and subsequent to the last two years of the Great War. They are composites in which finely divided carbonaceous solids or semi-solids—various kinds of coal—are so suspended in and blended with liquid fuel oils as to form readily stable and atomizing fuels. They have been developed for burning with the regular types of atomizing burners using ordinary fuel oils, but also have possibilities for use in internal-combustion engines of the Diesel and semi-Diesel type.

"The machinery for compounding these fuels is simple; it consists of a suitable mill for pulverizing coal, coke, etc.; storage and blending tanks for the oil bases, and mixing kettles for compounding the composite fuel. Little modification in existing types of machinery is necessary, and the process is readily made continuous. The cost of manufacture may be reckoned at approximately $1.50 per ton, inclusive of the fixateur —a substance used in small quantity to stabilize the colloidal fuel.

"The following is a brief summary of the properties of colloidal fuels. They are liquids which are handled and atomized for combustion like fuel oils. They contain more heat units per gallon than such oils and also little moisture and ash. The temperature at which they take fire—the flash point—is above 200 deg. F. They are immune from spontaneous combustion.

"Not only are they vaporless up to high temperatures, thus avoiding explosive mixtures with air, but they may be fireproofed by a 'water seal' of an inch or more of water, owing to the fact that they are heavier than that liquid. For this reason also they will sink if spilled blazing on the surface of water—that is, they are self-quenching. The fire risk in their use is as low as with anthracite coal, and far less than with bituminous or ordinary fuel oil. They are the most compact fuels known. The advantages of this quality are quite obvious: Increased radius for ships and lessened storage space in crowded cities."

The report by Alfred R. Powell discussed the factors which determine the amount of the sulphur which will be found in the coke and gas produced by the carbonization of bituminous coals. He pointed out the significance of the different sulphur compounds in the coal upon the distribution of the sulphur in the products.

Relation of Pyritic to Organic Sulphur

A report on a similar subject was presented by H. F. Yancey and Thomas Fraser entitled "The Distribution of the Forms of Sulphur in the Coal Bed." In this paper the relative quantities of pyritic and organic sulphur in coal were discussed as follows:

"A study has been made of the quantitative distribution of pyritic and organic sulphur in the various sections or bunches of a coal seam. About 120 samples were collected at twenty working places in three mines, one operating in the No. 6 seam in southern Illinois, one in No. 9 and the other in the No. 12 bed of western Kentucky.

"At each face the seam was divided into from four to eight benches and was represented by a corresponding number of samples. Some of these were taken at places in the bed which showed the coal intergrown and interbedded with lenses, bads and cat-faces of pyrite. The purpose of the work was to determine if any relation exists between pyritic and organic sulphur, and where segregations or concentrations of organic sulphur were found to exist to ascertain whether their occurrence was associated with other impurities or any specific recognizable conditions.

"The data obtained indicate no definite and absolute relationship between the amount of pyritic and organic sulphur in a given bed or sample. A majority of the samples taken at five faces in one mine indicate that an increase in pyritic sulphur is accompanied by a decrease in organic sulphur. This is not uniformly true, and the data do not warrant any such generalization. It may be said, however, that high pyritic sulphur and visible segregations of iron pyrite are not indicative of a high organic-sulphur content."

The Labor Situation

Edited by
R. Dawson Hall

Somerset Gets Standard Wage Increase

TO ACCORD with the advance given the daymen in the Central Competitive region the Somerset County Coal Operators' Association, of Pennsylvania, has agreed to increase the wages of all first-class day laborers in and about the mines $1.50 a day, and trapper boys and men who can do less than a full day's work, 82c. a day, the new scale to date from Aug. 16. Most of Somerset county is non-union.

Ousted Sub-District President Appeals to International Board of Union

H. E. PETERS, who was ousted as president of Sub-District 4 of District 17 (West Virginia) by the district board of District 17, has appealed from the decision to the international officers at Indianapolis. Charges were preferred against Peters by President Keeney of District 17. Just what the charges against Peters were has never been clearly made known. It was a foregone conclusion, however, that the district board would oust Peters, as it is dominated by Keeney.

Would Close Indefinitely to End Frequent Unauthorized Strikes of Union Miners

TWO mine workers at the mine of the Stirling Coal Co. Daniel Boone, Ky., were ringleaders in an unauthorized strike for an increase in pay above that provided in the contract; when the men went back to work the company laid off these men as having been leaders in a breach of contract. This caused another unauthorized strike on Sept. 3, when 125 mine workers went on "vacation." Paul G. Gannon, in charge of the mine operation, has announced that the men will not be re-employed and that the mines will be closed down until the men decide to return to work and perhaps may be closed indefinitely.

Standard Wage Increase Made Effective in Three Large West Virginia Fields

UNDER the agreement reached by representatives of the Northern West Virginia Coal Operators' Association and by representatives of District 17, United Mine Workers, in a meeting at Baltimore the wages of all daymen in the mines of the territory in the Northern West Virginia Coal Operators' Association have been increased, from Aug. 16, $1.50 per day and the wages of boys not paid men's wages at the rate of 82c. per day. This gives the daymen and monthly men in twelve and a half counties in northern West Virginia the benefit of the increase.

The change is in accordance with the amendment to the scale contract in the Central Competitive region. The conference at Baltimore at which the change was discussed and finally agreed upon lasted two days. The agreement was reached by Brooks Fleming, Jr., president of the Northern West Virginia Association, and by George E. Brackett, of Grafton, representing the operators, and by C. F. Keeney, president of District 17, and Charles H. Bateley, international representative, representing the mine workers.

The same rate of increase was granted in that part of District 17 embraced in the Kanawha field, including Big Coal River and Cabin Creek district, at a meeting of the scale committees of the operators and miners held in Charleston during the week ending Sept. 11. The increase dates from Aug. 16. It required little time to reach an agreement. Some of the operators objected to making the increase effective from Aug. 16 in view of the fact that their payrolls had been made up for the last half of August.

When the scale committee of the miners and operators of the New River Operators' Association met on Sept. 13 they likewise entered into an agreement the terms of which were in the matter of wage to adult daymen and boys the same as those just stated, the increase being retroactive also to Aug. 16. Following the meeting of the joint scale committee a meeting of the joint grievance committee was held, at which a number of matters were considered.

Union Driver Seeking Two Hours' Extra Pay Closes Mine in West Virginia

MINERS at the Galloway mine in Taylor County were on strike early this month. This strike grew out of the demand of a driver for two hours' extra pay each day for driving in a wet place. When he was offered an opportunity to drive in a dry place he refused to accept the change but clung to his demand for the two hours' extra pay. The company declined, however, to allow him the extra pay, pointing out that it would be in violation of the scale contract. Following the company's refusal to grant the extra pay to the driver, the entire force at the Galloway mine ceased work. There is a provision in the general wage agreement for settlement by joint board action of such cases as caused the trouble at Galloway.

Operators to Make Prompt Payment of Back Money to Mine Employees

WITH reference to the retroactive feature of the award of the Anthracite Coal Commission, at a meeting of the Joint Scale Committee of Anthracite Operators and Mine Workers held Sept. 2, 1920, the following resolution was adopted:

"Resolved that the back money shall be paid in one payment as soon as possible, but in no event shall the payment be deferred beyond Oct. 16, 1920."

Morgantown & Kingwood Strike Steadily Loses Ground; Many Are Evicted

UNION activity appears wholly unable to keep the strike along the Morgantown & Kingwood Ry. in northern West Virginia from coming to an end although not a point has been gained. This is shown by the fact that the Penn-Mary Coal Co., against which the strike is principally directed, because of its refusal to yield to the demands of the United Mine Workers, is operating at 70 per cent of normal capacity. In fact the only mines of the Penn-Mary Coal Co. not in operation are the Richard No. 21 mine and the Kingwood No. 24 mine.

At Bretz the company has thirty-two men at work as compared with forty before the strike; at Sabraton the mine is short only six men as compared with the number at work on the day preceding the strike; at Masontown more men are at work than was the case on the day preceding the strike. The company has an average normal production of 1,800 tons a day. During the first few days of September the company instituted eviction proceedings against a number of striking miners at Kingwood who were still in possession of company houses, as they had been since July 11.

Not only has the Penn-Mary Coal Co. succeeded in operating despite the strike but the Connellsville Basin Coke Co. also is operating its mines on a basis of between 50 and 75 per cent of normal and expects soon to be operating to capacity. Steps are being taken by the company to evict miners who are still occupying company houses at Rock Forge, W. Va., although they have gone on strike and have accepted work elsewhere.

Despite Steady Work Texan Mine Workers Ask for Increased Pay

REPRESENTATIVES of the Texas coal miners and operators are in session in Fort Worth in an effort to negotiate a new wage scale and contract and to settle recent controversies. The miners are demanding an increase of $1.50 a day, which will bring the daily wage to $7.50, and it is believed that an agreement can be reached on this point without difficulty.

The representatives of the miners are George R. Sparling, of Gordon, a member of the union executive committee; Matt Rosatto, Ed Tidewell and Ed Autrey, of Thurber; W. W. Mumford and Tony Brazik of Strawn; Soren Anderson and Lee Smith of Lyra, and John Wilkinson, president of District 21, United Mine Workers of America. The mine owners are represented by Judge E. B. Ritchie of Strawn, attorney for the coal operators; Gomer Gower and Ed Britton of Thurber; W. H. John of Bridgeport; W. F. Nance of Newcastle, and W. K. Gordon, president of Thurber Coal Co.

The situation in Texas with regard to the wage scale, as viewed by the mine owners, was outlined by Judge Ritchie in these words:

"Following the awards of the Bituminous Coal Commission appointed by President Wilson last winter to investigate all phases of the coal industry and to determine what increases in the wage scale were necessary to the miners to meet the increased cost of living, the Texas conference of miners and operators, as in other fields, met in Fort Worth in April and entered into a two-year working agreement, making effective the increase awarded by the commission, the contract being for a period of two years, beginning April 1, 1920, and ending March 22, 1922.

"In the Texas mines, the increase at that time represented a net increase since 1913 and prior to the war of 111 per cent to all daymen working in and about the mines, and an increase of 89 per cent for those digging coal on a tonnage basis. For instance, mule drivers, motormen and other drawing $2.84 a day in 1913 are now drawing, according to the April agreement, $6 a day.

"While no formal demands have been made to the Texas operators that have been invited into this conference, it is assumed that the same demands will be made for increases in the Texas mines as have been granted in the Central Competitive Field and some states of the Southwest.

"While the Texas operators are willing that their employees be paid fair and even liberal wages, they believe that consideration should be given to the fact that the operators are working thin beds, which occasion much expense, and that the mine workers of Texas have steady work in the mines, faring indeed much better during the railroad car shortage than the mine workers in most other sections. The Texas operators can see no reason why the two-year contract so recently entered into should not be lived up to in good faith by both parties."

Shooting Is Outcome of Union Activity at Penn-Mary, near Morgantown

ABE MURRAY, a striking miner, shot and seriously wounded Scott Felton, aged 63, a former member of the West Virginia Legislature, who was employed as a guard by the Penn-Mary Coal Co. at its Richard mine on the Morgantown & Kingwood R.R., where there has been a strike for some time. Murray fired at Felton from a second-story window. Previous to the shooting of Felton, Murray, while under the influence of liquor, made the statement that he intended to shoot the first guard who came along.

Felton was walking down a road near Murray's house when the latter opened fire on him. Felton received the brunt of the charge of the shotgun in the right side of his face, fifteen No. 5 shot being removed by a physician from his face. Murray was arrested and held on a charge of felonious assault with intent to kill. Murray had been employed for a time as mine guard but yielded to strike propaganda and became a supporter of the strike. His discharge naturally followed.

Three Thousand Men in Northern Colorado File Notice of Strike with Commission

SEEKING recognition of the union, 3,000 men in northern Colorado are threatening to go on strike. They have been promised a new wage scale to date from Sept. 1 and this will be paid as soon as it is worked out.

A meeting was held at Erie, Col., at which men from the Boulder and Weld mines were in attendance. The miners want a 20 per cent increase for "dead work." There is no dispute about the pay of daymen. Everyone is agreed that the $1.50 per day additional wage will be allowed. In accord with the law the State Industrial Commission must receive thirty days' notice, and the mine workers on this occasion are complying with the legal provisions.

Suspension of Priority Improves National Coal Situation

East, Middle West and Northwest, Where Conditions Are Acute, Helped by Lifting of New England Order —Railroads Equal to Northwest's Needs

WITH the temporary suspension by the Interstate Commerce Commission of the New England priority order, which called for shipments of 1,250,000 tons of soft coal a month to tidewater for transshipment to New England ports, the entire soft-coal situation throughout the country is appreciably improved. Discontinuance of New England priority, which was ordered last week by the commission at the request of the New England Coal Committee, makes it possible for a substantial quantity of coal, released from tidewater shipments, to be diverted to other points in the East and in the Middle West. The National Coal Association states that this coal can be diverted without prejudice to the supply New England will need next winter.

Renewal of Priority Not Likely

Although the New England priority order is only temporarily suspended, every evidence is at hand to indicate that New England's demands for the remainder of the year will be met without further resort to preferential shipments. The estimated requirements for New England for the calender year of 1920 are 22,000,000 tons of soft coal. From Jan. 1 up to Sept. 11, 15,480,000 tons had been shipped into New England. Of this, 8,094,000 tons went all-rail and 7,386,000 tons by way of tidewater. It is expected that the remaining 6,520,000 tons needed to supply the 22,000,000 tons for the winter will be shipped into New England before the middle of December. The railroads have signified their ability to handle this tonnage in the ordinary way in tidewater and all-rail movements.

Evidence of how effectively the New England priority order worked is found in official figures submitted to the U. S. Geological Survey showing recent movements of coal for New England. Under the program agreed upon by the bituminous-coal operators and New England coal distributors early in July a movement of 2,000,000 tons of coal a month all-rail and through tidewater was set down. Of this, 1,250,000 was to go to tidewater and the balance all-rail. In July 2,573,000 tons of soft coal were shipped to New England, 1,566,000 all-rail and 1,007,000 through tidewater. In August 2,458,000 tons were shipped in the New England movement, of which 1,048,000 were dumped at tidewater and 1,410,000 went all-rail. The all-rail shipments are estimated from reports of the American Railroad Association on the number of cars moving through the Hudson River gateways.

The fact that New England had at the beginning of last week all the coal at disposal that could be immediately absorbed in the tidewater and all-rail movements was the factor that induced the New England Coal Committee to advise the Interstate Commerce Commission that the priority order was no longer necessary.

With the New England situation now admittedly so improved that special relief is no longer necessary, efforts are being redoubled by the operators, railroads and shippers to clear up the shortage in the Northwest, where the situation has been even more acute. While there has been a slight decrease in the last three weeks in the Great Lakes movement under Service Order No. 10, the railroads are endeavoring to make up the deficiency, with the announced expectation of fully meeting the requirements before the close of navigation, about Dec. 1. Up to last week the Lake movement for the year aggregated approximately 13,900,000 tons, out of a scheduled movement of approximately 24,000,000 tons. The remaining tonnage must be shipped before the lakes become unnavigable, entailing a movement of over 1,000,000 tons a week. This the railroads promise to accomplish.

Ample Nationwide Supply Assured

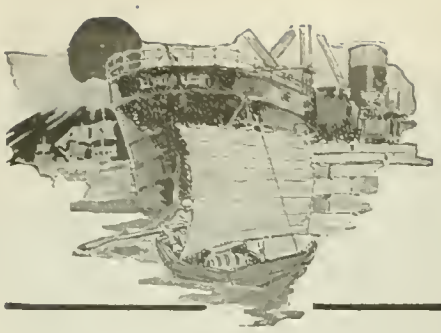
As soon as the Northwest program is cleared up ample coal will be released for the balance of the country, with every assurance that all the wants of the large and small consumers will be adequately met before winter sets in.

While public utilities commissions in Ohio, Indiana and Michigan have expressed concern as to the wants of householders in those states being filled before winter, it may be stated that there is no need for alarm. The Ohio situation recently was taken up by the bituminous-coal operators and the railroads in conjunction with the retail dealers of Ohio communities in direst need, and a program was developed to give an immediate supply of coal sufficient to last until the Great Lakes movement is out of the way. In the same way consumers in other states will be furnished with coal for immediate uses. Assurance is given by coal producers that householders need not feel it necessary to fill their bins with the entire winter's supply at this time. By taking only enough coal now to tide them over Dec. 1 the entire situation, it is promised, will work out with no great deprivation to anyone.

Bituminous Coal Loaded Into Vessels at Lake Ports as Dumped by Docks for Season to End of August

(In Net Tons)

Ports	Railroads	1920 Cargo	1920 Fuel	1920 Total	1919 Cargo	1919 Fuel	1919 Total	1918 Cargo	1918 Fuel	1918 Total
Toledo	Hocking Valley	1,811,256	34,760	1,846,016	2,984,508	84,205	3,068,713	2,801,425	82,015	2,883,440
	Toledo & Ohio Central	854,755	35,862	890,617	885,291	26,713	912,004	1,266,574	35,579	1,302,153
Sandusky	Baltimore & Ohio	644,643	20,507	665,150	1,623,051	37,891	1,660,942	1,558,519	28,731	1,587,250
Huron	Pennsylvania	723,938	9,312	733,250	936,149	26,513	962,662	1,343,597	33,946	1,377,543
Lorain	Wheeling & Lake Erie	1,123,653	61,928	1,185,581	1,063,902	34,409	1,098,311	1,293,953	47,605	1,341,558
Cleveland	Baltimore & Ohio	1,723,662	131,549	1,855,211	1,961,786	103,710	2,065,496	1,791,676	52,494	1,844,170
	Pennsylvania	445,663	80,582	526,245	1,598,451	163,919	1,762,370	1,493,807	185,607	1,679,414
	Erie	140,609	10,617	151,226	135,170	4,289	139,459	388,508	12,773	401,281
Fairport	Baltimore & Ohio				16,692	12,954	29,646	105,173	27,758	132,931
Ashtabula	New York Central	698,814	148,576	847,390	1,246,265	93,481	1,339,746	1,204,297	134,006	1,338,304
	Pennsylvania	820,404	55,126	875,530	1,260,910	57,258	1,318,168	778,520	50,526	829,046
Conneaut	Bessemer & Lake Erie	1,478,112	24,251	1,502,363	935,857	5,739	941,596	1,405,475	21,309	1,426,783
Erie	Pennsylvania—West	110,116	8,008	118,124	527,052	27,338	554,390	432,146	25,824	457,970
	Pennsylvania—East	86,901	47,039	133,940	145,472	9,328	154,800	248,035	5,953	253,988
Totals		10,662,526	668,117	11,330,643	15,320,556	687,747	16,008,303	16,111,705	744,126	16,855,831



Foreign Markets and Export News

Queensland's Coal Production

The annual report of the Queensland Department of Mines states that the total quantity of coal raised in Queensland last year was 931,631 tons, of a value of £614,307 (normally equal to $3,071,535), this being, as compared with the 1918 yield, a decrease of 51,562 tons in production, but an increase of £42,002 (normally equal to $210,010) in value. There were increases both in quantities and values on the Darling Downs, at Maryborough, Rockhampton and in the northern district, while Clermont recorded a lessened output, but a rise in values. There were forty-eight collieries in operation in Queensland, of which twenty-six were in the Ipswich district.

Reported Coal Output of Devastated Areas of France

Production of the coal mines of the Western Basin of the Pas-de-Calais for the months of June and July, after making allowance for wastage in sorting and washing, according to the Board of Trade Journal, amounted to 736,600 and 747,000 tons, respectively, made up as follows:

	July, Tons	June, Tons
Bruay	209,500	214,000
Noeux	169,000	164,000
Marles	168,900	162,000
Bethune	140,500	136,000
Ferfay	21,500	22,000
Liguy-le-Aire	14,200	14,500
Vendin-Lez-Bethune	15,000	14,000
Clarence	8,400	8,300

The production for July, therefore, shows an increase of 10,200 tons over the production for June, during which month there was an increase of production over the May figures of no less than 312,000 tons.

The production of the mines in the Department du Nord for the months of June and July was 146,010 and 176,154 tons respectively, after making allowance for consumption at the mines and for loss by sorting and washing. The amount given was made up as follows:

	July, Tons	June, Tons
Aniche	50,872	35,504
Anzin	82,030	70,990
Azincourt	814	275
Crespin	3,350	2,341
Douchy	6,717	6,924
Escarpelle	692	26
Thivencelles	3,991	4,408
Vicoigne	2,344	1,915
Dourges	3,579	3,600
Ostricourt	21,771	19,818

The work of restoring the mines at Lens is being actively pushed forward, and it is thought that it may be possible to turn out a few tons in the very near future from a small seam which was recently cut into during the work of reopening the pits.

The following figures are an estimate of the future production of the mines in the Department du Nord, which, given an adequate supply of labor and an absence of strikes, it is confidently believed will be actually attained in thousands of tons:

	1920	1922	1924	1925	1913
Anzin	1,500	3,000	3,800	4,000	3,042
Crespin	45	90	100	120	73
Thivencelles	90	150	250	250	177
Vicoigne	18	65	120	120	98
Douchy	90	350	450	500	365
Azincourt	15	60	100	120	93
Aniche	615	2,060	2,810	2,915	2,093
Elines-les-Raches		10	40	80	124
Escarpelle	50	420	560	630	750

The production of these mines in 1913 is given for purposes of comparison.

Europe Seeks Coal in the Orient; Japanese Market Dull

According to the coal market report of Wheelock & Co. issued at Shanghai Aug. 12 there was very little business done in the Japanese coal market during the preceding fortnight and on account of the high price of coal in Japan the silk Filatures have been more or less obliged to fall back on native coal. The coal market in Japan is rather dull, as is usual at this season of the year, and mine-owners are inclined to reduce the output for the time being owing to the general depression in trade existing.

There are numerous deals in Fushun coal under consideration and a fairly large business is expected to result in the near future.

Since the previous report rumors have been persistent of large quantities of Chinese coals having been sold for delivery in Europe, but so far it has not been possible to confirm the same, although one shipload of about 7,000 tons has been actually shipped to Denmark. It is realized that coal is urgently needed in Europe, owing to the restrictions placed on the export by the British and American governments, but it is doubtful if China can spare coal in anything like the large quantities which are now being inquired for.

Owing to the improved political situation in the North, shipments of Kaiping coal are more frequent, consequently deliveries have resumed normal conditions. Stocks are below the average and the market for better grades shows a decidedly firmer tendency.

A cargo of about 1,500 tons of Cardiff coal (Admiralty list) has just been landed at Shanghai. This is the first cargo to arrive since the outbreak of the Great War, but it is not for sale on the open market, having been imported for the use of the British government.

Coal prices are quoted as follows:

JAPAN COAL

Miike lump	..ex wharf	Contracted for
Miike small	..ex wharf	
Miike dust	....ex wharf	
		Taels
Kishima lump	....ex wharf	14 00
Kishima dust	....ex wharf	—no stock 10 00
Shakano lump	....ex wharf	13 00
Arate lump	....ex wharf	12 00
Shimoyamada Kirigomi	..ex wharf	11 00
Shin Shakano	....ex wharf	11 00
Yoshinotani No. 1 lump	ex wharf	12 00
Yoshinotani No. 2 lump	ex wharf	10 00

KAIPING COAL

	Taels per Ton ex Wharf
No. 2 lump	13 50
Washed nuts	13 50
Washed slack	10 50
No. 1 slack	9 00
No. 2 slack	8 50

Freight Rates to European and South American Ports Easier

W. W. Battie & Co.'s coal trade freight report announces the chartering of numerous steamers to carry coal to European and to South American ports. Freight rates to these destinations are easier. The West Indian situation is unchanged.

Freight rates by steamer are as follows:

Destination	Rate	Tons Discharged Daily
Malmo	About 15 00 —	1,000
Copenhagen	About 15 00 —	1,000
Stockholm	About 15 50 —	800
Gothenburg	About 15 00 —	1,000
Antwerp Rotterdam	About 12 50 —	1,000
Hamburg	About 14 50 —	1,000
French Atlantic ex Rouen	13 00 13 50 —	700
Algiers	15 00 15 50 —	800
West Italy	About 15 00 —	1,000
Marseilles	About 15 00 —	1,000
Piraeus	About 16 50 —	1,000
Trieste, Venice	About 16 00 —	1,000
Port Said	16 00 16 50 —	1,000
Constantinople	17 00 17 50 —	500
Gibraltar	About 14 50 —	1,000
Pernambuco	About 14 50 —	500
Bahia	About 14 50 —	500
Rio	About 14 50 —	1,000
Santos	About 15 50 —	600
Buenos Aires or Montevideo or La Plata	14 00 14 50 —	750
Para	14 00 14 50 —	500
Rosario	About 15 00 —	750
To Nitrate Range	12 00 13 00 —	750
Havana	About 6 50 —	500
Sagua or Cardenas	7 50 8 00 —	300
Cienfuegos	7 50 8 00 —	500
Caibarien	7 50 8 00 —	300
Guantanamo	7 50 8 00 —	500
Manzanillo	About 9 00 —	300
Bermuda	About 7 00 —	300
Bermuda p. c. and dis. free		
Kingston	About 8 50 —	400
Barbados	9 50 10 00 —	500
St. Lucia	9 50 10 00 —	500
Santiago	7 00 7 50 —	500
Port of Spain, Trin.	9 50 10 00 —	500
Curacao	About 10 00 —	500
Free p. c. Curacao		
Demerara	About 13.00 —	400
St. Thomas	8.50 9 00 —	500

All above rates gross from charter

News from the Capital

By Paul Wooton

Chile Seeks 50,000 Tons of American Coal for Navy Use

AMBASSADOR MATHIEU of Chile has taken up with Chairman Benson of the Shipping Board the matter of transporting in American Government-owned merchant ships 50,000 tons of coal for the use of the Chilean Navy.

Operators Say That High Production Costs Justify $5 Mine Price in Kentucky

THE Department of Justice is in receipt of a copy of the findings of a special Federal grand jury in Covington, Ky., which holds that prices in excess of $4.50 to $5 a ton for bituminous coal at the mines are unreasonably high. In justification of the $5 limit it was said that production costs are higher in the field under investigation by this grand jury than in other fields.

Wholesale Association Engages Counsel in Profiteering Inquiry

STANCHFIELD & LEVY, a New York legal firm, has been retained to represent the American Wholesale Coal Association before the Department of Justice in matters pertaining to profiteering.

American Coal Association Intervenes in Reconsignment Case

THE American Wholesale Coal Association, having elected to intervene in the case brought by the Omaha Chamber of Commerce attacking the reconsignment order, has retained William A. Glasgow, Jr., of Philadelphia, as counsel. The case will be argued before the Interstate Commerce Commission about the middle of October.

Assigned-Car Demand Increases Despite New Public Utilities Order

THE new public-utilities order seems to have been ineffectual in stopping a rapid increase in the number of assigned cars being demanded under that order. The new order was expected to make a pronounced decrease in the amount of coal being moved in assigned cars for public utilities. Instead, the number of cars being demanded by the public utilities has continued to increase rapidly. With the cars being used for railroad fuel and for Lake orders there are few left for commercial coal in the district furnishing Lake coal. Assigned cars also give the public utilities a splendid weapon to use on prices. On the other hand, the operators, to obtain the advantages which come from plentiful car supply, are inclining more and more to take utilities contracts at a shaded price.

The situation has been further aggravated by the new wagon-mine order, which has imposed an important draft on car supply at a critical time. The National Coal Association is urging its members to watch carefully for violations of the wagon-mine order and abuse of the public-utility order. The fault is said to lie with the difficulty of policing the orders. The Interstate Commerce Commission is cognizant of the situation and predictions are being made that modifications will be forthcoming soon.

A development in the Northwestern situation is the fact that nearly all the coal moving now has to be bargained for at lower Lake ports. Apparently there was nothing like the amount of coal under contract that the Northwest had represented. It also is stated that operators are not shipping to the Lakes more than their quota which may be under contract. When the order was issued there was a tentative understanding that shipments were to be made to the full amount called for in Northwestern contracts even if the quota should be lower than the contract amount.

Smokeless Exports Not Likely to Increase With Lifting of New England Order

SUSPENSION of the New England order has given rise to predictions that a large proportion of the smokeless coal will now be exported. There is no justification for this conclusion, it is stated at the Washington office of the Smokeless Coal Operators' Association, as the bulk of the coal produced in the smokeless fields is under contract. It was stated that the smokeless operators never were stampeded by the high prices and that no contract coal has been sold at spot prices, despite the fact that contract prices frequently have been $10 under the spot market. The unvarying policy of the smokeless operators, it is explained, is to take care of those sections of the United States which are dependent upon it for coal. New England contracts will be scrupulously filled, regardless of the offers which may be made by foreign buyers.

Every effort has been made by the smokeless operators to take care of the State of Virginia, it was pointed out. Since the formation of the Emergency Coal Committee, under the chairmanship of Oscar M. Deyerle, the 350 cars of emengency coal requested by the committee have been furnished.

Railroad Relations Committee Meets

THE Railroad Relations Committee of the National Coal Association held its regular meeting in Washington Sept. 29.

Survey Geologist Studies Virginia Coal

DAVID WHITE, the chief geologist of the U. S. Geological Survey, is conducting a series of paleontologic investigations on the coals in the Big Stone Gap region of Virginia.

National Coal Officials Confer with Western Associations

COLONEL D. B. WENTZ, president of the National Coal Association, and J. D. A. Morrow, vice-president, are now on a western trip. They were in Kansas City on Sept. 27 and in Denver on Sept. 28 and 29. They have been in conference with several of the Western coal associations.

Shipping Board Pays $9.30 for Coal Which The Navy Gets for $6.80

THE Shipping Board is not at all pleased with the situation at Hampton Roads which makes it necessary for it to pay $9.30 for smokeless coal, while the navy gets the pick of that coal for $6.80 a ton. Secretary Daniels fixed $4 as the price for navy coal at the mines, which results in a cost at Hampton Roads of $6.80. The Shipping Board's contract originally was for $8.25 delivered at Hampton Roads. The contract was contingent on freight rates, however, and since Aug. 6 it has been forced to pay $9.30.

Illinois and Indiana Coal Now Helping Solve Northwest's Fuel Problem

THAT unusually large quantities of Illinois and Indiana coal are moving into the Northwest is reported to the Interstate Commerce Commission. It is stated that these coals are going into the iron ranges in Minnesota for the first time in history and that Illinois coal is being stored on upper Lake docks, which also has never happened before. Despite the movement of Middle Western coal into the Northwest, the commission seems to be of the opinion that it is not sufficient to offset the loss of movement in Lake coal prior to the issuance of Service Order No. 10.

West Virginia Operations Surrender Books In Price Investigation

DEPARTMENT of Justice activities in following clues, real and imaginary, in the matter of coal profiteering are proceeding with unabated vigor. A considerable proportion of recent callers at the Department of Justice are said to be coal men who have been making personal visits to department officials to set forth their side of the situation.

Two hundred and five West Virginia bituminous coal operators accused of profiteering to the extent of from $1 to $10 per ton, have surrendered to the Department of Justice and agreed to open their books.

When the allegations were first made the operators defied the Government. They changed their minds, however, when about to be summoned before a grand jury.

New England Priority Suspended

ACUTE shortage of coal in the Northeastern section of the country having been to a great extent mitigated by shippers and carriers under Service Order No. 11, the New England Coal Committee requested suspension of the New England priority order. Accordingly on Sept. 17 the Interstate Commerce Commission temporarily lifted the order by the issuance of the following:

It appearing that the emergency which caused the commission on the 26th day of July, A.D., 1920, to make and enter its Service Order No. 11 has been measurably relieved:

It is ordered that the operation of said Service Order No. 11 be, and the same is hereby, suspended until the further order of the commission.

It is further ordered that copies hereof be served upon the carriers upon whom Service Order No. 11 was served and that notice hereof be given to the general public by depositing a copy of this order in the office of the secretary of this commission.

Fuel-Inspection Work of Bureau of Mines Promises to Expand

IT IS probable that the fuel inspection work being done by the Bureau of Mines will be expanded during the next fiscal year. The demand for fuel inspection, along the lines of government inspection of grains, cotton and other agricultural products, is becoming more widespread. There is evidence that coal operators are viewing Government fuel inspection with much less aversion than has been the case heretofore.

Tidewater Movement of Coal During August Establishes a Record

TIDEWATER movement of coal during August, 1920, established a new record. The total dumped at the four North Atlantic ports and Charleston is reported to the Geological Survey by the Tidewater Bituminous Coal Statistical Bureau as 5,352,000 net tons, an increase over July, hitherto the maximum, of 437,000 tons. Shipments of cargo coal to New England increased slightly, amounting to 1,048,000 tons. There was a marked increase in the local tonnage at the ports and in that for coastwise destinations other than New England. Exports rose to a new record, 2,295,000 net tons.

TIDEWATER BITUMINOUS COAL SHIPMENTS FOR AUGUST, 1920 BY PORTS

(In Net Tons)

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Total Dumped
Coastwise to New England	337,000	38,000	115,000	558,000		1,048,000
Exports		321,000	557,000	1,347,000	70,000	2,295,000
Bunker	354,000	53,000	83,000	295,000	8,000	793,000
Inside capes		190,000	107,000	26,000		323,000
Other tonnage	832,000			57,000	4,000	893,000
Totals	1,523,000	602,000	862,000	2,283,000	82,000	5,352,000

The destination of coal dumped at tide during the two weeks Aug. 29-Sept 12 is shown in the following table. Shipments to New England were 309,000 net tons in the week ending Sept. 4, and 261,000 tons the following week.

TIDEWATER BITUMINOUS COAL SHIPMENTS, AUG. 29—SEPT. 12, 1920 (a)

(In Net Tons)

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Total Dumped
Aug. 29-Sept. 4:						
Coastwise to New England	106,000	16,000	48,000	139,000		309,000
Exports		117,000	58,000	281,000	13,000	469,000
Bunker	109,000	12,000	8,000	60,000	3,000	192,000
Inside capes		38,000	31,000	6,000		75,000
Other tonnage	184,000			3,000	2,000	189,000
Totals	399,000	183,000	145,000	489,000	18,000	1,234,000
Sept. 5-12						
Coastwise to New England	111,000	14,000	38,000	98,000		261,000
Exports		81,000	112,000	237,000	9,000	439,000
Bunker	126,000	13,000	12,000	54,000	2,000	207,000
Inside capes		48,000	28,000	5,000	1,000	82,000
Other tonnage	188,000	4,000		11,000		203,000
Totals	425,000	160,000	190,000	405,000	12,000	1,192,000

(a) As reported to the Geological Survey by the Tidewater Coal Statistical Bureau

Jobbers, Wholesalers and Retailers To Be Heard in Indiana Price Fixing

INDIANA'S Coal and Food Commission announced a second hearing in connection with the fixing of coal prices, for coal jobbers and wholesalers, would be held Sept. 29 at 9 a.m. The third hearing, for retailers, has been called for Oct. 1. Operators' prices and problems were considered at the first hearing, Sept. 27. The commission is empowered to fix prices only on coal produced in the State of Indiana.

Despite High Prices Canadian Coal-Supply Situation Gives No Cause For Alarm

Imports From the United States Continue Close to the Average of Former Years—Anthracite Totals Gain, While Bituminous Figures Decrease—Dominion Monthly Coal-Supply Bulletin To Be Issued

By S. J. Cook*

DESPITE much loose talk to the contrary, the Canadian coal-supply situation does not appear alarming, although prices continue high and no immediate relief may be expected. The production of bituminous coal in the United States during the 199 working days ending Aug. 21, 1920, and for the corresponding periods in preceding years, according to figures supplied by the U. S. Geological Survey, was as follows (in net tons): 1917, 352,011,000; 1918, 375,395,000; 1919, 287,270,000; 1920, 335,967,000.

The year 1920, therefore, at Aug. 21, was 16,000,000 tons behind 1917 and about 39,500,000 tons behind 1918, but was 48,666,000 tons ahead of 1919. In this connection it is pointed out that production during 1918 exceeded consumption and provided for a net addition to consumers' stocks by the end of the year of approximately 30,000,000 tons. In 1919 the condition was reversed; consumption exceeded production and there was a net draft on stocks of perhaps 40,000,000 tons for the year.

United States production of anthracite showed an output of 55,712,000 net tons for the calendar year up to Aug. 21, 1920, compared with 52,678,000 for the same period during the preceding year.

Coal Imported from the United States

During the last five years Canada has imported from the United States bituminous coal in quantities varying from 9,000,000 tons in 1915 to 17,250,000 tons in 1918. Anthracite imports varied during the same years from 4,000,000 to 5,333,000 tons.

Central Ontario had received up to June 30, 1920, 99 per cent of the average amount of anthracite coal received during the corresponding six months in the three preceding years and 106 per cent of the amount of anthracite received during the same period in 1919. The bituminous coal supply is not as good. Receipts this year constitute only 89 per cent of the average amount for the corresponding six months of the three-year period, but when taken against last year's receipts 1920 shows an increase of 9 per cent over 1919. Quebec has received this year 110 per cent of the average amount of anthracite obtained during the same six months' period of three years preceding and 119 per cent of the amount brought in during the first six months of 1919. Receipts of bituminous are lower, the 1920 figures being 65 per cent of the three-years' average and 74 per cent of 1919 imports.

Total coal imports for Canada show that this year's receipts of anthracite to June 30 are 101 per cent of the three-years' average and 107 per cent of last year's receipts during a similar period. Bituminous coal imports into Canada up to June 30 have fallen this year to 80 per cent of the average for the same period during the three preceding years, but they still add up to 97 per cent of the receipts during the first six months of last year.

These data will serve to inform the reader that while there is undoubtedly a shortage of coal it is not such as to cause undue alarm. There seems no reason why United States production should not continue on the same scale as at present, and with the return of the United States railways to private control, transportation facilities probably will be considerably augmented, so that the losses due to car shortage may be reduced, and the consequently increased distribution will make for general relief.

Canadians never will be content to be absolutely dependent on the United States coal miner, hence a policy looking to the better development of Canada's coal fields would be acclaimed by both miners and consumers. Co-ordination of effort with the elimination of obsolete methods and unnecessary local competition in Canadian coal-mining districts would do much toward Canada's coal problem. But governments, capitalists and miners have all much progress yet to make before the necessary spirit of unity will be found pervading all.

Canadian Coal Output Increases

Coal mining in Canada has been subject to many vicissitudes and yet, in spite of all, the output from Canadian mines during the first three months of the present year was nearly half a million tons in excess of the output during the same three months of 1919, and if production is maintained at the same rate during the remainder of the year, the Canadian output in 1920 will exceed that of 1913, which so far holds the record at 15,500,000 tons.

Canadian output figures are given below for the years 1913-1919 inclusive, and for the three years 1917-18-19

CANADIAN OUTPUT OF COAL

1913	15,532,878	1915	13,480,196
1914	13,988,743	1916	14,815,703

	1917	1918	1919
Nova Scotia	6,345,335	5,836,370	5,790,196
New Brunswick	189,668	266,565	166,377
Saskatchewan	360,623	348,988	379,347
Alberta	4,873,637	6,126,453	4,950,310
British Columbia	2,660,834	2,879,099	2,549,516
Yukon	5,264	2,900	
Canada	14 435,361	15,460,385	13,935,745

Production in January, February and March

	1919	1920
Nova Scotia	1,448,588	1,591,170
New Brunswick	52,813	32,444
Saskatchewan	80,837	93,563
Alberta	1,416,578	1,732,330
British Columbia	736,748	*675,016
Canada	3,735,564	4,126,523

*Incomplete

*Chief of the Mining, Metallurgical and Chemical Division, Dominion Bureau of Statistics.

the output of each coal-producing province is recorded. Comparative figures for the first three months of the current year and last year also are given. All quantities are given in short tons.

To meet the very evident need for data regarding output, exports, imports, and movements of coal, and in order that the general public may be kept accurately informed regarding Canada's coal supply, it is proposed to issue from the Mining, Metallurgical and Chemical Division of the Dominion Bureau of Statistics a "Coal-Supply Bulletin" each month, giving all the available statistics relating to the production and disposition of Canadian coal, and the importation and distribution in Canada of coal from the United States. Owing, however, to the present extremely high costs of printing, issuance of the first number of this bulletin, which it was proposed to publish at this time, has been postponed as changes are now being made in the multigraph equipment of the bureau, which, when completed, will permit of the printing promptly and at greatly reduced cost of such publications as the one proposed.

During the recent administration of fuel control in Canada under C. A. Macgrath the necessity of maintaining accurate records of all data relating to coal production in this country and imports from the United Sattes in readily available tabular form was so emphasized that the principal records inaugurated under that régime were merged with those previously compiled in the Dominion Bureau of Statistics, and when the Mining Division of the Bureau was established last year, under my charge, the collection of adequate records of coal supply was one of the first matters given attention. The whole of this work is now on a permanent basis, and the several Government departments interested are being served through the co-ordination of provincial and dominion effort made possible by the bureau. Therefore the "Coal-Supply Bulletin," compiled each month from the wealth of data available in the Mining, Metallurgical and Chemical Division of the bureau, will provide a new service to the public, and will enable the bureau to keep its many correspondents on the subject of coal promptly and fully informed on the subject. The critical surveys made from time to time will serve to review and interpret the data recorded.

Data Collated by Co-operative Effort

Output and disposition of coal figures are obtained in the bureau through the co-operative assistance of the several provincial departments administering the mining laws in the coal-producing provinces. This scheme, inaugurated in January, 1920, provides for the collection of production data from the mine operators by provincial officers, thus insuring the highest degree of reliability in the data collected. Returns are obtained in duplicate, and one copy, after visé by the provincial officers, is forwarded to Ottawa for compilation, with the data from the other provinces, by the trained staff of the Mining Division. This plan has resulted favorably, not the least of the advantages gained going to the mine operator, who now completes one form each month, knowing that he will not be required to do the same work over several times more for other Government departments. The present arrangements are working so smoothly and well that the "Coal-Supply Bulletin" will contain complete output figures for the month preceding its date of publication.

Imports of coal into Canada, and exports therefrom, are supplied to the bureau twice a month through the courtesy of the Department of Customs. These figures are absolutely up to date and all coal coming into Canada from the United States is shown by quantities and kinds for each port of entry. Exports of coal produced in Canada also are shown by quantities shipped through each port of exit.

These data, with the production figures obtained through the provinces, enable the bureau to survey the coal situation continually, and to determine with facility when a fuel famine threatens. All the information thus collected is carefully compiled and tabulated, and digests are prepared for the various administrative offices, including more particularly the Railway Commission.

A mailing list is being prepared and those who wish to have the "Coal-Supply Bulletin" forwarded to them regularly free of charge should send in their names and postal addresses at once to the Chief of the Mining, Metallurgical and Chemical Division, Dominion Bureau of Statistics, Ottawa.

Federal Courts in West Virginia to Sift Profiteering Charges

At the September term of the Federal Court for the southern district of West Virginia at Huntington an effort will be made to begin the trial of cases against fifty-seven coal companies in southern West Virginia against whom charges under the Lever Act of profiteering in the sale of coal have been preferred by the Department of Justice. E. Lowery Hume, a special assistant Attorney General, who was at one time U. S. Attorney at Pittsburgh, has been retained to assist U. S. Attorney L. H. Kelly in the trial of the cases.

Up until about Sept. 1 all but about twenty companies, warrants for which had been issued, had answered to such warrants without service, but the twenty companies mentioned were somewhat slow in making arrangements for their appearance at court. Should there be a failure on the part of some of the companies to make arrangements for their appearance warrants will be served, of course.

A statement bearing upon the subject was given out by the United States Marshal in which he said: "Owing to the short period of time between now and the convening of court at Huntington on Sept. 21 and the additional work entailed by the approach of a term of court this office would be glad to have all the coal companies and operators who have not already arranged and given their bonds or had hearings before the U. S. Commissioner to come in at once and arrange these matters. By doing so they will avoid the necessity of sending a deputy marshal to serve the papers which are now in my hands." No such actions, it is believed, will be necessary, however.

Contrary to the method followed in southern West Virginia approximately 150 coal operators will be asked to appear before the grand jury of the Federal Court for the northern district of West Virginia at Martinsburg at the September term to tell what they know as to prices in northern West Virginia. Subpoenas for 150 operators either have been or will be served by the U. S. Marshal's office, such subpoenas having come from the office of U. S. Attorney S. W. Walker at Martinsburg. Operators affected are those having mines for the most part in Monongalia, Preston, Marion, Taylor and Harrison counties.

Issuance of the subpoenas for so many northern West Virginia operators no doubt was the outcome of a perusal of an investigation which has been made by the agents of the Department of Justice who have been engaged for some time in the northern part of the state in making an investigation of coal prices, coal costs, etc. Agents of the department were afforded full opportunity to examine the books of companies and all other data available.

The action taken in northern West Virginia differs from that taken in southern West Virginia in that in southern West Virginia companies and operators have been haled into court not upon the presentment of any grand jury but upon information furnished by the U. S. Attorney.

* * *

Late advices are that the Grand Jury investigation of coal operators of Northern West Virginia, which was to have been conducted at Martinsburg this week, is to be held in abeyance. It was stated at the Department of Justice after the conference Sept. 24 between a committee of coal operators and Henry S. Mitchell, assistant to the Attorney General, and U. S. Attorney Walker of the Martinsburg district. The official statement made in this connection by the Department of Justice is as follows:

U. S. Attorney Walker and Acting Assistant to the Attorney General Mitchell have received and considered the resolutions adopted at the meeting of coal operators of northern West Virginia held at the Fairmont Hotel, Fairmont, W. Va., on Wednesday, Sept. 22, 1920, presented in person by a committee of the operators together with the statement of counsel for the committee that the operators may be expected to co-operate in voluntarily furnishing information desired by the U. S. Attorney concerning prices charged for bituminous coal in the northern district of West Virginia, together with the request that the subpoenas outstanding against the operators to produce books and documents before the grand jury at Martinsburg, W. Va., on and after Monday next be temporarily suspended.

The numerous outstanding subpoenas were necessitated by reason of previous refusals to permit an inspection of books and documents desired by the U. S. Attorney. In view of the present disposition of the operators to furnish the desired information voluntarily, the U. S. Attorney will suspend the outstanding subpoenas pending his further consideration of the subject and inspection of the documents to be furnished.

The U. S. Attorney will resume proceedings before the grand jury as soon as he considers advisable, with a view to taking any action which may be necessary under the Lever Act with reference to the prices of bituminous coal. The U. S. Attorney will call a special grand jury if necessary.

It is understood that the Department of Justice will insist upon the immediate correction of three matters: Resales through brokers and consequent pyramiding of prices; sales of coal at spot prices which should be applied on contracts; neglect of American obligations in order to export coal at high prices.

A fair-price committee has been selected to co-operate with the Department of Justice in determining price matters in northern West Virginia. The committee is made up as follows: Wheeling district, J. C. McKinley; Upper Potomac district, Douglas Gorman; Morgantown-Kingwood district, J. L. Hatfield; Fairmont district, C. H. Jenkins; Clarksburg district, A. Lisle White; Grafton-Elkins district, Everett Drennen; at large, Brooks Fleming, Jr. George T. Bell has been selected as secretary for the committee.

Assigned-Car Case To Be Tried Before Supreme Court

THE case of the Lamberts Run Coal Co. vs. Baltimore & Ohio R.R. is now before the U. S. Supreme Court. It probably will be argued before the highest tribunal before the end of October. The trial court in this case granted an injunction against the Baltimore & Ohio in the matter of assigning cars for railroad fuel, but the case was appealed to the Circuit Court of Appeals, which reversed the decision of the lower court. The case now goes to the supreme court on a writ of error. There are a number of cases pending which attack the legality of the practice of assigning cars, but since the Lamberts Run case is furthest advanced the decision in this case is expected to settle the question.

Coal Consumed in Six Months by Railroad Locomotives

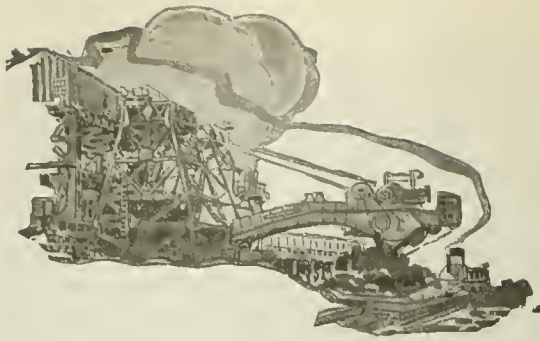
DURING the first six months of 1920 the principal railroads of the country—those with operating revenues in excess of $1,000,000 annually—used 55,325,387 tons of coal in locomotives. This was somewhat in excess of the quantity burned during the same period of 1919, which amounted to 47,585,257 tons. Details of coal consumption during the first six months of 1920 and of 1919 are as follows:

Region	Net Tons Purchased 1920	Net Tons Purchased 1919	Average Cost per Net Ton 1920	Average Cost per Net Ton 1919
New England	2,416,285	2,111,868	$7 08	$5 96
Great Lakes	9,315,074	7,782,016	3 95	3 45
Ohio-Indiana-Allegheny	13,158,608	11,315,750	3 31	2 81
Pocahontas	2,524,336	2,172,705	3 19	2 62
Southern	8,669,843	7,284,145	3 48	3 28
Northwestern	7,372,055	6,476,886	4 01	3 88
Central Western	8,617,569	7,340,126	3 35	3 04
Southwestern	3,251,617	3,151,761	3 96	3 55
All regions	55,325,387	47,585,257	$3 54	$3 35

Destination of Cargo Coal Dumped at Lake Erie Ports to Aug. 31*

Destination	1918 Net Tons	1918 Per Cent	1919 Net Tons	1919 Per Cent	1920 Net Tons	1920 Per Cent
American:						
Lake Superior Ports	6,560,000	40 7	6,942,000	45 3	4,228,000	39 8
Sault Ste Marie Pt and River points	391,000	2 5	216,000	1 4	355,000	3 3
Lake Huron - Georgian Bay ports	328,000	2 0	202,000	1 3	118,000	1 1
Lake Michigan ports	4,600,000	28 6	4,654,000	30 4	2,495,000	23 4
Port Huron and Detroit River	227,000	1 4	209,000	1 4	484,000	4 5
Lake Erie ports	38,000	0 2	56,000	0 4	20,000	0 1
Total American	12,144,000	75 4	12,279,000	80 2	7,700,000	72 2
Canadian:						
Lake Superior ports	1,348,000	8 36	1,094,000	7 1	797,000	7 5
Sault Ste. Marie Pt. and River points	728,000	4 5	496,000	3 2	674,000	6 3
Lake Huron-Georgian Bay ports	666,000	4 1	468,000	3 1	415,000	3 9
Port Huron and Detroit River	294,000	1 8	237,000	1 5	208,000	1 9
Lake Erie ports	8,000	0 04	34,000	0 2	10,000	0 1
Lake Ontario and St Lawrence River	923,000	5 8	713,000	4 7	859,000	8 1
Total Canadian	3,967,000	24 6	3,042,000	19 8	2,963,000	27 8
Grand total	16,111,000		15,321,000		10,663,000	

*Statistics furnished by courtesy of Ore and Coal Exchange



Production and the Market

Weekly Review

Production of Bituminous Shows Marked Gain — Anthracite Mining Again Approaches Normal—Car Supply Is Not Improved—Prices Are Firm and Demand Strong—Export Inquiries Increase.

WITH the exception of that for Aug. 14, bituminous production for the week ended Sept. 18 was the largest since January, according to figures of the Geological Survey. The output is estimated at 11,614,000 net tons. The anthracite strike caused the combined production of hard and soft coal to fall below the weekly average for August.

Anthracite production increased 153,000 tons, a total of 699,000 tons being mined for the week, about 39 per cent of the pre-strike average. Beehive coke production declined 8 per cent to 402,000 tons.

One factor of the increase in bituminous coal mined was the release of cars from the hard-coal region for use in bituminous fields. The mining of anthracite is now at normal, practically all the men having returned to work. This condition will make fewer cars available for soft-coal loading.

Various local disturbances among the bituminous miners are affecting production and with the expected decrease in car placement will probably curtail next week's output.

Prices remain firm. The demand for all coal is unabated and while there is less buying activity by manufacturers, this is offset by heavy calls for export and retail trade.

Coastwise movement to New England for the week amounted to 254,000 net tons; by rail 5,824 cars were forwarded. Exports showed a substantial gain, 507,000 net tons being dumped as compared with 439,000 tons for the preceding week.

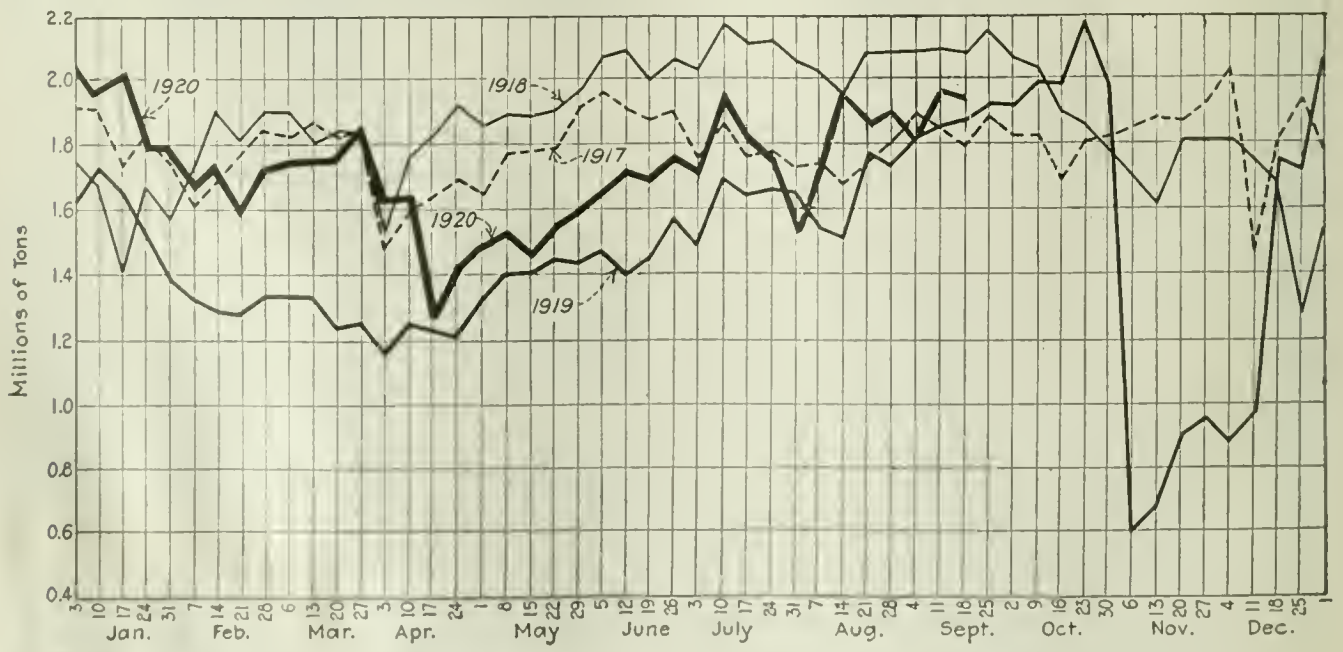
Lake shipments for the week ended Sept. 25 were 888,993 tons, a decrease of 118,000 tons when compared with the preceding week. Some concern is being shown by shippers and Northwest dock operators over the decreasing amounts being sent forward.

Lake Coal Dumped Season to Sept. 25

(NET TONS)

	Cargo	Fuel	Total
1919.....	17,495,404	823,785	18,319,189
1920.....	14,363,402	823,812	15,187,214

Average Daily Production of Bituminous Coal*



*From weekly report of Geological Survey.

Reports From the Market Centers

New England

BOSTON

Railroad Buying Causes Slight Lift in Prices — Better Car Supply, but All-rail Movement Falls Off—Less Coal at Tidewater—Occasional Slow Despatch at Hampton Roads—Higher Prices on Water Coal Increase Inquiry for Rail Deliveries — Widespread Anxiety Over Small Receipt of Anthracite.

Bituminous—Renewed buying on the part of the railroads has caused somewhat higher prices for spot shipment. One road here has bought at around $8.25 for Phillipsburg coal and figures have ranged from that to $10. Competitive buying by brokers has also been renewed on a small scale and it seems now that quotations will be on a higher level for the next 30 days.

Car supply is now fully adequate in most districts, light mining at so many operations having contributed to this result. Receipts at the Hudson River portals have fallen off since Sept. 15. Reserves are still being accumulated, however, without much recourse to spot buying and neither in textiles nor other industries is there prospect of greater production.

Now that Order 11 has been definitely cancelled, the various agencies are counting on less embarrassment over placing grades not well suited to this market. At Baltimore and Hampton Roads there is, at the same time, congestion on high-ash, high-volatiles and an actual shortage of low-volatiles due on contracts.

The past fortnight, there has been difficulty at Norfolk and Newport News over getting contract coal through to the piers. Demurrage has resulted with increased costs to consumers here.

Receipts from Hampton Roads this week are carrying the 40 per cent increase in tolls, and this, together with accrued demurrage, means an advance of more than $1. Naturally, when to this is added the 40 per cent increase inland from rehandling plants at this end, consumers are led again to think of deliveries all-rail. There is still in evidence, however, the old preference for the smokeless coals.

Current quotations on wholesale bituminous range about as follows:

	Clearfields	Cambrias and Somersets
F.o.b. mines, net tons	$8 00@ 9 50	$8 50@10 25
F.o.b. Philadelphia, gross tons	11 60@13 30	12 20@14 10
F.o.b. New York, gross tons	12.00@13 75	12 70@14 60

Pocahontas and New River, f.o.b. Boston or Providence are quoted $13.50 @$16 per gross ton on cars.

Anthracite—Resumption of mining last week in the Schuylkill and Hazelton districts somewhat relieved the tension, but shipments to New England are so far extremely light.

Tidewater

NEW YORK

Resumption of Anthracite Mining Is Welcomed — Stocks Are Low—Demand for Bituminous Is Strong—Export Inquiries Increase — Vessels Leave with Short Bunker Supplies.

Anthracite—Resumption of mining was glad news to the local trade. Supplies have reached the low-water mark. Considerable of the tonnage used in downtown office buildings is being taken from reserve stocks on the Jersey side and carried across in trucks.

Supplies at the piers have practically disappeared. With shipments from the mines practically nil, retail dealers were filling orders from their reserve stocks, which are considerably smaller than they have been for the past few years.

Conditions at the ports receiving coals from the lower mining fields are worse than at the upper ports which receive their shipments from the upper fields.

Dealers who are regular buyers of coal received at the upper ports are able to get an occasional cargo but these are few and far between.

Notwithstanding the influx of buyers from Canada and the Northwest, quotations for independent domestic sizes have not advanced. Comparatively little of this coal is coming to Tidewater.

The demand from New England continues strong and wholesalers and operators are endeavoring to send large tonnage forward before transportation difficulties have to be overcome.

Free steam coals are scarce. With the supplies running low, users are now mixing these coals with bituminous. The better grades of buckwheat No. 1 are being quoted around $6 at the mines; rice $2 less, and barley, which was long with some dealers, was quoted $2.25@ $2.50. Quotations for company coals, per gross ton, at the mine and f.o.b. New York Tidewater, lower ports, are unchanged.

Bituminous—Demand is active but pier supplies are not heavy. Prices are a trifle stronger than last week. This may be due to lack of anthracite, and also to the reported action of some operators in adding to the price to partially cover the increase in wages granted the miners in some districts.

There has been an increase in inquiries for export, some heavy tonnages being sought. Coals for bunker are scarce, some vessels leaving this port with low supplies.

Continued improvement in the situation is now expected, with suspension of the New England priority. Other sections of the country are reaping the benefits derived from this suspension and after these needs have been partially satisfied larger shipments will come to this Tidewater.

Although car supply shows improvement there is no considerable activity at the mines. High-grade coals move steadily and command good prices.

Light barges are plentiful in this harbor. Freight charges are normal within the harbor limits. The loaded boats have been nearly cleaned up.

Unclassified high-grade coals intended for New England shipment were quoted at $10.50; Pool 11 from $8.75@ $9.25 and Pool 10 around $10. There was a good demand for Pool 34 and prices were strong.

PHILADELPHIA

Little Anthracite Reaches City—Dealers and Consumers Become More Insistent — Company Prices Unchanged for October—Steam Coals Are Difficult To Get — Bituminous Prices Fail To Drop — Plenty of Strike Talk — Good Tide Business—Coke Prices Are High.

Anthracite—With a week elapsing since the miners began to return it has been the rare exception for any dealer to get coal, that is, those who are located on the Philadelphia & Reading R.R., which line handles the bulk of the city tonnage. Shippers give little encouragement of anything like heavy deliveries. They point out that at many mines this week the resumption was only about 70 per cent and little can be expected immediately in the way of better production. Western points are particularly clamorous at this time.

One of the larger companies has stated that the prices from Oct. 1 will be unchanged. This would indicate that the winter schedule has been settled.

All orders that the larger companies take are accepted with the understanding that they are for October delivery, and even at this the business is being held down to their regular trade on the basis of the allotment made in the spring.

The demand for steam sizes grows stronger. Storage stocks of rice and barley have been almost exhausted. Buckwheat of any grade seems to be out of the question and even old customers are likely to be hampered in getting their full shipments for some time.

Bituminous—The real feature is the firmness of prices. It was thought that with the adjustment of the anthracite trouble there would be some softening in bituminous, but this has so far failed to happen. There have been times of temporary softness in prices. For a few days Pool 10 was selling around $9.50, with Pool 11 about $1 less.

Shortly after there was a jump of a dollar. The chief reason seems to be the growing unrest among the bituminous workers. The Central Pennsylvania district is particularly troublesome just now.

Fairmont prices are still high. They started the week $9.50@$10 and the middle of the week saw $10.50 reached. Late in the week prices took a quick jump to $11.50@$12, and even these prices only represented the ordinary grades, as the low sulphur coals were entirely out of the spot market at any price.

The demand from the local trade is light. With industries quiet, the buying is far from heavy and most sales are made to concerns who feel they are compelled to buy a small amount to tide them over to the time when they feel sure that prices must be lower by several dollars.

Public utility plants have secured an extension of the order which expired on the 18th and the coal which was expected to be available in a moderate amount from that source has not reached the spot market. In addition, the railroads are taking a heavy share of high volatiles.

The main strength of the situation is in Tide coals. Without this business there would be available a heavier tonnage than the spot market would absorb, without a stringent price reduction. Export business still goes on under the permit system and the tonnage moving seems only to be limited by the vessels available.

Coke—Prices remain high. Furnace coke of Connellsville grade is around $18, with foundry at $19@$19.50. There have been some offerings of foundry at figures running $14.50@$17, but much of this is of a quality that has difficulty to make a market.

BALTIMORE

Bituminous Prices Quite Firm — Demand Is Heavy—Car Placements Are Not So Good—Anthracite Shipments Are Now Coming Forward.

Bituminous—The many predictions that the break in the coal market which had become evident just prior to the ending of the New England preferential order, would be accentuated by the end of this order, have not been borne out as yet.

The best Pennsylvania line coals are readily commanding $10.50@$11, and in some cases $11.50, while best Baltimore & Ohio line coals are $10@$11. Even the least desirable coals are readily absorbed in a market of steady and healthy demand for all classes of fuels, and are commanding from $8 up.

Immediate demand, both for domestic and at Tide for bunker loading, combined with the fact that car supply has dwindled decidedly, has stiffened prices considerably. Car supply on the Baltimore & Ohio R.R. eastern line is in the 60 per cent class, while the western lines have dropped to around 55 per cent run. The Western Maryland R.R. supply has fallen in some districts back of 75 per cent. Baltimore & Ohio daily loadings are now at times considerably below the 3,000-car mark, while the reserve at the pool has dwindled to around 1,000 cars at Curtis Bay and but a few hundred at Canton.

Anthracite—It can now be reported that hard coal deliveries are increasing. At first the renewed receipts consisted largely of independent coals, but now a fairly free flow is reported. It will take an abnormal run for several weeks to really put the trade here back on a normal basis. The better run covering practically all sizes is encouraging, however, and the proportion, if increased a bit and then held steady, would allow a fairly even distribution of coal for the most urgent needs before winter sets in.

Lake

BUFFALO

Bituminous Demand Is Lower—Price Decline Continues — Production Not Hampered by Car Supply, but Labor Is the Controlling Factor — Hard-Coal Situation Is Better—Lake Dumpings Negligible—Coke Demand Is Good.

Bituminous—The situation has improved in general but for the miners' meetings in the Clearfield district and the continued demands for more pay. Some of the shippers predict a stiffening market because of the light stocks in railroad hands and the near approach of weather that will require coal for heating.

It is plainly a contest between the consumer and the miner, and shippers generally say that the consumer will win. There are already reports of coal offered below $8. Shippers say there is too much surplus coal now in the country to expect anything but steady decline in prices for some time yet.

Of course the miners will stand in the way of price reduction as long as they can. Many of them are getting their pay on a percentage of the price of coal and if that goes down the wages must go too, or the mines will have to shut down. The car shortage is no longer the main element in production, for it is easy to get freight moved now.

The price of gas coal continues high. Seldom can it be moved for less than $10 and often even more is asked.

Anthracite—Production is now coming up again, but the men are returning to work slowly. At any rate the situation, which has been extremely bad, is improving. The scattering of the men to work in the fields, to take advantage of the fine weather and to attend picnics and fairs, is always large at this time of the year and will continue till the weather becomes unpleasant, when they will return rapidly. Coal came in at a fair rate last week, considering the condition of the mines, but most city retail trestles did little business.

Lakes—Loading was reduced so that some days nothing cleared. Shippers predict that the situation will improve fast enough now to prevent any serious difficulty.

The amount of coal loaded into vessels for the week was only 31,550 net tons, of which 6,500 tons cleared for Waukegan, 12,250 tons for Duluth and Superior and 12,800 tons for Chicago.

Coke—The demand is in excess of the supply and prices are strong at $18 for 72-hour Connellsville foundry, $17 for furnace and $14 for low grades.

There are offerings of byproduct coke at $10.75@$11 for stove and nut and $9 for pea delivered, with no large sizes moving.

MILWAUKEE

Supply Still Matter of Great Anxiety —Receipts of Anthracite Falling Off— Shortage of High-Grade Soft Coal Is Hampering Utilities.

Receipts of anthracite by Lake show a falling off, but the soft-coal tonnage is increasing. As the liberal inflow of hard coal had served to instill confidence as to the winter supply, this drop naturally has a disturbing influence.

The shortage in high-grade bituminous, which is practically unobtainable here at the present time, has become so acute that public utilities are unable to render efficient service. The gas furnished is short in heat units and patrons of electric companies are warned that there is danger that the supply will not be sufficient during the busy hours of the day. Strict economy is urged.

The better soft coal which comes from the East seems to have been bought up. Prices of coal hold steady.

Receipts of coal by Lake from the beginning of the season aggregate 565,146 tons of anthracite and 1,401,400 tons of soft coal, against 633,267 tons of the former and 2,388,618 tons of the latter during the same period last year. The docks begin to show signs of an accumulation of soft coal.

MINNEAPOLIS

Stocks Are at Minimum—Urge No Modification of Order 10—Heavy Movement by Lakes Now Necessary.

Trials and tribulations have attended the local coal trade for several years but never has there been quite so difficult a situation to face as now.

When the end of July was at hand it was clear that the Northwest would be entirely destitute of fuel if there were not heroic measures taken, and the Interstate Commerce Commission granted a priority via the Lakes.

But Order 10 was not self-enforcing. It was one thing to order 4,000 cars of coal a day diverted to the Northwest, but it was quite another thing to produce that number of cars.

So, with September gone, there is a shortage of soft coal on the docks on Lake Superior of 4,500,000 tons and an anthracite shortage of around 10 per cent. The hard coal situation was running fairly even with a year ago up

to the time that the "vacation" obsession struck the miners. It may be made up later but this seems unlikely, for there are accumulated orders from the territory nearer at hand which will prevent any surplus to make up the shortage thus developed.

There remain some 8 or 9 weeks of Lake navigation at the most. It is in a period when storms and difficult navigattion may be expected. The possibilities seem to be limited for making up any great amount of the shortage.

To add to this trying situation, there are repeated efforts being made on the part of cities of Ohio and adjoining states to have a portion of the coal which is coming to the Northwest diverted to other districts.

One cause for the shortage was the fact that the scarcity prompted people to bid up the market. Local concerns had coal under contract at $8@$9 delivered, but the open market was paying that much at the mine. Coal has therefore been listed in the Twin Cities $8@$13 a ton. Buyers who want to get quick shipment have to pay the top price.

No one knows how long these extreme prices will keep up. Many expect them to fall off as soon as there is a reasonable catching up with the demand.

The stocks in the interior of the Northwest are at a minimum, ranging 10 to 30 per cent of the normal winter's supply. The docks are almost bare.

CLEVELAND

Bituminous Market Is Easier—Lake Receipts Lower—Industrial Supplies Are Better—Retail Shipments Expected To Increase.

Bituminous — With the ratification of the agreement reached between representatives of northern Ohio cities and coal operators and railroads, a better flow of coal into this district is expected soon.

Cancellation of Service Order 11 for coal movement to New England is expected to release additional fuel for this territory. This factor, combined with the general improvement in railroad movements, should result in a much better coal situation shortly.

Steam coal for industrial uses is showing an easier tone, the spot market now being quoted at $8.25@$8.75 a ton as compared with the peak price of $10 and more reached some weeks ago. The trend in the industrial coal market is due to the slowing down of manufacturing activities in this district.

Lake—Some shortage of car supplies continues on a few roads. Receipts for Lake shipment are light. Only about 3,300 cars are being loaded daily as against the average of 4,000 cars the latter part of August.

Retail prices of coal per net ton delivered in Cleveland follow: Anthracite—egg, $15.85@$17; chestnut and stove, $16@$16.25. Pocahontas—shoveled lump, $16; mine run, $12.25@$12.50. Domestic bituminous — West Virginia splint, $13@$13.25; No. 8, $13.25; Millfield lump, $14.50; Cannel lump, $15@$15.50. Steam coal—No. 6 and No. 8 slack, $11.50@$12.75; No. 6 and No. 8 mine run, $13.60@$14.25; No. 6 ¾-in. lump, $14.45.

Inland West

CINCINNATI

Midwest Demand Is Strong—Local Situation Good — Better Production Is Noted—Prices Remain Firm.

No domestic consumer here need worry about coal this winter. A telephone survey of dealers in Cincinnati taken at random throughout the city showed that most of them had coal, though some smaller ones were out of it because they depend upon intermittent rail shipments. Prices on domestic lump deliveries in the neighborhood served by each dealer were $9@$10.75 a ton.

With production on a larger scale in the West Virginia fields supplying the local market and with better transportation facilities, Cincinnati dealers believe they will continue to have plenty of coal right along. Production in the eastern Kentucky fields is still far below normal. Little change is observed in prevailing prices in Kentucky.

The demand from all sources continues brisk. From many cities in the Middle West come pleas for coal and some Ohio cities report supplies are so low that even the schools have no fuel for the coming winter.

DETROIT

Inquiry for All Coal Continues — No Improvement in Supply — Inadequacy of Receipts Continues To Create Apprehension.

Bituminous—While a few wholesalers and jobbers report a slight increase in shipments, others say they are getting no greater supply than before and the theory is advanced that considerable of the coal released from New England shipment is going to the Lakes.

Current receipts are just about equal to the present requirements of public utility companies and manufacturing plants, very little excess remaining for the retail dealers or to be used in strengthening the reserves of industrial consumers. Despite assurance from Washington of an adequate winter supply of fuel, both steam and domestic consumers find reason for apprehension in the outlook. With almost no coal from Kentucky and West Virginia mines coming this way, only a small quantity is arriving from Ohio while shipments from Illinois and Indiana are very limited.

Anthracite—Very little hard coal is coming to Detroit, the small available supply being derived principally from the independent operators. Though a nominal price of $16.50 is quoted on nut, stove or egg sizes, buyers more often are paying about $20 a ton.

ST. LOUIS

Car Shortage Continues — Labor Troubles Waning—Receipts Are Inadequate—Northern Market Declines—Good Bunkerage Tonnage.

St. Louis proper is pretty well taken care of in steam sizes from the Standard and Mt. Olive fields. Domestic tonnage is still short. Small dealers are unable to secure anything like their requirements at competitive prices. Country conditions on Mt. Olive and Standard coal are still unusually bad.

Car supply is back to about 2½ days a week on trunk lines, excepting the Louisville & Nashville and Illinois Central roads, which show up somewhat better on account of surplus equipment released by strikes in western Kentucky and Alabama. The short line coal roads are working about 5 or 6 days a week.

A large tonnage is moving to the North and East at somewhat lower prices; $7@$8 for mine run and lump and $6 for screenings. Bunkerage market at Southern ports is stronger at prices of $7 for screenings, $7.75 mine run and $8.50 for lump. Local prices range $4@$6.

Car supply in the Carterville and Duquoin districts is about 4 days per week. Labor troubles are at a minimum. Prices go as high as $8.50 for prepared sizes and $7.50@$8 for mine-run. Contract receipts are light.

Retail prices are: Carterville $9.50, Mt. Olive $8@$8.50, Standard $7.50, West Virginia smokeless egg and lump $15.50@16.50. Anthracite chestnut is $18.10, stove $17.85, with practically no receipts.

INDIANAPOLIS

Car Placement Improves — Production Is Nearly Normal — Prices Decline — Local Trouble in Clinton Field.

Indiana is showing a weak market, according to operators. During the past two weeks the railroads have provided much better transportation and production has been more nearly normal.

This condition results in more coal being put on the market and has had an effect on prices. Jobbers have been able to find more free coal and prices are so widely varying that it is practically impossible to quote representative figures.

Retailers say there is little buying on the part of the general public, though industries are beginning to invade the market again. The small consumer has been led to believe that prices are due for a tumble before winter sets in and is in the market only for sufficient coal to meet actual needs.

Many of the operators report that Eastern utilities and industries are signing contracts at good figures.

While labor in general is showing a better working disposition, some trouble is being experienced in the Clinton field, where about 23 operations are closed by local strikes.

CHICAGO

Demand Continues Strong—Car Supply Is Unchanged—Prices Remain Firm—Retail Situation Is Causing Apprehension.

The local steam market has eased slightly during the last few days. This is offset by urgent demands from retailers, who are making strenuous efforts to accumulate a supply. Illinois and Indiana fields are also being called on for southern shipments to replace Alabamas curtailed production.

The wage award recently made to day men is the cause of dissatisfaction on the part of diggers in some of the Illinois fields who are, in turn, demanding increases.

Receipts of anthracite and smokeless are almost nil. Retailers declare their stocks are entirely inadequate and are urging bituminous substitution for these fuels.

Scarcity of cars still limits mine operations. Labor's attitude is not materially improved, and the result is continued under-production with aggregate demand as strong as ever.

Prices open market are: Indiana Fourth Vein prepared, $8@$8.50; mine run, $7@$7.75; screenings, $7@$7.50. Fifth and Sixth Vein prepared, $7.95 @$8; mine run, $6.50@$7; screenings, $6@$6.50. Illinois, Franklin, Williamson and Saline prepared, $8@$8.50; mine run, $6.75@$7.25; screenings, $6.50@$7. Central district prepared, $7@$7.75; mine run, $6@$6.50; screenings, $5.50@$6.25. Standard prepared, $7@$7.50; mine run, $6@$6.50; screenings, $5.50@$6.

COLUMBUS

Falling Off in Car Supply Has Reduced the Output—Prices Are Still High—Lake Trade Is Now Attracting Attention

With a continued good demand for all grades and a shortage of reserve stocks, the market still remains firm. A lower supply of cars in all sections has reduced the output to between 50 and 60 per cent.

In the Hocking Valley field production has been reduced from 75 per cent to about 55 or 60 per cent. Pomeroy Bend, Cambridge, Tuscarawas and Crooksville report about 50 per cent production. Little free tonnage is available.

Lake trade is also slowing up under the influence of the poor car supply. This is causing concern to Lake shippers and prices have advanced as a consequence. Lake coal is $6.50@$7 and in some instances higher.

Consumers are still bringing pressure to bear to secure modification of the Lake priority order. It is estimated that only about 24 per cent of the winter's supply is in the bins of users as compared with 65 per cent usual at this time of the year. Retail prices are firm and show a range of $1.50@$2. Hocking lump or mine run retails $8.50 @$10. Pomeroy Bend lump sells $8.75 @$10.25 and West Virginia splints $9.50@$11. Pocahontas is scarce and is quoted $12.50@$15.

Prices at the mines for grades used in central Ohio Are:

Hocking lump	$7.75@$8.75
Hocking mine run	7.50@ 8.50
Hocking screenings	7.00@ 8.25
Pomeroy lump	8.00@ 9.00
Pomeroy mine run	7.75@ 8.75
Pomeroy screenings	7.50@ 8.25
West Virginia splints, lump	8.25@ 9.25
W. Va. splints, mine run	8.00@ 9.00
West Virginia, screenings	7.50@ 8.25
Pocahontas lump	8.50@ 9.75
Kentucky lump	8.25@ 9.00

West

DENVER

Bituminous Conditions Are Better—Prices Are at High Peak—Lignite Advances in Anticipation of Wage Award—Demand Is Good.

Bituminous—Favorable weather conditions and a greater distribution of cars have enabled operators to make an effort to catch up with back orders.

Routt County bituminous is retailing in Denver at $12.50. Walsenburg grades are $11@$12. Trinidad coking steam is $8.05, while Routt County steam is selling for $6.75.

Retail orders flooded dealers about the time the recent freight advances were authorized and deliveries on this basis forestalled the possibility of any immediate shortage.

Lignite—Labor leaders have given the customary 30-day notice of demands for higher wages, based largely upon the concessions granted in the Central Competitive Field, but have also included a wedge for union recognition. Unless this is granted, or a compromise reached, some 4,000 miners may be induced to take a "vacation" Oct. 8.

In anticipation of the increase in wages, many operators have added 30c. a ton to the mine price, the wage demands of the men, if granted, being retroactive to Sept. 1.

Prices for lignite have also reached the peak, in the estimation of many coal men, unless further disturbances upset the present level. First grade lignite is retailing in Denver for $9.95, while second grade is bringing $7.85@$9.15. Steam is selling for $5.30 in retail markets.

The demand is good, although the retail trade is again being slowed down by unusually good weather for this time of year.

South

LOUISVILLE

Spot Market Is Very Active — Little Tonnage Is Available — Profiteering Charges Are Not Affecting Prices — Car Supply Continues Poor.

Continuation of assigned car order for another thirty days will probably prevent any large amount of spot coal being on the market, which will result in continuation of high prices. Eastern Kentucky assigned car coal is quoted $6.25 for gas mine run.

There are many buyers in the field for spot coal and they are bidding against one another for available tonnage. Exporters are also becoming more active, and this coupled with Lake movement and short car supply is bound to hold up prices.

On Sept. 20 the Federal Grand Jury at Covington announced it had decided that a price of $5 a ton maximum was fair for eastern Kentucky and prices beyond that amount represented profiteering. The decision was reached after investigation of coal books and records, seized a few weeks ago.

Operators and jobbers are of the opinion that the finding of the Covington jury will have no effect on prices. The coal trade feels that when the Supreme Court gets around to a decision it will hold the Lever Act to be unconstitutional.

Car supply continues poor, records for the Hazard field, showing 37.82 per cent placement other than cars assigned for railroad fuel. River shipments are larger than last year, a total of 53,330 tons coming to Louisville through Aug. 31.

Modification of the open-car order affecting wagon mines, permitting use of such cars where they can be loaded in twenty-four hours, has been accepted as satisfactory and fair to both tipple and wagon mines in Kentucky.

Retailers report that consumers are waiting for cheaper coal, and will not touch the low grades offered, wanting the best and nothing else, while there is really very little high-grade coal available at this time.

Eastern Kentucky gas mine run is quoted $8.25@$8.75 for spot; nongas $8@$8.50. Block coal is quoted around $10.

Canada

TORONTO

Shipments Held Up by Strike and Embargo—Increased Demand Owing to Cooler Weather—Advance in Prices.

Supplies of hard coal have lately been considerably below normal as result of strike conditions at the mines. Shipments of bituminous have also been held up by the embargo west of Buffalo. With the adjustment of labor difficulties, it is expected that larger shipments of anthracite will come forward in a few days.

Cooler weather has resulted in a rush of orders, which dealers are unable to fill. The increase in Canadian freight rates has resulted in another slight advance in prices.

Quotations per short ton are as follows:

Retail:	
Anthracite, egg, stove, nut and grate	$16 90
Pea	15 40
Bituminous steam	16 00@ $17 40
Domestic lump	18 15
Cannel	20 00
Wholesale f.o.b. cars at destination:	
Three-quarter lump	14 50@ 16 00

News From the Coal Fields

Northern Appalachian

CONNELLSVILLE

Embargo Disturbs Distribution — Consumers Less Anxious for Spot — No Interest in First Half Contracts—Spot Foundry Prices Are Lower.

Production of coke in the Connellsville and Lower Connellsville region is running about the same as formerly, but well below the rate in March. There is no indication that a return to the March production will soon occur.

Distribution is altered by embargoes, the Monongahela R.R. refusing to let loads go out over the Pennsylvania unless replaced by corresponding numbers of empties. For the time being, nearly all coke loaded on this connecting line goes out over the P. & L. E., which is supplying almost its full quota of cars, and coke is much easier for P. & L. E. delivery.

On the whole, offerings of spot coke in the past few days have been hardly as heavy as the average lately. On the other hand, the disposition of furnaces and foundries to buy in the spot market is reduced further. Foundries seem to be less busy, while the merchant blast furnaces have a stagnant pig-iron market and there is less incentive to buy high-priced coke in order to rush completion of present pig-iron contracts. Contract deliveries are fair and some furnaces have slackened their blast so as to get along with these.

There is no interest in the contract market, offerings of furnace coke at $14 for the first half of next year by one interest not having produced any general disposition to negotiate. Buyers are disposed to hold off, feeling that the lapse of time will be in their favor.

Spot coke is $16.50@$17 for furnace and $17.50@$18 for foundry, per net ton at ovens.

The *Courier* reports production in the Connellsville and Lower Connellsville region in the week ended Sept. 18 at 200,930 tons, a decrease of 16,750 tons.

PITTSBURGH

Embargoes Soften the Market — Steel Interests Not Greatly Disturbed by Continuance of Coal Car Definition.

Car supplies are running about the same as formerly, on an average, although there are great ups and downs. In point of service, transportation is not as good, as important embargoes have been placed.

The Monongahela R.R. has placed an embargo against coal going to the Pennsylvania R.R. unless that road will furnish a certain quota of empties, which it apparently cannot do. The Western Maryland R.R. has placed an embargo against the Pittsburgh & Lake Erie R.R. This forces a great deal of coal, chiefly from the Connelsville region, to move North over the P. & L. E. R.R. and the coal market at points that can be reached has been softened. Some Tidewater shipments are shut out of their usual channel, being forced over the N. Y. Central instead, if they can get through that way.

Coal operators are gratified by the Interstate Commerce Commission's order extending indefinitely the car preference order and at the same time refusing to raise the limit from 38 to 42 inches in the definition of what makes a flat bottom gondola a "coal car." The steel interests that were pressing for this modification, in order to get more gondolas for their own use, are less concerned than would have been expected, as their transportation service has greatly improved since the efforts were set on foot to have the modification made.

Spot coal market is easier, but the only softness observed is attributable to embargoes which increase the offerings to free territory. Steam has declined 25c.@50c. in the week, while gas and by-product have dropped to the level of steam. Price is now at $8 for steam, gas and by-product, per net ton at mine, Pittsburgh district.

UNIONTOWN

Rail Congestion Clogs Yards — Prices Remain Firm — Embargoes Hamper Production.

Car supply dominated the movement of coke and coal last week but failed to materially affect prices. Coal is selling at $10.25 for P. R.R. Pool 34 and $10 for B. & O. R.R. same grade, with byproduct at $10. Steam coal on both roads is $9. Pennsylvania furnace coke is $17.25 with few sales, while Lake Erie coke commands but $16.25. Foundry grades run one dollar higher.

The rail situation has materially lessened forward movement of fuel and has clogged the yards and sidings almost to capacity. This situation is resulting from diverse railroad orders. Embargoed from Western Maryland connections, the Lake Erie management of the Monongahela Ry. delivered an ultimatum which required the P. R.R. to replace all loads taken from Lake Erie rails with an equal number of empties. A few days later the Pennsylvania commenced placing cars on the Monongahela Ry. but failed to remove any loads, thus adding to the growing congestion. Until some compromise is effected there seems little prospect of a decided improvement.

Coal car placement followed the record of the month, with poor supply from the Pennsylvania but quite excellent placement by the Lake Erie. On the Monongahela the Pennsylvania placed a 25 per cent car supply, while placement on the same road by the Lake Erie was about 105 per cent.

Coke car supply was slightly better, the Pennsylvania placing about 30 per cent on the M. Ry. tracks, while the Lake Erie made a showing of 110 per cent.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

BITUMINOUS COAL

	1920		1919 (a)	
	Week	Calendar Year to Date	Week	Calendar Year to Date
Sept. 4b	11,167,000	358,573,000	9,651,000	307,364,000
Daily average	1,861,000	1,703,000	1,821,000	1,459,000
Sept. 11b	10,645,000	369,218,000	11,046,000	318,410,000
Daily average	2,008,000	1,710,000	1,841,000	1,475,000
Sept. 18c	11,614,000	380,832,000	11,253,000	329,663,000
Daily average	1,936,000	1,716,000	1,876,000	1,485,000

ANTHRACITE

	1920		1919 (a)	
	Week	Calendar Year to Date	Week	Calendar Year to Date
Sept. 4	1,084,000	58,614,000	1,349,000	55,968,000
Sept. 11	546,000	59,160,000	1,408,000	57,376,000
Sept. 18	699,000	59,859,000	1,665,000	59,041,000

BEEHIVE COKE

United States Total

Week Ended				
Sept. 18	Sept. 11	Sept. 20	1920	1919a
1920c	1920b	1919	to Date	to Date
402,000	438,000	449,000	15,292,000	14,141,000

(a) Less one day's production during New Year's week to equalize number of days covered for the two years. (b) Revised from last report. (c) Subject to revision. All figures in net tons.

NORTHERN PAN HANDLE

Production Placed at 70 Per Cent—Priorities Take Heavy Tonnage—Little Free Coal Available.

Transportation facilities are still limited to about 70 per cent of mine rating. While Lake requirements during the period ending the 18th were unchanged as compared with previous weeks yet during the week ending Sept. 25, mines on the Pennsylvania R.R. were called on to ship 40 per cent of the coarse coal produced to Lake points.

While there was more variation in the percentage required for the Lakes from mines on the Baltimore & Ohio R.R. the quota was 50 per cent of all coal loaded. The general movement was good and labor conditions continued to be satisfactory, although there were not enough miners to run to capacity.

Limited production cut down the free coal available. In fact, between Lakes, public utilities and the railroads, Northern Pan Handle mines experienced difficulty in filling their contracts.

FAIRMONT

Production Is Greatly Increased — Lakes' Quotas Are Enforced — Export Movement Gains — Prices Are Firm.

The week ending Sept. 18th was a most satisfactory one from a production standpoint as cars were furnished in sufficient numbers throughout nearly the entire week to keep mines going most of the time, though a congestion of loads on the lines of the Baltimore & Ohio R.R. was beginning to develop toward the end of the week because of slow movement on the Cumberland Division of that road. Suspension of activities in the anthracite fields made more cars available elsewhere. Assigned cars were much in evidence throughout the week.

A number of shippers having failed to meet the requirements covering lake shipments, railroads operating in the northern part of the state made it plain that, unless producers shipped their quota, such coal as had been loaded for other markets would not be handled. With a stronger insistence upon meeting Lake requirements, the movement was somewhat better but hardly up to that of the preceding week.

Exporting appeared to be on the increase following a larger issuance of export permits. With more coal flowing to Tidewater it was believed that prices might become somewhat firmer. Railroads continued to secure a large percentage of the Northern West Virginia production.

Operators were preparing to attend the session of the Federal Grand Jury at Martinsburg, before which they have been summoned to appear. Virtually every operator in the northern part of the State has received such a summons. However, after a conference at Washington, the Department of Justice ordered a week's postponement of the investigation.

EASTERN OHIO

Prices Are Firm—Car Supply Unimproved—Labor Troubles Cause Apprehension—Heavy Lakes Shipments.

Considerable apprehension is felt that the threatened outlaw strikes on Sept. 25 may assume quite general proportions, but the best informed seem to feel that any suspension in mining that may occur will not survive longer than a week or two. The movement for suspension of work is apparently being carried on by the radical elements in the miners organization and the hope prevails that the conservatives may be able to control the situation and avoid the trouble.

Production for the week ended Sept. 18 was about 200,000 tons, of which the railroads absorbed 80,000. The major portion of the balance went to the Lakes for the Northwest, through increase production and shipments to the Lakes for the Northwest, through improvement in car supply, as pledged by the railroads in the meeting held in Washington last week.

Prices for Pittsburgh No. 8 mine run or ¾-in. lump remain firm at $6.50@$7.

Car supply of about 75 per cent for the past week showed no indication of improvement.

Middle Appalachian

NORTHEAST KENTUCKY

Production Curtailed by Poor Transportation Facilities—Operators Discuss Situation at Meeting.

Headquarters of the Northeast Kentucky Coal Association was a Mecca for a number of members of the Association drawn by a meeting which had for its object the discussion of transportation problems which are inseparably woven with production in the Northeast Kentucky field at the present time.

Railroad facilities were described as being not only unsatisfactory but utterly inadequate in view of the growth of the industry. The general complaint was that the maintenance of tracks was neglected and that the Chesapeake & Ohio R.R. was not furnishing sufficient motive power and coal-loading equipment.

In proof of the poor condition of the track, frequent wrecks and the endless delays entailed by operators were pointed to. The association will undertake to have the Chesapeake & Ohio R.R. double track its Big Sandy Division and put on enough locomotives and cars to move the tonnage originating on that division.

POCAHONTAS AND TUG RIVER

Car Shortage Is More Pronounced—Labor Losses Are Lower—Slow Price Recession Continues.

Production in both the Tug River and Pocahontas fields during the first 18 days of September was running behind the same period of August, because of an increasing car shortage. While labor shortage losses were being cut down car shortage losses were on the increase.

Pocahontas production in the period ending Sept. 18 was averaging nearly 90,000 tons short of normal, largely because of car shortage, though at the same time a labor shortage was entailing losses of about 30,000 tons.

Two factors are responsible for the growing shortage of equipment on the Norfolk & Western R.R. One was the paucity of boats both at Tide and the Lakes. Operators were also of the opinion that public utility consignees were holding loads longer than necessary.

Consignments to the Lakes were fairly large, constituting the bulk of western shipments. Export shipments were also large, but movement to New England declined.

While there was an absence of speculative buying to a great extent, yet there was a ready market for Pocahontas fuel, prices still being lower than the August level.

There was a more pronounced car shortage in the Tug River field. Scarcity of bottoms to handle the large tonnage reaching Tidewater and the Lakes and the consequent delay in releasing equipment were responsible.

An improvement in the morale of the miners and greater willingness to work is conducive to a larger production than was the case in August. The losses from an increasing car shortage, however, are more than overbalancing this gain. Lake shipments continue to be heavy and exporting was on a fairly large scale.

LOGAN AND THACKER

Logan Maintains Good Production Rate —Williamson Output Makes Little Gain—Prices Are Lower—Lakes Tonnage Heavy.

During the period ended Sept. 18 it was possible for the Guyan field to keep up to the high production mark for the year established during the previous week. The mines had an unusually good car supply throughout the week; output averaged between 35,000 and 45,000 tons a day, a large part of which was being shipped to Lake points.

It was necessary to ship the bulk of the output Westward since there was an embargo on coal originating at points west of St. Albans, yet the shipments Eastward to inland points were fairly large. Prices in the spot market were avaraging about the same as those in the Kanawha field, $7@$9. Free coal was almost impossible to secure, however, even though buyers were largely conspicuous by their absence.

In the Williamson field, companies whose plants were closed down several months ago because of the strike are slowly gaining ground. Production in

the period ended Sept. 18 reached about 60,000 tons. Strike losses were not far from 100,000 tons. There was an absence of any disorder in the field, Federal troops having a most quieting effect. Such mines in Williamson field as were operating experienced no difficulty in securing as much equipment as needed.

NEW RIVER AND THE GULF

New River Production Declines While Winding Gulf Output Increases—Prices Are Firm but Spot Demand Is Weaker —Export Shipments Heavy.

Less coal was produced in the New River field than in any recent week, in the period ended Sept. 18. The car supply was so short that mines were unable to operate more than three or four days during the week at the most.

With production so limited it was even difficult to meet contract obligations, leaving little free tonnage available. Production was billed to Eastern points for the most part, a large proportion going for export, New England securing only a small portion. Shipments to Western points were almost negligible.

Little change was observed in prices. While buyers were still largely remaining out of the market, it was having little effect on prices and certainly none on production.

In the Winding Gulf region mines dependent upon the Chesapeake & Ohio R.R. found it difficult to secure an adequate car supply. Such was not the case at mines on the Virginian Ry. In fact these mines were receiving a better supply than had been in evidence for some time and transportation conditions were rapidly approaching normal. The fact that many of the new 120-ton cars were in service is adding very materially to the movement of coal. The Chesapeake & Ohio, however, had only enough cars for its mines to enable them to work about half the week. Winding Gulf miners received a wage boost during the week just as had been the case in the New River region during the previous week.

KANAWHA

Car Supply Was 75 Per Cent in Early Part of the Week—Dropped to 50 Per Cent—Demand for Coal Still Strong—Small Export Business Reported—Prices Decline.

Kanawha mines were not faring so well as others in the high volatile territory. The week was ushered in with about a 75 per cent car supply, and during the remainder of the week there was a dwindling supply of cars in evidence. Mines were not able to load to more than 45 per cent of potential capacity during the latter part of the week. Thursday's production as an example was 16,450 tons and Friday's 19,950. One reason for the shortage was the restricted number of cars being received by the Chesapeake & Ohio from Western connections. Production was probably in excess of that for the week ending Sept. 11, owing to the fact that there were six working days available, yet the shortage of cars was still curtailing production. Mines had toward the end of the week only a 20 per cent supply.

Comparatively little coal was being sent to New England and none after the Commerce Commission had suspended Service Order 11. Exporting of coal was not on as large a scale as during August and earlier months but lake shipments were comparatively large in volume throughout the week.

Demand for Kanawha coal was stronger in Western markets, apparently, than in Eastern markets, and while operators stated that prices were still on the downward path, yet inland was still hovering around $7 a ton and export $9 a ton.

Middle Western

DUQUOIN

Transportation Facilities Are Much Improved—Priorities Take Heavy Tonnage—Mines Operate Nearly to Capacity.

Mining conditions in this region have been improved to such an extent that at the present time nearly all of the mines are working between 90 and 100 per cent capacity. Since August 15th a decided change for the better has been noticed in the service of the Illinois Central R.R. on which the main car supply is dependent. Many of the mines in the vicinity are operating on priority orders, however, even those which are not working under such conditions are getting ample cars to enable them to run five days and better per week.

WESTERN KENTUCKY

Strike Is Forcing Higher Prices—Operators Stand Firm—Production Is Not Materially Reduced.

The strike, which affects Muhlenberg, Union and Henderson counties principally, has not spread to Madison or Webster counties to any extent. Better car supply is resulting for operating mines and the strike is not affecting total production of the field to any great extent.

However, the strike is causing a more active demand for spot coal. It is claimed that there are many buyers after available supplies, resulting in markets being slightly higher, with mine run around $8@$8.75.

It is believed that the strike may be settled within the next few days, although the miners' union is not showing any weakness, and there have been but few desertions from the operators ranks. Some few non-affiliated mines have agreed to pay the union demand. Some of the largest mines in the Western Kentucky field are in counties that are not affected.

Western

OKLAHOMA

Aid of State Corporation Committee Is Asked—Coal Is Released for Ginning—McAlester Mines Make Heavy Shipments.

Railroads have been diverting practically all shipments for their own use. The shortage has become so acute that large industries asked the State Corporation Commission to take the matter in hand. The Rock Island Ry. will release considerable coal, to be distributed by the commission to cotton gins along its line.

Much coal is being shipped from the McAlester mines to northern Texas, where the situation is now improving. Due to strikes in Kansas and Illinois mines heavy shipments are moving to points normally supplied by those fields.

Canada

ALBERTA

Coal Production Is Greatly Increased—Lack of Orders Curtails Lignite Production.

The official figures up to the end of June this year give an output of 3,043,940 tons, compared with 2,068,907 last year. This is for both bituminous and lignite.

There has been more fuel marketed up to this time than in the history of coal production in Alberta. It is also pointed out that more coal will be required from these mines than ever before, on account of the shortage in the United States.

The Winnipeg market is most encouraging. The actual output, however, to that market, and to further Eastern points, will solely depend upon freight rates. If these are prohibitive, a staggering blow will be dealt the industry.

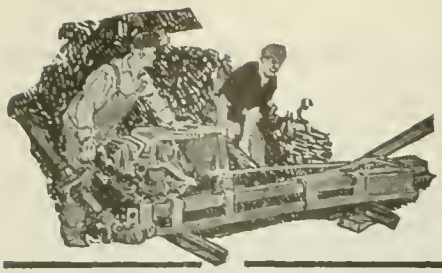
While the bituminous mines in Alberta have been working fairly to capacity, the lignite fields, owing to lack of orders, have for some time fallen far short of this.

BRITISH COLUMBIA

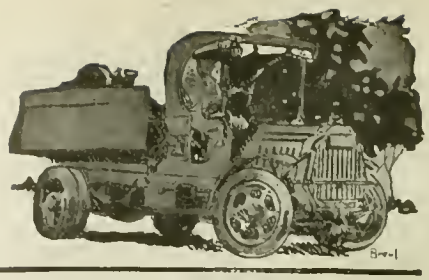
August Production Declines—Indolent Labor Is Cause—Export Possibilities Are Excellent.

The coal production of Vancouver Island Field for the month of August was 117,194 tons as compared with 140,512 tons for July.

The decrease is attributed to labor conditions. Operators are finding it an increasingly difficult matter to induce miners to work even a fair portion of the time. The embargo against export of eastern Canadian coals has opened up unusual overseas possibilities. However, it is doubtful if the mines will be able to take care of more than the local domestic and bunker trade.



Mine and Company News



CALIFORNIA

San Francisco — Negotiations are pending for the sale of coal mines in Contra Costa County by the Southport Land & Improvement Co. The mines are situated in the Coast Range Mountains. Operations have not been worked for some time. Under the new ownership of a syndicate, they will be at once re-opened. Coal mining in the foothills was once the leading industry of Contra Costa County. The supply of coal in the mines has hardly been touched.

IDAHO

Boise—Articles of incorporation have been filed with the proper authorities by the Neal Coal Mining Co., which will operate in Idaho county. The company is capitalized at $500,000. Several geologists have declared that the indications for coal are unusually good.

ILLINOIS

Bloomington—The creation of two committees, one to act as an emergency coal distributing agency, the other to bring pressure to bear upon the McLean County Coal Co. to keep its mine open and to send a telegram to President Wilson asking for action against coal profiteers, were the results of a mass meeting held in an effort to bring relief to the coal situation. The meeting was attended by citizens of Bloomington and Normal and the real issue was to urge the McLean County Coal Co. to operate the local mine and to influence the coal miners to end the "vacation strike" which has been in progress.

Benton — Improvements on a large scale are being made by the Big Muddy Co. at its New Virginia mine in Williamson County. The cost of the improvements will aggregate more than $75,000.

KENTUCKY

Middlesboro—The Kentucky Coal & Railroad Co. is being organized and will shortly incorporate with a capital of $1,500,000 for development of properties in Breathitt, Knott and Perry Counties. These properties have 5 seams of coal, including gas and steam, 42 inches to 7 feet thick. Main offices will be at Middlesboro. Operations are planned to start about January 1. Seven miles of rail will be laid to connect with the Louisville & Eastern Division of the L. & N. R.R.

Garrett—The Standard-Elkhorn Coal Co. has perfected plans for the erection of a new steel tipple on its properties. Machinery will be installed at an early date.

Hazard—The Carrs Fork Coal Co. has filed amended articles increasing its capital from $300,000 to $400,000, and changing main office to Allcock, Ky.

Whitesburg—Reports from Eastern Kentucky, in the vicinity of Whitesburg, state that the Cumberland Hazard Coal Co., near Ice, is erecting a large powder house, and will build a new chute and tipple, as well as storage bins.

Louisville—The Turkey Creek Coal Co. has been incorporated with a capital of $1,000,000, for expansion. The incorporators are F. J. Wagner, J. C. Reddick of Louisville, and J. J. Lidwick of Cloverdale, Mich.

Near Dalna in the Smoot Creek section, the Consolidated Fuel Co. is erecting one of the largest storage bins in the state. The company is also doing work at Blackey, where it took over the Woodburn Coal Co. It is further reported that improvements are under way at the plants of the Kenmont Coal Co., Storm King Coal Co., Reliance Coal & Coke Co., all of which are making plans for larger production.

It is reported that five small mines, now affiliated with the Western Kentucky Coal Operators Association, have signed up with the strikers on a proposed new wage scale, which has been turned down by the organized operators. These mines — in Henderson County—are the Bluff City, Dixie, Jennings, Nicholson and Corydon mines. The Kleiderer, Robards, Zion and Smith Mills mines have continued operation, two being non-union.

MISSOURI

Kansas City—The Kansas City Prudenized Coal Co. has been organized with a capitalization of $250,000. Project is a local one and is controlled by Kansas City men. The new concern will manufacture powdered coal and will also handle equipment used in burning this fuel. The use of powdered coal will be established through patent rights covering the Pruden process. Promotion of the use of this fuel in domestic plants will be pushed. Powdered coal will be stored and delivered in steel tanks, such as those used for fuel oil. Similar organizations being formed in Omaha, Buffalo and Salt Lake City.

OHIO

Crooksville—Contracts for the big tipple and buildings at the New York Coal Co. mines on the Vincent Gossman farm, east of Crooksville, will be let and actual development work will be in progress shortly.

The new mine will tap a 3,500-acre block of coal will give employment to about 300 men and when in full operation will have a daily output of more than 1,500 tons per day.

A deal was closed in Columbus

Operating Conditions at Indiana Coal Mines, August, 1920

PREPARED BY JONAS WAFFLE, SECRETARY INDIANA COAL TRADE BUREAU

Railroads on Which Mines Are Located	District	No. of Mines	Tons Produced	Full Time Capacity (Tons)	— Tons Lost and Causes Therefor — Total All Causes	Car Shortage	Labor Trouble	Mine Disability
Big Four	Terre Haute	6	69,746	115,761	46,015	21,515	23,333	1,167
B. & O. S. W.	Vincennes	2	20,926	45,248	24,322	3,652	20,610	60
	Clinton	27	209,047	378,453	169,406	27,841	132,729	8,836
C. & E. I.	[1] Sullivan [2]	16	175,208	280,309	105,101	18,845	72,341	13,915
	Total	43	384,255	658,762	274,507	46,686	205,070	22,751
C. I. & W.	Dana	1	9,333	12,802	3,469	573	2,896	
Cent. Ind.	Brazil	1	2,871	4,389	1,518		1,518	
	Clinton	14	187,691	328,417	140,726	37,149	101,063	2,514
C. T. H. & S. E.	Linton [3]	27	226,054	394,810	168,756	44,820	114,410	9,526
	Total	41	413,745	723,227	309,482	81,969	215,473	12,040
E. & I.	Clay City, Petersburg	11	94,588	200,299	105,711	32,202	61,067	12,442
E. & E.	Evansville	2	12,000	12,605	605	70	535	
E. S. & N.	Evansville	4	26,154	35,184	9,030	2,717	6,071	242
Ill. Cent.	Linton	6	60,724	109,269	48,545	10,933	32,032	5,580
Monon	Linton [4]	21	163,273	315,108	151,835	10,146	119,475	22,214
	[5] Main Line	20	175,355	311,529	136,174	35,862	81,144	19,168
P. C. C. & St. L.	[6] Vincennes	20	256,007	720,917	464,910	202,677	222,575	39,658
	Total	40	431,362	1,032,446	601,084	238,539	303,719	58,826
	Ayrshire	7	43,522	96,954	53,432	25,665	20,878	6,889
Southern	Boonville	8	71,989	104,633	32,644	11,836	18,507	2,301
	Total	15	115,511	201,587	86,076	37,501	39,385	9,190
Totals		193	1,804,488	3,466,687	1,662,199	486,503	103,184	144,512
Totals for month ending July 31, 1920		191	1,716,793	3,440,205	1,723,412	796,659	764,777	161,976

[1] Includes all mines South of Terre Haute. [2] Two mines served by two railroads. [3] One mine served by two railroads. [4] Four mines served by two railroads. [5] Includes all mines on St. Louis and Michigan Divisions. [6] Includes all mines on Vincennes Division and Dugger Branch.

whereby the property of the Zanesville Coal Co. was transferred to the Seneca Coal Co. of Columbus. The property includes the company's mines in the vicinity of Crooksville and McLuney with an output of 1,500 tons daily and a valuable tract of 3,000 acres of undeveloped Coal land. Hayden-Miller & Co. of Cleveland, and W. L. Timmons, of Zanesville, Ohio, were associates of the Zanesvlile Coal Co. It is understood to be the intention of the new owners to operate the mines to full capacity, and the property will be further developed.

Canaanville—The Canaan Coal Co. has awarded a contract for the construction of a one-story boiler plant addition to its present works, estimated to cost about $50,000. Rust Engineering Co., 1901 Fifth Avenue, Pittsburgh, Pa., is the engineer and contractor.

Columbus—The Faye Coal Co. has been chartered with a capital of $150,000 to mine and sell coal. The company has closed a deal for the purchase of a working mine at Corning. The product will be sold through the company's office in Columbus.

PENNSYLVANIA

Beachley—The operations of the Shawnee Coal Co. in Somerset County, Pa., have been purchased by a syndicate of Johnson and Windber men, the consideration being close to $100,000. The output of the mine will be doubled, according to announcement.

Rockwood—A new record for earnings was established in Somerset County, when John Vought, Jr., of Black township, drew $459.99 as pay for a two-week period in August. Miner was employed in operation of the Berkey Bros., near Fraunheim.

Kantner—Coal developments in the local fields are progressing rapidly. New openings and a tipple with side tracks, attracting attention near the Stoyestown station, are the work of D. B. Specht, operating as the D. B. Specht Co. This is considered one of the most complete plants in Somerset County. About one mile north of Kantner, along the Baltimore & Ohio R.R., the Hilcrest Coal Co., is almost ready to begin shipping coal. J. H. Tipton, superintendent and manager, is arranging for the construction of dwelling houses in the near future. On the opposite side of Stony Creek from the Hilcrest operations, some Johnstown men are rapidly developing the Triangle Coal Co., about 275 acres of the best coal in this section. The openings, with tipple and sidings, are being fitted for extensive business.

Harrisburg—Two anthracite coal companies have recently filed notices of increase in capital stock. The Central Coal Co., of Scranton, increased its capitalization from $100,000 to $185,000. The president is A. F. Wolf, and the company operates in Luzerne County. The Avoca Coal Co., which operates in Lackawanna County, has increased its capital stock from $25,000 to $100,000.

Altoona—Coal production in the Wopsonnock field has been started and promises plenty of coal for local consumption. Mines are being operated by both the Montvale Coal Co., the concern that is operating the Northern Central R.R. and the Blair-Cambria Coal Co., and by the Garman Co. The new Fairview tipple is not being used, but it is expected that the Montvale company will take it over in the near future. This will insure a supply of coal for Altoona.

Brownsville—The Cook & Robbins Coal Co. has completed plans for the erection of a trestle and steel coal tipple at its plant, estimated to cost $15,000. J. M. Beall, Trust Building, Monessen, Pa., is architect.

Uniontown—Several tons of slate horribly mangled the remains of John Hobosky, aged 50, when he was instantly killed in the Leith mine of the Frick Coke Co., near here.

VIRGINIA

Christiansburg—The National Collieries Co., recently organized with a capital of $2,000,000, are planning for the development of coal properties in this district and a large daily output is anticipated. David F. Reid is president, Hunter J. Phlegar, secretary, and Guy F. Ellett, treasurer.

WASHINGTON

Centralia—Articles of incorporation were recently filed by the Tilton River Bituminous Coal Co., at Olympia. The new company capitalized at $300,000 is organized to develop coal properties at Lindberg, in eastern Lewis County. The home office will be maintained in Tacoma, with a temporary branch office here. The Tacoma & Eastern R.R. passes through the new company's property, which consists of 2,680 acres, underlaid with workable bituminous coking coal of the highest grade. This tract is the natural outlet for the coal contents of at least 3,000 additional acres.

WEST VIRGINIA

Grafton—The Jerry Run Coal Co., recently organized, is planning for the development of 130 acres of coal property, to have a daily capacity of about 1,500 tons. Machinery will be installed at an early date.

Fairmont—The plant and property of the North Fairmont Coal Co., at Hildebrand, in Monongalia county, has changed hands, having been acquired by H. J. Booth and associates of Pittsburgh, Pa., who are interested rather extensively in the manufacture of glass products. In acquiring the Hildebrand mine Mr. Booth also secured 332 acres of Pittsburgh gas coal, at an expenditure, it is understood, of $500,000.

Huntington—A new coal company has been launched by Huntington business men, known as the Mountain State Coal Corporation, this concern having a capitalization of $500,000. As to just where the company will operate, it has not been so far announced. Chiefly interested in the new company are C. T. Benton, R. B. Campbell, F. A. Steward, S. S. McNeer and F. M. Livezey.

Huntington people have formed a coal company for the purpose of developing properties in Greenbrier County. This company will be known as the Darknet Coal Co., with a capital stock of $500,000. Among those having an active part in the formation of the new concern are: S. J. Hyman, E. J. Payne, A. B. Hyman, N. J. Pugh and John S. Marcum, all of Huntington.

Bluefield—A. J. Clyborne and associates of Bluefield having purchased the stock of the Rocky Branch Coal Co. operating at Lex, W. Va., have organized the Purity Pocahontas Coal Co. to operate the Lex mines, the newly organized corporation being capitalized at $150,000. The Lex mines are on the Dry Fork branch of the Norfolk & Western R.R. Output will be materially increased by numerous improvements involving a large outlay of money.

Morgantown—In order to eliminate unnecessary handling of slack, the Bertha Coal Co. is having a storage basin constructed, a conveyor system leading to the slack basin from the screens. The slack so stored can be loaded on to cars from the basin through the use of gates at the bottom of the basin, and another conveyor.

Shinnston—The Basin Coal Co. will operate near this place, having been organized by F. O. Denar of Fayette City, Pa., and others, among whom are Louis A. Johnson, Philip P. Steptoe, Leo P. Caulifield and D. D. Holtz of Clarksburg, W. Va. The new company is capitalized at $300,000

Charleston—The Grosvenor Coal Sale Co. of Charleston has been formed by Dr. H. C. Jones and others of Charleston, among them being A. P. Kilburn, J. G. Pettet, B. M. Ruffner and Isabell J. Pettet. The company has a capital stock of $25,000.

WISCONSIN

Appleton—The newly organized Appleton Peat Products Co., has acquired 360 acres of peat land and plan extensive fuel manufacturing here. It is estimated that 4,000 tons of fuel will be the yield per acre. Specially constructed machinery will be used to manufacture briquettes. The first unit of the plant will be started within 30 days.

BRITISH COLUMBIA

Princeton—W. J. Blake Wilson, president of the Coalmont Collieries, near here, has announced that the new aerial tramway that is to convey coal from the mine to the railway will shortly be in operation. By the middle of December it is hoped to bring the output up to 1,000 tons daily. The company is working a huge seam, which runs up to 28 feet in thickness, with a few clay-slate partings that easily are separated from the coal.

Traffic News

I. C. C. Decision.—Investigation and Suspension Docket 1178. Proposed cancellation of joint rates on bituminous coal from Buffalo, Rochester & Pittsburgh Ry. stations between Vintondale, Pa., and Josephine, Pa., to Eastern points, including Tidewater, found to have been justified, and order of suspension vacated.

I. C. C. Order.—Investigation and Suspension, Docket 1170. Proposed cancellation of joint rates on coal from mines on Sewell Valley R.R. to destinations on the Chesapeake & Ohio Ry. and its connections found not justified. The suspended schedules ordered cancelled.

I. C. C. Decision. No. 10699. Rates charged by the Lehigh Valley R.R. for the transportation of anthracite coal from mines in Pennsylvania to Auburn, N. Y., found to have been and to be unduly prejudicial to the extent that they exceeded or may exceed those contemporaneously charged to Seneca Falls and Naples, N. Y. Reparation denied.

Industrial News

New York, N. Y.—Dwight P. Robinson & Company, Inc., (with which Westinghouse, Church, Kerr & Co., Inc., has recently consolidated) engineers and contractors, has established a new branch office in Youngstown, Ohio, in the Home Savings & Loan Building, in charge of C. I. Crippen. The company recently moved its Cleveland office from the Leader-News Building to the Citizens Building, and H. P. Clawson, who was for several years a member of the Chicago staff, has been transferred to take charge of this office. The company now maintains branch offices in Pittsburgh, Youngstown, Cleveland, Chicago, Dallas and Los Angeles, and Sao Paulo, Brazil.

Buffalo, N. Y.—The Jeffrey Manufacturing Co., Columbus, Ohio, have opened a branch office at 1108 Marine Trust Bldg., in charge of H. W. Scott, formerly of the home office.

Pittsburgh, Pa.—A full-sized mine, a model only in that it yields no coal, is the latest practical addition at Carnegie Tech. The mine has been constructed under the division of science and engineering building and when school is opened this fall students of the coal-mining department will have one of the finest mines of its kind in which to make their experiments. Machinery and a mine locomotive will be installed within the next few weeks.

Philadelphia, Pa.—The Valley Smokeless Coal Co. announces that all purchasing for that concern will be done from offices of Weston Dodson & Co., Inc., Bethlehem, Pa., and affiliated companies, J. B. Connell is general purchasing agent.

Philadelphia, Pa.—The office of E. E. Clark, deputy commissioner of the Tidewater Coal Exchange, Inc., has been removed to the Dencla Bldg., 10th and Market Sts.

Baltimore, Md.—Acting Deputy Commissioner J. A. Biddison, Tidewater Coal Exchange, Inc., is now located in the Lexington Bldg., Liberty and Lexington Sts.

Personals

B. W. K. Edmonds has been appointed Canadian manager with headquarters in Montreal for W. H. Bradford Co., Inc., of Philadelphia.

M. L. Hyde, fuel and heating engineer, has been appointed by the Alberta authorities to represent that province in Winnipeg, to inspect and advise on sales and distribution of Alberta's coal.

A. F. Hilleke, who has been district manager for the Semet-Solvay Co., with supervision over the plants and properties of the company in Alabama, has been appointed general superintendent of operations with headquarters in Syracuse, N. Y. Mr. Hilleke has been identified with civic and industrial activities in this district for the past 25 years, and supervised the construction of several coke plants of the Semet-Solvay type in Alabama, the last of which was the $6,000,000 byproduct works of the Sloss-Sheffield Steel & Iron Co. at North Birmingham. The name of Mr. Hilleke's successor has not been announced.

After ten and a half years of service with the Consolidation Coal Co., **R. P. Hines** has resigned as head of the power and mechanical department to become the electrical engineer of the Fairmont & Cleveland Coal Co. A graduate of Vanderbilt, Mr. Hines entered the service of the Consolidation Coal Co. after having been for a time with the General Electric Co. He was made superintendent of the power and mechanical department of the Consolidation on June 1, 1919.

Charles R. Martin, formerly chief clerk of the Fairmont office of the Jamison Coal & Coke Co. has been made superintendent of the Marion Gas Coal Co. and of the Wyatt-Bingamon Coal Co., and has moved his headquarters to Bingamon.

Gail Fishback, chief car distributor of the Baltimore & Ohio R.R. at Grafton, has resigned to accept the post as Fairmont representative of the Arkwright Coal Co. Mr. Fishback was for a time car distributor of the B. & O. at Fairmont. His services with the B. & O. covered a period of 20 years.

A. Hallam Christian has been appointed as the Huntington representative of the Old Dominion Coal Co. He has been connected with coal companies in the Logan field.

Matthew G. Siener, formerly sales agent of the Pittsburgh & Shawmut Coal Co. at Buffalo, has been elected vice-president of the P. O. McIntire Coal Co. of Cleveland, and will represent the company in Buffalo, having opened an office at Room 32 Naylor Building.

L. Everett White, for the past several months connected with the W. E. Deegans Consolidated Coal Co. as Division Engineer, Logan County Division, has resigned to accept a position as Assistant to the General Manager of the Cerro de Pasco Copper Corporation, operating coal and mineral mines in Peru, South America. Mr. White will sail for South America early in October.

A. R. Lee, former General Freight Agent of the Chicago and Alton Ry., will be in charge of a group of central Illinois coal mines. He has been appointed vice-president and general manager of the Union Fuel Co., which recently purchased mines at Auburn, Selbytown and other shafts along the Alton in the Springfield district.

Byford C. Tynes, attorney of Huntington, has been designated as general manager of the Kountze interests in West Virginia, dominant in the affairs of the United Thacker Coal Co. Mr. Tynes appointment was announced by T. Irving Madden, president of the company. Mr. Tynes represented the company in securing an injunction in the Federal Circuit Court restraining certain surface owners from removing timber and he also had a prominent part in negotiating leases for the development of the Kountze holdings on Pigeon Creek in West Virginia.

Lewis Littlepage, for 13 years Tidewater agent of the Winding Gulf Colliery Co., has been made Eastern agent of the company with headquarters in New York. That announcement has been made by Justus Collins, president of the Winding Gulf Company in connection with the announcement that **J. A. Renshan**, vice president and general manager of the company since it was organized, has retired. **George Buntino** has been made Tidewater agent, with headquarters at Norfolk. He was for a number of years Mr. Littlepage's assistant.

Chas. F. Wainwright, for the past two years salesman for the Rutledge & Taylor Coal Co., of Chicago, has resigned and joined the Lafayette Coal Co., of Chicago. W. E. Brandt, also formerly of the Rutledge Taylor concern, is now president of the Lafayette Coal Co.

W. Ewart James has been appointed general superintendent of the Beards Fork operation of the Loup Creek Colliery Co., Page, W. Va. Mr. James was formerly connected with the Elkhorn Piney Coal Mining Co.

B. J. Walhatt, Assistant State Geologist for Indiana has resigned to accept a position in the faculty of Technical high schools. **L. S. Ferguson** has been appointed to fill the vacancy. Mr. Ferguson has been associated with Dr. G. N. Logan, State Geologist, in field work.

Trade Catalogs

Jeffrey Mine Locomotives. Jeffrey Manufacturing Co., Columbus, Ohio. Catalog 263. Pp. 55; 8½ x 11 in.; illustrated. Data on construction of mine locomotives.—Advertiser.

Storage Battery Locomotives. Jeffrey Manufacturing Co., Columbus Ohio. Catalog 312. Pp. 20; 7½ x 10½ in.; illustrated. Useful data, tables and descriptions of storage battery mine locomotives.—Advertiser.

Core Drilling by Contract. Sullivan Machinery Co., Chicago, Ill. Booklet 122. Pp. 32; pocket size; illustrated. Setting forth facilities of the company for undertaking boring contracts of all sorts.—Advertiser.

Sullivan Rotators. Sullivan Machinery Co., Chicago, Ill. Bulletin 70-J, replacing 70-F. Pp. 28; 6 x 9 in.; illustrated. Description of DP-33, DP-32 and DR-37 drilling machines.—Advertiser.

Reading Wrought Iron Pipe. Reading Iron Co., Reading, Pa. Bulletin 1. Pp. 31; 8½ x 11 in; illustrated. Describing the manufacture and uses of wrought iron pipe.—Advertiser.

Lidgerwood Steam Hoisting Engines. Lidgerwood Manufacturing Co., New York, N. Y. Bulletin 2. Pp. 52; 9 x 11½ in.; illustrated. Specifications of construction details of steam hoists.—Advertiser.

G. E. Insulating Compounds. General Electric Co., Schenectady, N. Y. Bulletin 48704-A. Pp. 15; 8 x 10½ in.; illustrated. Presents the principal characteristics of insulating and coating materials.—Advertiser.

Obituary

Otto F. Stifel, owner of the Pocahontas mine at Greenview, Ill., killed himself recently at his home in St. Louis. He was well known in Illinois and vicinity, having recently during the last walkout of the Illinois miners, made a separate settlement with his men, whereby his mine worked while the others were idle.

James Lea Paull, Pittsburgh, Pa., died recently at the home of his son in Buffalo, N. Y. Mr. Paull was 74 years of age and a pioneer coke operator of the Connellsville region.

William James, Pottsville, Pa., 49 years of age, died recently at the Shamokin Hospital from the effects of burns received in the blast of a bursting steam chest. Mr. James was the head of the Shipman Coal Co., operating the Colbert colliery near Shamokin, and was doing emergency duty as a fireman when killed.

John W. Wilson, President of the Wilson Smokeless Coal Co. and of the Tracee Fork Coal Co. and General Manager of the Wyoming Coal Co., died at Harrisonburg, Va. Mr. Wilson had been in the New River fields for 20 years. Of late he had been identified with the interests controlled by W. P. Tams, Jr.

Coming Meetings

Coal Mining Institute of America will hold its annual meeting Dec. 8, 9 and 10, 1920, in the Chamber of Commerce Auditorium, Pittsburgh, Pa. Secretary, H. D. Mason, Jr., Chamber of Commerce Bldg., Pittsburgh, Pa.

American Mining Congress will hold its annual meeting at Denver, Col., Nov. 15. Secretary, J. F. Callbreath, Munsey Building, Washington, D. C.

The Canadian Institute of Mining and Metallurgy will hold its second annual western meeting at Winnipeg on Oct. 25, 26 and 27. Headquarters will be at the Hotel Fort Garry. Local secretary, W. W. Berridge, 905 Union Trust Building, Winnipeg, Can.

The National Association of Purchasing Agents will hold its annual convention at the Congress Hotel, Chicago, Ill., Oct. 11, 12 and 13. Secretary, L. F. Boffey, 25 Beaver St., New York City.

COAL AGE

The Weekly Journal of the Coal and Coke Industries

Volume 18 NEW YORK, THURSDAY, OCT. 7, 1920 Number 15

Consumers' Obligations

STABILIZING the bituminous coal industry is as much an obligation on the consumer as it is his privilege. Acute disturbances in the industry, shortage of supply and violent fluctuations in price such as have chacterized the last few years could have been and in the future can largely be prevented. It has been set forth in these columns how the shortage and high prices of this year would have been averted had consumers not so greatly depleted their stocks of coal last year. If each consumer were to carefully calculate for his own plant the quantity of coal experience has shown to be necessary and desirable to have on hand at each period of the year, and then endeavor to maintain that amount in storage, the industry would be as near stable as business can be held.

The public, however, has only begun to learn the basic facts of the coal industry, though but few are untouched by it in their everyday personal and business life. Education over the years to come will be necessary to reach any great measure of the millennium toward which such men as McAuliffe are striving with their various proposals for stabilization. No opportunity must be spared to tell in as many ways as can be conceived and as often as possible, the facts about coal. And men in the industry have much to learn of their obligations in the business.

It must be clear by now that no single remedy will suffice to cure once for all the ailments of the coal industry. The plan for seasonal rates was to have given the urge to store coal in the summer months, but that urge is what caused most of the trouble this summer. Seasonal rates may be good for what ailments the industry may have some summers, but it was not the cure for the ills of the season just closed.

The great need is for quantitative information and education. Senator Frelinghuysen thundered for data during the summer of 1919 and this year he proposed a Coal Commissioner who would get the facts that he found were necessary for a proper understanding of the situation. But this year the Geological Survey, assisted by funds left over from the Bituminous Coal Commission, has given us the essential data, and the trouble has been located and is in a fair way to being cured—without a Coal Commissioner.

The consumer is the one to suffer in a coal shortage. If he can be taught to read the signs of approaching under- or overproduction and if he will but heed the warnings and neither overdelay in purchase nor be overanxious at other times, much of his grief can be warded off. The acumen of a business man who always buys and sells at the right time is praised. Some are dependent on "hunches" to guide them in such matters; others assemble and study facts. More facts are now available regarding coal than ever before and there is less excuse for poor judgment in this market than at any time in the past. The country as a whole has paid dearly for the mistaken policy of burning its stocks of soft coal in the summer of 1919 and New England in particular deserves no sympathy for having in addition made the mistake of not buying at the beginning of this year.

Plainly enough it is the obligation of the consumer of bituminous coal to keep fully informed as to his own requirements and to study the coal situation nationally and locally in order that he may forestall in the future such a situation as arose this year. Mr. Morrow, vice-president of the National Coal Association, addressing a meeting of the Pennsylvania Electric Association at Bedford Springs, Pa., recently said:

"It will be largely up to the public in future whether it is to have the supply of coal it wants, or if crises such as the one through which we have passed are to come again. With the railroads now alert to the exigencies of the coal problem it is to be assumed that there will be no recurrence of the transportation difficulties of this year. If the railroads do their part in future, and the coal consumer, large and small, does his part in arranging for his coal supply sufficiently in advance, while the miner sticks at his work, there will be no danger of another such crisis as that from which we are now emerging."

Labor Saving and Labor Easing

MACHINERY, not being sold, as a rule, to the man who will actually use it, has rarely been recommended on its ability to ease labor; the whole stress has been on the labor that it saves—that is, the number of men it has the ability to lay off. Consequently machinery has never had a benign look to the workman, who, seeing that it might involve a temporary lay-off, could less obviously realize that in the long run he could find the condition more than corrected by an increase of production which would inevitably find one or more places for him. Moreover, even temporary idleness is likely to make the workman unfriendly to labor-saving machinery.

The farmer has a different view of machinery from the mechanic. As he has to use the machine that is to be sold him, care is taken to show him that it will ease his toil as well as save in operating hands, and had it not been that the farmer's pockets have been in the past most generally empty and his knowledge of machinery nearly nil, he would have been most enthusiastic in favor of mechanizing his farm, for he has the constant realization that more machinery means easier work.

The shortage of labor has made labor-saving machinery less likely than ever to lay workingmen idle even for a day and it has made labor more determined than ever not to exert itself when such exertion is unnecessary and often when the expenditure of energy cannot be avoided if the job is to be done.

Labor therefore has a somewhat different attitude toward machinery from that which it held in the past. Is the laboring man about to swing over from the point where he opposed machinery to the point where he demands it as a right? There seems some such possibility. He is beginning to see that much of his labor is the outcome not of the necessities of the case but of sheer lack of thought and equipment, and he is ready to welcome an era when his labor will be merely to put in motion and watch the forces of nature and not to be the force of nature himself, as in the past.

The change that he opposed he is beginning to welcome. He will seek it still further if care is taken that every man displaced is given congenial labor that will convince him that machinery is not merely a displacer of labor but its replacer.

The interesting quality about the operation of machinery is that the operative likes to see it working and has no desire to see it lag. The designer of the machine can set the pace, and the operative will never complain unless perhaps that it has not been set to operate faster. The machine decides the speed at which the work shall be wrought and the man at the wheel is wishing all the while that it had powers of greater accomplishment. That quality of the director of the forces of nature can be held as axiomatic. The laborer may set a limit on the amount he wants to do, but the operative at a machine, provided it does not demand labor, will drive it always at its limit unless most stringent rules are made that he shall not crowd it beyond its capacity.

Machinery therefore produces a change in psychology in the individual. It changes a shirker into an industrious worker. It may utterly spoil him for further laborious work, but so long as the machine is to his hand and he is kept to his task by the terms of his contract, he will operate the machine to its limit and be little pleased if he is asked to forbear and be a little careful for the machine's sake. With the machine he becomes a master; with the tool, as he has to supply the labor, he is the servant. It is the machine which changes him from one to the other, and gives him, as far as the work is concerned, the class consciousness of the employer rather than that of the employed.

Jury Prices and State Commissions

PRICES for bituminous coal set by a grand jury in Kentucky and control of production, distribution and prices by a commission in Indiana are the latest developments in the political horizon of the coal man. Prices on coal produced in Kentucky ranging from $4.30 to $5 per ton were recommended by the grand jury in Covington, Ky., in its report to U. S. Attorney Slattery. This jury had been called to investigate alleged profiteering in coal in eastern Kentucky, and during the course of its work examined the books of hundreds of producers and distributors of coal mined in the state and heard the testimony of the men in the business. The jury reported finding that excessive prices for coal have been charged by the operators, and further states that the prices fixed by the jury (p. 768) are fair and reasonable. It has been intimated that if the prices are not in future exceeded prosecutions for previous offences may be delayed or postponed indefinitely.

In northern West Virginia similar action appears to have been forestalled by the request of the operators for opportunity to correct the price level without Federal interference.

In Indiana the law creating a commission to regulate the industry within the state is in effect and has withstood the first legal attack against it—an attempt to stay the activity of the commission by injunction. Reports from Birmingham are that a form of state control is being pressed for Alabama, and the Governor of Alabama has threatened to take over the coal mines for the benefit of the people of his state.

These are indications of the troubled waters through which the coal industry is sailing today. The industry having held off actual Federal control this summer still faces what some loosely term nationalization—if for no other reason, because all the self-regulation so far has not effected a lowering of prices. The National Coal Association, it is reported, will take a hand and assist the operators of Indiana in having the law tested out before the U. S. Supreme Court. This is as it should be—the industry as a whole is concerned, and the law if constitutional in one state may be expected to be tried out in others.

According to Rush Butler, general counsel for the National Coal Association, the court in dismissing the application for injunction apparently based its action on the ground that though portions of the act might be in violation of constitutional rights, relief could not be granted until the commission had entered an actual order, the effect of the enforcement of which would be to impair contracts or otherwise to deprive one of rights and privileges guaranteed by the constitution.

Mr. Butler goes on to say: "The interesting and at the same time the alarming feature of the opinion of the court is that while no state in the United States has heretofore attempted any such regulation of a concededly private industry it is apparent that the exercise of price-fixing and other regulatory powers by the Federal Government during the war has made such an impression as to lead the court seriously to consider whether the exercise of those powers by the several sovereign states during times of peace may not be nothing more than the exercise of the portion of the police power not delegated by the states to the Federal Government.

"Perhaps I should not have used the word 'alarming' in speaking of this opinion for, after all, the laws which govern us, whether municipal, state or federal, merely reflect the mind and will of the people, and the courts' duty is merely to interpret and apply these laws.

"Accordingly, if it is the will of the people that such laws be enacted it is clearly within their power by constitutional amendments, if not otherwise, to authorize the enactment of statutes similar to the one referred to. However, the opinion of the court may well give alarm to the coal industry, if for no other reason than that that industry and no other is singled out for price-fixing and regulation in this particular piece of legislation."

Coal Cars Return More Promptly

The Car Service Division of the American Railroad Association has issued a report on the return of coal cars to home lines. From March 1 to Sept. 1 coal cars returning to home roads have made a gain from 22.6 per cent to 33.8 per cent. Coal cars, however, show losses in the three Western districts.

To Ration Coal in Providence

Residents of Providence, R. I., are to be placed on a coal ration until such time as the supply of fuel becomes more plentiful. This was decided upon Sept. 24 at a conference of coal dealers called by Mayor Joseph H. Gainer. A committee of dealers and citizens will work out the details of the plan, with the end in view of assuring all families at least a partial supply of fuel before cold weather.

Coal Roads Get Government Loans

Loans have been authorized by the Interstate Commerce Commission to these two important coal-carrying roads to enable them to purchase additional equipment and improve facilities: $2,000,000 to the Virginian Railway Co., to aid in extending its facilities to adequately handle its rapidly increasing traffic, and to the Western Maryland Railway Co., $1,372,800 to aid in purchasing twenty Mikado freight locomotives at a cost of $1,500,000, and in making additions and betterments to roadway and structures to promote the movement of cars at a cost of $622,800. The Maine Central will get $653,000 and the Ann Arbor R.R. $250,000. The commission also has approved a security issue of $2.400,000 by the Pittsburgh & Lake Erie R.R. to enable it to procure 1,375 cars of the 55-ton all steel hopper type at a cost of $3,508,300.

Alabama Seeks Coal Legislation

A bill was introduced Sept. 23 in the House of Representatives of the Alabama Legislature, authorizing the Governor of Alabama to make contracts with coal operators for supplies for the use of the public in averting coal famine and appointment of a fuel administrator to control distribution of the tonnage contracted for by the Governor. The bill would, therefore, give the Governor the authority to establish fair prices.

Lackawanna May Get B., R. & P.

William H. Truesdale, president of the Delaware, Lackawanna & Western, has refused to comment on the reported acquisition of the Buffalo, Rochester & Pittsburgh, but it was learned in authoritative quarters that to date no offer for the B., R. & P. properties has been made by the former company. Acquisition of the B., R. & P. by the Lackawanna would bring to the latter a splendid opportunity to handle a heavy bituminous coal tonnage, and in conservative railroad quarters it is believed such a consolidation would make for the improvement of both companies.

Report Increase in Efficiency of Railroads

Encouraging results are reported by the railroads in their efforts to get more service out of existing transportation facilities. The current number of *American Railroads*, issued by the Association of Railway Executives, covering reports from twenty-seven principal roads,

NEWS BRIEFS

Terse Items Chronicling Events of Interest to the Industry

shows that the roads are moving more freight more miles a day than ever before; that they are reducing the number of cars in bad order and they are not only getting heavier loading per car, but are securing, through the co-operation of the shippers, quicker loading and unloading. The amount of freight handled by the railroads of the United States in August, 1918, was 7 per cent greater than ever before in that month. But in August, 1920, the railroads moved more than 4,000 carloads in excess of the 1918 record.

Brooklyn Goes After Profiteers

The Flatbush Chamber of Commerce, of Brooklyn, N. Y., has appointed a committee to investigate a complaint that 75 per cent of the residents of the Flatbush section of Brooklyn have been unable to lay in their winter supply of coal. The committee also will look into an accusation that coal men are charging as high as $30 a ton. Prosecution is promised if profiteering is found.

Oklahoma Governor Threatens to Seize Coal Mines

Governor J. B. A. Robertson of Oklahoma telegraphed to the Interstate Commerce Commission Sept. 27 that the coal situation in Oklahoma was serious and that if necessary he would "not only take possession of the mines but also take sufficient cars and engines to distribute the necessary fuel."

Rich Coal Fields Found in Spitzbergen

The Christiania *Aftenposten* learns from Spitzbergen that new and rich coal fields have been found at King's Bay. The fields are said to cover an area of 150 square kilometers. The quality is like the ordinary English coal. The proprietors of the new fields are the King's Bay Coal Co. of Aalesbund.

Railroads Report Operating Deficit for July

Major railroads of the country recorded a deficit of $6,653,420 in operating income for July, compared with an operating income of $80,325,481 in July, 1919, according to a summary issued Sept. 29 by the Interstate Commerce Commission. For the seven months ended with July the operating income of the roads was $26,200,730, as against $252,952,359 for the corresponding period of last year. Operating revenues of the roads for the month amounted to $528,132,986, compared with $455,280,142 in July, 1919, while operating expenses totaled $511,773,300, against $358,891,812 for July of last year. Deductions for taxes and uncollectible accounts produced the deficit.

47,363 Tons of Coal "Makes" Panama Canal in July

Movement of coal in cargo lots through the Panama Canal during July totaled 47,363 tons. All of the coal orignated at Hampton Roads. With the exception of one cargo, which went to Balboa, Panama, all of the fuel went to Chilean ports. A cargo of fuel briquets moved from Norfolk to Iquique. A cargo of coke moved from Baltimore to Valparaiso.

British Coal Strike Unlikely

A strike of British coal miners is now believed unlikely as a result of a decision taken Oct. 1 to call for a re-ballot by the miners on the question of ceasing work. The result is expected to be an acceptance by the men of an offer by the owners of an advance in wages of 2 shillings per shift when the output of coal reaches 248,000,000 tons yearly. This was the rate of the output for the first three months of the present year. The coal strike notices which were effective Oct. 2 have been postponed for another fortnight. This action resulted from a conference between Premier Lloyd George and representatives of the miners and owners.

Through the Coal Fields With a Camera

Welfare Work in Alabama

Progress Made by Tennessee Coal, Iron & Railroad Co., at Some of Its Plants

Medical Attention
INTEREST IS SHOWN IN PHYSICAL DEVELOPMENT OF THE MINERS' CHILDREN AT DOCENA

Health
CENTRAL HOSPITAL AT FAIRFIELD IS ABSOLUTELY FIREPROOF

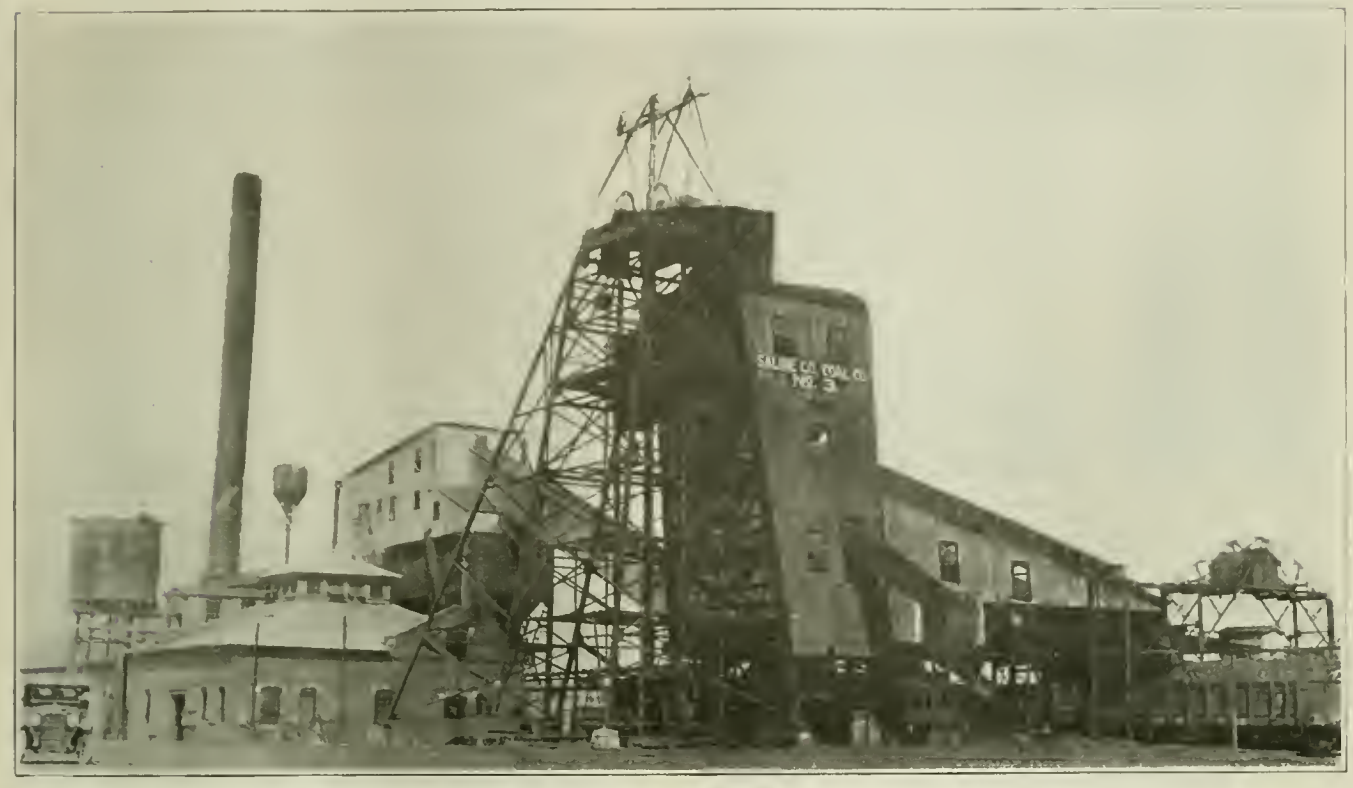
Recreation
EMPLOYEES' CLUB HOUSE AT MU'SCODA

Education
KINDERGARTEN AT EDGEWATER

Illinois Mines Guard Their Timbered Shaft Bottoms by Fusible-Plug Sprinklers

State Statutes Demand the Elimination of Fire Hazards Below Ground —To Secure This Protection One Operator Uses Fusible Fireplug Sprinkler Heads on Pressure Lines Containing Rain Water Only

By Donald J. Baker
Wilkinsburg, Pa.



GENERAL VIEW OF NO. 3 SURFACE PLANT, SALINE COUNTY COAL CO.
On the extreme left is the tank containing the water used in the underground sprinkler system. A 4-in. pipe carries this water down the shaft.

MINING law in Illinois probably demands more of the coal operator than does the law in any other state in the Union. More particularly is this true of those portions of the statute which deal with reducing fire and explosion hazards. Doubtless this is well, and as it should be, for as a rule the mines in that state are drier and consequently present greater hazards than are faced in other coal-mining districts.

Fire Hazards Not All in Shaft Landing

To reduce the hazard of dust explosions some form of sprinkling system is adopted in order that the floor may be kept damp, the roof and ribs being periodically washed down to remove coal dust from all projections. Where the shaft bottom is timbered, as is a quite general condition, precautions must be taken to protect it and the shaft from the effects of a disastrous fire. As a safety provision many of the mines have installed a network of piping with sprinkler heads fitted with a plug made of a readily fusible alloy which will melt in case the temperature rises above an accurately predetermined figure.

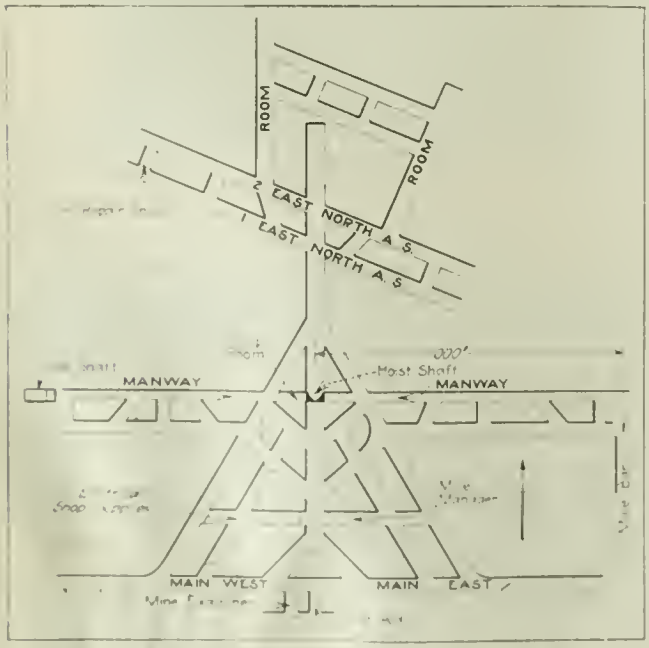
It is practically impossible to eliminate entirely fire hazards around the bottom, for even in the newer operations, where steel and concrete construction is extensively used, there will in all probability be a mule barn to be protected as well as a machine and repair shop where timber, oil and waste are used or stored. No matter how small the hazard existing, if it be a hazard at all, protective measures must be taken. This much the state demands. Whether or not the measures are legally adequate depends, of course, upon the viewpoint of the visiting inspector.

At the bottom of the No. 3 mine of the Saline County Coal Co., which is situated in the southern end of the state, over 2,000 ft. of 1½- and 2½-in. pipe composes a sprinkling system where are installed 75 fused fireplugs to protect the timbered sections in the immediate vicinity. Construction plans call for an additional installation of nearly as much pipe as is already in use. This concern contemplates the building of a mule barn similar to the one illustrated, which is located in its No. 6 mine. As shown by the accompanying drawing, this room will be distant about 1,000 ft. from the

DISTRIBUTING LINES CONNECTING WITH THE MAIN
In this illustration one of these lines controlled by a valve may be seen leading away from the shaft

shaft bottom. Each manger will contain a fireplug so that it will be extremely difficult for a fire to gain headway.

At the immediate bottom there are at present five rooms containing fire hazards—not hazards as interpreted by many state laws but hazards as the term is



BOTTOM LAYOUT SHOWING POINTS PROTECTED
Some idea may be gained from this drawing of the extent of territory that is or will be covered by the sprinkler system

construed in Illinois. These are: An electrical supply and repair shop, a car-repair shop, a first-aid dressing station, a mine manager's office and a mine examiner's office.

Each of these chambers contains an overhead arrangement of pipes and fireplugs that bespeaks immediate extinction for any fire that might break out.

The utility of this system once it is installed is manifest—no further attention need be paid to it, while the

MINE MANAGER'S OFFICE PROTECTED
One fused fireplug, seen in the upper center of the illustration, protects this small room.

first cost of installation is the only one, as there is no continuous overhead expense. Like watchdogs of the night, the plugs stand guard over inflammable material, and convey a businesslike impression of pent-up or potential efficiency. Never in the way of operation yet always on the job, these plugs inspire a feeling of security that is reassuring.

In the extreme left of Fig. 1 can be noticed a large tank supported on steel legs. This container, 11 ft. in diameter and 12 ft. high, holds the water that feeds

Distribution Line in a Heading

Bracket suspension from I-beams is practiced wherever possible. Such suspension may be here plainly seen.

the network of pipes around the bottom of the shaft. Nothing but rain water is permitted to enter the pipe line in any part of the system. This is collected at a reservoir on the surface and then pumped to the tank shown in the illustration, which is always kept filled.

Mine Water Would Cause Clogging and Rust

Mine water with its sediment and acid content cannot be used in a system of this kind, for while it is unlikely that the plugs will ever be called on to deliver water, yet should the occasion arise, the need will be both immediate and vital. Utilization of the water from the underground workings would in all probability cause rusting and clogging of the pipe lines and might so impair the entire system that it would be of small account when put to the test.

A 4-in. main leads from the tank on the surface down the shaft to the bottom. At this point 2½-in. leads are tapped off. No fixed method is followed for suspending these latter pipes from the roof, as the type of overhead construction varies. When the line is beneath an I-beam construction, a bracket fixture is attached by a bolt to the lower flange of the beam. This carries the pipe in a jaw. When passing beneath timber several strands of wire encircle the pipe and securely hold it in place. The 2½-in. lines run directly to the room containing the hazard. Wherever this pipe is suspended from the roof, a valve is provided at 100-ft. intervals so that a connection may be quickly made for a 2-in. hose line. Thus, if the plugs do not suffice to keep a fire under control, adequate means are provided for fighting it by hand. One-and-a-half-inch pipe is connected to the larger size at the room entrance and the fused plugs are attached to this smaller size.

Gives Fine Spray Covering Large Area

The plugs have an umbrella-shaped hood, the cap of which is held in place by a fuse composed of an alloy of low melting point. Any unusual amount of heat around the plug will melt the fuse, release the cap and permit the water under pressure in the pipe to escape. In doing this it strikes the hood and is deflected, so that the resulting spray is not unlike that from a shower head. The stream of water will persist until the valve controlling that particular line has been shut off.

In connecting plugs to the overhead line one is installed wherever a fire hazard is encountered. The greater the hazard, the larger will be the number of plugs assigned to cover it. In the smaller rooms, such as the mine manager's office, shown in one of the accompanying illustrations, a single plug is considered sufficient protection, while above the workbench in the electrical repair shop the plugs are connected to the pipe at intervals of only a few feet.

Type of Mule Barn Under Construction

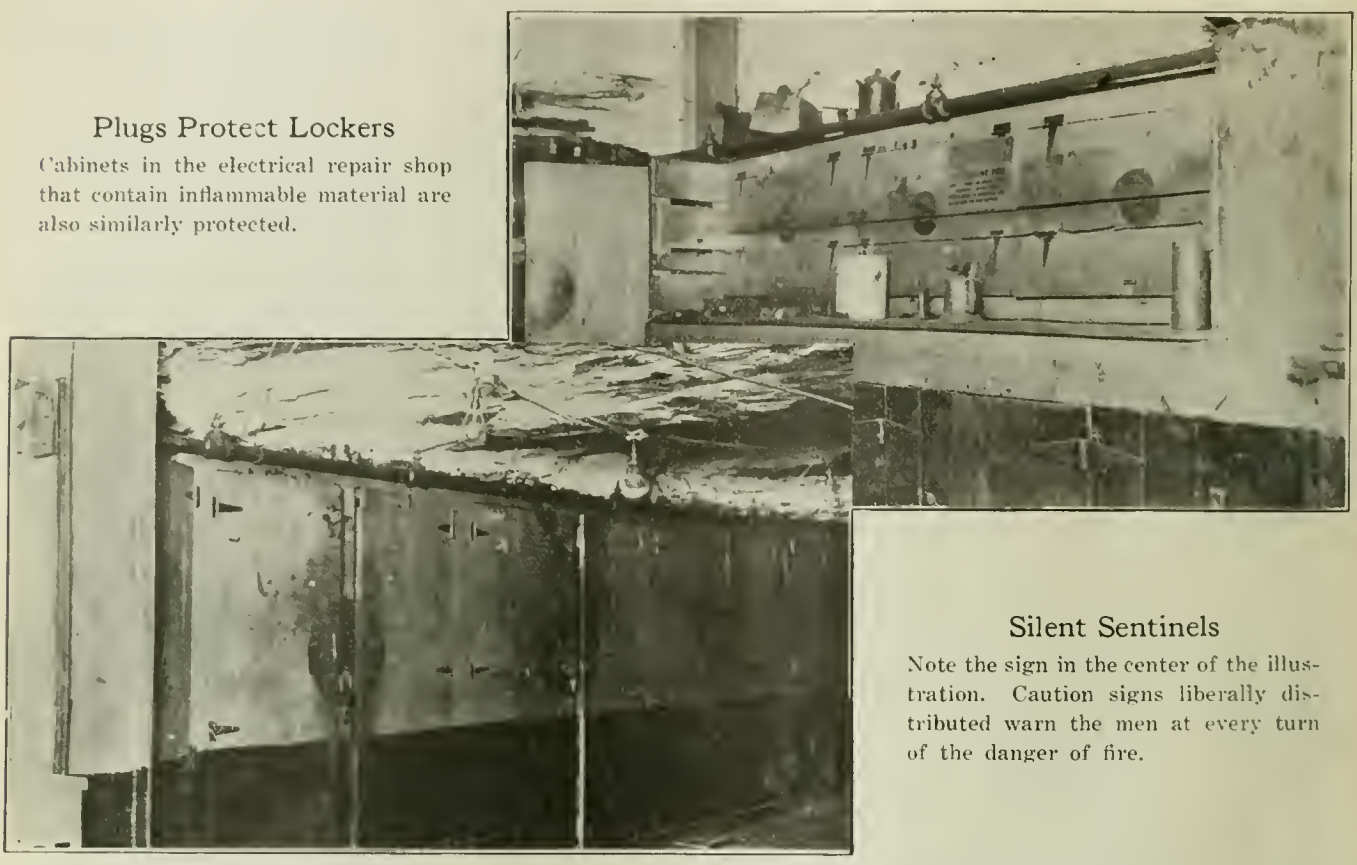
When completed each manger will be provided with a fireplug giving the mine stock ample protection.

The water pressure in the pipes is approximately 140 lb. to the square inch. This is attained by the head on the line coming down the shaft, which is 270 ft. deep. There is thus sufficient pressure from gravity alone without resorting to any pumping units.

in the mine, the ventilation should be good and a fire once started would gain rapid headway. It is to forestall any such contingency that such a system as this is resorted to. If "an ounce of prevention is worth a pound of cure" such a sprinkler system as this with

Plugs Protect Lockers

Cabinets in the electrical repair shop that contain inflammable material are also similarly protected.



Silent Sentinels

Note the sign in the center of the illustration. Caution signs liberally distributed warn the men at every turn of the danger of fire.

It is a maxim among mining men that "the shaft is the neck of the bottle." It is accordingly decidedly vulnerable and any accident that cripples it cripples the entire operation that it serves. Here if anywhere

pressure constantly on the mains and the sprinklers waiting only a comparatively small increase of temperature to let loose their sprays where they will do the most good, should prove highly efficacious.

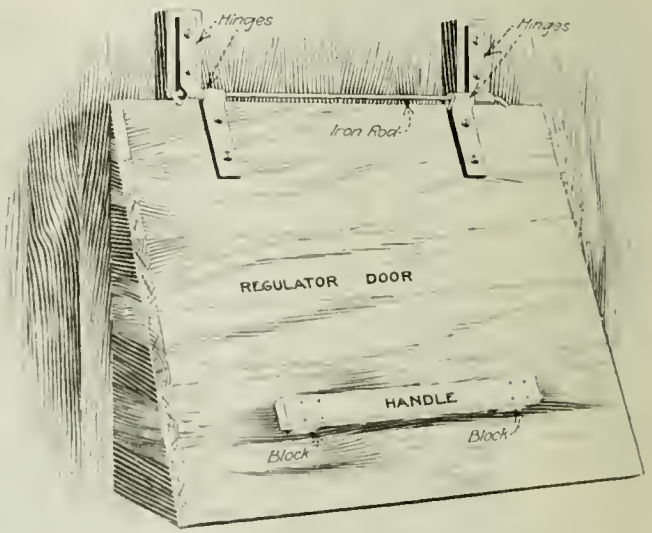
Regulator Door Which Will Close Itself Unless It Is Propped Open

By Ralph W. Mayer
California, Pa.

THE old orthodox sliding regulator placed in a stopping may be carelessly or negligently left open. To obviate this difficulty the Pittsburgh Coal Co., in its Crescent mine, has adopted a self-closing type. The frame for this device is placed in the stopping with its lower edge extending slightly outward, and the door itself is hinged at the top. Gravity thus closes the door when it is released, and the air pressure forces it against the frame and holds it securely in place. Thus unless the door is deliberately propped open it will close automatically.

Four strips of iron of suitable dimensions serve as hinge straps. These may be bent upon themselves around a ½-in. rod the ends of which are then bent at right angles. The straps are then drilled and two are spiked to the regulator door while two are spiked to the frame in the stopping. Two cleats nailed in place near the lower edge of the door with a small strip across them form the handle whereby the door may be opened.

The extreme simplicity of this arrangement is at once apparent. The advantage of a door that naturally and automatically tends to closure will appeal to mining men.



REGULATOR AND ITS SLANTING FRAME
Gravity swings this door shut and the air pressure holds it in place. A simple handle makes opening easy when this is desirable.

Pennsylvania Mining Town Constructs Its Own Sewage-Disposal Plant

Open Sewers Breed Bacteria and Invite Disease Langeloth Passes Its Sewage Through a Disposal Plant That Yields Two Products, One a Colorless, Odorless, Harmless, Bacteria-Free Water, and the Other an Excellent Germless Fertilizer

By Donald J. Baker
Pittsburgh, Pa.

FIG. 1. GENERAL VIEW OF SEVERAL UNITS OF THE DISPOSAL PLANT
Here may be seen the sludge and filter beds, disinfecting house and resettling basins. It is planned to inclose the entire plant with a fence in the near future.

AT THE town of Langeloth, in Washington County, Pa., where are housed the coal miners and mill workers of the American Zinc & Chemical Co., can be found one of the most effective and most easily operated sewage-disposal plants in the Keystone State. This assertion is borne out by the health department of that Commonwealth. No expense has been spared to make the town not only highly attractive but one wherein good health may reasonably be expected to be the lot of the inhabitants.

This community boasts a population of 1,350, which is somewhat less than it was five years ago. Not an outhouse can be found in the entire town and yet the sewage of the village is not directed to some near-by stream to contaminate its waters and furnish a new breeding ground for bacteria of all kinds. Sewage from each house is collected into a 10-in. sewer, and thence directed to the disposal plant by gravity. The only product of the works to enter a surface stream is a clear and odorless water.

The sewage-disposal plant is located about half a mile from the town. At a distance of 300 ft. away from the point where the pipe carrying the town refuse enters the first unit of the plant—the Imhoff tanks—a screen chamber has been constructed in which sticks and other foreign matter that will not permit of early digestion in the sludge chamber of the settling tanks are caught to be removed later and buried. Fig. 4 is a view of the twin Imhoff tanks. The main line coming from the town is bifurcated, and a separate pipe line delivers the collected sewage to each of the two tanks.

Upon entering the tanks the sewage strikes a baffle board that serves a double purpose. In the first place the water in the main portion of the settling chamber must be kept placid at the surface in order to insure rapid digestion of the organic material lying at the bottom. The baffle serves to direct the incoming sewage away from the body of water that must lie undisturbed if the tanks are to function effectively.

The second purpose of the baffle board is to receive the shock of the incoming sewage. In this manner the larger particles carried in suspension strike the board with some little force and are partly disin-

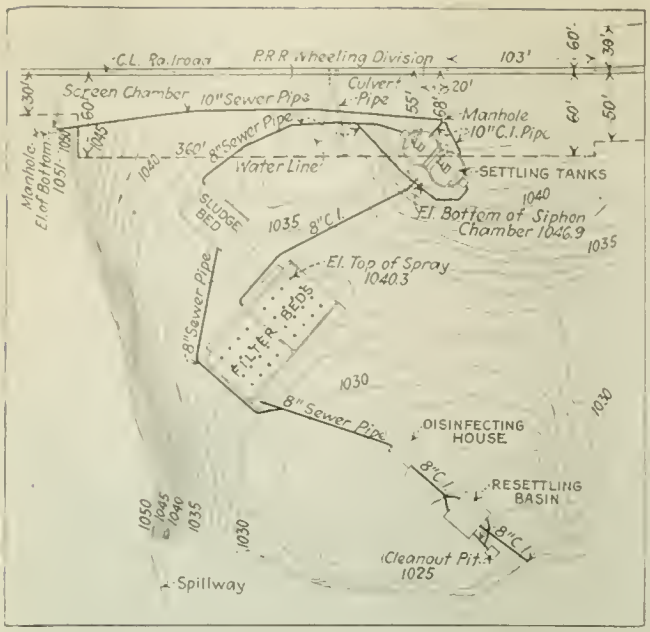


FIG 2. PLAN SHOWING ARRANGEMENT OF UNITS
Comparative distances as well as ground contours are here indicated.

tegrated or broken up. This is advantageous, as there are then fewer air spaces contained in the fecal matters and these solids consequently sink to the bottom much more quickly.

As is shown in the diagrams, the incoming sewage must first pass down and around the concrete retaining walls, or through a vertical distance of about 13 ft., before it can gain entrance to the sludge chamber. This latter is circular in shape and has an inside diameter of 16 ft.

The most interesting portions of the entire plant are, of course, the Imhoff tanks, which include settling, sludge and siphon chambers. The incoming solid particles contained in the water drop to the sludge chamber, after disintegration has been started by the baffle board. They are deposited on top of the accumulation already in the chamber. A 20- to 24-ft. head of water is maintained above the sludge. This arrangement is necessary if the fecal matters are to generate gas and rapidly digest. The digestive process is slow but in the end the bacteria perish, for after feeding upon all sustaining matter in the sludge they feed upon themselves, and in this manner are ultimately destroyed.

In the longitudinal sections of the tanks can be noticed a central receiving gas chamber or vent leading to the surface, the lower lip of which is wing-shaped and projects down and under the concrete wall that guides the incoming heavy particles to the sludge chamber. This furnishes an exit for the gas generated at the bottom of the sludge tank without necessitating its passage through the main body of water in the settling tank. Thus no disturbance is created in the settling chamber and the water pressure on the sludge is evenly maintained at all times.

For the gas that does not pass to the surface through this orifice another exit is provided. This gas may be directed around the concrete wall inclosing the settling tank. If this is the case it comes to the surface outside the division wall of the tanks or next to the outer retaining wall.

The settling chambers of the tanks were so constructed as to adequately handle the sewage from a

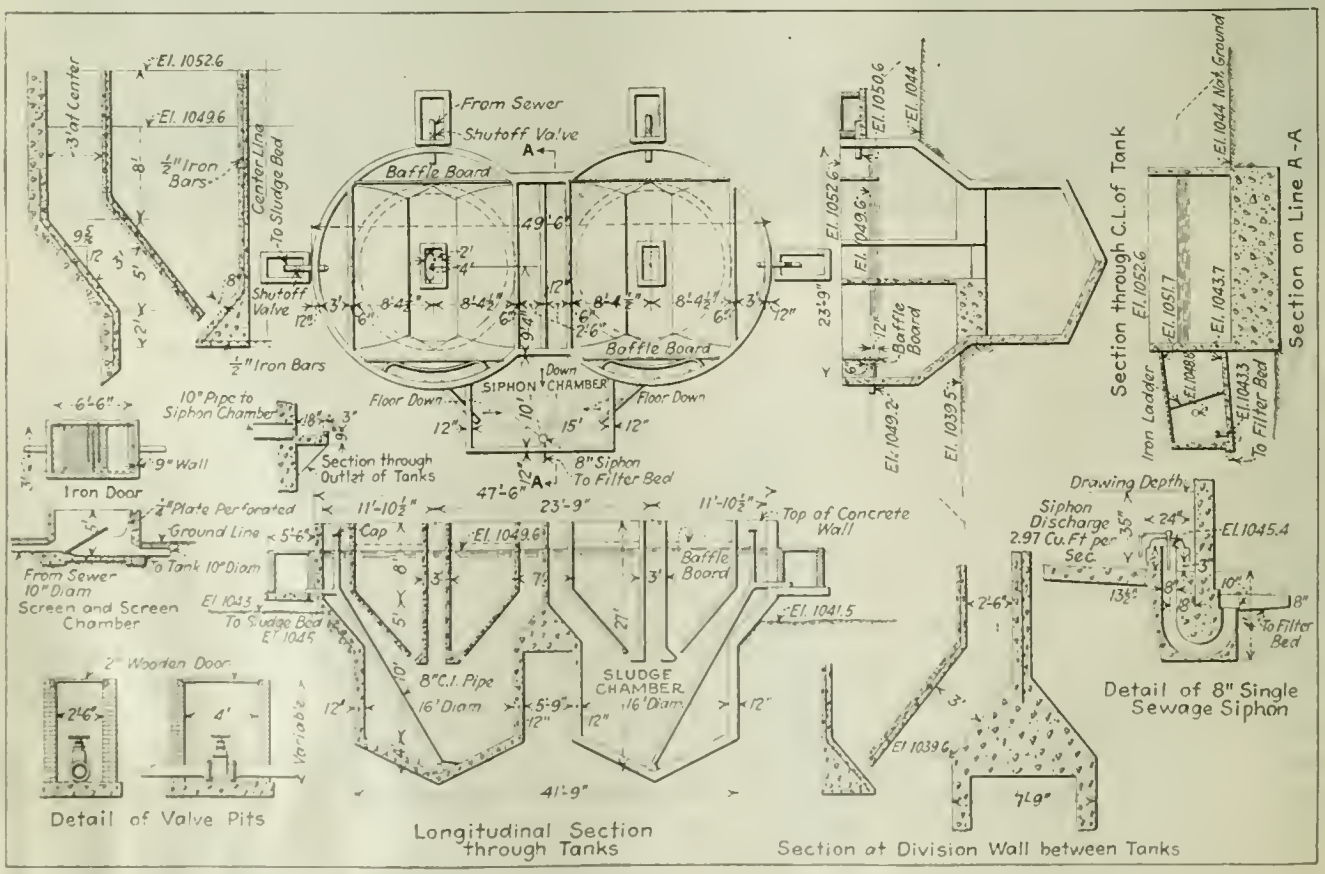


FIG. 3 DETAILS OF THE TWIN IMHOFF SETTLING TANKS
Twin tanks are employed so that one may operate while the other is idle for cleaning or for any other reason

population of 2,500. The per-capita flow was estimated at 70 gal. per day, making a total flow of 175,000 gal.; assuming a steady influx for eighteen hours, approximately 9,720 gal. will enter the tanks each hour. The tanks were designed to accommodate the accumulation of a 3-hour flow before the water content would be entirely displaced. Thus they should have a capacity of 29,160 gal., which is equivalent to 3,888 cu.ft. of space. As a matter of fact a capacity of 4,500 cu.ft. is available.

The capacity of the sludge chamber is 2,800 cu.ft. Computations for the size of this compartment involved the allowance of 0.007 cu.ft. of sludge per capita per day. Approximately 120 days' storage is desired in order that the bacteria in the organic matter may have time to destroy themselves, so that the sludge may be removed to the outside air absolutely harmless. Estimates from the above figures for a population of 2,500 show that only 2,100 cu.ft. of space actually is required. It thus can be seen that the size of this chamber is more than adequate.

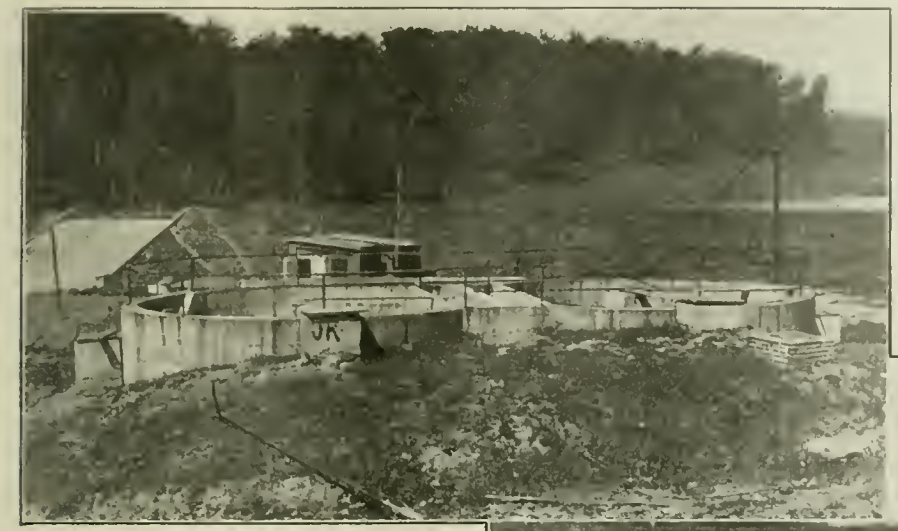


FIG. 4

Twin Imhoff Tanks

This is a photograph of the tanks shown in detail in Fig. 3.

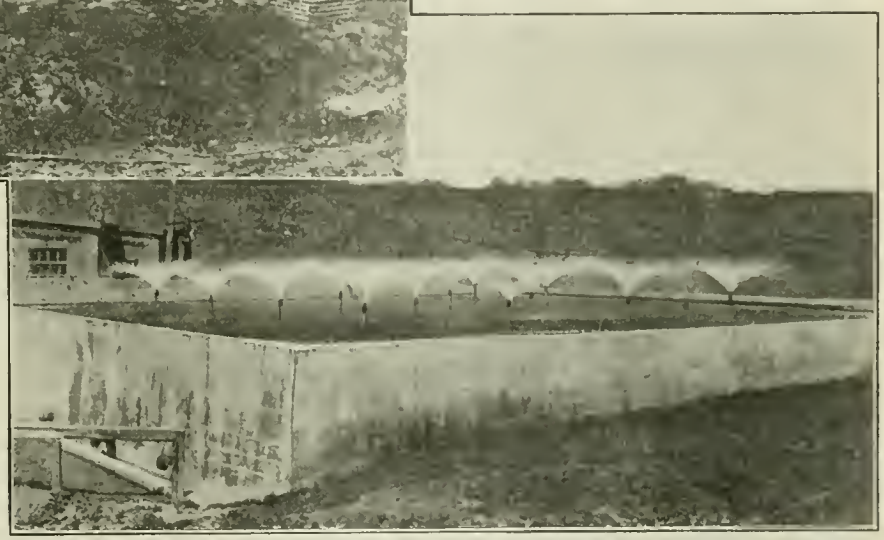


FIG. 5.

Sprays Playing on Filter Bed

Overflow from the settling tanks is distributed by spray over the crushed rock forming the filter.

Liquid Is Voided from Tank by Siphon

Opposite the side of the tank which receives the sewage a second baffle board has been constructed. This serves as an additional safeguard against disturbance of the water in the settling chamber. In the division wall at this point there is an outlet pipe, and water passes out of the tank at the same rate of flow as that at which it enters. It should be remembered, however, that about three hours are required for the water to circulate from one side of the tank to the other.

By the time the water reaches the outlet pipe, it is carrying in suspension nothing but the finest of particles. The outlet pipe leads to the siphon chamber, where the water collects until a pressure has been established that is sufficient to operate automatically a Miller siphon, by which the water is voided to a 10-in. pipe to pass by gravity to the filter beds. When the water in the siphon chamber has been reduced to a level that corresponds with the height of the siphon valve, air enters and the valve closes. It does not operate again until the proper pressure has been set up on the valve by the accumulating water. Under normal conditions the siphon makes three discharges hourly during the day. At such times 8 gal. of water are passed per second for a period of 5.6 minutes. The head of water required to operate the valve is 2.5 ft.

The filter beds are in duplicate, like every other unit of the plant. This arrangement permits any half of a unit to be closed down temporarily for repairs. When the water arrives at the filter beds it is directed into an 8-in. cast-iron main. At the entrance to the beds two shut-off valves are provided, so that the entire flow from the siphon chamber may be directed through either bed. This is a highly desirable arrangement, as the broken stone which acts as the filtering agent should be frequently cleaned and aired.

Idle Filter Bed Aired for Days in Sun

One of the most effective methods of cleaning the stones in the bed is to permit them to be exposed to the warm sunlight for several days. When this is being done the work of filtering is thrown entirely upon one bed. Each bed receives the water from the siphon chamber through four 4-in. lines. Four 2-in. riser pipes are connected to each of the 4-in. pipes. The upper end of each riser pipe is fitted with riser connections and a circular spray. These fixtures were supplied by the Pacific Flush Tank Co.

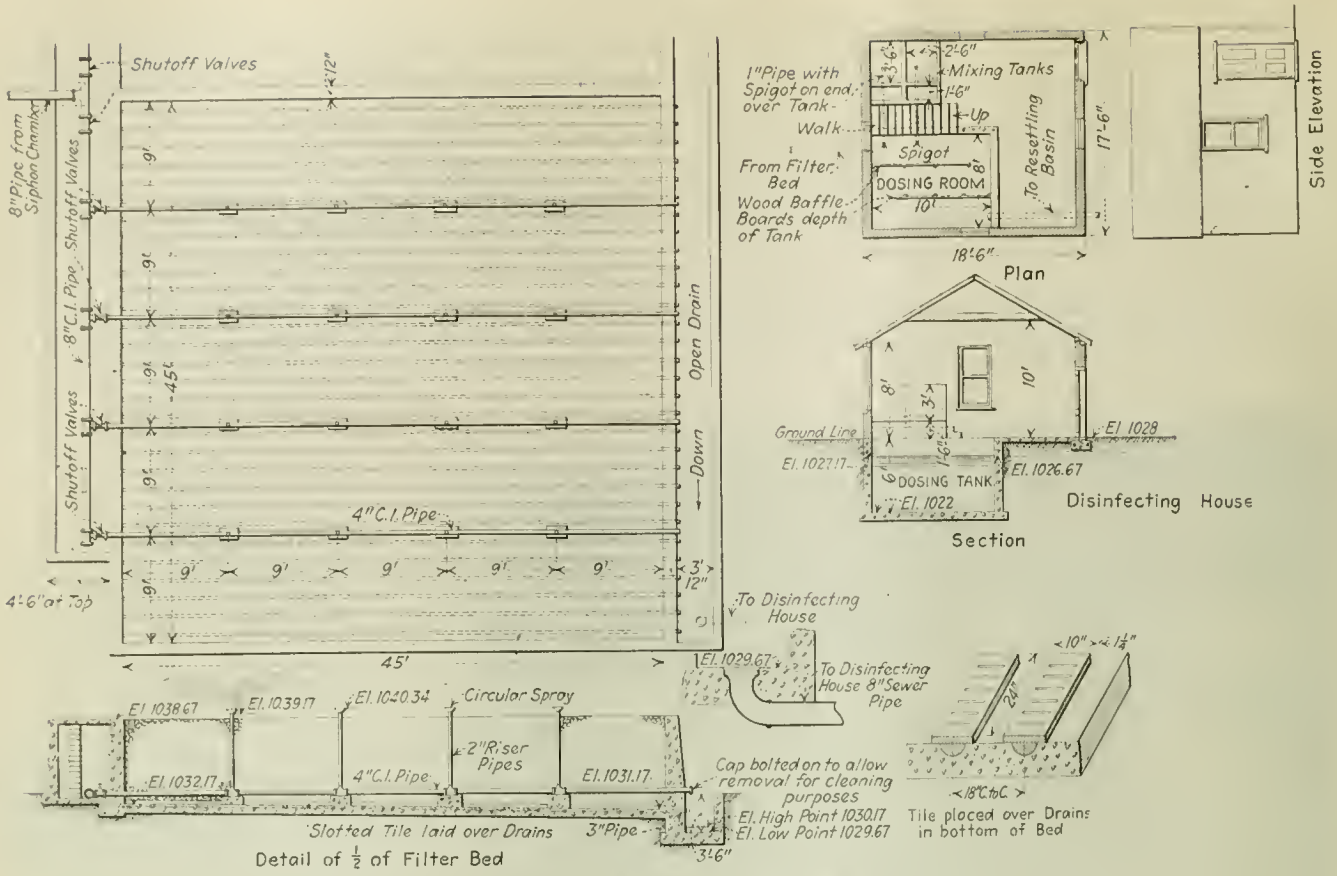


FIG. 6. DETAILS OF FILTER BED AND DISINFECTING HOUSE
Drains below the filtering medium are protected by slotted tile.

Each filter bed, which is 45 ft. square, is filled to a depth of 7 ft. with 1½-in. broken stone. Over the bottom of the bed, which is of concrete, slotted tile have been placed. These vitrified-clay floor blocks were supplied by the American Sewer Pipe Co. The bottom of each bed is, of course, graded, and the filtered water passes through the slotted tile and enters the drains. These lead to 3-in. lines that pass through the concrete retaining wall, permitting the water to reach the surface. Water from both beds enters the same drain, by which it is directed to the disinfecting house through a single 8-in. line. It was estimated that 4,000 sq.ft. of filter surface would be required for the water. This figure was reached by making a per-capita allowance of 1.6 sq.ft. However, it is apparent that the actual available space is 4,050 sq.ft., or 2.025 sq.ft. per bed.

Filter-Bed Water Dosed with Chloride

The part of the plant which is covered is the disinfecting chambers, which are housed in a brick building. Here the water is treated with chemicals, which must be kept under cover. The water coming from the filter beds enters the dosing tank, where it mixes with a chloride of lime solution that drips from a spigot projecting over the basin. The dosing tank, which is 10 ft. long by 8 ft. wide, is divided longitudinally by two baffle boards. These guide the water so that before it leaves the building it has to traverse a greater distance than if it took a direct course. In traveling through the tanks, which are 5 ft. in depth, any suspended materials not removed by the stones in the filter bed are deposited.

An 8-in. line of cast-iron pipe from the disinfecting house leads the water to the resettling basins. Each of these is 22 x 11 x 9 ft. in dimensions. A separate line makes the connection with each basin. The water enters at a 9-ft. level and leaves at the same elevation. Any suspended material still remaining is now finally deposited before the water reaches an outlet pipe to enter a stream near by.

Sludge Is Emptied Three Times a Year

Let us see what means are taken to dispose of the material deposited in the sludge chamber of the Imhoff tanks, as well as the suspended materials left in the filter beds or later deposited in the disinfecting chambers and resettling basins. After the sludge has stood for about 120 days in the tanks, a valve is opened in an 8-in. line leading from the bottom of each tank. This pipe runs to the sludge beds.

At the bottom of the sludge chamber this line is protected by a steel stool which is composed of ⅜-in. iron rods anchored to the concrete floor. This arrangement prevents any sticks or other foreign substances that may have passed through the grate in the screen chamber from entering the line and clogging it. The water pressure on the sludge is sufficient to force it up into the pipe to a point where it drops by gravity to the sludge beds.

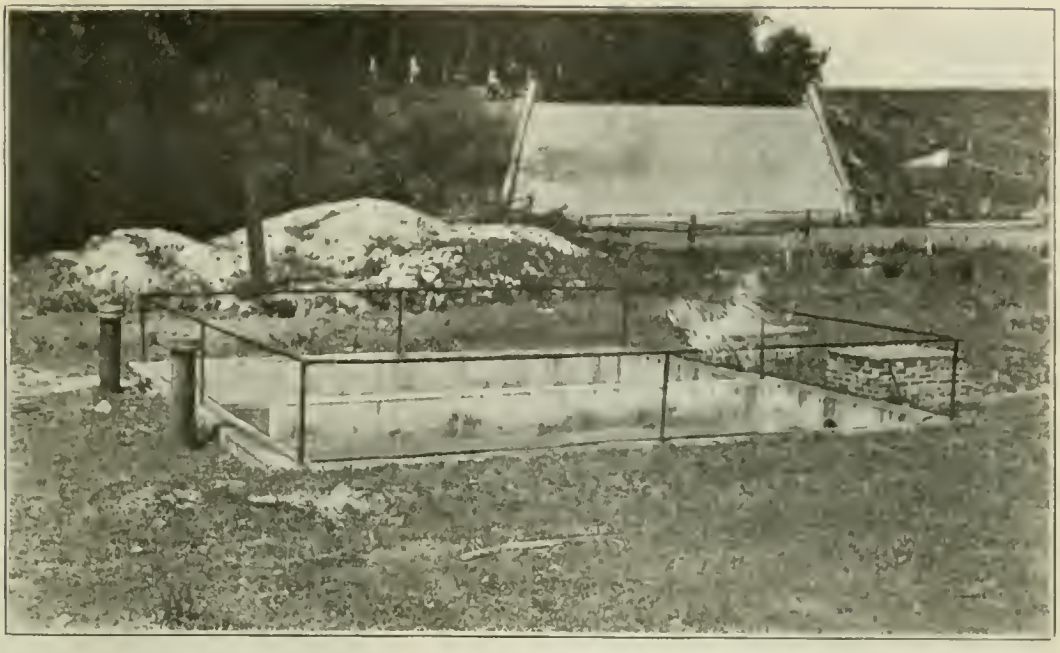
The sludge bed is simply constructed and measures 40 x 30 ft., dimensions which give it an area of 1,200 sq.ft., which is ample enough to supply all needs. The sludge coming from its chamber is in a viscous state and slowly spreads out over the bed, which has been given a slight grade to assist in this movement.

The construction of the bottom of the bed is quite similar to that of the filter beds. The floor is of concrete and supports slotted tile. A portion of the

FIG. 7.

Twins Resettling Tanks

Here the liquid is given its final treatment and the last of the suspended matter removed before the water is turned into a nearby creek.



moisture in the sludge drains off through the cinders forming the bed proper. This collects in one corner and is thence directed to the disinfecting house. The sludge, however, rapidly dries when exposed to the air. While it gives off some slight odor when it enters the bed, it is practically free of bacteria, and after a few days this odor disappears.

Sludge Used by Miners for Fertilizer

The sludge is allowed to stand for several weeks, during which time the surface cracks and permits of a better aëration of the mass. At the end of this time it may be removed by the easiest means available. As it possesses a high nitrogen and potassium content, its value as a fertilizer is high, and for this reason it is readily removed by those in the town inclined toward agricultural pursuits.

At the disinfecting house and at the resettling basins the sediment is collected at regular intervals and removed to the sludge bed to dry and mingle with the product of the sludge chamber.

Northern West Virginia Justice Asserts Company's Right to Evict Strikers

A DECISION has been handed down by Justice of the Peace W. L. Boughner in the eviction proceeding brought by the Connellsville Basin Coal & Coke Co. to obtain possession of several houses belonging to the company at Rock Forge which have been occupied by idle miners ever since July 11, when a strike was declared against the Connellsville Basin Coal & Coke Co. and the Penn.-Mary Co. The miners were ordered to vacate their homes. The justice ordered the defendants to pay back rent.

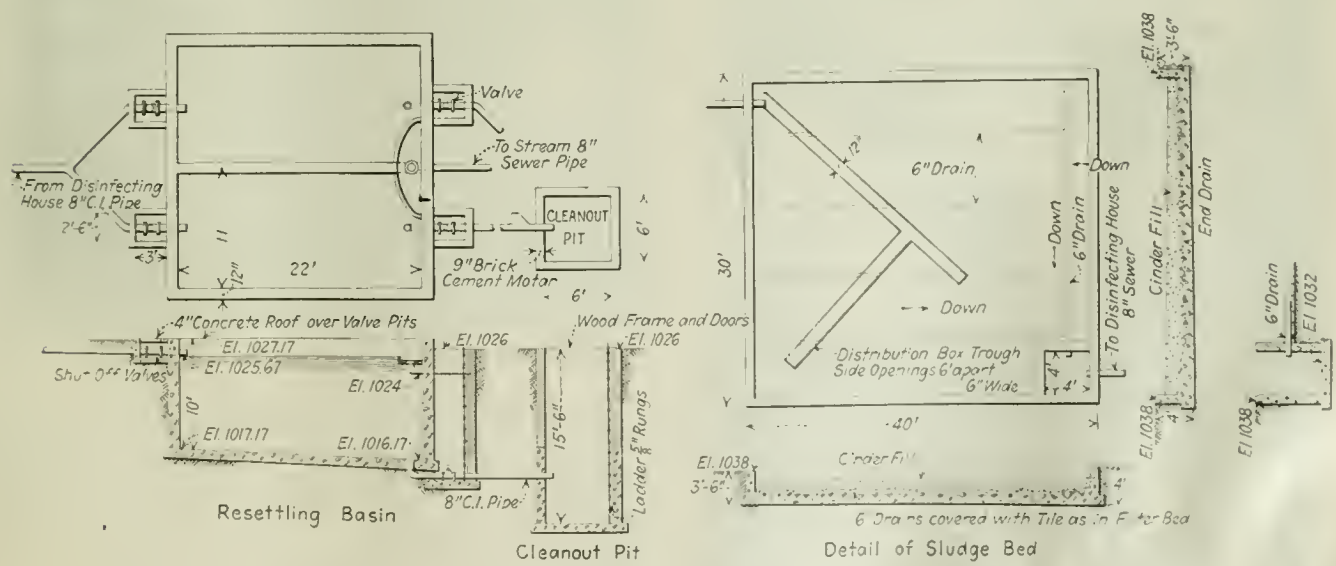


FIG. 8. DETAILS OF RESETTLING BASINS AND SLUDGE BED

The final sludge from the disposal process is allowed to spread out pancake-wise in the sludge bed and dry in the sun. After this process has been completed, it may be scraped up in a solid or rather semi-powdered form and removed. It makes an excellent fertilizer and is largely used for this purpose. The high nitrogen content in this material makes garden vegetables fairly "hump themselves."

Nova Scotia Co.'s Rescue Car: First Firm in America to Use Breathing Apparatus

Introduces Giersberg Oxygen Equipment — Car for Fourteen Men, Heated by Electricity or Steam, Carries Five Sets of Apparatus, Maps of Mines and of Water Lines, and First-Aid Room

By Frank H. Kneeland*
New York, N. Y.

AS EVERYONE knows, much work has been done during the last two decades in safety, first-aid organization and drill. This is, of course, closely related to that of mine rescue, the two usually going hand in hand.

Just who started this movement or where it originated it is now difficult to determine. Nor are either of these questions important, the great consideration being that somebody started them and somebody kept them going until now each state has many first-aid teams and thousands of men are annually trained for mine-rescue operations.

Looking backward, however, it is interesting to learn that the first set of breathing apparatus imported into America was brought in by the Nova Scotia Steel & Coal Co. This was of the Giersberg type. This form of apparatus was the forerunner of the Fleuss, which was, in turn, the precursor of the well-known Draeger apparatus.

Nor did the Nova Scotia company stop with this notable priority. It has progressed in mine-rescue training as have other firms. Being older at the game than many of the coal producers now having "crack" teams, it has the tremendous advantage of long experience in its favor when a real emergency must be met.

*Editorial Staff *Coal Age*.

FIRE-FIGHTING APPARATUS COMPARTMENT

From this view some idea may be gained of the quantity and variety of fire-fighting and emergency equipment carried. A set of ladders reposes upon the truss rods beneath the car body

INTERIOR OF COMPARTMENT FOR BREATHING APPARATUS

Note the oxygen helmets, a stretcher on its stand and a cabinet for surgical implements and dressings. The medicine and blanket cabinet is to the left beyond the range of the camera.

Rescue Car

This car is normally kept on a side track about 100 yd. from the main office. When not actually in use it is thus always ready for an emergency.

The mine-rescue car maintained by this company, while perhaps not as large or as pretentious as some of those belonging to some of the larger coal companies in the United States, is excellently adapted to the needs it is intended to serve. The equipment of this car, while not elaborate, is quite complete and appears to be adequate to meet almost any possible emergency.

Electricity Heats Car in Engine's Absence

The car itself is a small passenger coach remodeled. It contains three distinct compartments of about equal size. The first is intended for the accommodation of the crew and will seat fourteen men. This portion of the car has been left almost in its original condition, with ordinary seats in place.

What appears to be the most conspicuous change made in this section of the car is the installation of electric heaters. These will keep the car reasonably warm even in severe weather should it become necessary to place and leave it on a sidetrack where steam from the locomotive or some other source is unavailable but where it may be within reach of an electric power line. The heaters may be made to serve a similar purpose when the car is in the yards at Sydney Mines.

The second compartment is the hospital and mine-rescue apparatus room. Here are kept five complete sets of Draeger breathing apparatus, seven oxygen cylinders, a pulmotor, a cage for canaries, a dozen electric safety lamps, together with charging equipment and spare parts for the various appliances. This compartment contains a stretcher stand, a small writing desk, lockers for overalls and the like, as well as blankets, rubber blankets towels and similar necessities.

All Mine and Water-Line Maps on Board

The medicine cabinet contains first-aid supplies, absorbent cotton, gauze, adhesive plaster, bandages, instruments, utensils, needles, legatures, scissors, etc., together with a formidable array of medicines, anesthetics and stimulants. Among the latter is a large bottle, supposedly kept full, of "third rail" brandy. On the day I inspected the car, however, this bottle was absolutely empty. Canada as well as the United States is—theoretically at least—dry, arid and parched.

In this compartment of the car also is kept a tin tube containing up-to-date maps of every mine the company owns. Another similar tube contains plans of all water lines with their connections such as fire plugs and the like.

The third compartment of the car might well be termed the baggage room, for this it strongly resembles in appearance. Here are kept the fire-fighting and general-utility tools. These consist of a large reel of fire hose, lanterns, buckets, axes, saws, bars, sledges, hammers, hatchets, nails, stables, rubber coats, boots, and sou'westers, rope, tackle, snatch blocks, lineman's climbers, tool belt and safety strap, a chest of small tools (wood and cold chisels, brace and bits, drills, etc.), wrenches, electrical wires for temporary work, a kerosene cook stove and a set of cooking utensils, picks, shovels, a pair of boat hooks and all other tools and appliances that experience has shown may be needed in an emergency. A set of ladders is carried on the truss rods underneath the car body.

Room Provided for Four Loaded Stretchers

This tool compartment is provided with two side doors of large size, so that the hose reel and other appliances may be readily taken off or placed upon the car. The stretchers, four in number, which are kept here also may be slid through either of these openings, into the car together with their burdens. The door between this compartment and the next one is sufficiently large to permit the easy passage of the stretcher. It may be placed upon the floor of the car, or if the patient requires immediate surgical attention it may be deposited upon the stretcher stand, which is of proper height to permit the surgeon to work with ease and efficiency.

This stretcher stand consists of four pipe columns, the upper ends of which terminate in forks of suitable size to receive and securely hold the handles of the stretcher. The columns are so placed as to carry their burden without danger of its moving endwise. They are securely fastened to the floor by means of floor flanges.

This rescue car is kept on a sidetrack near the office of the Nova Scotia Steel & Coal Co., at Sydney Mines, N. S. It is kept reasonably warm in severe weather and ready at all times, day or night, to go to the scene of an accident or fire either underground or on the surface. When a call for help reaches the office the rescue crew is immediately summoned and a locomotive procured. To obtain a locomotive is always easy, as one

or two are always at work in the yards of the company's steel plant close by. By the time the rescue train is coupled up the crew is in place, and a swift run is made for the scene of the difficulty.

From the foregoing description it will be apparent that this rescue car, while unostentatious in appearance, may be highly efficient in action. In times of emergency men who are brave, intelligent and individually efficient may be found at almost any plant. The two great needs upon such occasions are organization and equipment. This rescue car with the crew that it carries furnishes both. On several occasions in the past when trouble has arisen at various operations of the company, and help has been called for, this car has been the means whereby it could be promptly and effectively furnished.

Waiting Room for Miners at Shaft Is Cool In Summer and Warm in Winter

MORE and more attention is being paid around the coal mines to the convenience and comfort of the men. At the Silver Creek colliery of the Philadelphia & Reading Coal & Iron Co. there is provided a plain but comfortable waiting room for the protection of the men from the weather while awaiting their turn to go down the shaft. The accompanying illustration shows the type of this building. It is 40 ft. long and 10 ft. wide and is open on one side. This makes it cool in the summer and yet gives the men sufficient protection from the rain and sun.

Through the center of the building, extending almost its full length, is a steel drum 30 in. in diameter, the purpose of which is to warm the building during the winter. This is connected by a pipe to the exhaust from the fan engine. The steam from this source is sufficient to make the building comfortable during the coldest weather although one side is entirely open to the weather. Should the fan, for any reason, be idle when the building needs to be heated, a small live-steam pipe line is connected to the drum.

As can be seen from the illustration, the waiting room is located conveniently near the tender shaft. In consequence the men have only a comparatively short distance to go through the weather to reach the cage.

Kentucky Opens Its First Big Strip Pit

WHAT is said to be the first stripping operation in Kentucky has been opened by the Sunlight Mining Co. near Nortonville and Madisonville, Ky. It made its initial run on Sept. 2 to test its transportation and loading facilities. It loaded on that day twelve 50-ton cars in six hours. The Sunlight concern proposes to produce 3,500 to 4,000 tons daily, and hopes to reach that output within sixty days.

The company turns its coal over under contract to the Sunlight Collieries Co. It is stripping a 700-acre tract, which it expects will last the next twenty years, as there is a combined thickness of 11 ft. of coal in veins 11 and 12. The overburden is 3 to 50 ft. thick.

The Sunlight concern is controlled by T. W. Crow, of Jasper, Ala.; J. B. Boddie, Madisonville, is general manager; Monroe B. Lanier is president; Sterling S. Lanier, Jr., vice-president, and R. L. Schlotman, secretary.

A "Dragon" type shovel is removing the overburden, and another will soon be installed for the same purpose. The box cut will be 100 ft. wide and extend clear across the tract. The stripping shovel weighs 700,000 lb., has a 6-yd. dipper, a 58-ft. dipper stick and an 80-ft. boom. It will remove 3,500 yd. of earth in an eight-hour shift.

Two loading shovels remove the coal, and two more are to be installed when the second stripping shovel reaches the job. The coal is loaded in dump cars and taken to the temporary tipple. These loading shovels each have a capacity of 1,200 tons in eight hours. Three trains of ten 5-ton dump cars drawn by "dinkey" locomotives are engaged in the transportation of the coal. Each trainload represents one car of coal, or fifty tons. A modern four-track tipple is to replace the temporary structure.

When the new tipple is installed the coal from the dump-car trains will be dumped to a 50-ton hopper, thence to a reciprocating feeder, where the coal will be uniformly distributed over a shaking screen, the larger sizes passing over picking tables, where slate and impurities will be removed by workmen before the coal is loaded in the cars, four of which will be loaded simultaneously with as many sizes of coal. Lump coal of 2½, 4½ and 6 in. will be produced.

Waiting Room Near the Shaft Entrance

Warmth is secured in cold weather by means of the steam drum running nearly the entire length of the building and through which exhaust is passed.

What the Bureau of Mines Purposes to Do On Behalf of the Coal Industry*

Has Only $50 a Mine and 65c. per Miner to Expend on Coal Industry — Would Co-operate with Industry in Running Test Mines so as to Save Coal and Labor and to Settle Wage Controversies

By F. G. Cottrell†
Washington, D. C.

In what was practically his inaugural speech, Mr. Cottrell delivered at Denver his opinions on the possible functions of the bureau, especially in regard to the economics of mining. He believes that it could do much to reduce coal and labor waste and by presentation of unquestioned facts could oil the ways when the vexatious problems attending wage settlements were being considered.

THE Bureau of Mines exists primarily to help the mining industry, the importance of which in this country is at least equal to that of all other mining industries combined, whether the comparison be based on the number of miners employed, the value of the output, the wide distribution of the industry or the number of producing mines. Consequently it is natural and proper that fully half the mining work of the Bureau should be concerned directly with coal mines and with matters of interest to the operators and miners of such plants.

In round numbers the coal industry employs 750,000 men and there are some 8,000 producing coal mines in the country. For expenditure in metallurgy, chemistry and metal mining, the Bureau receives about a million and a quarter dollars each year. This means that something less than half a million dollars per year is available to the Bureau for co-operation with, and for affording assistance to, the coal-mining industry.

Appropriation Figures $50 Per Mine

On that basis there is an average per year of $50 to each coal mine or 65c. to each coal miner employed. Individually you would hardly appreciate this amount or think it a worthy subsidy of a great Government, yet it represents the average amount of money with which we have to work and from which we must make the best possible return to the average mine and man in the coal industry.

It is evident, therefore, that as far as individual mines and men are concerned, the Bureau must help the coal-mining industry chiefly in indirect ways, in ways, that is, which may reach each individual in indirect benefits, the origin of which may be easily lost sight of by persons who do not follow closely the work of the Bureau.

It is by these indirect means that the Bureau has reached, and must continue to reach and appeal to, every man in the industry who desires to be helped. I say "desires to be helped," for you must remember that the Bureau of Mines stands alone among the mining departments either of nations or of states in having absolutely no police or regulatory powers given to it, with one exception, however, which I will mention later.

This fact is a matter that causes comment and often wonderment from representatives of foreign governments who from time to time visit our central and field laboratories and offices. The Bureau cannot compel you or any operator or any miner to take up or enforce either its improved economic methods or its safety practices and appliances; it can only experiment, demonstrate and point the way. It is therefore your Bureau in a very democratic and intimate sense. The responsibility is yours, not only for its adequate support through Congressional appropriations but also for making its findings and recommendations really effective in the industry.

In regard to the Bureau you cannot take the attitude "Let George do it"; the final authority is yours, and the responsibility must likewise rest with you. There is but one particular in which the Bureau does not lack ultimate authority. Coal mines title to which is owned by the Government and which are leased to individuals or companies under predetermined operating regulations come under the supervision of the Bureau of Mines, but this provision is so new and, as yet, so small a part of the Bureau's functions as to be at the present time quite an insignificant part of the Bureau's activities.

Not Merely a Bureau of Mine Safety

Many of you know of the Bureau through its mine-rescue work, its rescue cars and stations, the railroad cars which are fitted up with living and training quarters in which first-aid and mine-rescue training are given and which at times of disasters and other emergencies are dispatched to the mines for co-operation and assistance. There also are several auto-trucks equipped for training and emergency service. Outside of certain fuel-testing work this first-aid and mine-rescue training force is the oldest division of the Bureau, more than ten years having elapsed since its inception.

It is time to take stock that you may know where this work stands and toward what point it is heading. Some have even raised the question whether the Bureau of Mines was not after all merely a "bureau of safety first." While the Bureau is undoubtedly, as is perhaps

*Article entitled "Policy of Bureau of Mines Concerning the Coal Industry," read before the Rocky Mountain Coal Mining Institute at its Denver (Col.) meeting, Sept. 10, 1920.
†Director, Bureau of Mines.

quite natural, best known to the general public through its safety and other humanitarian activities, this is, I am convinced, not because such work consumes an entirely disproportionate part of the Bureau's resources and interest but rather because the Bureau's technical activities are naturally of less intrinsic interest to the man in the street.

Desires Suggestions from Mining Field

I feel that we have a right to expect from you of the mining industry a much more discriminating judgment. It should be backed by willingness on your part to take the time necessary to really inform yourselves as to what is actually being done and what should constitute the future program of the Bureau. Having done this, we ask you to give us frankly the benefit of your judgment, criticisms and constructive suggestions. Only on such a basis can the Bureau function efficiently, working as it does under the strongly individualistic republican form of organization which I have just outlined. It is our American way of doing things and one in which we all take pride, so let us, one and all, be not only careful but watchful that we bear our full share in the effective co-operation which it postulates as the most fundamental element for its success. Until a short time ago my connection with this first-aid and mine-rescue work was nominal and indirect, and I had no particular responsibility in determining its scope or relation to the other activities of the Bureau.

Should Rescue Work Be Left to Industry?

I had seen the work start under the genius of Joseph A. Holmes, and broadened and expanded under the leadership of Van H. Manning. During that time the question was often discussed at some length whether we should not plan, now that the fundamental educational work has progressed so far, to gradually restrict our activities in the mine-rescue and training work by frankly passing more and more of this over to the industry itself. It was often debated whether we should not turn the resources thus released into pioneer investigative work which the industry itself could be less rightly expected to undertake. I do not wish today to attempt any dogmatic pronouncement on such issues, but rather to present them to you as definite questions on which your best judgment and counsel are earnestly desired.

I am the more strongly impelled to take this tentative attitude because I feel that just at present we are distinctly passing through a transition period and, as most of you doubtless know, my own training and experience have been so largely along chemical and metallurgical lines that during my stewardship I must lean even more heavily than my predecessors on the men of real mining experience in the industry. Thus I look upon my present function as chiefly to keep the Bureau on an even keel in its accustomed way, while aiding those in ultimate authority toward the selection and acquisition of the strongest possible staff from top to bottom.

Favors Continuance of Humanitarian Work

Frankly, I should be sorry to see conditions arise in which the Bureau ever entirely dissevered itself from this part of the humanitarian side of its present work; and no matter how far its more purely scientific, technological or economic activities may extend, I believe that a certain amount of this more human element of safety and welfare will always prove an invaluable leaven to lighten the loaf and keep alive in the morale of the Bureau an indefinable something which has, from its very inception under Dr. Holmes, given it a certain distinctiveness even among Government bureaus.

Again, by letters entirely unsolicited, my attention has been called several times recently to the work of this division. These communications set forth the work of our cars and men at mine fires or disasters and recited how lives had been saved and property recovered. Many of the men who years ago lent their personal help to the establishment of mine safety work and who have since thought only of the past of the movement have only to investigate the facts to know that it would be to the everlasting good of the industry that this work be continued. If further proof be needed, look around you at the present international first-aid meet now under way here and in which we are all participating.

Do Not Think of Bureau as Fire Department

Thus, whatever expansion and development may come in other directions, it is my feeling that we may assume the first-aid and mine-rescue training work of the Bureau, at least in its fundamentals, to be on a permanent basis and its continuance to be a fixed policy of the organization. Do not think of us on the one hand as a fire department or on the other as a diversion to share your troubles. To perform such first-aid, mine-rescue and recovery work adequately for all the coal-mining districts of the country would take many times the men and money now at our command.

Rather look to us as a central agency for counsel and for co-operative effort. Our men investigate first-aid methods and can help your teachers in order that they in turn may teach others. Our investigators are testing and approving mine-rescue apparatus and constantly informing our field men of the best methods and practices. They in turn can be instructors to your men. However, let me add that in case of disaster the small crew on one of the Bureau cars or stations cannot help you effectively unless you have prepared yourself beforehand by adequately training your own men to co-operate with them. Remember, also, that the Bureau engineers and miners are constantly making a study of mine explosives and mine-fire and recovery work and that most of them have had the knowledge which comes only from actually aiding in the recovery of mines after disasters, experiences which fortunately are new to the personnel of most mining plants and even to experienced mining men.

Bureau Officials Comment Only if Desired

Investigating mining conditions and methods and making public the results constitute a second main but indirect way in which the Bureau has reached the mining public. If a mine inspector visits your mine, you know exactly what he is doing. If your safety methods, appliances and practices are not in accord with state law you must remedy them. If a Bureau of Mines engineer investigates conditions in your workings, it is entirely possible that neither yourself, unless you particularly request it, nor anyone else will directly be informed as to the engineer's ideas of your methods and practices.

Lifting Patient Over an Overcast

A scene in the gallery erected for the demonstration of mine-rescue work at the recent First-Aid and Mine-Rescue Meet of the U. S. Bureau of Mines held in Denver, Sept. 9, 10 and 11. Working under the disadvantages entailed in the use of oxygen-breathing apparatus the men are lifting the patient with scrupulous care over the obstruction so as to avoid giving him the least possible pain.

However, he has gathered data on your practice, which will be compared with data and practices from many other mines, not only in your own state or district but with those in operation in other districts of near and distant states. It may be that ventilation systems or methods of working are under discussion, or that the Bureau is called upon to give the results of its experience in the framing of the mining laws of one of the states or as to the correct application of electricity to some class of underground work.

From the compiled data and from the combined experience of its many engineers the Bureau is able to help on questions such as the above which affect every mine and man in a state or district. It helps the individual by helping the whole. Thus, a continuing work of the Bureau is to safeguard, improve and pass upon underground mechanical and electrical appliances, ventilation, mine gases, explosives, methods of working, and everywhere and at all times to reduce the human hazard.

Would Extend Mine Electrical Inquiries

This investigative work must increase even out of proportion to the increase in the number of mines or miners. For example, ten years ago we marveled at the uses of electricity underground, and yet today, judging by the inquiries received from mine officials, electricity—its use underground, its dangers and safeguards, its efficiency and practicability—furnishes the most vital problem of all those having reference to underground mining appliances. On the whole, today public knowledge on the subject is inadequate, and the Bureau wants, as soon as funds are available for the purpose, to greatly extend its underground electrical testing work.

Continued and new investigations on mine dusts and gases, on ventilation and on underground mechanical appliances are yielding excellent and usable results. Often an investigation started with one purpose in view will yield as a byproduct a result of more far-reaching value than the original investigation itself.

A Laboratory That Discovered Itself

For example, when a laboratory for investigating mine gases, which could accurately analyze minute percentages of carbon monoxide and other constituents of the mine atmosphere, had been perfected it was found useful for tests of like character in connection with rescue breathing apparatus.

In this laboratory also, during the war, were laid the foundations of the great and successful gas-mask work of the Chemical Division of the Army. Further, from it came information regarding the occurrence of helium in a certain natural gas and knowledge as to the best methods by which to extract it. Moreover, the presence of carbon monoxide in the exhaust of automobile-engine gases and its menace in proposed underground vehicular tunnels are now being investigated through the work of this laboratory with money furnished by the States of New York and New Jersey.

It may be added that investigations of many kinds have found unexpected and peculiar applications. As an illustration the geophone, invented as a listening device to detect tunneling operations beneath the trenches in France, has been further perfected by the Bureau and is being adapted to a variety of underground uses. It is everywhere the province of the Bureau to investigate various discoveries and to try to apply them to mines and mining conditions.

Mine for Investigating Extraction Methods

Several times during the last few years it has been proposed that the Bureau of Mines conduct and operate an experimental mine in one or more of the several

large coal districts and so try to bring about systems of mining whereby a larger percentage of coal would be extracted. This has been opposed by some on the ground that it was an entering wedge toward Government ownership of mines.

Whether we take this particular objection seriously or not, the project raises enough questions of major policy in all directions to demand that it be approached with the greatest care and circumspection. Here again, if anything constructive is to be accomplished, I feel it must eventually be through the heartiest sort of co-operation with the industry.

It is a question for plain discussion whether or not the country as a whole can afford to allow systems of mining to continue which place beyond recovery a large percentage of the coal in the seam being mined. Everyone connected with the business of mining coal should remember that the new economic conditions prevailing since the war have made commercially feasible new methods of mining which mean much to the supply of coal available for future use.

Could Industry Help to Finance Test Mine?

The operators are not to blame for failing to adopt new systems of mining which would increase the cost of coal per ton; neither are the miners to blame for preferring to work under systems of mining to which they are accustomed. In any given mining district in changing mining methods the initial costs of the experiment are large. The pioneer must feel his way through the obstacles of newness of work, probable loss of output, dissatisfaction of his personnel—both management and miners—and higher costs per ton.

The work cannot be done in a laboratory or workshop, but must be instituted underground on a full-size scale. A single operating company cannot afford the initial expense of an experiment the results of which would benefit all its competitors. Might it not be possible, for instance, for the coal industry itself, either as a nation-wide group or as more localized organizations, such as your own, in co-operation with or through the Bureau of Mines, to undertake the investigation of some of these more general problems which must be handled in the field and on a large scale if attacked at all?

Oil Industry Has Shown Coal the Way

The recent organization of the American Petroleum Institute, under the guidance of Dr. Manning, to do much the same sort of work for the oil industry is suggestive of this possibility. I am skeptical, under present conditions, of purely governmental enterprises in the large fields of production, even from the viewpoint of collection of experimental data, for in the attempt to make good on the experiment there is often unconsciously a tendency to get away from the actual economic conditions of industry, and thus make useless what positive facts may be actually obtained by blindly ignoring their inapplicability to conditions as they exist in actual practice. This is particularly evident, of course, in such purely economic factors as may easily be entirely obscured by the employment and accounting methods imposed by governmental machinery.

I am wondering, however, if it might not be possible to operate certain test mines upon a thorough business basis and under a management responsible in a business way to the coal producers' organization. The men in charge might co-operate closely with the Bureau of Mines and any other Government agencies whose help it might seem desirable to enlist.

The primary object would be to determine just what could be done under given conditions—both technical and economic—in a problem which, on account of its untried nature and the possibility that financial losses might result, at least temporarily would make any company at present question whether it was justified in trying it out.

Might Solve Labor Problems Authoritatively

Yet accurate data concerning the problem might be extremely valuable to the whole industry, particularly in the period of fundamental readjustment that we now seem to be facing. Any financial loss which such experimental operation entailed over standard operations would thus be distributed over the whole industry and it might be borne with propriety, at least in part, by governmental appropriation, because of the unquestionable interest of the ultimate consumer, who would have his representation through the co-operating Government agencies.

Thus, co-operative experimental mines under the management of the united industry with a certain degree of Government supervision might try out methods and systems of mining best fitted for the region, solve the problems relating to the safety of the miners under these new difficulties and train officials and miners in the new work.

The data carefully accumulated and recorded under such conditions also would prove invaluable as a basis for settling many of the more intangible disputes in industry, and so would prove a great saving to both sides in a controversy.

How Combustion Economy Helps Coal Industry

Of no other essential to modern civilization is it more true than of mineral fuels (of which coal is the principal one) that use involves absolute destruction without hope of replacement. Thus in furthering a program of coal conservation it has been a function of the Bureau to make more efficient the combustion of coal. At one time it was seriously charged against the Bureau that its efforts toward more efficient burning of coal lessened the amount of coal needed and therefore the amount of coal produced; that this reacted directly against the producer and should be stopped.

Both producer and consumer know today that the more efficient use of coal, making for cheap power, reacts to promote a more widespread use of that assistance to labor, and, in the end, increases the actual amount of coal consumed. Being the agency of the Government charged with work in this field and noting the changed economic conditions in regard to the cost of power, the Bureau hopes to make itself increasingly felt in this combustion work.

Might Furnish Data in Wage Controversies

For the last three or four years there has been a growing feeling among all connected with coal mining that the days were gone when the loss of a few cents a ton in the cost of coal through ill-chosen methods or appliances or the gain through careful engineering meant often the difference between failure and success, and that today the human element of work, com-

monly called "labor," is the great factor on which the coal situation depends. The question is often asked "When is the Bureau of Mines going to come in and exert its efforts, as the permanent governmental agency concerned in the coal-mining business, to help straighten and adjust the coal situation?"

Briefly, the Bureau of Mines is interested in every problem of the coal-mining industry of this country. Up to the present time it has been of service to operator and miner alike without expressing opinions in any wage-scale or other like controversy. In all questions, however, it should be said that where such information has been properly requested, either by a Government or a state agency, or by private individuals, replies and reports have been made only on a basis of data and fact, observed and compiled, and not on a basis of opinion.

As the public each year takes, and rightly so, an increasing interest in the coal industry, the Bureau should increasingly serve it as a non-partisan governmental agency to determine the facts regarding the conditions that the coal operator must meet, and by this service the Bureau will be of increasing value to the industry.

In this connection I wish also to emphasize that although the Bureau of Mines does not attempt of itself to cover all the phases of Government activity that in any way affect the mining industry, it does stand ready at all times to lend its aid to every member of that industry in getting any questions and problems confronting him before the particular person or body in the Government service best able, either by reason of knowledge or authority, to give the required answer or action.

We hear much discussion at present as to the necessity or desirability of reclassifying the Government functions as represented by the various executive departments, bureaus and independent commissions. Doubtless there is much room for improvement along this line, but even after everything possible has been done in this direction we inevitably shall still find that a large measure of co-operative effort between the units is indispensable to their efficient functioning.

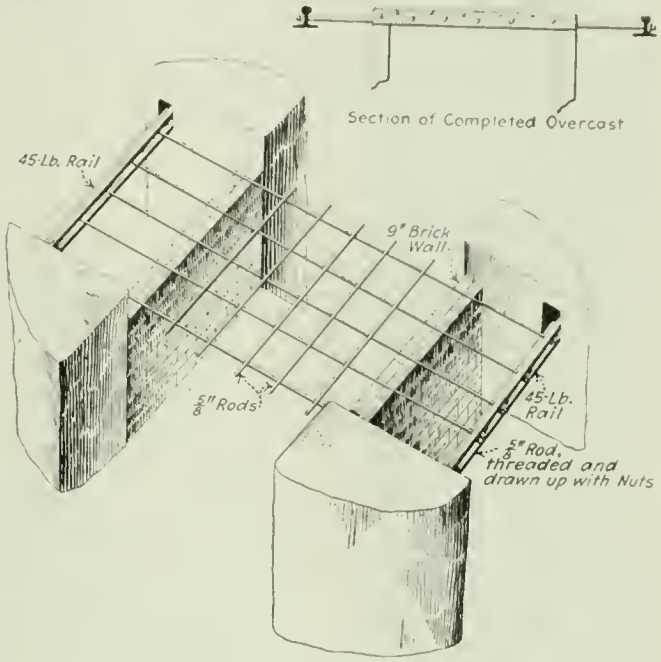
In so large and complex a system there is certain to be classification both horizontally and vertically, so to speak. Thus, transportation, the mining industry, labor and commerce each unquestionably deserve to be handled as a whole somewhere, yet it is impossible to regard each of these as if it were entirely unrelated to the others.

The only answer is the development of active and effective liaison personnel in each group capable of following a subject through, wherever it may lead, with a cordial spirit of co-operation and an avoidance of the tendency unfortunately too often found in Government work and elsewhere, to try to center in one's own group all functions which even remotely affect the central issue. The maintenance of such a liaison is one of the most crucial tests of the efficiency of the really big executive, and it is my special ambition to have the Bureau of Mines rank high in this kind of service, both inside and outside the Government's own organization.

The practical carrying out and putting into effect of the program that I have outlined involves time, money, the hearty co-operation and interest of the miner and the operator, first-class engineering skill, interest in and discussion of the subjects by such institutes as your own and a realization by everyone that improved methods and practices are vital to the continued supremacy of the American coal industry.

Concrete Overcast Where Rods in Part Replace Rails, Lowering Cost

CONCRETE overcasts are usually constructed by the use of lengths of 45-lb. rails set in concrete. This type of construction assures durability but is relatively expensive at the present time. A. E. Roberts, superintendent of the Monroe Coal Mining Co., whose plant is located at Revloc, Cambria County, Pennsylvania, advises the use of the following type of construction to meet the present exorbitant prices of steel. This type of overcast is being constructed throughout the mine and those already in service have given results that place them on an equal footing with the old type.



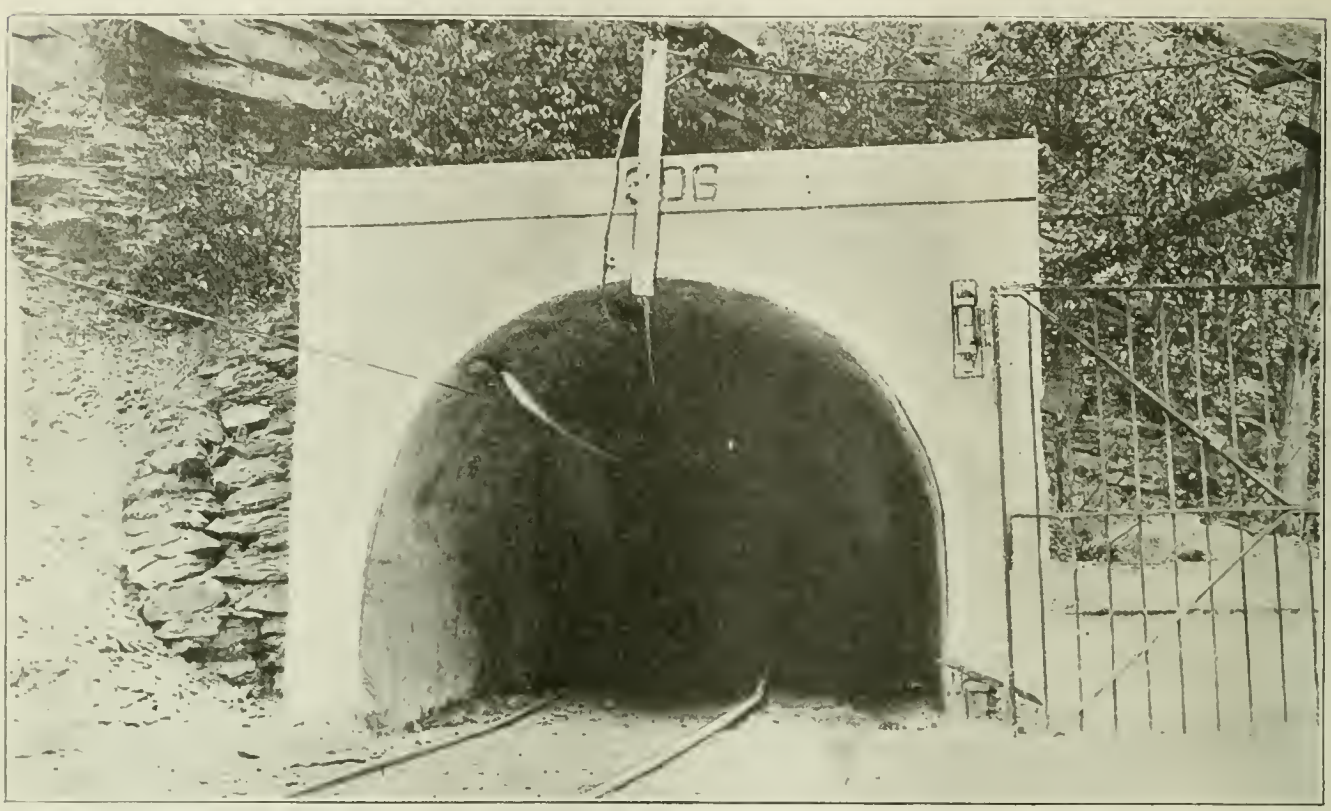
REINFORCEMENT OF THE OVERCAST

Two sets of rods laid at right angles form the reinforcement for the concrete; rails embedded in corner piers through which one set of rods are passed hold the reinforcement taut until the aggregates are poured.

Materials for construction consist principally of two 45-lb. steel rails and ten ⅝-in. iron rods. The rails are hitched into the rib at any convenient distance from the rib line of the entry after five equally spaced holes have been drilled in each to receive as many rods. These rods are threaded at each end and placed transversely over the entry, their ends extending through the receiving holes in the rails. Nuts are then screwed on the rods and the entire frame drawn up rigidly. Five more rods are then placed transversely over the others, and at an equal spacing across the entry. The frame in its entirety is then set in a 6- to 8-in. slab of concrete which is supported at either end by 9-in. brick piers that have previously been constructed. The dimensions that have been placed on the accompanying drawing apply to overcasts that might be constructed in mines that are working a bed of the thicknes of the Miller bed at Revloc. The idea, however, can be applied to other operations, and the dimensions altered to suit other entry heights and widths. Mr. Roberts has been utilizing the cleanings from the motor road in mixing concrete for the slabs.

At Gary Working Faces Are Illuminated by A Permanent Lighting System

Adequate Illumination Is the Greatest of Safety Measures—United States Coal & Coke Co. Keeps Two or Three Electric Bulbs Within Ten Feet of Every Working Face Throughout Its Operations



CONCRETE PORTAL OF NO. 6 MINE
From this entrance to the remotest working face one may plainly see his way without the aid of cap or hand lamp. The first lamp may be plainly seen in the entry.

IN MOST coal mines the underground workmen are compelled to grope their way with much stumbling, their steps lighted only by a small lamp which they carry with them. Although much has been accomplished to make mines safer, practically nothing has been done toward the introduction of the greatest possible safety measure—efficient illumination. Darkness or insufficient lighting affords a most favorable condition for the occurrence of that particular type of mine mishap which takes the greatest toll in human life each year—falls of roof, slate and coal. The term "unavoidable accident" is often grossly abused, as proper lighting would in many instances have rendered the victim of a fall of roof immune from any such misfortune.

Lynch Mines Will Be Electrically Lighted

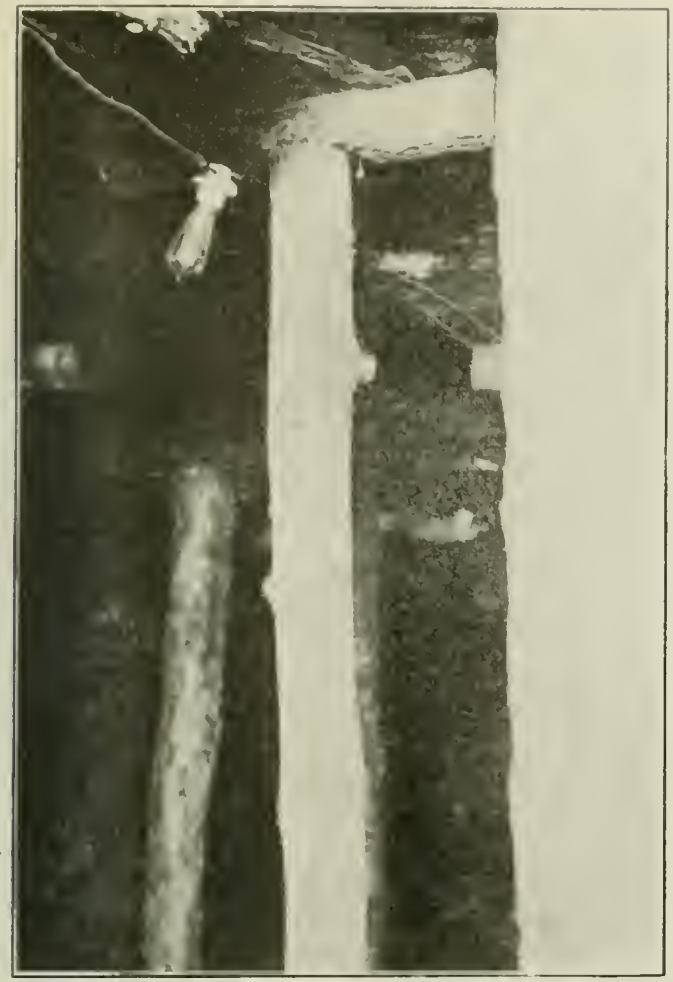
For the last six years the United States Coal & Coke Co., in its mines in and about Gary, W. Va., has been experimenting with the problem of mine illumination. During this period the officials of the company have learned much on this subject, and today every mine owned and operated by this firm is lighted from the opening to the face of the rooms by the light from electric mazda bulbs. It is possible, therefore, to walk to any section of the mine without the aid of a cap or hand lamp.

While this work is still in an experimental state certain definite results have been attained, and the experimenters feel well paid for the efforts they have expended. That the company officials consider mine illumination to have passed the rudimentary state is evidenced by the fact that this concern's new operations at Lynch, Ky., are being equipped in the same manner as those in Gary.

Trolley Wire Used as Feed Line for Lamps

Apparently this concern has so far been waging a single-handed warfare against mine darkness, at least so far as the working face is concerned. All other mining companies have done little to devise ways and means for securing an efficient low-cost type of installation with a correspondingly low maintenance cost, yet the field is a wide and highly attractive one.

If the operators of non-gaseous mines, who under present conditions can alone safely light their mines with stationary electric lights, are not going to seek better methods of mine illumination the progress in this direction will be necessarily slow, as it will be

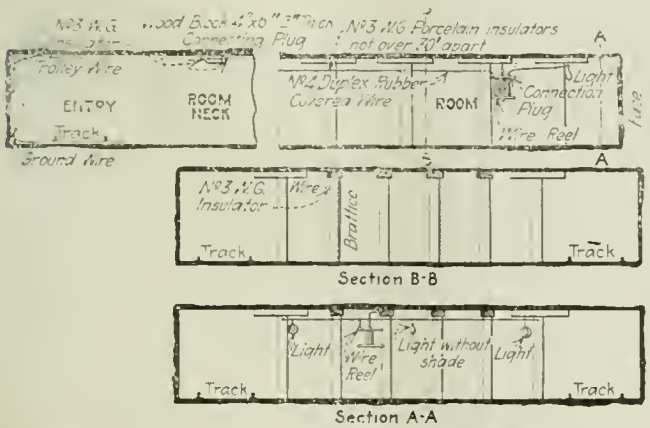


AN INCANDESCENT BULB 10 FT. FROM THE WORKING FACE

Lights strung along the faces are moved up after each cut has been brought down and loaded out.

confined to the efforts of one company. While this firm has been working along quietly and going ahead with its experiments, little mention has been made of its endeavors through the technical press.

The entire system followed by this company is built around the utilization of the trolley wire as a feed and the employment of the correct number of lamps connected in series and spaced at definite intervals. Three 36-watt 105-volt mazda lamps in each group are energized from the trolley wire, which carries 275 volts,



LONGITUDINAL AND TRANSVERSE ROOM SECTIONS

A visit to this operation gives the impression that factory methods have here been applied to mining. Good illumination is the first requisite of such methods.

direct current. On the haulage road one lamp is suspended from the roof every 100 ft. where the heading is straight, but a 75-ft. spacing is employed on curves.

The wire used in connecting these lamps is insulated from the roof, rib and timber, and is tied to a porcelain insulator with non-conducting material. The wire running from the lamp to the ground is carried on insulators, and this holds true of the line extending from rib to rail when the rail return is utilized. It will be immediately apparent that neither nails nor staples should be used in supporting the wire.

It is considered good practice to keep the light wires on the same side of the heading as the trolley wires. Second, if the wire has been hanging for any length of time it may have the insulation rubbed off in places, and such bare spots introduce a hazard, especially if the wire is strung on the opposite side of the entry from the trolley. The side of the heading having the trolley wire always is the danger side of the passageway and the one that is scrupulously avoided.

Light Wire Acts as Trolley-Wire Guard

Lastly, if the light wire is hung close to the trolley line it will serve as a slight protection against accidental contact with this conductor. This is particularly true in those sections of the mine where the roof is comparatively low. This arrangement is no small safety measure, as in most cases a man will first rub his head on the insulated wire before he comes in contact with the bare trolley. He is thus given a degree of warning, for the light wire is carried nearer to the center of the heading than the trolley line.

Within the rooms No. 14 duplex rubber-covered wire is supported on No. 14 porcelain insulators which are attached to the posts extending up the center of the room. These insulators are placed not more than 25 ft. apart and care is taken that the wire shall not touch wood at any point. Weatherproof sockets are employed to hold the lamps.

Wire for Room Hooked Onto Trolley Line

All the rooms in the mines near Gary are carried to a depth of 325 ft. This length of wire is accordingly cut and carried on a reel in each room. Contact is made with the trolley wire at the room entrance by means of a hook. Making a contact of more permanent nature has been tried, but was not satisfactory, because of the amount of time and trouble which the installation of such a device required.

When a room is advancing it is cutsomary to carry two lights at the face and the third at the nearest breakthrough, although this detail is left to the discretion and desire of the men themselves. Frequently perference is shown for having all three lights at the working face.

Lamps are never kept further from the face than 10 ft. They are in fact supported on the nearest post. The coal bed under development at most of these operations averages 8 ft. in thickness. This, in connection with the existing roof conditions, necessitates the use of a large number of posts in each room. Both wire guards and shades of the 15 deg. angle type have been used at various times on the room lamps. The use of the shades proved rather unsatisfactory, as they frequently became dented in moving, and if the globe was broken another could not be readily replaced in the socket. The wire guards employed to protect the light bulbs were found unsatisfactory because much time is

consumed in replacing a broken globe when guards are employed. These lights, being connected in series, all of them burn or none; consequently the replacement of a globe must be accomplished in darkness.

The chief drawback, however, to the present type of installation is that so much wire is needed. Experiments are now being made with a single-wire feeder, in which case the return from the face will be made through the rail. The fact that steel mine ties are used exclusively in the rooms assists in the establishment of a satisfactory return. Most of the trouble encountered where this plan has been tried has centered in the fishplates joining the rails. If such plates are loosely connected the lighting system fails. In fact, in laying tracks within rooms most miners neglect altogether to use fishplates.

Before the coal is shot down the lights are removed to a safe distance, and after shooting are brought forward again to furnish light while the coal is loaded.

Lights Controlled by Section Switches

When this lighting system was first installed switches were placed at the room necks, and the last miner to leave in the evening turned out the lights in his working place. The switches, however, would not endure the severe usage to which they were subjected and this plan was abandoned. The lights are now turned out at the end of the day's work by means of section switches which control a complete working section. These switches are again turned on by the machine men who go in at night. This arrangement might well be improved, for all the lights in any one section are kept burning, though the machine men may be working in only a few rooms.

The cost of current for energizing the lights is not an important factor, as the company's central power station is large and current is produced cheaply. As a result what constitutes an important element of cost in most mines is almost negligible at Gary.

It has been found that the largest element of cost in the installation is that of maintenance. Many globes are carelessly broken, while a still greater number are removed from the mine by the employees for use in their homes. At present this is certainly an important and costly item. In a short time, however, the mines will be equipped in such a way that this misappropriation of lamps will be impossible. A suggestion has been made that globes and sockets provided with left-hand threads be used in place of those now employed. This scheme, however, would not prevent the men from taking both bulb and socket. It is probable, therefore, that a weatherproof socket provided with a lock will eventually be provided.

Lighting Costs 23c. Per Hundred Tons

Accurate accounts have been kept on the cost of installing and maintaining this lighting system. The cost of the power consumed is not, however, considered in these figures. When reduced to a cost-per-ton basis the lighting charge is found to add 0.0023c. to the expense of mining each ton of coal. The cost of the installation per room is about $20, and this includes wire, reel, sockets, etc. This amount could be materially reduced if half as much wire could be used, and this, as has been stated, is now under consideration. The average number of hours that a lamp will burn in this service is 360. This appears small, but it should be remembered that breakage and theft have played a very important rôle in reducing the life of the bulbs.

From experience gained at Gary it would appear that careful consideration should be given to the reduction in upkeep of the installation. Theft can be eliminated by the use of suitable sockets or some other means, but the men should be instructed in the care of the lamps if the item of breakage is to be materially reduced.

I have intimated thus far that safety is the only advantage secured from the installation of a complete lighting system. While the officials at Gary credit a large reduction in accidents to the electrical illumination of the working faces, there are other factors that must be considered when the underground is "daylighted." Chief of these is the psychological effect produced upon the employee. These men appreciate the monetary saving in carbide and oil, to say nothing of the more pleasant surroundings created by adequate lighting.

Community and welfare work have assumed an important position in recent years and by making the employees more contented with their positions are doing much toward preventing a large labor turnover.

This, however, is believed to be the first instance where a coal-mining company has carried community work into the hillside and up to the working face. Not only is the worker rendered in a better frame of mind by proper illumination, but he is better able to see what he is doing and can therefore produce a larger tonnage of coal. The effect is apparent and counterbalances the labor shortage.

Miners efficient in their work procure for themsleves and their company greater financial returns than those who are handicapped in their labors. The United States Coal & Coke Co. has, as mining companies go, a remarkably low labor turnover. With the shortage of labor as keenly felt throughout the different coal fields of the country as it is today, there should be in this a sufficient result to convince other mine operators that face illumination has progressed to a point warranting its adoption.

Is it illogical to predict that the time is not far distant when adequate lighting of the face will become universal throughout the mines of the country? The United States Coal & Coke Co. has started something; others should assist in bringing it to a suitable finish.

Southeastern Kentucky Union Lays Less Stress on Wage Than on Recognition

SEEING that union leaders in southeastern Kentucky are fighting Henry Ford, of the Banner Fork Coal Mining Co., near Harlan, Ky., charging that he raised wages above the scale asked and refused to recognize the union, it is believed that the wage-increase agitation is secondary to that of union recognition. The union leaders declare that he desires to beat the organization by agreeing to pay more than they offered to accept at the Knoxville meeting, where the prices set were $4.72 as a minimum for outside men and $5.70 for inside men. Ford is paying outside men $6 and inside men $6.40, and as the men are staying by Ford it seems likely that he will succeed in escaping recognition.

Sixty men walked out at the Dixie Gem Coal Co.'s mines, at Middlesboro, Ky., because the company refused to discharge a foreman who, in the opinion of the union miners, had discriminated against them.

Removable Auger Bit as a Safety Device

Forcing Cartridge Into Hole Too Small for It and Carrying Drills Out to Blacksmith for Reshaping Are Dangerous — Hard, Detachable Drill Points Obviate Both Risks

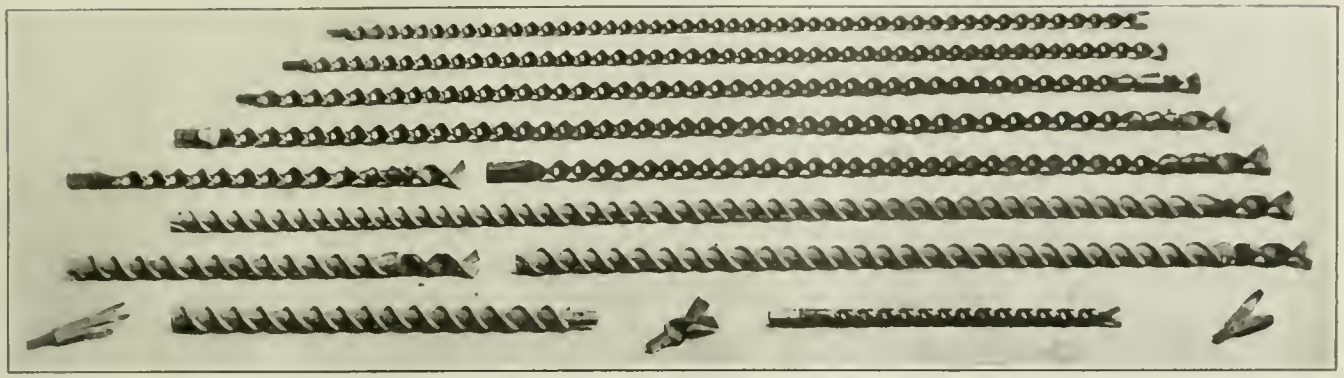


FIG. 1. AUGER BITS OF OLD AND NEW TYPES

The two augers at the top are the old style with fixed or integral bit. Contrast carrying one of these to the surface for sharpening and carrying one of the removable cutting points shown in the foreground.

PERMITTING the point of a coal auger to wear down until the hole drilled by it becomes too small to readily admit the explosive charge is the indirect cause of a comparatively small but, nevertheless, appreciable number of accidental deaths occurring yearly in coal mines. In the anthracite field of Pennsylvania the loss of life from this cause amounts to only about 1½ per cent of the total number of fatal accidents. Its abolition, however, would mean just so many lives saved each year.

Accidents Result From "Taking a Chance"

When a shot hole is drilled too small, the cartridge will not slip into place properly and will stick when part way into the hole. This requires that the miner either take out the cartridge and make it smaller or force it into its place. As is well known, the miner will almost invariably take the easiest way out of any difficulty and, unless he is prevented from doing so, will attempt to force the cartridge home with the tamping bar. It is at this point in the operation that most of the serious accidents attendant on work of this nature occur.

With the ordinary coal auger, made of only mild steel, there is a marked tendency for the point to wear rapidly, and since this point usually is of the flared or fish-tail variety any wear that may occur immediately results in a decrease in the size of the hole drilled. When the point becomes worn down the miner does not take it to the surface, as he should, but continues its use despite its small point. He is willing to risk the danger involved in drilling holes of too small a diameter in order to save himself the labor of carrying the heavy drill to the surface for resharpening.

Cartridge Is Standard but Hole Variable

In the anthracite region, as elsewhere, dynamite and permissible explosives are put up in the form of sticks which have a diameter of 1¼ in. Black powder, on the other hand, is either used loose or is incased in a paper tube, giving the cartridge the appearance of an elongated bologna sausage. This method of putting up the powder is coming more and more into use and it probably is the safest and best means of handling it. When put up in this form no danger is incurred in making up cartridges, nor is there any loss in spillage. If the hole is of the proper size, the cartridge will slip readily into it without the necessity of using force to push it home. However, there is danger that the hole will be too small for the cartridge even when the miner makes his own cartridges, for he forms the envelope over a standard cylindrical piece of wood and as the drill wears down the hole decreases, whereas the cartridge remains still standard. Thus the outcome is much the same whether dynamite, permissible powder, home-made cartridges of loose powder or factory-made cartridges are used.

Foremen Are Ordered to Carry Drill Gages

One of the anthracite mining companies, realizing the danger incurred in forcing sticks of dynamite or other "touchy" explosives into holes too small to receive them, provides each foreman and assistant foreman with a gage to be used in testing the diameter of the auger. When the size of the auger is found to be below standard, the miner is required to take it to the blacksmith for sharpening. By this means all the holes are drilled of a sufficient diameter to admit the cartridge easily. Wherever some such system is not employed, however, there always exists the danger of having the holes too small.

Even with a method of this kind there is a constant likelihood that the foreman or other official will not check up the diameter of the drill bits with sufficient frequency to insure their proper size at all times and thus prevent the miner, upon occasion, from drilling holes that are too small. The safest and surest way to forestall this error therefore is to use a drill bit that can be easily transported and that the miner cannot himself sharpen with a file.

Blacksmith Must Reshape Ordinary Drill

This can only be done by the use of tool steel in the drill point, made sufficiently hard that an ordinary file

will not "touch" it. To make the entire auger of this kind of steel would be out of the question, on account of its comparatively high cost. Such a drill, furthermore, would necessitate the miner transporting the entire implement to the surface every time he wanted the edge sharpened even a slight amount. Such steel, when given the proper temper, must be ground and cannot be filed. Coal augers are, of course, long, heavy and awkward to handle and as a consequence the miner would be prone to use a dull bit rather than go to the trouble of taking it to the surface. This in turn would reduce output. As a consequence, this type of drill would not be desirable, although doubtless it would reduce the danger of having the holes drilled too small.

By making it unnecessary to move an auger from the working face from the time the place starts till it is finished or the man leaves or is discharged, the risk in the transportation of augers is avoided. When augers are taken in or brought out on an empty car the dangers are few, but when they are piled on a locomotive or a loaded wagon danger is imminent. Rules may be made that drills shall not be placed on such wagons or on locomotives, but where there is a manifest advantage in breaking a rule it does not long remain without infraction. Consequently removable drill bits make for compliance with rules and laws and also make for safety.

However, quite frequently miners walk out with the drills over their shoulders. Should they have to pass along a heading with an electric trolley wire they are apt to touch it and be felled to the track. They may even be killed, if susceptible to shock and if their shoes and the soles of their socks are wet. Hence it is well if the drill can be left in the place with as few trips as possible consistent with its ability to cut rock or coal and make holes of the right diameter. The old-fashioned one-piece drill will not do this.

FIG. 2

Drilling from a Cross-Bar

One end of the "cross-bar," which is in reality a kind of steady rest, is fixed in the coal while the other carries the feed nut.

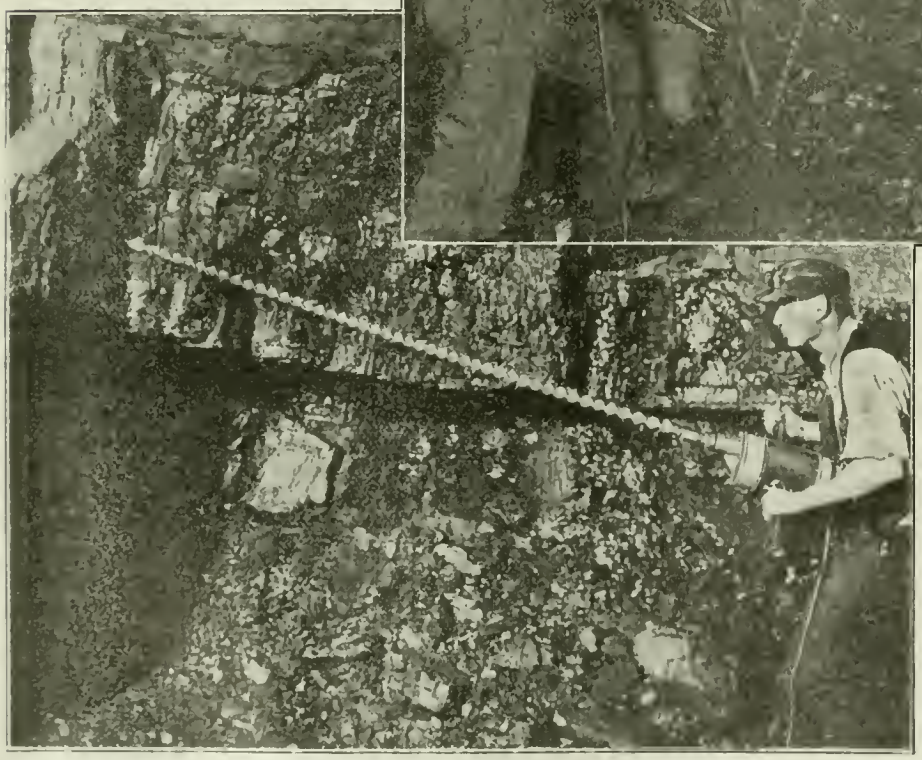


FIG. 3

Drilling Bituminous

In this coal post, standard or cross-bar is unnecessary. The operator himself forces the auger into the coal, which in soft material is not difficult. No guide or feed nut, therefore, is necessary.

Risk of Touching Trolley Wire with Drill

A comparatively short interval usually elapses from the time that a definite need for improvement in mechanical devices is recognized until such an improved appliance is placed upon the market. The Howells Mine Drill Co. a short time ago realized the need for a coal-boring auger that would keep its shape and diameter, yet be readily portable, so that the miner could easily carry it to the surface when sharpening was

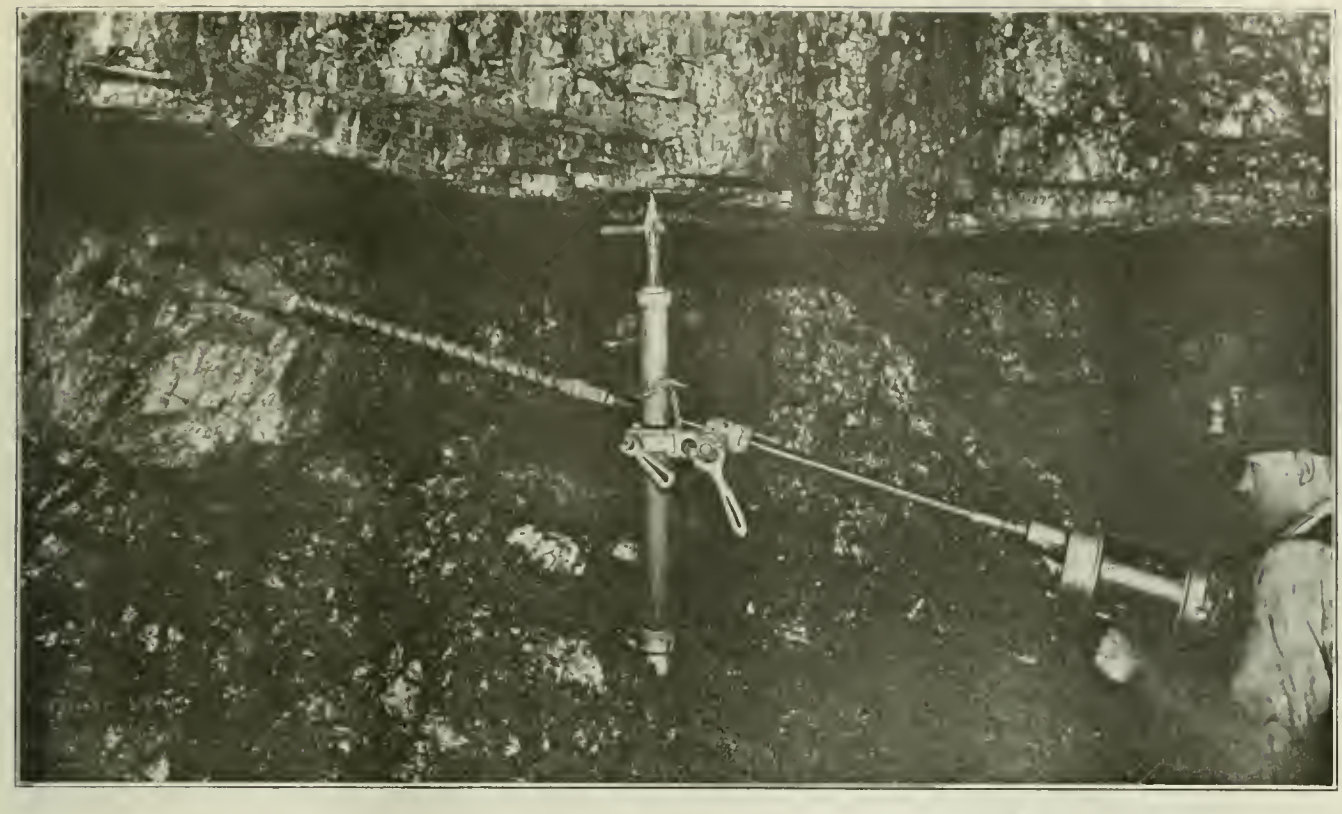


FIG. 4. OPERATING A DRILL FROM A NEW ADJUSTABLE COLUMN

The feed nut is here carried on a short arm or bracket clamped upon the upright. Manipulation of two locking clamps permits adjustment of the drill in any direction.

needed. As a result of its study of mine drilling, extending over a period of many years, it has invented and placed on the market an auger with an inserted tool-steel cutting bit. This cutter or auger point weighs only a little over ½ lb. and is about 6 in. long. It is made of tool steel and hardened to such a degree that a file will not cut it.

Adjustable Cutter Fits Into End of Auger

This cutter fits into the end of a spiral auger, its shank being square. This shank fits into a similarly shaped socket in the auger proper. A hole is then drilled through the auger socket near the side, matching with a notch in the cutter shank, through which a cotter pin is passed. This effectively prevents the bit from falling out or being pulled out of the socket. The augers themselves are normally made in 2-, 4- and 6-ft. lengths. In addition to these, which may be considered standard, there is provided an auxiliary 2 ft. length, which upon occasion extends the longest auger and makes its over-all dimension 8 ft. Such cutters and auger spirals are shown in Fig. 1, together with two of the long one-piece old-fashioned augers lying in the rear of the picture. In order to sharpen this old type of auger it was necessary to carry it to the surface complete. With the newer type, removal of the small cotter key permits of the cutting bit being withdrawn from the implement. Then it may readily be placed in the pocket and carried to the surface. Formerly it was necessary to have the blacksmith sharpen an auger; now anyone who can operate an emery wheel can do the sharpening.

The character of the steel employed in the bit reduces the danger that sharpening will wear it down rapidly. On the emery wheel such a small amount of metal is ground away that it makes no appreciable difference in the diameter of the bit, and consequently in that of the hole drilled.

Worm Type of Auger for Hard Coal or Rock

Again referring to Fig. 1, it will be noted that in the foreground of the illustration is a type of auger differing essentially from that ordinarily used. This is called the worm type and is employed where the coal or rock is harder than usual. Since this auger consists of a solid rod as a center with a helical feather on its outer surface, it is not easily bent. Furthermore, as may be seen, it is furnished with an inserted tool-steel cutter bit.

Not only has the Howells company perfected this new bit, which increases safety and lessens the labor of mining, but it also has invented a new electrically-driven drill which may be operated by one man. This machine, intended for use in the anthracite coal field, weighs only 40 lb., while the one designed for the bituminous field weighs 32 lb. The motor is of only 1 hp. and can be operated upon either direct or alternating current.

Elevation and Direction Changed at Will

Figs. 2, 3, 4 and 5 show the drill being operated under various conditions. In the first case, Fig. 2, the drill is being used in an anthracite mine upon a crossbar. A hole is first drilled, using the bit in the foreground and to the right in Fig. 1. This hole is driven in a distance of 8 in. and into it is inserted the crossbar, to which the feed nut is attached as shown in Fig. 2.

Fig. 5 shows the drill being operated from a standard post, while Fig. 4 shows an interesting column that the Howells company has designed. The advantage of this column lies in the fact that the elevation and direction of the auger can be changed at will by simply loosening the two swinging levers and moving the nut to the

FIG. 3

Drilling from Standard Post

The feed nut here forms a crosshead that spans the opening or slot in the post. Ears or lugs upon either side of it fit into notches in the post and permit ready vertical adjustment.

proper position, where it may be tightened and the drill fixed in place.

Fig. 3 shows one of these drills in the bituminous field. It will be noted that here it is not ordinarily necessary to use any kind of a post, since the long auger may be placed immediately in the drill and used as if the instrument were a hand auger. It may readily be seen in this picture that the operator is using one of the new inserted tool-steel bits.

When operating in anthracite coal the drill with the new bit cuts at the rate of 2½ ft. per minute, while it has put in two 6-ft. holes, each requiring three changes of auger lengths, in seven minutes. These changes, are, of course, from the 2- to the 4- to the 6-ft. augers.

Participants in Matewan Battle Charged With Murder of Material Witness

SID HATFIELD, Ed Hallie, and Tatt Chambers, indicted for complicity in the Matewan (W. Va.) trouble of May 19, were indicted also in the Circuit Court of Mingo County of that state on Sept. 9 and were arraigned in the Circuit Court on Sept. 10 charged with the murder of Anse Hatfield, who was a co-defendant before the grand jury which investigated the Matewan trouble, and who would have been one of the witnesses against the four defendants. While counsel for the four men indicated that they were ready for trial, the prosecution insisted upon a postponement owing to the absence of material witnesses. The court finally granted a continuance until the January term.

The cases of twenty-four men indicted in Mingo County for participation in the Matewan trouble which were to have been tried at Williamson beginning on Labor Day were continued until the January term of court by Judge Damron at the instance of counsel representing the state. Absence of material witnesses was the ground on which the state asked for a continuance.

It has been decided, at least for the time being, not to declare martial law in Mingo County, where riots and other disturbances in connection with a strike in the Williamson field have necessitated the presence of Federal troops. Announcement to that effect has been made by General Samuel C. Sturgiss, in command at Camp Sherman, after a conference with Colonel Samuel Burkhart, who is in command at Williamson, and with others.

Oklahoma Mine Workers Remain on Strike —Miners Offered Increase Want More

AT THE conclusion of a conference of representatives of the mine workers and the Oklahoma Coal Operators' Association in McAlester, Okla., Oklahoma coal miners were awarded their demand of $1.50 a day advance in wages over the wage agreed on at the end of the coal strike last winter. The miners' demands were presented by John Wilkinson, president of District 21, United Mine Workers, and a heated discussion lasting two days followed. The award was retroactive to Aug. 16 and added at least $6,000 a day to the mine payroll in Oklahoma. The miners' request for abolition of the penalty clause was referred to John A. Lewis, international president, and J. B. Wilson, Oklahoma Coal Commissioner for Arbitration.

Approximately 700 of the 1,800 coal miners of the Oklahoma fields refused to accept the award and remained on strike. The strike was brought on by tonnage men, who were dissatisfied because an increase of $1.50 a day was granted to the daymen, while they were given an advance which, they claimed, did not add an equal percentage to their wages. The matter is expected to be settled in a few days.

McDowell County, Coal Mining Being Almost Sole Industry, Provides Free Dentistry

Thirteen Dentists and as Many Hygienists Visit Schools Three Times a Year and Take Care of Children's Teeth, Recording Condition and Health of the Little Patients

TOOTHBRUSH DRILL AT THE SCHOOL AT MAYBURY, W. VA.
These children, whose fathers are employed by the Pocahontas Fuel Co., were presented with toothbrushes and dental cream by that firm. Dr. Epling (in a white coat) with members of his staff may be seen on the schoolhouse steps

ONE of the chief reasons for the admiration entertained by the French and English civilian population for the American doughboy during the recent war was his "ivory smile." In comparison to the English Tommy and his French co-warrior—the poilu—our own soldiers far outdistanced their allies in the care bestowed upon, and the excellent condition of, their teeth. Both the Allied and Central Powers realized at the beginning of the struggle that the morale of the armies was destined to be a factor in the final decision quite as important as any number of high-explosive shells.

Army field regulations have long since ordained that a soldier shall be clean shaven at all times. The men who were responsible for the formulation of these war-time rules realized that a man thus conditioned had more self-respect and consequently was better fitted for battle. The same statement holds true regarding the teeth of the fighting man. Because an army was only as strong as its teeth was the main reason why good care was taken of the molars and incisors of our fighting men. Undoubtedly this is one of the reasons why the American doughboy gave such an excellent account of himself in all the engagements in which he participated.

Devise Dental Equipment for Field Use

Officers holding dental commissions in the medical services of the army were extremely busy men during the war period. Not only was theirs a big job in keeping the fighting man fit but they were forced to accept and use field equipment in accomplishing their ends. The change from the dental equipment of the civilian to the field equipment of the army was not made over night, and it was only by the time the struggle ended that the army dentist was attaining a high stage of efficiency.

Those holding higher commissions in the service realized at the close of the war that a move should be made toward instructing the youth of the nation in the care of its teeth. As a nation we have fair teeth in comparison to some of our European friends, yet there is still a long distance to be covered before we can point to this portion of our anatomy with pride and register self-satisfaction.

Obviously the only way whereby as a country we can hope to have solid molars is by instructing the children in the graded schools until such a time as they can realize for themselves the powerful influence that good teeth exert toward the general health and morale of the individual. The children of the city as a rule have better teeth than their country cousins since they are in closer proximity to dental surgeons, and their parents are brought into closer touch with the propaganda for sound teeth. The children of the outlying industrial communities have not fared so well.

Mining County Takes Lead in Free Clinic

It has remained for McDowell County of West Virginia, where practically the whole population is engaged in coal mining, to organize, establish and maintain the first free dental clinic in the country for children under sixteen years of age. McDowell County is strictly a mining community, and it is with pride that the coal industry can point to this first step in a campaign to establish industrial dentistry throughout the country.

The results of the experiment have eclipsed the hopes of the founders and would indicate that this county will not long remain alone in adopting this new idea, which fits better into an Americanization program than some others made up mostly of words and not of deeds. Rumors around Welch, the county seat, would indicate that West Virginia will soon make this a state activity and remove the direct burden from the county.

The State Legislature on June 24, 1919, authorized the McDowell County Court to establish a dental clinic under the Department of Schools and Health. This act

was approved by the Governor the following month. In order to make it a law the vote of the people was required. The measure was carried by a majority of nearly a thousand.

Dr. G. T. Epling was appointed director and the work was started. Headquarters were set up at Welch, and the director appointed a staff to assist him. Today this staff numbers thirteen graduate dentists and as many

DR. G. T. EPLING
First Director of the McDowell County Free Dental Clinic for School Children

women hygienists, three of whom are colored and treat the negro children of the county. Each member of the director's staff is a specialist in some branch of dentistry, while one of them served in the army and is familiar with field equipment.

At the end of the war there was a vast amount of dental equipment and supplies left on hand. The county has expended over $40,000 in the purchase of this material from the Government. A saving of over four-fifths of its present-day cost was thus effected.

The operators of all the coal companies in the county are strongly in favor of this new development and have taken every opportunity to assist the visiting dentists. A dentist and a hygienist, each provided with army field equipment, work together. Present plans call for a tri-yearly visit to every school in the county. This schedule has been closely followed to date but it is probable that the near future will see a visit of the dentist to the schools every three months.

When a dentist and a hygienist arrive at one of the coal-mining communities they are usually given the use of the schoolhouse. However, at some of the operations special buildings have been erected by the operators for this purpose. The arrival of the dentist may or may not conflict with the children's studies but as far as possible every effort is made to prevent such an outcome.

The name of every child in the school is turned over to the hygienist by the teacher in charge and every pupil goes to her first. She cleans the children's teeth and in other ways assists the dentist in much of his routine work. At the time of the cleansing she notes the general condition of the individual's teeth and notifies her colleague of these observations, so that when he reaches the child he will already have an idea of the nature and amount of work to be done. In this manner much time is saved.

The dentist attempts to do nothing but elementary work with his field equipment. Any unusual condition of the teeth that might require surgical attention is referred to the main office at Welch, where the child may go and receive the care of a specialist. Any case so reported is carefully noted as well as the time at which the child reports.

One detail of the visiting dentist's duties is that he must make a record of all work accomplished daily. This is done by providing him with charts so that each child's record is kept separate. Outside of accounting for the dental work done on an individual case other information is listed on this chart. This is of an elementary medical nature and is secured by questioning the child as to his or her eyesight and general health. Any case that might require the services of a physician is reported at Welch and is further investigated. This scheme provides for the detection in their first stages of many contagious diseases.

In this manner the dentist co-operates with the Health Department of the county in controlling and curbing the spread of infectious and contagious ailments among children. It is planned to keep but one chart for each child until the time is reached when he or she is no longer entitled to receive the benefit of free treatment. Upon each visit of the dentist to the school the same charts are used. At other times these are kept on file at headquarters in the county seat.

But the McDowell County Dental Clinic is not what might be called an innovation—that is, not from the standpoint of an industrial clinic—for many industries have maintained such service. Nor is it new to the coal industry itself. In fact, this county's activity is but the outgrowth of similar schemes tried by some of the larger coal operations in this very district. As a strictly county activity, however, it is new, and as such the founders deserve much commendation. Such free clinics must be controlled by some large political subdivision of the Government if all the children—many of whom live in the smaller mining communities—are to be reached.

McDowell County is not a thickly populated center, yet a glance at the following report of the dental clinic for the first eight months of its operation will show the stupendous amount of work that has been accomplished and at the same time furnish food for thought as to what might have been done, and what is actually needed, by the country as a whole:

Number of children treated	7,215
Number of temporary fillings made	3,777
Number of permanent fillings made	8,996
Number of deciduous extractions	4,307
Number of permanent extractions	429
Number of cleanings	7,550
Total number of complete treatments	3,318
Total number of operations	30,385

Dr. Charles Mayo, of Rochester, Minn., is credited with having made the statement that over 90 per cent of all diseases enter the body through the mouth. The importance, therefore, of keeping the teeth healthy cannot be too strongly emphasized if a vigorous resistance is to be offered to infection by the germs with which we come in contact daily. For a long time the National Safety Council has been preaching the gospel of sound teeth to some 2,500,000 workmen in all industries.

It has often been said that care of the teeth logically should become a Government activity. Last year the Government spent $47,000,000 to protect farmers against preventable loss of hogs, corn and cattle. Nothing was provided for any research into the ways in which loss of human life through physical defects of children might be avoided.

Emergency Hospital and Lecture Room of Pittsburgh Terminal Company

Combination Hospital and Lecture Room Buildings as Here Described Assure Injured Men Receiving Proper Medical Treatment and Also Serve as a Powerful Stimulant to Interest in First-Aid Training

By Staff Correspondent

ITEM 2 of the General Safety Standards of the Bituminous Coal Mine Compensation Rating Schedule allows a credit of 20c. if three specified regulations are complied with. The first of these deals with a surface receiving station for the treatment of injured employees and allows a 6c. credit if such a receiving station is located less than 1,000 ft. from the main opening of the mine and is at least 8 x 12 ft. in dimensions.

As practically every operator knows, this building must be kept scrupulously clean at all times, as well as well lighted, ventilated and heated. As the credit permitted is no small one, the building usually is constructed, for in an operation of any size it pays for itself within a short time. There is, however, no inducement to erect a building larger than the specified standard, and consequently most plants are equipped with one of regulation size only.

New Hospital Used as Model for Others

One coal company in the Pittsburgh district, however, has seen fit to erect buildings of this character larger than the standard. This is the Pittsburgh Terminal Railroad & Coal Co., of which John Bowles is safety engineer. The accompanying drawing shows the construction plans of an emergency hospital and lecture-room building which has recently been erected at the No. 2 mine of this company, located at Cooley, Pa., only a few miles from Pittsburgh. This building is being used as a model for others of a like nature that either have been or will be constructed at other mines of the company.

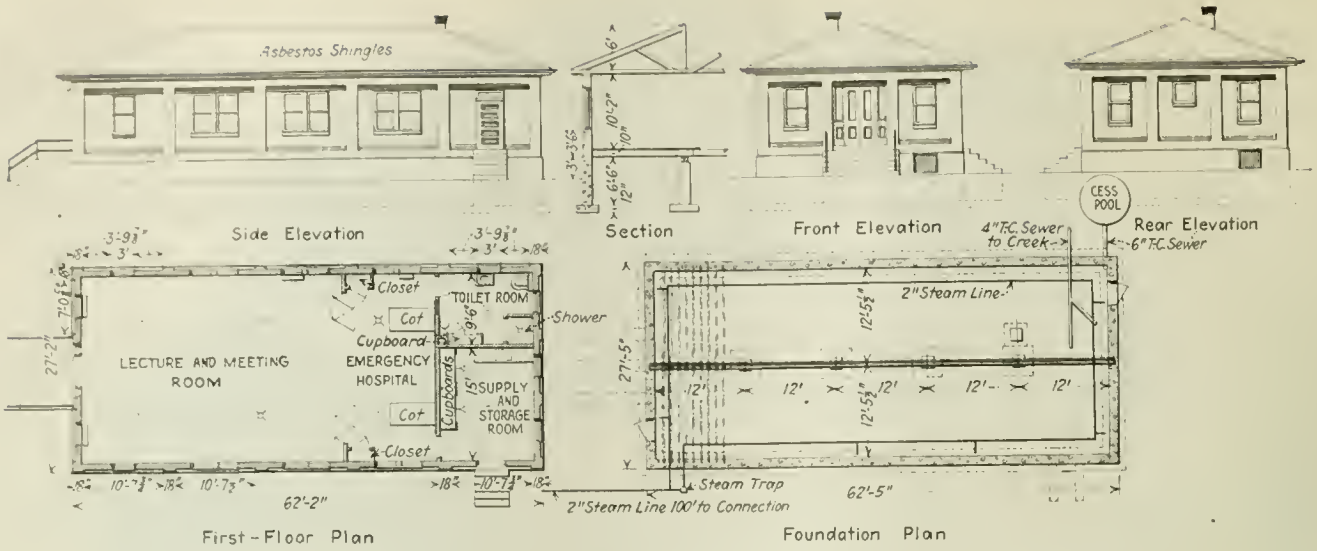
The motive for building these small hospitals has been purely an unselfish one, since no further benefit than that named is to be derived from the state. Certain advantages, however, accrue to a progressive company other than mere monetary considerations. The psychological factor enters into the reckoning and is of no small influence. The employees know that they will receive excellent care if injured and are that much more closely cemented by a bond of friendship to their chosen company. The building is erected along highly practical lines and it is safe to hazard the prediction that this type of construction will become more general in the near future. And why not? Surely, a man, if seriously injured, is entitled to the best treatment possible. It is difficult to believe that either a long ride by motor or lying for several hours upon a stretcher can be included in the meaning of humane treatment. Yet this is often the case where operations are situated a considerable distance from a city where a hospital is available.

A building of this type serves several purposes. A lecture room 36 ft. long can be lengthened 12 ft. if there are no patients in the hospital. This is done by means of folding doors that divide the building into two main compartments. A class-room is thus formed where first-aid crews may be instructed. A blackboard in the hospital may then be utilized for illustrating the treatment of various injuries. This room is further used as a place for informal gatherings.

Modern Conveniences Are Provided

The building itself is well lighted and steam heated by a 2-in. line from the boiler house. Hot and cold water is available from the same source. A shower bath has been provided in a small room adjacent to the hospital proper. A second room adjoining the hospital is used for the storage of medicinal supplies as well as linen and all other materials that should be kept on hand in such a building.

The structure presents a highly attractive appearance, being constructed of rough red brick on a concrete foundation, while asbestos shingles are used



PLANS AND ELEVATIONS OF THE BUILDING

These show some of the salient details. Folding doors separate the emergency hospital from the lecture room. These may be thrown back, making practically one large room.

on the roof. The real utility of construction lies within, however. The plastered walls, finished woodwork, many windows and lighting fixtures give a particularly pleasing and cheery appearance.

Upkeep Cost Is Almost Negligible

Little real use has been made of the hospital to date, but the men know that it is there. A trained nurse is available in time of accident. Inasmuch as many operations in the bituminous district have employed nurses who also assist in general community uplift work, a building of this nature is particularly appropriate, having proved an adjunct of immeasurable value in the pursuit of their humanitarian and educational activities.

The additional expenditure entailed in constructing a building of this type as against the specified standard is not as much as might at first be imagined. This is especially true with respect to the newer plants being constructed in the Pittsburgh district. The initial cost is the final one. Furthermore, the structure is relatively small and requires no attendant. When the hospital is not occupied, a man is detailed to keep the room clean and in readiness for immediate occupancy.

Last summer, when the various coal companies were preparing for the National first-aid meet that was held at Pittsburgh under the auspices of the Bureau of Mines, this building was the scene of considerable activity in the evenings. Preliminary meets were held and a general concentrated course in first-aid instruction given. Proof that the Pittsburgh Terminal Railroad & Coal Co. is among the leaders in the first-aid movement may be had from the fact that its teams entered in the National meet captured second and ninth state prizes. In this respect, this company's teams ran second only to those from the mines of the H. C. Frick Coke Co., one of which captured a National prize.

Encouragement Given to First-Aid Work

The construction of these buildings has stimulated interest in first-aid courses, which even under the best of conditions is difficult to keep at a high point. Any incentive to first-aid instruction or to improving the treatment of injured employees is worthy of consideration and this company has striven to accomplish something definite along these lines. In fact, while the building is not an innovation in type, it presents interesting features that are likely to encourage other companies to provide for their injured employees in like manner.

The Hospital

Note the sanitary iron cots, the stand between them, and the chairs. Note also the blackboard and the semi-indirect lighting fixtures.

Kaska, a Mining Town in the Rebuilding

Each Family Has Seven Rooms and Bath, a Furnace, Radiators in Every Room, Electric Lighting and Cemented Cellar — All Buildings of Vitrified Tile; Some Covered with Stucco — Two Large Porches on Every House

DAY by day American standards of living mount higher and higher. As this process goes on the employer of men must so alter and improve the conditions under which his men live as to render them comparable with this ever-rising standard of living.

Many a coal miner works under difficulties all day and then comes home at night to listen to the complaints of his family in regard to his home and home life. That man is not in a proper frame of mind next day to put forth his best efforts. Every little incident in the day's work, trifling in itself, but nevertheless vexatious, tends to increase such a man's antipathy to life, to his fellowmen in general and to his employer in particular.

This feeling, therefore, gradually builds up and spreads like contagion from one person to another until restlessness becomes universal among the workers and almost any occurrence, trivial in itself, may fan the spark of animosity into a blaze, when the employer will have a vicious strike upon his hands or the output per man will decrease to such a point that coal cannot be mined at a profit.

Many of the coal-mining companies throughout the country are realizing this fact and are improving both working and housing conditions. Underground, labor-saving machinery is being installed, while on the surface, excellent types of dwelling houses are being erected. Also much greater interest is being manifested in schools—their structure, scope and organization.

Furthermore a better type of company store is being provided and a better class of merchandise is on sale therein. The education of the miner's family in the utilization of the better type of goods now sold is revealed in their homes and on their persons. Relaxation also is provided, not only by the building of movie theaters, amusement halls and playgrounds but by the formation of clubs and societies so that the people are brought into close contact, not only with each other but with the various company officials.

Only Community Life Makes a Community

They, therefore, become better acquainted, not alone with their neighbors but with their employers. This tends to reduce the antagonism which has in the past often existed between various nationalities living in the same community and heads off what soon grows to be a common feeling of antipathy to the employer. Aid also is being extended to churches and other religious organizations with the idea of raising the moral standard of the various communities, a large percentage of the inhabitants of which are of foreign birth or, at least, of foreign extraction.

A man with a fair education and reasonable acquaintance with American ideas and ideals, living under pleasant conditions and with attractive surroundings, with safety and labor-saving devices furnished him in his daily work, with a reasonable opportunity to earn fair wages and support his family in moderate comfort, is not an individual that will be prone to complain about his work, but is apt to be satisfied and try to give a fair return for the money paid him.

Old Town of Kaska Fast Being Made Over

The Alliance Coal Mining Co., of Kaska, Pa., realizes the potency of these influences and is rebuilding the town of Kaska in accordance with them. The point on the railroad nearest this town is Middleport, which is about two miles away. Leaving the train at that point an individual bound for Kaska may enter a jitney making regular trips between the two places.

The road is one of the new state highways, a beautiful macadam thoroughfare that winds through the woods to the mine at Kaska. The town itself is both old and new, but the new is rapidly replacing the old, so nothing will be said about the more ancient portion of the community, because in about another year this will have ceased to exist.

Vitrified Clay Tile Covered with Stucco

Coming into Kaska the first of the new buildings to attract attention is the club or boarding house. This is shown on page 749. Like all other buildings recently constructed at this place, the clubhouse is built of vitrified clay tile, in this case covered with stucco. On the hill above the boarding house is the superintendent's dwelling. This is a single house of three stories and basement, containing nine rooms and bath. Heat is furnished by a hot-air furnace in the cellar. All the rooms are wired for electricity, and the roof is covered with slate. A large front porch and a smaller rear porch are provided. At present the grounds are not laid out and completed, but in about another year terraces will be finished and streets built.

Near the superintendent's house stand the dwellings of the foremen. These houses are nearer to the mines than the others, so that the officials may be easily reached in case of accident. The design of these houses is identical with those intended for the miners. One of them is single but the others are double. The company store, not far distant and shown in one of the accompanying illustrations, is, like all the other buildings, constructed of vitrified clay tile with a slate roof. This building is two stories high, and the interior arrangement is such that the various departments such as butcher shop, grocery store and dry goods department are separated, yet are still practically in one large room. The separation consists of walls extending a short distance into the room. Sufficient storage room is provided in the rear and in the cellar.

Will Roof Over the Dance Hall This Winter

To the rear of the store and lying between it and the schoolhouse is the new amusement building, now in course of construction. The roof and floor have been finished, and during the summer months it was used as an open-air dance hall. It will be inclosed in the fall or early winter and used for balls, moving picture shows and other social events. This building is quite simple.

being one large room with a moving-picture curtain at one end and a machine at the other. The seats employed will be movable so that the floor may be cleared for dancing and other amusements.

The schoolhouse is the only frame building in the new town. It is of simple but attractive design and contains four rooms. These are of ample capacity for the size of the town. This school is not, like the other buildings of the town, heated by a central furnace but is provided with a stove in each room.

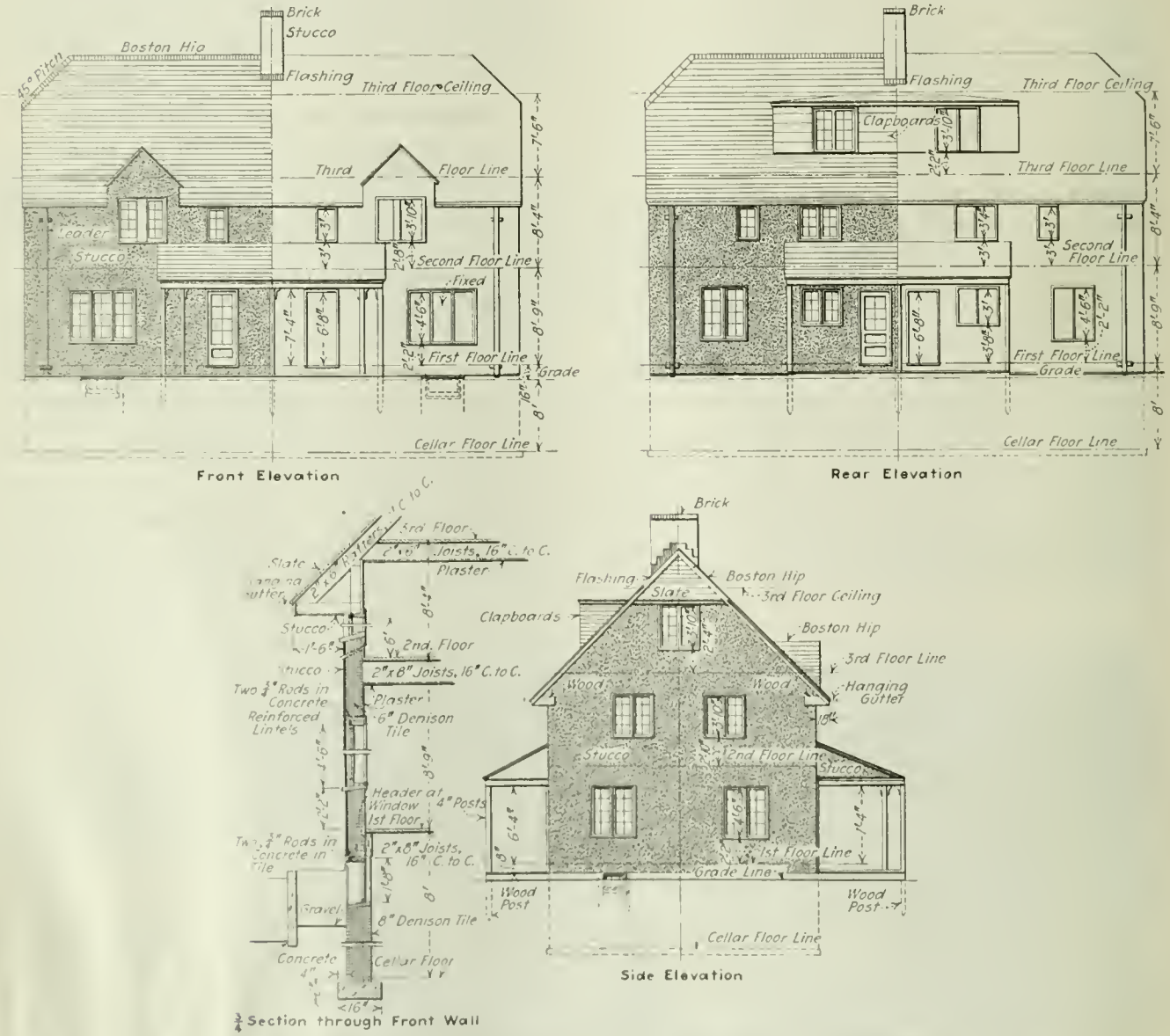
It is safe to say that many people living in cities and towns throughout the country, both in the anthracite region and elsewhere, would be glad to secure such attractive, well-designed and comfortable houses as are furnished the miners at this operation, front and rear views of which are shown on page 749.

All Have Bath, Furnace and Cemented Cellar

These houses are all double or of the two-family semi-detached type. At the present time twenty have been constructed, but before another year has passed eighty more will have been built. A contract recently was signed for twenty of these houses. The plans are shown on page 750. Seven rooms and a bath are provided for each family.

Churches and Social Activities to Follow

It was not many years ago that a bathroom in a miner's house was a unheard-of luxury. Here is a whole town where every house is provided with such a bath. Furthermore, every house has a furnace. How many towns are there throughout the United States composed of one hundred or more dwelling houses where every house has not only a bathroom but is heated by furnace, with a radiator in each room! Furthermore, these houses are wired throughout for electric lighting, and a fire wall built of tile extends from cellar to roof and separates the two parts of the building. Some of these buildings are covered externally with stucco while others are left with the finish of the vitrified tile. This gives variety in external appearance and averts the monotony for which many towns of a similar type are conspicuous. Large front and back porches are provided, and the cellar floors are cemented.



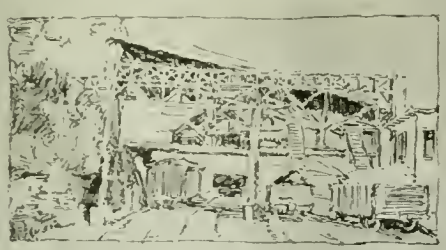
FRONT, REAR AND END ELEVATIONS OF THE DWELLING HOUSES

As may be seen these are double houses with three floors and basement. The type of construction, as revealed by the section of the wall, renders the house both substantial and warm.

The Public School

Miners' Houses

Miners' Houses



The Club House

Foremans House

Store Building

At the time the accompanying photographs were taken grading had not been finished around these houses, but, as has already been stated, the company intends to do this as soon as possible. Furthermore, as soon as arrangements can be made, churches will be built so that the miners and their families may have the benefit of religious instruction.

The company has not yet formulated its plans for the organization of social activities but intends soon to take up this matter as well as that of the instruction to be provided in the schools. All things cannot be provided immediately at the inception and it takes time to get any plan in working order. Kaska is well removed from the attractions of city life, so that it is desirable that the inhabitants should have all necessary pleasure and recreation in their own homes to the end that the miners' families will remain at the mine in preference to moving to towns and cities.

Grumbling Has Not Yet Entirely Ceased

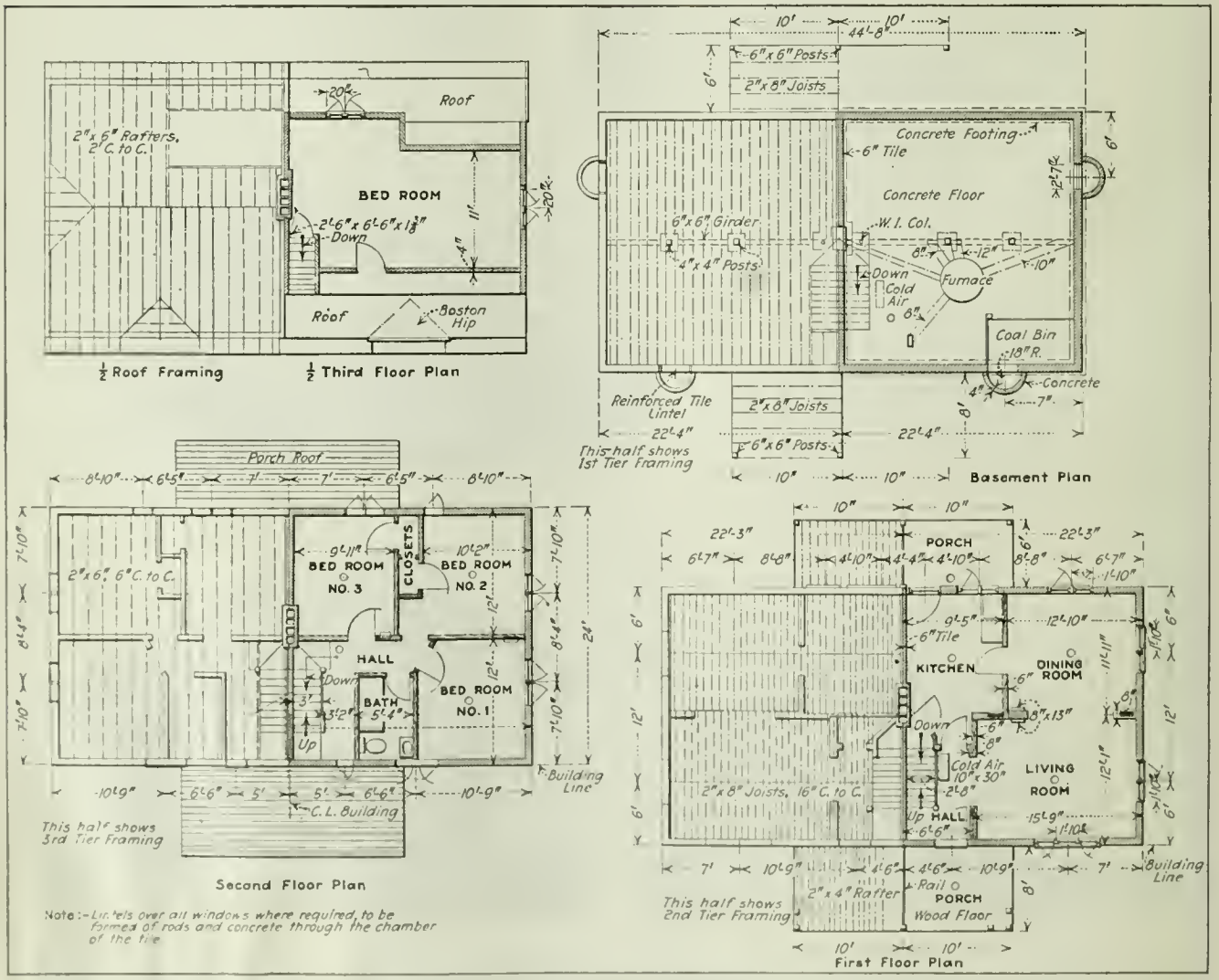
Despite all advantages here offered, grumbling is still heard among the men. This will never be entirely eradicated until the younger generation has become sufficiently educated to be able to reason and understand the proper relationship between employer and employee. Such conveniences, however, as the company has provided tend to minimize dissatisfaction and unrest to the lowest possible degree.

The breaker at this operation has already been described in *Coal Age*. In a future issue it is hoped that another article may be published describing among other things how this company is improving its mines and mining conditions. This will be particularly interesting in this instance as the operation here involved is the reopening of an old and abandoned mine.

Threatens General West Virginia Strike if Troops Are Used for Strike Breaking

GENERAL strike, involving 126,000 organized workMers of West Virginia, will be called "if Federal troops are to be used as a strike-breaking agency instead of for the protection of the constitutional rights of citizens of state and nation," said C. F. Keeney, president of district 17, United Mine Workers of America, in a statement issued at Charleston, Sept. 24.

Mr. Keeney added that "before this drastic action is taken, however, the associations of coal miners in northern and southern West Virginia will be requested to use their influence to have Federal soldiers removed from the state that tranquillity may prevail."



FLOOR AND BASEMENT PLANS

Each half of these double houses contains seven rooms, bath and hall. The attic bedroom is of extreme size and might be made to accommodate several people. Each house has furnace heat, electric light and running water.

Wrong

Hinging the door on the manway side or that away from the trolley wire compels him who would pass through to cross the track. If a locomotive rams the door from the opposite side the man's body receives the full force of the blow.

Right and Wrong in Hanging Mine Doors

By E. E. Hughes
Benham, Ky.

EVERY once in a while one hears of an accident caused by a locomotive "ramming" a door while a man on the other side is in the act of opening it. Such accidents may be easily prevented if adequate precaution be taken to that end.

The accompanying illustrations show two methods of arranging a door. The first shows the common method of hinging the door on the manway side of the entry—i.e., the side away from the trolley wire. To open such a door a man is compelled to cross the track and place himself in the path of the door should it be suddenly pushed open from the opposite side. Furthermore, with this arrangement he must go to the trolley side of the track and while opening the door is almost directly under the trolley wire. This is of course dangerous in low mines, especially as the trolley wire, where it passes the door, must in most instances be entirely unguarded on the opening side, as is the wire shown in the picture.

The second illustration shows a far better and safer arrangement. Here the door is hinged on the trolley side, and consequently if it is rammed open it swings away from the path of the traveler. In addition to this, the door is provided with a small pane of glass so placed that a person approaching it from one side can see whether a locomotive is approaching from the other, provided, of course, that such machine carries a headlight. If the locomotive does not carry a headlight or the man upon it does not wear a cap lamp and the locomotive rams the door before its presence is known to the man on the farther side it will at least swing away from and not toward him. About the worst that can happen in such a case is that the man will be knocked down.

Right

Hinging the door on the trolley-wire side permits him who would pass through to open it without exposing his entire body to the force of a blow resulting from ramming by a locomotive. A little glass window also is advantageous.

The door last described has been successfully employed for some time past in the mines of the Wisconsin Steel Co., Benham, Ky. This account of its construction and operation is published in the hope that its adoption by other producers may lessen danger to life and limb in the operations where it is employed.

Does Organized Safety at Coal Mines Pay?*

AN EXCELLENT answer to the question "Does organized safety in a coal mine pay?" is the record of the Johnson City Coal Co., Johnson City, Ill., now a property of the Old Ben Coal Corporation. This company on Nov. 1, 1919, because of its discouraging accident record and mounting costs of insurance appointed M. A. Rowan safety engineer of its mines and gave him full authority to do whatever he found necessary in order to reduce the accident costs. Mr. Rowan was not new to the mining business, having had valuable experience as engineer and superintendent of mines for several companies and as chief engineer for the coal properties of the Chicago & Eastern Illinois Railroad Co. He at once launched a safety campaign that met with truly remarkable results, as will be seen from the accompanying table.

The Johnson City Coal Co. carried indemnity insurance up to April 1, 1919, at a cost of $4.30 per $100 of payroll. On that date the rate was raised to $4.95, and as a result the company decided to carry its own insurance. From April to November, when this firm had no safety inspector or organized campaign for the reduction of accidents, the costs amounted to $5.42 per $100 of payroll. The subsequent drop in insurance expense is indicated in accompanying table.

According to Mr. Rowan, the program during the intensive campaign which he inaugurated provided for the guarding of all machinery in and around the mines; the guarding of trolley and feeder lines where necessary; the installation of safety track switches; the erection of warning signs wherever needed; frequent inspection of the mines, covering such items as track conditions, haulage practices, timbering on roads and in rooms, ventilation at face and in old workings; checking up of examiners' and shot-firers' work; the distribution of safety notices in pay envelopes; the establishment of suggestion boxes and the encouragement of all employees to use them freely.

Other provisions were the formulation of a set of safety rules for haulage and face bosses and the establishment of a bonus system whereby those making the best accident records received monthly a cash prize; the placing throughout the mines of illuminated bulletin boards on which were posted copies of National Safety Council bulletins and local safety news items. An accident meter was placed at each mine. This was simply a large blackboard at the top of the shaft, on which was written each morning the names of those injured on the previous day, with a description of the accident. An electric gong placed over the blackboard rang at change of shifts.

It is significant that in addition to a big decrease in the number and severity of accidents, the daily production of coal actually increased more than 11 per cent, and this was accomplished with the same number of men, mules, cars and other equipment.

If anyone has doubts as to the value of safety work in reducing operating costs and increasing production the record made at these mines should help to remove such misgivings.

*Abstracted from *National Safety News* of July 5, 1920, published by the National Safety Council.

Septic Sewage Disposal Readily Provided For Single or Small Groups of Houses

SEWAGE disposal is an ever-present and sometimes vexing problem around mines, factories, agricultural communities and other places, where the expense of a large and elaborate sewer system is not warranted. In the past the difficulty of avoiding the pollution of waterways has been surmounted in a variety of unsatisfactory ways, but of late years the installation of septic tanks has in many instances simplified matters considerably.

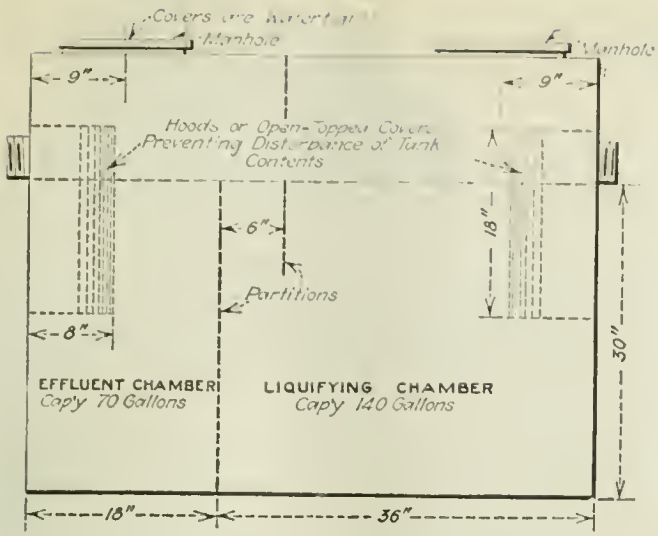
Heretofore most septic tanks have been built of concrete, brick or vitrified clay in some form or other. Recently, however, the Dail Steel Products Co., of Lansing, Mich., has placed upon the market what it terms its Wolverine septic tank. It is made of steel so alloyed as to be unaffected by acids or other chemicals contained in the sewage. Therefore it is practically corrosion-proof and consequently will last almost indefinitely. The tank is, of course, constructed upon strictly scientific lines and in accordance with the best modern practice.

It operates on a principle that has been known and utilized for many years. The tank itself consists of a series of compartments or chambers, two or more in number. The Wolverine consists of one tank with two interconnected compartments. These are known as the liquifying and effluent chambers respectively.

TABLE SHOWING HOW ACCIDENT RECORD OF JOHNSON CITY COAL CO. WAS BETTERED BY SAFETY ENGINEERING

	(1) Previous to Apr. 1, 1919	(2) April 1 to Nov. 1, 1919	(3) Nov. and Dec., 1919	(4) Jan., 1920	(5) Feb., 1920	(6) Mar., 1920	(7) Comparison of Col. 6 to Col. 2
							Per Cent
Number of accidents causing over 7 days' lost time	Records not available	143 (20.4 per month)	See note below	20	11	10	51 decrease
Number of days lost (for accidents over 7 days only)		34,000 (4,852 per month)		1,950	622	730	85 decrease
Number of hours worked (approximated)		997,600 (142,514 per month)		137,200	116,400	145,600	2 decrease
Frequency rate (for accidents over 7 days only); number of accidents per 1,000,000 hours worked		144		149	95	69	52 decrease
Severity rate (for accidents over 7 days only); number of days lost per 1,000 hours worked		34 2		14 2	5 4	5 01	86 decrease
Average tons per day		4,587		4,521	4,932	5,100	11 2 increase
Total cost of all accidents (includes compensation paid and pending, medical and legal expense, and salary of safety engineer)		$47,320 ($6,760 per month)		$4,002	$2,641	$2,260	66 decrease
Accidents cost per ton		$0 0752		$0 0505	$0 037	$0 024	68 decrease
Cost of accidents per $100 payroll	$4 30	$5 42		$2 81	$2 15	$1 48	72 decrease

* NOTE.—Miners on strike during most of this period so record is omitted as not being representative. Resumed work during last part of December



CROSS-SECTION OF THE SEWAGE TANK

This shows the incoming and effluent baffles and the vertical partitions governing the movement of the water through the tank.

Raw sewage enters first the liquifying chamber. Here the heavier portions or solids settle to the bottom, while the lighter seek the top and eventually form a scum. Two varieties of bacteria develop in these septic tanks. The first of these are harmless so far as man is concerned and thrive most vigorously in darkness and removed from the presence of oxygen. The other variety is the harmful, disease-bearing kind that develops most rapidly where light and oxygen can gain access. In the septic tank the two kinds of bacteria wage continuous warfare, with the result that the harmless variety, greatly outnumbering the others, exterminate them before they can escape with the effluent.

During this warfare of the bacteria the solid portion of the sewage is broken down and converted into either a liquid or gaseous state. Thus the effluent is practically as clear as water. After leaving the septic tank the process of disposal is completed usually by allowing the soil to absorb the affluent. This is rapidly accomplished by draining the liquid into a system of unglazed tile laid in gravel cinders or porous earth about a foot below the ground surface.

This septic method of sewage disposal is extremely simple and easy to install while at the same time it is highly efficacious. For individual residences or small communities, where the expense of a more elaborate system is unwarranted, it offers possibilities of which many mining and industrial firms are taking advantage.

Mark Your Electric Hazards and Section Switches with Whitewash

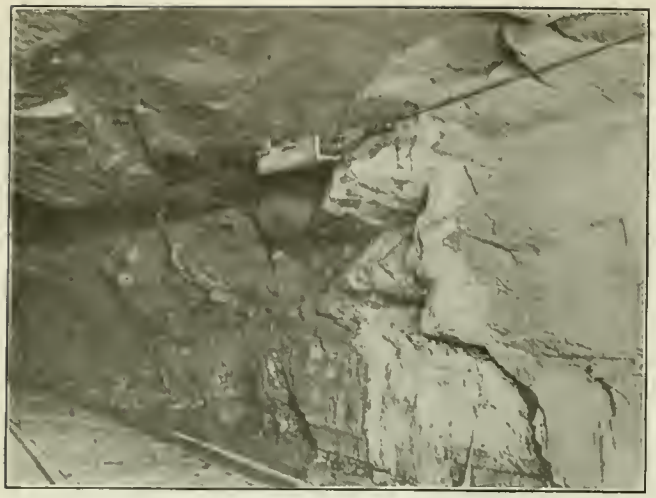
MANY a man passing along an unwired roadway with a drill over his shoulder is unaware when he arrives at a section that is wired. He goes blissfully along till the drill makes contact with the wire, when he falls as if shot and is injured and possibly killed.

It is necessary, therefore, to mark clearly the place where the wire ends or, to speak more correctly from the point of view of safety, where the wire begins. It is not only the man with a drill who needs the warning; any man is likely to fail to see the wire. It is customary to go along watching for lumps of coal in the road and not looking for low spots or suspended wire near the roof.

The traveler relies on his practice of stooping low enough to protect himself against low roof, but he often fails to bend his head enough to pass safely under the trolley wire. The marking of the end of the wire should be done, as in the illustration, by a liberal use

Section Switches Marked

Where there is a short circuit on the rail there is risk of a mine fire, and where there is gas or a coal readily generating gas, of an explosion also, in which, of course, coal dust also may function. It should be made easy to find the section switch, hence the bright whitewash mark on the wall.



POINT OF DANGER—WHERE WIRE BEGINS

At this point a little whitewash may save a life. It is usually only after a man has traveled several feet along a roadway strung with trolley wire that he is cognizant that the wire is present. A glaring splotch of whitewash will call his attention to the conductor and to the imminence of danger more quickly than will a sight of the wire itself.

of whitewash, so much in fact that the traveler even with a poor light will not fail to see it. It should be continued down as near as possible to the mine floor, for that is the level at which his eyes will in all probability be directed.

Another illustration shows a sign placed to draw attention to an electric switch whereby the trolley line to the inby can be rendered dead. In case of a short circuit such a switch may save a life or a locomotive and may prevent a fire or explosion, and, in consequence, it should readily be found by anyone who desires to throw it. No man can make speed with his eyes pinned to the roof. If he would run to a spot, that spot must be indicated near the floor, so that it readily may be seen.

However, as anything too near the floor is apt to get heavily covered with dust and plastered with mud, the mark shown in the illustration is placed just so high as to be well clear of the road dust and mud and low enough to be seen by a man whose vision is directed on the road. For these illustrations we are indebted to the National Safety Council.

Reading Company Erects Attractive Bridge For Protection of Public

AT THE Silver Creek Colliery of the Philadelphia & Reading Coal & Iron Co., near New Philadelphia, Pa., a wagon road crossed the mine track at a grade crossing. This was a particularly dangerous crossing because of the exceedingly sharp curve made by the track around the hillside. As both the wagon road and the mine track were in continual use something had to be done to overcome the ever present imminence of accidents.

Accordingly the engineering department of the coal company designed the reinforced-concrete bridge shown in the accompanying illustration. This bridge removes all danger of vehicles being struck by mine locomotives or trips. It is simple and comparatively cheap in construction and pleasing to the eye.

More and more as time passes coal companies are realizing that at practically the same cost attractive structures can be built in place of the eyesores that have been erected around the mines in the past. They have also found that attractive buildings tend to improve the morale of the men and make them proud of the places at which they work and of the firm that employs them.

Only One Company in the Williamson Coal Field Has Surrendered to Union

THERE has been but one defection so far in the ranks of the coal companies operating in the Williamson field, where there has been a strike since early in July. According to an announcement made by David Fowler, of Scranton, Pa., the Alma Thacker Coal Co., of Columbus, Ohio, with a mine in the Mingo County field, has signed the scale of the United Mine Workers. The mine, which is on the Kentucky side of Tug River, has been idle since the strike was called.

Concrete Road Bridge

This bridge is not only a sightly structure but eliminates danger of accident at what before its erection was a perilous grade crossing.

Discussion by Readers

Edited by
James T. Beard

"How to Test for Firedamp"

What is the correct height of flame cap corresponding to a given percentage of gas? The kind of lamp used in testing and the oil burned important factors.

THE instructive diagrams and accompanying explanation of how the heights of the flame caps shown were ascertained, submitted by James Ashworth, Mining Engineer, in *Coal Age*, July 29, p. 236, will doubtless prove of great interest to those whose duties are to examine the mines and determine their condition in respect to the safety of the men working therein. Upon the fireboss falls this duty and, in British Columbia, he must assume the responsibility of withdrawing the men from the mine should the proportion of gas reach 2½ per cent, which the chief inspector of mines for the province has determined to be the "withdrawal percentage."

In a previous letter, May 27, p. 1107, I drew attention to the difference in the heights of flame cap for different percentages of gas given by different authors. Since

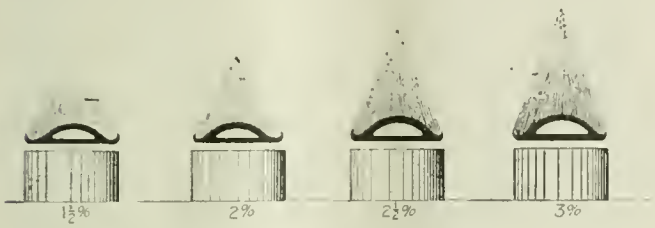


FIG. 1. FLAME DIAGRAM, HOME OFFICE, LONDON

then, the letter of Mr. Ashworth, referred to above, has appeared in *Coal Age*. In that letter, Mr. Ashworth shows clearly that the height of flame cap, for any given percentage of gas, varies considerably in the use of different lamps and different illuminants; also, when the test is made under varying conditions.

I wish now to submit three diagrams giving the heights of flame caps for different percentages of gas. One of these diagrams was issued by the Home Office,

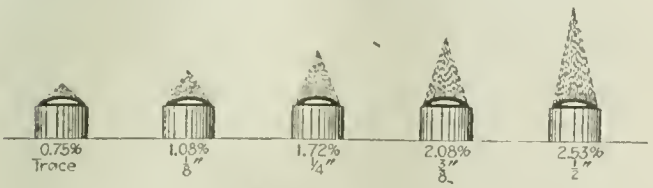


FIG. 2 DEPARTMENT OF MINES, COAST AND NICOLA DISTRICTS

"for the use of miners." The other two diagrams are issued by the Department of Mines in British Columbia, the first giving the height of flame cap for different percentages of gas, as determined for the Coast and Nicola districts; and the second giving the same information for the Crowsnest Pass district. Both the instructions from the Home Office and those from the Department of Mines are entitled "How to Test for Firedamp."

It will be observed that the diagram, Fig. 1, does not give the height of the cap in inches, as do the diagrams, Figs. 2 and 3. I am led to assume that the height of cap for 2½ per cent of gas, in Fig. 1, is about the same as that shown in Fig. 2 for practically the same percentage. But the height of cap for this percentage of gas in the Crowsnest Pass district

FIG. 3. CROWSNEST PASS DISTRICT

(Fig. 3) is given as $\frac{5}{16}$ in., which is considerably less than the height in Fig. 2.

What seems to me strange, however, is that in neither of these issues sent out by the Home Office or the Department of Mines is any mention made of the kind of lamp used or the illuminant burned. Neither is any reference made to the conditions surrounding the test referred to by Mr. Ashworth. Now, no one will doubt the necessity of obeying the mandates of the Home Office and the Department of Mines; but it seems unreasonable to expect men to fulfill these requirements when the available information is so diverse.

Mr. Ashworth's reference to the need of standardization of safety lamps used in testing, seems to me opportune. I take it, however, that his suggestion of a possible requirement of an increased lighting value of the lamp has no bearing on the matter of testing for gas; but relates to the need of greater illumination for the better detection of other dangers in the mine.

Cumberland, B. C., Canada. COAL DIGGER.

What Should Be the Duties and Authority of Safety Inspectors in Mines?

What is the status of the mine-safety inspector, and how far does his authority extend? Can he be employed on other work without making him less responsible for the safety of workers and of the mine?

FROM time to time mention has been made in *Coal Age* regarding the necessity of employing safety inspectors or safety bosses in mines. What should be their duties and how far should their authority extend has, however not been clearly defined. In my opinion, this is a matter well worthy of discussion.

In a number of mines where I have worked there have been employed safety inspectors charged with various duties that naturally vary with the conditions in the several mines. Owing to these varying condi-

tions, it is clear there can be no set rules laid down that will be applicable to all mines. However, the point I wish to urge is the disregard that is often paid to the instructions of the safety inspector.

For example, the mine foreman who rightly has the full charge of the mine, will frequently have his own ideas as to safety. When his attention is called, by the safety inspector, to a bad roof condition on the haulage road it is not uncommon for him to reply, "We have hauled coal for months under worse roof than that and never had an accident." Unwilling to increase the cost, he puts the matter aside and nothing is done, until some day a driver is caught and another fatal accident recorded.

Again, there are mines where the manager has designated one or more men to be employed as safety inspectors. For two or three weeks they perform their duties as such, and then the mine foreman calls on them for other necessary work. He orders them to inspect the mine for safety Mondays and Wednesdays only. A little later, the safety inspection is made but once a week. All this time the work of these men is charged to safety inspection and the foreman's cost-sheet gets the benefit, at the expense of the safety of the mine workers.

Why Should There Be Any Clash of Authority Between the Foreman and a Safety Inspector

Now, it is not my wish nor do I want to be understood as questioning the authority of the mine foreman in all matters underground. It would seem, however, that he should co-operate with his safety inspectors and not interfere with their regular work as such, when they are supposed to be so employed. It is this phase of the question that I would like to see discussed thoroughly in *Coal Age*, for the purpose of ascertaining if there can be any need of clash of authority between these two officials.

In my estimation, a safety inspector should be a practical miner who has performed every class of work, such as trackwork, timbering, digging coal, shooting rock, and is familiar with the dangers of mule and motor haulage, besides having a full knowledge of the properties and behavior of gas in mines. He should be a man, say from 24 to 35 years of age, and capable of giving first-aid in case of accident.

It is my belief that a safety inspector should not be called on to perform other work. In the interests of safety, he should visit every working place in the mine at least each alternate day, at the same time inspecting all roads, travelingways and air-courses, giving particular attention to pillar workings and the condition of any abandoned portions of the mine. He should make out a daily report for the mine foreman and a copy should go to the superintendent. These reports should all be signed by the foreman and superintendent, respectively, to show that they have been examined before being placed on file for reference.

Safety Inspector as Chief Assistant Foreman

One of the duties of the safety inspector should be to see that all danger signals are properly placed and kept in good condition, and that the rules and regulations of the mine are posted on the surface where they can be seen and read by all employees. The safety inspector should be called into conference on all matters pertaining to safety, including the drafting of rules and regulations pertaining thereto.

In short, I believe that greater safety is assured where the safety inspector is authorized to act as the chief assistant to the mine foreman, in everything pertaining to the safe operation of the mine and its healthful condition. In this respect, all assistant foremen and other underground bosses should be required to respect his suggestions and instructions. Where the mine is electrically equipped the safety inspector should give particular attention to the condition of the wiring and all devices or safeguards used for the protection of the men.

Question of Cost Second to That of Safety

Every safety inspector should have a thorough knowledge of the mine law, and it should be his duty to see that its requirements are fulfilled in respect to the ventilation of all working places, roads and travelingways and that crosscuts are driven at the proper distance apart in all. Where brattice is required to cause the air to sweep the face of the coal the inspector should see that it is in good condition and performs its proper function.

If the mine is generating gas it is the duty of the inspector to see that each miner understands how to use his lamp. Every lamp should be carefully inspected by him as he passes around the mine. The safety inspector should be prominent in all first-aid work, organizing and instructing a first-aid and rescue team. He should encourage all employees to take the necessary training that would fit them for service in case of need.

There is no question but that due regard should be had for the cost-sheet so as not to unnecessarily increase expenses in the mine. However, no expense should be spared to make a mine safe for work, and where there is any disagreement between the safety inspector and the mine foreman in this regard the matter should be referred to the superintendent or manager.

———, W. Va. Ostel Bullock.

Assistant Mine Foremen and Safety

The assistant mine foreman who performs his work thoroughly is, in effect, a safety inspector. His duties bring him into close daily touch with the men and the conditions affecting their safety.

WHEN the duties of assistant mine foreman are properly performed it is my belief that they have more to do in maintaining safe conditions in a mine than the respective duties of either the mine foreman or the fireboss. My reason for this belief is that the assistant foreman comes into closer contact with the miners than either of the other officials.

It has been my lot to have filled, at different times, both the position of mine foreman and that of fireboss. At present I am serving as an assistant foreman. The principal duty of an assistant foreman is to examine the working places of the mine or section of the mine in his charge and see that they are kept in a healthful and safe condition. This work brings him in close touch with each miner while the man is at work in his place.

On the assistant foreman devolves the duty of making a close examination of every condition that would make a miner's place unfit or unsafe for work. The assistant must see that all loose coal and rock are taken down or properly posted, and that the miner sprags his coal when making an undercut. Where a

uniform system of timbering is employed he must see that the posts are set at the right distance apart and that those in each succeeding row are staggered.

Another important duty of the assistant, when blasting is performed in the mine, is to see that the miner drills his holes in the proper place and observes every precaution in charging, tamping and firing his shots. He must observe where each miner keeps his powder and the manner in which he makes up his charge. Indeed, the proper and safe supervision of the work of each miner to see that it is properly performed is no simple task, but requires patience and constant watchcare if accidents are to be avoided at the working face. Every shot must be carefully inspected and no shooting off the solid permitted.

Ventilation, Lamps, Room Sights, Timber Supply Form a Part of the Assistant's Duties

The proper ventilation of each working place is another matter requiring the attention of the assistant foreman. He must see that breakthroughs are made of sufficient size and at the required distances apart. Where brattice is needed to conduct the air to the face and keep the place clear of gas the assistant must see that it is properly maintained. If safety lamps are used, these also call for his careful supervision. It is the assistant's duty to instruct each miner in everything pertaining to the man's safety and that of his fellow worker.

Frequently, one of the most troublesome tasks of an assistant foreman is to see that each miner keeps his place on the sights and does not rob the pillar separating his place from that next adjoining. If not closely watched, miners are pront to widen out the faces of their rooms, particularly if they are in good coal. This robs the pillars and results in much loss of coal when these pillars are withdrawn. Robbing the pillars in the first working both weakens the roof and invites a squeeze and is both costly and dangerous.

It is up to the assistant foreman to see that each miner has his proper supply of posts, cap-pieces, rails and ties and that none of this material is wasted, thrown aside in the gob or lost when a place is abandoned. In this respect alone the assistant foreman can save the company many times his own salary.

It generally falls to the lot of the assistant foreman to take the air measurements once a week, as required by law, and report these in a book kept for that purpose. Many of the lesser troubles must be settled by the assistant where a miner has a grievance and desires an allowance made him or there is a difference between him and his buddy the assistant foreman can often make things satisfactory without the matter being referred to the foreman for settlement.

What has always seemed strange to me is that, in view of the important work performed by the assistant foreman, his duties are not specifically enumerated in the Bituminous Mine Law of Pennsylvania. It is true that the law requires the assistant foreman, in the absence of the foreman, to perform the duties of that office (Art. 4, Sec. 1 and 24). The last-named section also makes the assistant foreman liable to the same penalties as attach to the mine foreman for any violation of the Act.

The law also requires (Art. 4, Sec. 10) each assistant to make a daily report in a book provided for that purpose. The law fails to state, however, that the assistant shall sign his report, which seems to me an important omission, particularly as the law requires the mine foreman to make and sign his own daily and weekly report (Sec. 18). Where there are two or more assistant foremen how can it be told who has entered a report that is not signed?

Attention has already been called in *Coal Age*, Sept. 2, p. 497, to the indefinite and uncertain expressions that so frequently occur in our mining laws, where a mine inspector cannot properly interpret the law, how can it be expected that an assistant foreman will be able to understand what the law requires of him. Again, if the law requires the assistant to perform the duties of a foreman in the latter's absence from the mine, why should he not be required to hold the same grade of certificate as the foreman? My belief is that the assistant foreman should be fully as competent as the foreman in matters pertaining to the safe operation of the mine.

Oliver Young.

Nu Mine, Pa.

Preventing Premature Explosion in Electric Firing

Safety in electric firing is only insured by installing a safety switch in the firing cable at a point that will eliminate all possible accidental sources of electricity and be safe for firing the shot.

REFERRING to the suggested soldering together of the lead wires of an electric fuse or detonator, to prevent premature explosion in blasting, mentioned by R. H. Sisley, *Coal Age*, Sept. 9, 546, permit me to say this is a point of long standing and one that has been considered from different points.

During the year 1916 a bad accident occurred when a miner carrying some explosive cartridges and a primer with an electric blasting cap or detonator attached, was passing an electric motor. In some way the leads of the detonator came in contact with a charged portion of the motor.

It was recommended, at that time, that the bare ends of the detonator leads be twisted together to avoid accidental or premature firing of the cap, and this practice was adopted at the Explosives Testing Station of the Bureau of Mines.

This method of insuring against the accidental discharge of electric detonators, by short-circuiting the current by either twisting together the bare ends of the lead wires as stated above, or by lightly soldering them together, as suggested by Mr. Sisley, is of value only in handling or transporting detonators up to the time of completing the charging of the hole.

Serious accident from a live firing cable would not be averted by the plan suggested by Mr. Sisley in which he positively states that the ends are to be left sufficiently free to permit of connections being made to the firing cable before the soldered joint is broken. The only safe way to prevent accident by reason of the firing cable becoming accidentally charged, is to have a switch in the cable at a safe distance from the working face and between it and all possible sources of electricity.

A. J. Strane, Head Explosives Division,
Reynolds Experimental Laboratories.

Tamaqua, Pa.

Inquiries of General Interest

Answered by

James T. Beard

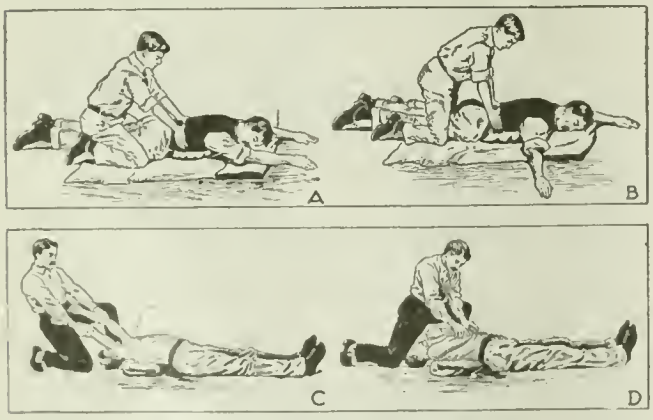
Methods of Applying Artificial Respiration

KINDLY explain the difference between the three methods of applying artificial respiration, which I understand are the following: The Prone method; Schaefer method and the Sylvester method. I would like to ask if there is any advantage in applying one or the other of these methods when a man is overcome by blackdamp, or has been rescued from drowning and is unconscious. STUDENT.

Jasonville, Ind.

The first two methods mentioned by this correspondent are one and the same, the Schaefer method often being called the "Prone method," because the person treated is laid face downward on the ground, as shown in the upper half of the accompanying figure. As indicated at *A*, the patient is laid flat on his stomach with arms outstretched and face turned to one side to admit of easy breathing when revived.

In this method the operator kneels astraddle of the man's thighs, spreading his hands over the small of the back in a manner to throw pressure on the lower ribs



TWO METHODS OF APPLYING ARTIFICIAL RESPIRATION

and expel the air, gas or water from the lungs. Having done this the operator swings forward to the position shown in *B*, thus throwing a portion of his weight onto the lower chest and abdomen of the patient. This pressure is applied moderately but firmly for two or three seconds and then relieved by swinging backward, the process being repeated, alternatively applying the pressure and relieving it again, at the rate of 14 or 15 times a minute, which is the normal rate of breathing when at rest.

The Sylvester method of applying artificial respiration is shown in the lower half of the figure. Here the patient is stretched on his back, a folded coat or light pillow being placed under his chest and back. The operator kneeling at his head, first seizes the patient's arms just below the elbow and draws them backward above the man's head, as indicated at *C*. After a couple of seconds the operator swings forward, bending the patient's arms and doubling them against the man's chest, in a manner to bring pressure thereon and expel the air, gas or water from the lungs, as indicated at *D*.

Like in the previous method, this process is repeated alternately, the operator swinging backward and forward at the rate of 14 or 15 times a minute. The object in both of these methods is to invite and restore respiration by imitating the action of breathing, which is automatic in life. Present-day practice commonly gives the preference to the application of the Schaefer or Prone method first described.

The Prone method would certainly prove more advantageous for reviving a person rescued from drowning, as it would give a better opportunity for the expulsion of the water from the lungs than when the man is laid on his back. Some may prefer to apply the Sylvester method when a man has been overcome with gas, believing that the gas could escape from the lungs more freely when the face is turned upward.

However, it must be remembered that it is more difficult to prevent the tongue from falling back and obstructing the throat, where the patient is laid on his back than when he is laid prone on the ground with his face turned slightly to one side, which causes the tongue to drop forward in the mouth and leaves the throat clear. In any case, it is important to see that the throat passage is left unobstructed. The application of smelling salts to the nostrils will often prove beneficial by inviting a sneeze. Artificial respiration should never be abandoned for two hours or more, or until a physician has pronounced life to be extinct.

Capacity of Lungs in Breathing

WHAT is the average normal capacity of the lungs of an adult person; or how much air inhaled in breath; and what percentage of carbon dioxide is contained in the exhaled breath of a man?

———, Col. RESCUE FOREMAN.

The average adult person's lungs should be capable of holding about 300 cu.in. of air. In the act of breathing, however, the flow of air into and out of the lungs ("tidal air") rarely exceeds 25 or 30 cu.in. at a single breath when the person is at rest. The air remaining in the lungs ("residual air") prevents their collapse, which would prove fatal should that take place.

In the performance of arduous work or making any violent exertion the tidal air may be increased five or six times in volume. Practically, the volume of carbon dioxide in the exhaled breath is equal to that of the oxygen in the air inhaled, or say one-fifth of the tidal air passing in and out of the lungs.

Examination Questions

Answered by

James T. Beard

Miscellaneous Questions

(Answered by Request)

Ques.—The specific gravity of a body of firedamp is 0.93; what are the proportions of the mixture?

Ans.—Assume 100 volumes of the firedamp having a specific gravity of 0.93 and let x equal the volume of the gas (CH_4), specific gravity 0.559, contained in the firedamp. The volume of the firedamp being 100 and that of the gas x, the volume of air (specific gravity 1) is $100 - x$.

Now find the relative weights of the gas and the air by multiplying each respective volume by its specific gravity; thus,

Gas, $0.559 \times x = 0.559x$

Air, $1 \times (100 - x) = 100 - x$

Adding these together gives the total relative weight of the 100 volumes of firedamp; thus, $(100 - x) + 0.559x = 100 - 0.441x$ lb.

Finally, since the specific gravity of the firedamp is found by dividing this relative weight by its volume,

$$Sp.gr. = \frac{100 - 0.441x}{100} = 0.93$$

and

$$x = \frac{100 - 93}{0.441} = 15.87 \text{ per cent.}$$

Ques.—In the following analysis of the air in a mine, state what is the vitiating gas present, and what is its percentage: Oxygen (O), 19 per cent; carbon dioxide (CO_2), 0.75 per cent; nitrogen (N), 80.25 per cent. What is your opinion of this atmosphere?

Ans.—The vitiating gas, in this case, is the carbon dioxide, the oxygen and nitrogen being constituents of the original air.

The percentage of carbon dioxide present is three-quarters of one per cent. This is too small a percentage to have any appreciable effect on either life or flame. The presence of carbon dioxide in the air breathed is first felt when three per cent is present, when breathing becomes slightly laborious, while fourteen per cent of this gas is necessary, in normal air, to extinguish an ordinary candle or oil-fed flame.

Ques.—How would you proceed to reduce the number of doors in a mine and still maintain a good circulation of the air current? What advantage would be gained by so doing?

Ans.—Wherever practicable, an air bridge should be built at the mouth of each pair of cross-headings, as quickly as their development will warrant the expense. By this means each pair of headings will be ventilated by a separate air split and the haulage road will no longer be obstructed by a door used to deflect the air into those headings.

The advantages gained by thus splitting the air current are the following: The circulation of a larger quantity of air by the same power; better air furnished to each split; the circulation kept under better control; and less danger of trouble caused by local explosions of gas or dust.

Ques.—How shall main doors be placed?

Ans.—The law provides (Art. 10, Sec. 11) that all main doors shall be so placed that when one door is opened a second door having the same effect on the air current, shall be closed, so that there shall be no temporary stoppage of the air current when one of these doors is opened.

Ques.—If the velocity of an air current is 200 ft. per min. and the quantity of air passing is 10,000 cu.ft. per min., what is the length of a side of a square airway passing this quantity?

Ans.—The sectional area of this airway is found by dividing the quantity of air in circulation by the velocity of the current; thus, $10,000 \div 200 = 50$ sq.ft. The airway being square, each side is $\sqrt{50} = 7.07$ ft. in length.

Ques.—A mine map shows a plus 400 ft. at the head of the shaft and a minus 300 ft. at the foot. There a level gangway is driven north, a distance of 600 ft., at which point a plane is started and driven on a pitch of 30 deg. for a distance of 600 ft.; what is the tidal elevation at the head of the plane?

Ans.—The elevation at the top of the shaft being +400 ft. and that at the bottom —300 ft., the depth of the shaft is 700 ft. The gangway being level from the foot of the shaft to the foot of the plane, its elevation is —300. Finally, the pitch of the plane being 30 deg. ($\sin 30° = 0.5$), its rise is $0.5 \times 600 = 300$ ft. The elevation at the head of the plane is, therefore, zero or sea level.

Ques.—An airway, which is square in cross-section, is 4,000 ft. long and passes 10,000 cu.ft. of air per min., under a water gage of 1.7 in.; what is the size of the airway?

Ans.—Calling a side of the square airway d, the length l, the quantity of air in circulation Q and the unit pressure p, we have $p = 4\,klQ^2/d^5$.

Then, since the unit pressure corresponding to a 1.7-in. water gage is $5.2 \times 1.7 = 8.84$ lb. per sq.ft., we have in this case

$$8.84 = \frac{4 \times 0.00000002 \times 4,000 \times 10,000^2}{d^5} = \frac{32,000}{d^5}$$

$$d = \sqrt[5]{\frac{32,000}{8.84}} = 5.15 \text{ ft.}$$

Ques.—Find the quantity of air passing per minute, in an airway 14 ft. 6 in. by 6 ft. 9 in., when the anemometer registers 542 r.p.m.

Ans.—The sectional area of this airway, estimated by the dimensions given, is $14.5 \times 6.75 = 97.875$ sq.ft. Assuming that the reading of the anemometer is a fair indication of the average velocity of the air current passing in this airway, the volume of air in circulation is $97.875 \times 542 =$ say 53,000 cu.ft. per min.

Perfecting Uniform Cost Accounting in the Bituminous Coal Industry*

Federal Trade Commission Reports Have Promoted Widespread Interest in the Movement—Allowance for Depreciation and Depletion Charges Conspicuous Factors—Contingent Reserve Recommended

By William B. Reed
Washington, D. C.

William B. Reed
Secretary, National Coal Association

PRIOR to the war little attention was given by coal operators to the fundamentals of cost accounting. Some talked in terms of long tons and others in terms of short tons. Some few operators had cost systems that were complete and exhaustive, others had systems not so complete. The major portion had systems either crude or misleading or had none at all. In some few sections of the country coal operators' associations had been formed for the mutual advantage of the operators, and in these associations some attention had been given to the study of mining costs of individual operations and of fields. General interest in the coal industry in cost accounting was first aroused by Edward N. Hurley in 1914 when with the Federal Trade Commission. In August, 1917, the Federal Trade Commission sent out a blank form of coal cost sheet to bituminous coal operators, asking for the returns of the year 1917 to that date. This form probably was the first attempt at uniformity in the industry, and became to some extent, at least, the basis of further attempts to collect cost statistics on the part of governmental agencies. On Jan. 1, 1918, the Federal Trade Commission issued a second form differing to a considerable extent from the form prepared for use during 1917. Coal costs were collected on that basis during the calendar year 1918 by the Federal Trade Commission, and these costs as revised by the Engineers' Committee of the Fuel Administration were the basis of the prices granted by the U. S. Fuel Administration during governmental control of the industry.

The Federal Trade Commission prepared a third form in 1919 that was much more elaborate than those which had preceded it, and, in the opinion of coal operators and accountants who had made a study of coal costs, that was absolutely unworkable in the vexatious refinement into which the items of cost were divided. Failure of Congress to make a sufficient appropriation for the commission to carry out the work of collecting these items in detail, coupled with the opposition raised by the operators and the antagonism of the Engineers' Committee of the Fuel Administration, resulted in the failure to introduce this form, and during the year 1919 no costs were collected by this agency of the Government. On Jan. 1, 1920, the Federal Trade Commission issued a fourth form embodying some of the features of the preceding ones but very much abridged and containing several departures from their preceding plans. Careful study of this form by accountants of the coal-mining industry developed strong objection to some of its features. To test the right of the commission to require reports in a form which practically meant the admission of the power of the Federal Trade Commission to regulate the manner of keeping books for bituminous-coal operators, an injunction suit was instituted by the Maynard Coal Co., asking the court to restrain the Federal Trade Commission from requiring such reports. This case was tried before Justice Bailey in the Supreme Court of the District of Columbia, and a preliminary injunction was issued.

In the autumn of 1917 the National Coal Association appointed a committee of competent accountants charged with the duty of devising a scheme of cost accounting applicable to the industry. This committee after mature consideration prepared a tentative short form of report sufficient in their opinion to meet the needs of the Government, and by request submitted it to the Federal Trade Commission, which accorded it scant consideration. In the winter of 1918 a second committee was appointed for further consideration of this matter. This committee gave considerable time to its study, and in the summer of 1919 submitted a report which was adopted by the directors of the National Coal Association as a standard for the industry.

This report and the forms which accompanied it have been distributed among coal operators throughout the country, and they have been very generally adopted, not only by individual companies as a complete method of

*Paper read before the convention of the American Association of Cost Accountants, Atlantic City, N. J., Sept. 21, 1920.

handling of their cost accounts, but also by various trade associations as a medium for collecting the cost of production by fields. During the period when the Trade Commission was not collecting cost data—namely, 1919—this report form was submitted to the economists and accountants in charge of the coal section, with the advice that, if it elicited their approval it would have the endorsement of the entire coal-mining industry, but sanction was not forthcoming from the commission and instead, as has been shown heretofore, that body issued a new form Jan. 1, 1920, which is still in use as a report to it by operators who voluntarily report to the commission, although the commission has been enjoined from requiring its filing by those who object. It will thus be seen that the action of governmental authorities on this subject has been at various times both helpful and harmful. The introduction of a uniform method of cost accounting, whatever its faults, was helpful and probably through no other than the Government could comparable records have been obtained from any considerable portion of the coal operators of the country.

Conditions Affect Accounting Methods

Coal mining is a wasting industry and, like other wasting industries, requires special consideration from the accounting standpoint. Many expenditures which in a manufacturing concern are properly an investment of capital and should be treated as such, are in a coal mine simply operating expense. A coal mine consists of coal deposits either owned or leased, plant, equipment and development. Conditions by which the mine is surrounded determine which of these elements is of the greatest value. After the work of prospecting has been done and development has been carried along to a point where the mine is on an operating basis, the combined value of these elements is, of course, greater than the sum of their component parts. All of these elements depreciate together, and when the coal is exhausted the remaining plant has little value. The development of the mine is a mere easement, which disappears when the mineral has been mined out.

In the mining of coal the unit of measurement is a ton of coal mined, and depreciation, depletion, and the amortization of leasehold values must all be measured by this unit. In the development of a railroad each additional expenditure is for the purpose of tapping some new territory and with the idea that the returns of revenue will continue indefinitely. The life of the units of equipment and of extensions are not limited by the fact that there is no further product to handle. On the other hand in a coal mine when the mineral for which a mining plant has been installed has been exhausted, the development is valueless. The scrap value is negligible. The equipment is usually worn out and of little salvage value because it is subjected at all times to dust, sulphur and dampness—admittedly the worst possible conditions under which machinery can be used.

In the development of a coal mine all expenditures for equipment, development, mineral, etc., should be capitalized until the point is reached when the mine has reached its normal or projected capacity; until the houses have been constructed to properly take care of the necessary employees, or until the development has been carried to the extent with which normal output could be produced under normal operating conditions. Beyond that point there should be no additional charges to plant and equipment unless such additional charges will materially and permanently increase production or decrease production costs. Under this method of treatment all additional installations of mine rails, locomotives, mules, mine cars and items of like equipment made necessary to maintain production to its normal or projected capacity because of the increased length of haul or depth of workings, should be charged to expense, since their installation will not materially increase the productive capacity of the mine. Any other method of handling can only result in overcapitalization and, in the later years of operation, high or inadequate depreciation charges. It is therefore considered advisable to take these items into expense currently instead of borrowing earnings from the future through the capitalization of charges which do not increase the productive capacity of the mine.

Probably the most difficult thing with which the coal operator has been confronted is the determination of adequate rates of depreciation for plant and equipment and of depletion of mineral. Conditions are so much at variance in different mines, equipment is subjected to so many different kinds of exposure, that to establish a rate of depreciation on any particular class of equipment as a whole is practically impossible. The only adequate appraisal of depreciation is that measured by the exhaustion of the mineral. Assuming an operating plant to have been developed with a capital expenditure of $100,000, and the recoverable units of coal to be 5,000,000 tons, dividing the value by the recoverable units we have a depreciation rate of 2c. per ton, which will with certainty return the original capital investment by the time the mineral has been mined out.

Shifting Basis of Price Setting

In the event that additional installations calculated to increase production are made, these will necessarily be capitalized and a new rate per ton be obtained by dividing the remaining mineral into the capital account not depreciated. A correspondingly higher rate of depreciation will obtain. Should the mineral be added to, necessarily the situation will be reversed and a lower rate of depreciation will follow. Of course, in the instance in which the life of the lease is shorter than the life of the mineral and the improvements revert to the lessor, as they usually do in the bituminous-coal mining industry, the basis of depreciation will be a rate obtained by dividing the plant value by the number of years of life of the lease.

In the matter of depletion of the value of mineral deposits in most coal mines the element of uncertainty as to quantity does not exist to the same extent as in other minerals. Recoverable tons in a coal mine may be estimated with reasonable accuracy by any competent mining engineer familiar with the coal measures. Depletion must necessarily be measured by the tons of recoverable coal. One of the points of difference between the generally accepted theory of accounting with relation to the bituminous-coal mining industry and the theory advanced by the Federal Trade Commission in their cost forms is on the question of the value to be depleted. The Trade Commission insists that the cost price is the amount to be recovered through depletion charges. Coal operators insist upon the privilege of recovering as cost the value placed by revaluation as of March 1, 1913, to which they are entitled by the Federal income tax laws. Indeed it is reasonable to maintain that not only this value but instead the replacement value should be

taken up in cost, especially when the costs as ascertained are to be used by a governmental agency, as has been the case in the past, as the basis of fixing prices for the sale of the product.

A tract of coal which may be profitably mined cannot be picked up from day to day as a manufacturer can replenish his stock of raw material. It is necessary that the coal operator, before embarking upon a mining venture, have a sufficient coal reserve to last him for a number of years. The average life of a coal mine probably is thirty years. It is, to say the least, imprudent if he does not provide out of his earnings a fund sufficiently large not only to return his capital but also to provide a fund which will replace his mineral in kind at the price which he will have to pay for it when needed, unless he expects, of course, to retire from business with the exhaustion of his present mineral holdings. It is contended that margins between cost and selling price as determined by the method which allows only the cost of mineral sometimes purchased as much as fifty years ago do not give a true margin of profit and are misleading to the public and operator alike. When a coal operator sells his coal he is selling not only his product but a portion of his capital as well, and he should include in cost certainly the value exempted to him for tax purposes, if not indeed the full replacement value.

What is true of the depletion of mineral is true to some extent of leasehold values. A profitable mining lease which had a salable value on March 1, 1913, whether it cost the owner anything or not at the time of its acquisition, should be recoverable by him by appropriate amortization charges pro-rata with the exhaustion of the mineral.

Unusual Hazards Hedge the Industry

It frequently happens that a coal-mining property has been purchased for a lump sum, no separate value having ever been assigned to plant equipment or mineral and in such cases it is necessary that the depreciation and depletion be calculated as a whole on the full purchase price.

Coal mining is a hazardous occupation. No insurance company has yet been found willing to insure against the hazard of mine fires, gas and dust explosions, surface breaks with resultant floods or the cave-in of the surface. Practically the entire value in a coal mine may be wiped out by an explosion or some other catastrophe. The only possible insurance against such a risk in mining is that set up by a correspondingly greater return on capital sufficient to insure the operator who is willing to assume such a risk that in the long run his operation will be a winning proposition. For this reason he should set up as an item of current cost an amount per ton which will reasonably insure against such a catastrophe. If this were a commercially insurable item it would be treated as an item of legitimate expense, not only from the standpoint of cost but also as an item properly deductible under the income tax laws. Even though it is not so permitted by the Internal Revenue Bureau, and although the operator must pay taxes upon such an item, he should nevertheless make provision for it in his accounting, and in any governmental price fixing a reasonable amount should be allowed for such contingencies.

It is the custom of bituminous-coal operators generally to treat the coal burned under the boilers for generation of power as an item of expense. It is admitted that the labor cost of producing this coal has already been taken up in "Labor"; that the supplies have been accounted for and that this coal has borne its share of the necessary burden of overhead. It is contended by the Federal Trade Commission that this item should not be included in cost, but that the divisor for coal cost should be the number of tons of coal sold rather than the number of tons of coal produced. The total cost is practically the same from either viewpoint, but a large majority of the operators prefer to include such items in cost; first, because their depreciation and depletion records are handled on that basis; second, because many coal companies operate more than one mine, one of which generates its own power, the other of which purchases from some public utility or from another coal company. Many have costs running over a series of years in which during the first period power was generated and in the second period power was purchased. In order to show the economy of such changes in mode of operation and for internal comparisons where power is received from sources of different nature it is necessary to include the value of such coal in the power cost, and in the form proposed by the National Coal Association it is so treated. The customary plan is to charge such fuel at the cost of production, not including any selling expense, or at the market price if below the cost of production.

Miners' Houses Stump Cost Experts

One of the things in which there is not a unanimity of opinion is the question of the handling of the revenue from miners' dwellings. Formerly these were considered a paying investment, chiefly because a proper allocation was never made against them for insurance, taxes, depreciation, these things being spread over the mining property or the property handled as a whole. Such houses are rented at a very low rate of rental, probably averaging $1.50 to $2 per room. In some districts these will be found to net a loss, but in districts where such properties are in the vicinity of larger towns these items will show a profit. The practice of operators is divided; some prefer to treat the rental and repairs of dwellings as an item separate and distinct from the mining operation, while others prefer to include the net loss or profit, as it may be, in the mining cost. But where so included the profit or loss should certainly be either a reduction from or an addition to cost, and not included as prime part of the mining expense.

The man who through an adequate cost accounting system knows his cost of production will most likely prove a fair competitor, since he will insist upon getting a fair profit for his product. The dangerous man in any industry is the one who assumes to be able to sell at the lowest figure without any adequate knowledge of his production cost.

Workers in 23 Indiana Mines Strike: Want Coal at Production Cost

TWENTY-THREE mines in the Clinton coal field in Indiana were idle Sept. 24 due to a strike of workmen resulting from a dispute with operators regarding the price the men should pay for coal. The miners want coal at actual cost of production, while the operators ask $4.25 per ton.

Mine Safety Experts Discuss at Milwaukee Accidents, Health and Welfare

Ballot Favors Increase in Dues of Mining Section, National Safety Council—Industrial Nurses Biggest Factor in Americanization—Keen Discussion on Vocational Training and the Standardization of First-Aid Contests

By R. Dawson Hall
New York City, N. Y.

MEETING at Milwaukee, Wis., from Sept. 27 to Oct. 1, the National Safety Council set a new record for large attendance, number of papers presented and increase in interest, incidentally conducting a "No Accident Week" as a part of its community safety work. At least 2,500 persons were present. The annual meeting was held on Monday morning, Sept. 27, and was opened by an address of welcome delivered by Mayor Daniel W. Hoan. The usual reports from the president, the general manager and six committees and the election of the directors for the ensuing year then followed.

The National Safety Council at its Milwaukee meeting elected an engineer, C. P. Tollman, chairman, Manufacturing Committee, National Lead Co., New York City, as its president for the year 1921. The expectation is that the engineering features of the council will be further strengthened during the year 1921. Pete Tollman's slogan is "Safety is merely good engineering. Wholly apart from the saving in accident compensation, safe methods are profitable to the company employing them." He has proved the motto in the practice of his profession.

In the afternoon, under the chairmanship of George P. Hambrecht, chairman of the Industrial Commission of Wisconsin, a public mass meeting was held at which Marcus A. Dow and Dr. Franklin C. Wells made addresses, the comment on which was exceptionally enthusiastic. In the evening a dance was given in the Auditorium Arena, a floor that will take care of 2,000 people without crowding. In the Auditorium Milwaukee has a meeting place in which not only the Safety Show but all the dances, banquets, main gatherings and meetings of sections could be comfortably taken care of.

Tuesday morning was occupied by a General Round Table presided over by Frank E. Morris, of the Syracuse Local Council, in which a discussion on methods of maintaining interest in safety was presented. On the morning of Tuesday the sectional meetings and special sessions began. It may be well to list these, because mining men would have found themselves entirely at home at many of the discussions which took place in them. The meetings were entitled: Public Safety, Public Utilities, Employees' Publications, A. B. C. Session (Foundations of Safety), Health Service, Mining, Automotive, Cement, Chemical, Construction, American Association of Industrial Physicians and Surgeons, Meat Packers, Metals, Paper and Pulp; Rubber, Steam Railroad, Textile, Woodworking, Safety Bulletins Session; Education, Engineering, Women in Industry; Grain-Dust Explosion Hazards; Electric Railway, Employees' Benefit Associations, Local Council Officers; Boy Scouts. Nearly all of these except the meeting of the Mining Section will be passed over, but nevertheless there are not a few which serve specific needs of safety men at the coal mines as much as of those elsewhere.

The Mining Section of the National Safety Council met for its first session on Tuesday afternoon, Sept. 28, with fifty-four persons present from all over the country, B. F. Tillson, the chairman, assistant superintendent of the New Jersey Zinc Co., presiding and making his annual address. He announced the result of the letter ballot on the proposal to increase the dues for the purpose of engaging a permanent secretary and of otherwise extending the work of the Mining Section. In the coal-mining industry 30 firms with dues of $1,372.50 yearly agreed to the proposition, 15 firms paying $675 demurred, and 121 firms with dues aggregating $4,687.50 made no reply. There are in all 166 firms, and they pay $6,735 per year in dues. Of the metal-mining companies 25 with dues of $1,372.50 a year agreed to pay the increase, 11 with dues of $457.50 voted "No," while 46 paying $1,890 a year did not vote. In all there are 82 firms in the metal-mining field paying an aggregate of $3,720 in dues.

Adding the three individual memberships paying in aggregate $60 in dues, the number voting "Yes" were 58, the "Noes" were 26, the number abstaining from using the ballot were 167 and the total membership is 251. The number agreeing to pay more are now paying $2,805, those satisfied with the dues as they are pay $1,132.50, those who did not register a vote pay $6,577.50, the total receipts being $10,515 a year. It is clear that, as the president stated, there were too many non-committal members to make any action to increase the rate a perfectly safe proposition.

Need of Vocational Training at Mines

There are many who would like the bulletin service enlarged. Fifty-two specific mining bulletins were prepared in the fiscal year just passed, but with the multiplicity of forms of mining they could not well be made so as to cover the needs of every department of that diverse industry in a completely adequate manner. The president concluded his address by appointing R. Dawson Hall, J. W. Reed and W. W. Gidley on the nominating committee.

The initial paper was written by C. A. Mitke, now a consulting engineer at Bisbee, Ariz., but formerly an engineer in the anthracite region. His address was

on "Vocational Training as Influencing Safety and Efficiency in Mining." Mr. Mitke in his paper quoted the report of the late James E. Roderick, chief of the Pennsylvania Department of Mines, to the effect that: "The education of the foreign-born workers in one branch of English alone is said to increase their efficiency about 20 per cent. Just to what extent the conditions of safety are increased are not known, but probably the percentage is as great as in the matter of efficiency."

Mr. Mitke adds: "The Federal Board for Vocational Training in its recent bulletin on 'General Mining' states that 71 per cent of the fatal accidents in the mines of Pennsylvania are among the non-English speaking employees and 90 per cent of the fatal and non-fatal accidents in Oklahoma occur among foreigners. This bears out Mr. Roderick's statement and emphasizes the need for education along these lines."

Mr. Mitke recommended vocational training on the job as well as in the classroom, urging in regard to the former that "More explicit orders should be given and an effort made to give the men a more intelligent understanding of the work they are doing. Hasty orders, merely giving a few commands without detailed explanations, are unsatisfactory both to the miner and the boss."

New Industrial Slogan To Be "English First"

Discussing the paper E. E. Bach declared that the slogan for the new campaign soon to be inaugurated in Pennsylvania by the Pennsylvania Americanization Bureau is "English First." An attempt will be made to drive this campaign in the same way as the Liberty Loan campaigns. No real progress can be made in safety till the foreigners in the mines learn the language of the country.

J. W. Reed, of the Consolidation Coal Co., said that in every campaign for safety there must be three schools—one to teach conversational English, one for the acquirement of the ability to read and write and the third, a mining school. The schools he had started had opened with forty pupils and ended with eight or nine, but no one of those who took the mining courses failed to rise in the company.

One of the pupils, who was a timberman, is now the general manager of a coal operation. The distressing effect of having four-fifths of the men drop out should not weigh heavily, for those who remain faithful give adequate return for the effort expended.

How Industrial Nurses Revolutionize Plant

Following this discussion George Martinson, safety inspector of Pickands, Mather & Co., Hibbing, Minn., delivered an address on "Industrial Nurses" and a few of the interesting features of his remarks follow:

"The foreigner in common with the rest of us has a certain pride about himself and his home, and we should respect the privacy of the home at all times. It is therefore patent that the nurse have tact in order to get the confidence of the folks with whom she is to deal. Little Joe Krakovich needs a new romper suit, and his mother would love to have him dress like Jim Fisher, who lives next door, but she is unable to cut the cloth and make it. On a friendly visit the nurse learns of the mother's wish and assists her.

"In a few days little Joe is playing with Jim and looks just as much an American. Are the mother and father pleased? Of course they are. When selecting a nurse, don't forget that qualification—she must be able to do plain sewing. She, of course, should be a graduate of some reputable training school and, if possible, one who has had a good education before going into training should be engaged. The nurse should be able to take the lead in the little social gatherings which she must promote. But after all is said, outside of her professional training, tact is really the fundamental requirement.

Safety Inspector Directs Company Nurses

"A brief explanation of our plan might be of interest to you. Our nurses are members of the safety department, and do their work under the direction of the safety inspector. They are also, of course, responsible to the general superintendent or manager of the group of mines in the district in which they work. Their responsibility to the physician concerns only the cases which he is caring for.

"That is probably better illustrated in this manner. The physician who is caring for a family where there is illness advises the department of the fact. The nurse visits them, and tries to make the sufferer more comfortable and cheerful, explaining in detail any instructions which the physician may have left. Her responsibility to that physician ends when his case is disposed of.

"In this way, it is almost impossible for the physician to make use of her as an office assistant, or send her out to apply dressings or do other work for which *he* is being compensated. The nurse, then, being responsible to the company, may feel free to make any suggestions as to the improvements in our medical service, without feeling that she has overstepped the bounds of professional etiquette.

Nurses Asked To Be Generally Helpful

"Our instructions to our nurses are simply these: 'Here is where our people live. Go out and do your best to help them keep their bodies healthy and their minds free from worry. Sympathize with and help them in their sorrow. Try and leave each home happier because you were there and, finally, try to inculcate in them the spirit of love, not only within the family but for their neighbors and for America. Remember always that in their eyes YOU are the company.'

"The instructions to our nurse may not seem explicit, but it is utterly impossible to lay out a specific plan for her to follow. She, of course, makes weekly and monthly reports of what she has accomplished, but the written and spoken words cannot begin to do her work justice. The real report can only be obtained by going into these communities and noting the changes which have taken place since the advent of the nurse.

"For example, let us take the case of an ordinary family. One of the children is sick. The nurse calls and helps make the little sufferer comfortable. Before leaving she teaches the mother a few things relating to the care of the child. She calls at this home often during the period of illness, becoming acquainted with the other members of the family and with their immediate neighbors. She learns the birthdays of the children, calls them by their first name, inquires about their school work, in fact she is interested in every affair of their daily lives.

"Soon she has established herself in the neighborhood. She remembers the birthdays of the children and comes

to them on that day with some little gift. The people begin to look forward to her visits with pleasure. The mother of this family has not been in good health and has dreaded to go to the hospital for an examination. Soon, however, the nurse will suggest this and will make an appointment with the hospital, accompanying the mother on her visit. Perhaps a few decayed teeth are the cause of the trouble. She will prevail upon her to have the necessary dental work done.

Association with Americans Completes Work

"After this work is done the mother, being again in good health, commences to take a new interest in life. Then comes a desire to improve her home. She will want new curtains and new furniture and, of course, the friend of the family—the nurse—is called upon to assist in the selection of this material. She will then wish to associate with her neighbors. The first step in this is usually taken during the canning and preserving season. The folks are brought together in a home, where the nurse has arranged for a demonstration by a person skilled in that work.

"The friendships formed at this little gathering grow, and probably during the winter they begin to meet at little neighborhood parties, sponsored by the nurse. As soon as she can associate with Americans and have the family dress like them the mother learns to laugh and to live. Then, instead of the workman coming home to a harping, nagging wife, he finds that joy has supplanted gloom, and his home is, as it should be, a temple of happiness.

"In the home where happiness reigns there you will find love, not only in the family but also love of America, its institutions and industries. When this attitude prevails among the workmen and America's industries recognize the blessed trinity of laughter, love and work we will have made a real start toward the solution of one of the great problems confronting us."

Supplementing these remarks M. D. McIntyre, also of Pickands, Mather & Co., said that one of the nurses had fixed up a home for herself as an exhibit of just what could be done in the matter of inexpensive housekeeping. She chose to purchase second-hand furniture, illustrating that gratifying results could readily be obtained without the expenditure of a large sum of money.

Nurses Not Asked to Follow up Absenteeism

Mr. Tillson inquired if the nurses followed up absenteeism on the part of the mine workers, and Mr. Martinson replied that the nurses employed by them, while under the supervision of the company, were not to be regarded as "snoopers" to find out for what good or bad causes the men were absent from their work. He said that the local safety workers were the men who made inquiry into this unfortunate propensity on the part of some workmen.

Mr. Reed, of the Consolidation Coal Co., said that this company would not permit the nurses to seek information of this kind. They regarded their work as having a right to the strictest professional secrecy. Inquiries as to absence from work were made by the safety men or by the foremen. To their investigations there could be no objection, for they were not the recipients of private confidences and were obviously engaged in business for economic and not philanthropic reasons, whereas the nurse's work was clearly defined as work for the welfare of those with whom she was brought in contact.

One member spoke of an industrial company that relied entirely on the nurses for this work. It was a mistake, in his belief, for any nurse to flash a badge of authority, and then, like a policeman, begin to make inquiries regarding a failure of the workman to fulfill his duty. Dr. Lanza said that nurses thus employed by industrial firms were known as "dog catchers." All certificated nurses have been trained for three long arduous years in the technique of helping doctors to take care of patients. Their first duty should be to the physician, and the attempt to make them independent of him was a mistake. Especially fallacious was it to encourage nurses, as Mr. Martinson's paper seems to suggest, to criticize the medical service. He believed, however, that there were forms of social work that nurses could and would do, but it should be regarded as entirely secondary to the main work, which is curing the sick.

How About the Man Who Has to Stay Home?

B. F. Tillson and R. H. Seip asserted that one of the great gains from the introduction of industrial nursing lies in the fact that it reduces absenteeism. Much of the irregular work of employees is by no means voluntary. When the wife or any of the children are sick the husband feels that he must stay at home to tend them, despite the fact that there are others better qualified than himself to take care of the family. The nurse either provides the needed assistance or she finds someone who will.

E. H. Brown, of the American Cyanamid Co., Niagara Falls, Can., said that he was contemplating the employment of industrial nurses, but he feared that too much would be expected of them in houses where there was sickness. Suppose, he said, that there were many families with sick members, and that one family in particular believed that it had a right to the exclusive assistance of a nurse and that anything less constituted the grossest neglect, what would Mr. Martinson do?

A trained nurse who was present said that in that case she would try to find someone who, under her care and supervision, would be equal to the emergency. Mr. McIntyre said that this would be treated as a special case requiring the specific attention of the management. Some special assignment would be made to that duty. Guy J. Johnson said that the Homestake Mining Co., at Lead, would bring the patient to the hospital there, which has been built amply large for that purpose.

A case was cited where a man with a wife and five children insisted that a nurse should be employed to take care of the family when the wife was sick, regarding it as his right to receive the full assistance despite the fact that he was receiving $9 a day and was fully able to meet the charge himself out of his daily earnings. It was pointed out that an analogous case existed as regards the medical man, who frequently was required by patients (who, indeed, pay him and, therefore, feel they have a real claim) to spend an excessive amount of time over one case.

Nurse May Save Doctor Much Difficulty

This difficulty would be lessened if the trained nurse were present to explain the doctor's point of view and rights in the matter, provided of course that the doctor's case were really good. Mr. Gidley said that the Phelps-Dodge Corporation did not allow its physicians, who rendered their services entirely without charge to the employees, to accept any outside clients whatsoever. Mr.

Woodburn declared that there was always a feeling against any physicians who might be appointed by a company for the medical care of its men. At Globe, Ariz., the railroad men favored the mine physician, and the mining men preferred the railroad physician, and both class of men were willing to pay the amount necessary to put their preferences into effect.

As it was already late the round-table discussion was postponed to a later date and the meeting adjourned. In the evening a "smile party" was held in the Auditorium Arena, at which about 2,000 were present. It probably would serve no purpose to describe its frivolities or the admirable pageant representing the industries with which it concluded. A magnificent chorus of men from the Elks and women from the Federal Rubber Co. completely filled the large stage of the Auditorium, searchlights lighted the room and colored balloons floated from the ceiling. Music was furnished by the Cutler-Hammer Fife and Drum Corps.

Seek Uniform Rules for First-Aid Contests

At the session of Wednesday morning the first paper presented was that by Major M. J. Shields, field director, First-Aid Division of the American Red Cross, entitled "Standardization of First-Aid Training and First-Aid Contests in Mining." Dr. Shields spoke in favor of standardization, saying that with the large labor turnover it was difficult to maintain first-aid work at maximum efficiency if the practice of one company or region was at variance with that of another. It was an expensive matter to re-train every man on entering a company team, and that was necessary if a difference in technique existed.

He advocated the use of the prone-pressure method of resuscitation, the application of iodine on open wounds with a sterile dressing, the prohibition for first-aid men of the washing of wounds except, perhaps, the cleansing, with the aid of gasoline, of such wounds as are of a greasy character, and the non-interference of first-aid men with eye injuries except so far as to protect the eye from the outside by the use of a compress and a bandage. Shock should be universally treated by application of external heat, the patient being wrapped in blankets and sent to the hospital or the doctor as quickly as possible.

Book on First-Aid Standards Nearly Ready

A new book is in preparation which Dr. Shields hoped would supplant the American Red Cross Textbook, Miners' Edition. It needs only the revision of Colonel Charles Lynch. It will be approved by the American Red Cross and the Bureau of Mines and will be submitted to the National Safety Council, Mining Section, for approval. It should leave the press Jan. 1, 1921.

In order to avoid difficulties in judging he would have all judges of first-aid contests chosen from men who have had experience in teaching first-aid work or who have had the advantage of previous experience in judging at first-aid contests. He would recommend that the judges be chosen from both physicians and laymen, two of the former to one of the latter. This layman could be a safety engineer, mine foreman or anyone connected with mining who has taken a full course of first-aid and holds either a Red Cross or a U. S. Bureau of Mines First-Aid Certificate or who has had practical first-aid experience in or around the mine.

He urges that the judges shall work as a committee consisting of two medical men and one layman, who shall progress from team to team and pass on the work as a unit. In order to keep the meets within reasonable time limits no more than fifty teams should take part in any elimination contest and not more than twenty teams in a final contest. This would avert the employment of incompetent judges and a tiresome prolongation of the contests.

In state and national meets sufficient time should be given in hours and days to prevent hurry in the "running off" of ties. No contesting team should be allowed to wear a distinctive uniform, but all should be dressed in ordinary working attire. Dr. Shields advocated that judges be paid at least their expenses, as this practice makes for competent and efficient judging.

Of forty-five companies to whom a questionnaire was sent forty-two gave first-aid training to their men; all agreed that first-aid was of value; fourteen favored the Red Cross Textbook, Miners' Edition; eleven the Bureau of Mines Advanced First-Aid Manual; fifteen had no preference; three favored other textbooks, and twelve returned no answer. As to the number of men trained in first-aid, thirteen companies declared that 5 per cent of the men were so trained; ten trained 10 per cent; two trained 15 per cent; three trained 20 per cent; three trained 25 per cent, and three other companies extended their first-aid training to as many as half their men.

Men practiced first-aid on company time with twenty-four companies. Ten companies did not compensate the men at all, while eleven companies paid them part time for such practice. At the mines of twenty-one companies instruction was given by persons not physicians. Physicians trained the men at the mines of ten companies. No replies respecting this practice were made by four of the companies questioned.

Thirteen reported that they held no first-aid contests. Fifteen said they were accustomed to hold them, while seventeen did not reply to the question that sought this information. Twenty-eight favored a proper discount table in the judging of contests; only two opposed, while fifteen had nothing to say. The Red Cross tables were favored by nineteen; six expressed a preference for the Bureau of Mines tables; six had no preference, and fourteen, if they had any choice, preferred to make no reply.

Two companies had one lay judge to three physicians; three had one lay judge to two physicians. Two had twice as many laymen as physicians in making judgments, one preferred to have an equal number of each, while one had only lay judges and thirty-six made no answer. Seventeen favored a percentage of lay judges and nine would have all physicians. There were nineteen who did not express their preferences.

Dr. Shields said that he had prepared a list by states of all physicians and industrial surgeons who had had experience in judging first-aid contests. The list covers thirteen states. He hoped during the winter to get a similar list of competent lay judges.

Would Eliminate Elimination Contests

D. Harrington spoke in favor of standardization, saying that erratic judging of contests had, in some sections, ruined first-aid work. He advocated the "elimination of the elimination contest." The teams competing should represent some state or some company division and in this way there would be only a reasonable number of men competing in one "first and final" event.

George Martinson, of Hibbing, Minn., declared that he was against contests. There was always a reaction

after they were over, and while the reaction lasted it was impossible to get the men to practice. He thought there was an overdose of stimulant and that the teams did better without it. Orr Woodburn, of Globe, Ariz., disagreed, saying that contests developed the men and that, while there might be a "letting down" after a contest, there was a tendency to "let down" all the time and the contest shook up the teams and revived their interest just when it began to flag. He believed, however, that the practice of arranging the teams in order of merit was discouraging, as there was, of course, a good deal of chance in first-aid and a good team might obtain only a poor place.

He would have no firsts, seconds, or thirds, but two classes. Those who made over 90 per cent should form Class A, and those who made between 80 and 90 per cent should be grouped in Class B. Stating that at the recent National meet only one team in sixty-eight had fallen below 80 per cent, he declared that they were one and all good teams. One team from Oklahoma had been speeded on their way with bands and the plaudits of all the citizens in the town from which they came.

To Avoid Joshing Were Minded to Go West

They did good work but their place was so low that they dreaded to go home and take the jibes of their fellow workmen. They were contemplating going West so as to avoid inevitable joshing. Yet they deserved nothing but praise. He did not believe that the suggestion that meets be held every two years instead of every year was worthy of a moment's consideration.

B. F. Tillson, Franklin Furnace, N. J., declared that first-aid was like baseball. The best team did not always win. There was always an element of uncertainty as to the performance of the men. One foolish act might land the best team quite low in the running where all were good. The mining public must reconcile itself to the fact that the contests have this dissimilarity from baseball, that there are not many contests but only a few, and there are greater chances that the decision may fail to rest with the team that is all-around the best. It is not unnatural when the best of the teams in a state contest fails to exhibit that same superiority at a national meet.

J. W. Reed, of Fairmont, W. Va., said that the Consolidation Coal Co. had mines in three states and he found it quite trying to meet the fact that there were three different standards of judging in those three commonwealths. He believed that the practice of holding one big elimination contest was wrong. He would hold them by preference every month and have the winner of the series of contests represent that mining section or company.

British Methods of Handling First Aid

James Thirtle, of Pittsburgh, Pa., urged the system of training practiced by the St. John of Jerusalem Ambulance of England, which had a graduated system, giving two certificates, a medallion and a badge for progressive studies in first-aid. Another member declared that he believed that the use of a single textbook, that of the St. John's Ambulance, prevented much difficulty at British mines. He advocated also the weekly quiz, which served to put the men on their mettle. Questions like this were asked: A man has fallen from the "first storey" (in the United States this would be the "second story") and liquid is oozing from his nose. What is wrong?"

Dr. W. A. Lynott, of Bartlesville, Okla., remarked that first-aid contests were a joke. He was opposed to medical judges unless they had received first-aid training. He had, when with the Bureau of Mines, spent two years getting up a book, to which, however, other names than his have been appended in more conspicuous position, though they had spent but ten days in its revision. He said we are still changing our books and our standards. He contended there was too much changing, and that, in consequence, there was too much uncertainty. The railroad men's book differed from the miners' books. However, he said contests, while not by any means what they should be, do good. Nearly all of them generate soreness, but it is all over in a month, and the men fall back into the harness determined to win the next year.

R. H. Seip, of Franklin Furnace, N. J., said that he felt that, with advancing experience, there must be year by year a revision of standards. The progress of first-aid must not be hampered by any narrow body of instruction that takes no account of the advances in the science of taking care of the injured.

Dr. E. R. Hunter, of the American Red Cross, said that before contests the judges should be assembled and advised as to the problems presented and their correct solution. No hurried summoning of doctors should be allowed. Dr. Sayers set a good example at the National first-aid meet at Denver by taking plenty of time to secure the right doctors and train them in the work that was expected of them.

War Training Made Medicos Good Judges

Dan Harrington, of the U. S. Bureau of Mines, said that during the war many doctors had to teach the soldiers first-aid, and many of them studied it then for the first time. In consequence there were more competent first-aid men among doctors than ever before, and at the time of the national meet it was easy to find numbers of them around Denver. One of the members, however, declared that doctors soon forget, as do laymen who have been trained in the work. It is necessary to have men, lay and medical, who by practice have kept the technique in their minds.

Orr Woodburn declared that it was pleasing to note that the sixty-eight teams at Denver went about their problems with such uniformity that the observer would have been justified in believing that they all had had but one instructor. He proposed that the report of the Standardization Committee, for that was what Dr. Shields' paper practically was, be accepted. This motion was carried unanimously.

It was interesting to note the uniformity with which the work of the judges and management of the Denver meet was praised, that meet having been signalized by strong medical support and the introduction of new methods.

J. W. Reed said that the questions given at contests were not always covered by the standards given in the textbooks. He desired standard questions and thought some care should be taken to that end. He also wanted to know what meaning should be put on the word "crushed." Did it mean a severe bruise or a fracture? Dr. Shields promised that he would give these matters careful consideration.

Dr. C. E. Julihn, of Minneapolis, Minn., an engineer with the Bureau of Mines, proposed that "It is the opinion of this meeting that standardization of first-aid work is desirable." The motion was carried unanimously.

(To Be Continued Next Week)

National Coal Association Summarizes Soft-Coal Situation

IN the opinion of officials of the National Coal Association the bituminous coal situation can be summarized in six paragraphs, as follows:

(1) Generally the soft-coal situation, from the viewpoint of output, is steadily improving but

(2) To meet all the demands for the winter, bituminous production, it is agreed, must be speeded up to approximately 12,000,000 tons a week.

(3) To reach that output production must be advanced by some 768,500 tons each week over the average for the last four weeks. Through increased car service at the mines this additional output can be attained.

(4) The Northwest priority movement will be out of the way at the close of navigation, about Dec. 1, when over 1,000,000 tons of soft coal a week will be released for the remainder of the country.

(5) In the meantime communities in the East and Middle West where shortages in supply for immediate use exist are being provided for just as rapidly as the operators, working in conjunction with committees of local retailers, can do so.

(6) Consumers will aid in the problem of adequate soft-coal supply by taking at this time only enough to last until the Northwest situation is cleared up. After that, with ample car supply in the meantime, there will be plenty of soft coal for the balance of the country for the winter.

Plan Washington Conference on Coal Prices And Conditions in Kentucky

A SPECIAL conference on the coal situation in Kentucky will be held in Washington, it was announced at Covington, Ky., Sept. 27. U. S. Attorney Thomas Slattery of the Eastern district has been summoned to Washington to discuss the coal situation. Governor Edwin P. Morrow of Kentucky sent a telegram Sept. 24 to the Interstate Commerce Commission demanding modification of the coal "priority orders." This action, he said, is necessary to prevent a coal famine in Kentucky.

Mr. Slattery sent a letter to Governor Morrow containing a copy of the Federal Grand Jury report, in which it was alleged excessive prices for coal were charged. His letter, dated Sept. 22, to the Governor, summarized the findings of the Grand Jury as follows:

(1) That the coal operators in Kentucky are charging excessive prices for coal.

(2) That said grand jury has designated fair and reasonable prices for said coal, as established by the evidence before them.

(3) That there is a serious shortage of coal for domestic purposes in the Eastern district of Kentucky, which will reach tragical proportions unless some remedy is found.

The prices recommended by the Grand Jury are reported to be as follows:

For District No. 2, containing the following counties: Harlan, Letcher and Perry, except the operations in Perry County included in District No. 3: Run of mine, $4.50 per ton; slack, $4.40 per ton; prepared sizes, $5 per ton.

For District No. 3, containing that part of Kentucky east of the eighty-fifth degree of longitude excepting Harlan, Letcher and Martin Counties, that part of Pike County on the watershed of the Tug fork of the Big Sandy River, and that part of Perry County included in District No. 2, but including the operations in Perry County of Hazard Coal Co., Diamond Block Co., Coneva Coal Corporation, Storm King Coal Co., C. H. McDonald Coal Co., Four Seam Block Coal Co., Daniel Boone Coal Co., Blue Grass Coal Corporation, Columbus Mining Co., No. 4 Coal Co., and Walker's Branch Mining Co.: Run of mine, $4.40 per ton; slack, $4.30 per ton; prepared sizes, $4.90 per ton.

For District No. 4, containing the following counties, to wit: operations in Pike County, on the watershed of the Tug fork of the Big Sandy River east of Williamson, on the Norfolk & Western R.R.: Run of mine, $4.50 per ton; slack, $4.40 per ton; prepared sizes, $5 per ton.

In all fields not included in Districts 2, 3 and 4, above enumerated, the prices should correspond to the prices designated for said fields, when the character of coal mining conditions are the same or similar, whereas the prices have been greatly in excess of those figures. In arriving at these figures we have taken into consideration the limited car supply for the mines and should the number of cars to the mines be increased the selling price should be reduced.

It is our opinion that a fair charge to the brokers or sales agents of said coal would have been one charge of 25c. per ton; whereas their commissions have greatly exceeded that sum.

Six Thousand Eastern Ohio Workers Quit, But Soon Return

TROUBLE between the operators and miners of the eastern Ohio fields on the stone question and the pay for stone work resulted in a strike on Monday, Sept. 27, with 6,000 or more miners absent from their posts on that date. The miners held a meeting on Sunday night and at that time voted to go out. Approximately half the mines in the territory of the Pittsburgh Vein Operators' Association were affected by the strike, but the operators expect the difficulty to be of short duration. Operations were continued at about fifty mines.

It was indicated by the strikers that they would not attempt to go back to work until after the convention of sub-district No. 5 at Martins Ferry on Sept. 29.

As a result of the convention representatives of the strikers voted to end the strike and go back to work. Accordingly, work was resumed in seventeen mines on Oct. 1. As a considerable number of miners declined to begin work on Friday, general resumption after the strike did not begin until Oct. 4.

Revise Scale for Day and Monthly Men In New River Field

UNDER a revision of the scale of wages paid day and monthly men in the New River field, inside day workers will receive the following pay: Motormen and machine runners, $7.18; brakemen, $6.77; trip riders, rope haulage, $6.77; skilled wiremen, $7.18; wiremen's helpers, $6.74; track layers, $7.05; track layers' helpers, $6.65; slate shooters, $6.89; slatemen, $6.65; bratticemen, $7.03; timbermen, $7.05; pumpmen, $6.70; bottom eagers, $6.85; drivers, single mule, $6.65; drivers, two or more mules, $6.77; couplers, where men are employed, $6.60; couplers, where boys are employed, per day, $4; greasers, where men are employed, $6.60; greasers, where boys are employed, $4; trappers, per day, $4; pipemen, $7.05; all other inside day labor, $6.60.

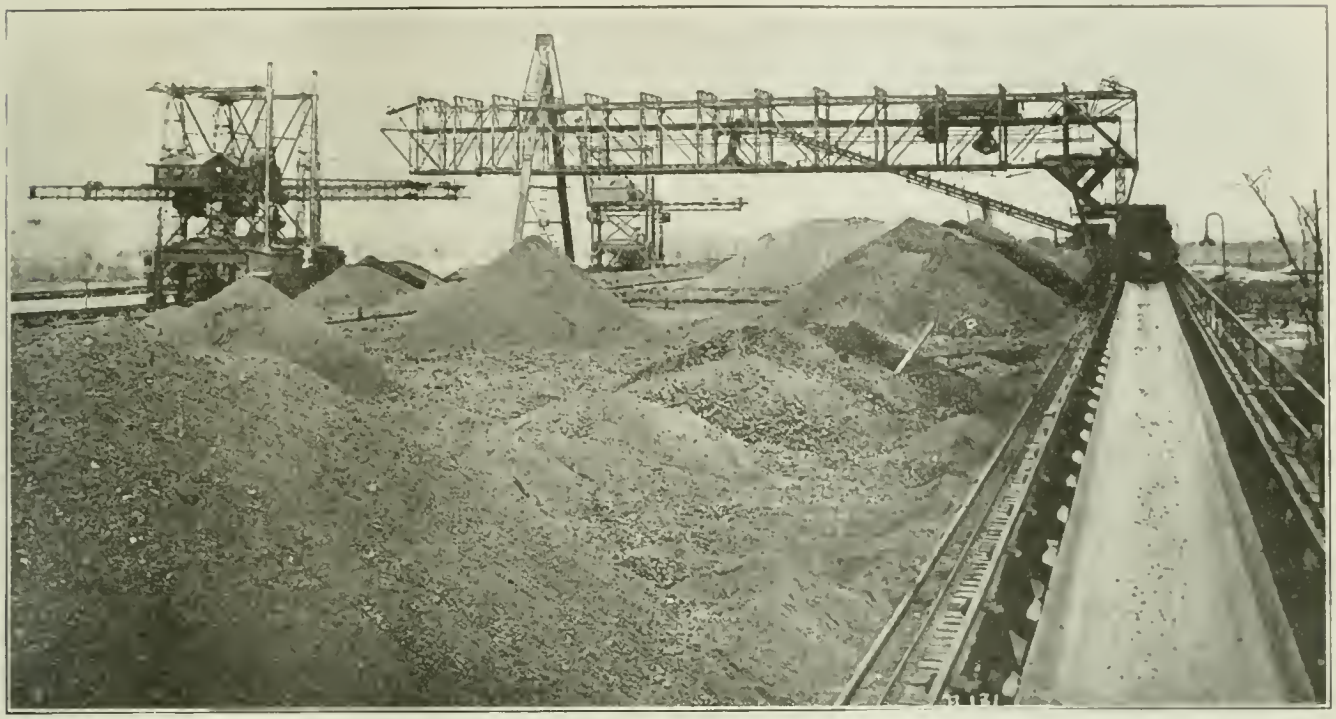
The daily wage scale for outside labor is as follows: Dumpers, $6.65; top tipplemen, $6.58; transfer operators, $6.50; trimmers, $6.50; drum-runners, $7.10; car cleaners and car droppers, $6.50; blacksmiths, $7.50; blacksmith's helper, $6.80; car repairmen, $7.06; greasers, where men are employed, $6.50; greasers, where boys are employed, $3.85; couplers, where men are employed, $5.50; couplers, where boys are employed, $3.85.

Kanawha Mine Workers Strike Too Soon

UNION miners employed by the Holdred Collieries Co. selected a very inopportune time in which to take a "vacation." While negotiations for an increase in the pay of the daymen and monthly men in the Kanawha and adjoining fields was in progress a number of the mine workers went on strike and were promptly paid off by the company and discharged. Too late they learned that had they remained at work they would have had much back pay coming to them, as the increase had been made retroactive. As it was few were taken back.

Importance of Coal Stocks in Insuring the Consumer Against Fuel Shortage*

Many Firms Store Little, Depending on Supply in Transit—Severe Storms, Railway Strikes and Transportation Tie-ups Perilous—Data on Stocks Significant—Conditions Affecting the Size of Reserves



NEWEST METHODS OF HANDLING COAL AND COKE
The coal storing and reclaiming bridge and (right) trunk line belt conveyor in the yards of the By-Products Coke Corporation, South Chicago, Ill. This is one of the biggest coal cranes in the world.

STOCKS are the consumer's insurance against an interruption of his fuel supply. As it is not the practice to store coal above ground at the mines, the quantity of fuel which is available for use at any time consists of the coal en route and of the coal already in the hands of the consumer. The first is a sort of mobile reserve; it comprises the coal on wheels and the coal on the commercial docks at the head of the Lakes and at points on New England tidewater.

Coal on wheels is a more or less constant quantity, like the raw material in process of transformation at a manufacturing plant. The docks at the head of the Lakes constitute the greatest coal-storage plant in the world, with a capacity of 15,000,000 tons of bituminous coal. The quantity on hand at the docks varies greatly, however, from winter to summer and therefore may best be excluded from figures of stocks if it is desired to make them comparable. For this reason the Lake dock coal is treated as a part of the coal in transit rather than as a part of the commercial stock.

At many plants it is the practice to carry small stocks and to depend chiefly on the mobile reserve of coal in transit. This type of plant is the first to suffer in a sudden tie-up of transportation, such as may be caused by a great storm or by a railroad strike. Storms like those of the winter of 1917-18 make unavailable the mobile reserve. The suffering at such a time is due not so much to a stoppage of production at the mines as to an interference with the delivery of coal already loaded.

Therefore, whether a given stock of coal will be sufficient or not depends on the weather. The figures show, for example, that stocks were larger in the fall of 1917 than in 1916. Yet in the absence of exceptional weather the country got through the winter of 1916-17 without actual suffering. A year later larger stocks proved insufficient because of the terrific storms.

Principles Affecting the Size of Stocks

Stocks, therefore, are a very useful barometer of the coal supply. They are the final proof of whether or not production has been keeping pace with consumption. Other things being equal, very large stocks are a sign that the market has been oversupplied and forecast a season of low prices. Depleted stocks, on the other hand, show that production has fallen behind consumption and forecast a period of active demand and consequently of high prices.

In examining figures of stocks eleven principles must be kept in mind:

(1) Averages for the country may be deceptive. Coal

*Abstract from report on consumers' stocks of bituminous coal March 1 and June 1, 1920, by F. G. Tryon, U. S. Geological Survey, September 1920.

is produced in twenty-nine states and loaded for shipment by 174 railroads. There may be an oversupply in one locality when there is a shortage in another.

(2) Averages for a locality or an industry may be deceptive. Individual plants may have more than the average, and many plants may have virtually nothing in stock when the average shows an adequate supply.

(3) Consumers located at long-haul points require larger stocks than those at short-haul points. The greater the distance from the mines to the plant, the greater the chance that its current supply may be interrupted, and the greater the number of weeks' stock which it must keep on hand.

(4) Localities that rely largely on lignite or low-grade bituminous coal, which does not store well, will show smaller stocks than localities where coals of better storing qualities are available.

(5) Larger stocks are needed in the autumn than in the spring and summer. Not only does the rate of consumption generally increase as the weather grows colder, so that the coal required for a week's supply increases, but also the chance of an interruption of shipments from the mines becomes greater.

(6) Interruptions of transportation or stoppage of production act as an incentive to acquire larger stocks. When a man knows that he can get coal easily he has less concern about the size of his storage pile.

(7) Small plants can and ordinarily do carry greater reserves in proportion to their needs than larger plants.

(8) High prices produce irregular distribution of stocks. Prosperous consumers, to whom fuel is a small item, can afford to pay more than consumers to whom coal is a major item of expense or who operate on a narrow margin of profit or a fixed return.

(9) Large stocks held by one class of consumers may fail to compensate for small stocks held by other consumers, even though the average is large. Closing down a public utility may cause great inconvenience and suffering in a locality where many consumers are well supplied with fuel. This principle is particularly effective as regards railroad fuel. The railroad usually gets its coal, but when its stocks are low it must frequently resort to confiscating coal destined to other consumers.

(10) In considering retailers' stocks it must be remembered that the retailer does not consume coal but merely delivers it to others either for their current needs or for storage. Retailers' requirements are therefore peculiarly subject to variation in response to seasonal changes or market conditions.

(11) As the country grows and business develops the tonnage required for a safe reserve increases. Not only are population and the per capita consumption both increasing, but there is a relative increase in the consumption at long-haul points. Every new byproduct oven, for example, is a new stock liability. A three-weeks' stock for the byproduct coke plants now in existence is fully a million tons greater than the same supply for the ovens in operation four years ago.

Northwest Still Fears Winter Shortage

INTIMATION of the coming of winter comes from the Middle West in the form of a renewed demand that more coal be made available in that section. The psychological effect of the passing of warm weather is expected to increase greatly the difficulties under which the Interstate Commerce Commission is laboring. The Public Service Commission of Ohio went so far as to telegraph the commission asking for the immediate suspension of the Lake order.

The only action which has been taken, however, was an effort to speed up the Lake program. The commission's agent at Cleveland has directed that the coal quota on some of the railroads be increased. The operators have doubled up on classification and now are making mixtures of coal in the lower Lake pools, which had not been anticipated under the original Lake order.

The transportation situation during the week preceding this writing was extremely bad, judging from the returns to the various agencies in Washington. In fact the week compares well with midwinter transportation conditions. The principal difficulty is said to lie in the departures which are being permitted from the service orders. This is particularly true with regard to Service Order 15, the open-top priority order. So many cars are being used for road materials, building materials, steel and other classes of freight as to interfere materially with coal production. This has been complicated by the increasing number of assigned cars being used by public utilities and the failure of the railroads to police the orders. The situation has become so bad that the Interstate Commerce Commission has been requested to give an absolute priority on open-top cars for thirty days.

It is stated that the commission may subordinate public utility coal to Lake coal. One of the largest railroads has declined to furnish cars for public utility loading. This line, on its own initiative, is confining its efforts to the movement of Lake coal and railroad fuel.

The frequent changes in the service orders have had the effect of confusing many of the employees of the railroads and as result some of the orders are not being carried out with any degree of regularity. In some cases, it is declared, employees are being induced to furnish cars to those who are not entitled to them.

W. W. Broughton, of Minneapolis, president of the Pittsburgh Coal Co., wired the National Coal Association that all present indications point to a shortage of at least 5,000,000 tons of coal on the docks of Duluth and Superior on Dec. 1. If this is to be relieved from Illinois and Indiana, it will call for 1,100 coal cars a day from Dec. 1 to March 1, in addition to the normal tonnage. Obviously, Mr. Broughton does not regard this as possible.

Rename Mining Experiment Stations

THE Bureau of Mines has renamed its mining experiment stations, giving them names to conform to the district in which located, or to their line of investigations. The names of stations dealing with coal have been designated as follows: Pittsburgh Station, located at Pittsburgh, Pa.; Northwestern Station, located at Seattle, Wash., dealing with coal washing; Central District Station, located at Urbana, Ill.; Southern Station, located at Birmingham, Ala., dealing with coal, coke and byproducts.

"One Big Union" in Alberta to Strike Against United Mine Worker Checkoff

WARS between the unions trouble the mine operators in the Drumheller fields. They have granted the United Mine Workers of America the checkoff, but the "One Big Union" men—Industrial Workers of the World in another guise—resent the compulsory payment of dues to a hostile organization. They promised to quit work on Oct. 1. Meantime the United Mine Workers of America is active, urging that in Alberta as in the United States the contract be reopened and an increase of $1.50 be given to the day wage men.

News from the Capital

By Paul Wooton

Railroads to Begin Delivery of Coal from Mines to Army Bases

ORDERS just issued by the Car Service Division of the American Railroad Association direct the railroads to move coal from mines to army posts under purchases now being made. The War Department is about to enter into various contracts with mines to supply coal for army posts, camps and stations in the Eastern, Northeastern and Central departments.

It will be necessary when these contracts are made and the Interstate Commerce Commission has been notified, to see that the commission's agents under Service Orders Nos. 10 and 11 are instructed that to the extent coal is supplied to the War Department such mines will be relieved from the burden of any allotment made by the agents under these service orders.

I. C. C. Commandeers Coal and Gives It Priority for the Navy

COMMANDEERING of coal by the navy from Maryland and Pennsylvania coal mines for delivery at Atlantic coast ports and orders to railroads for preference and priority in its delivery were issued by the Interstate Commerce Commission on Oct. 1. The President, through the Secretary of the Navy, certified to the commission that "it is essential to the national defense and security" that coal commandeered by the navy should have preference in transportation, whereupon the commission issued the necessary order directing the preferential movement of this coal, and the schedule of companies from whom the coal is commandeered, the amount to be delivered by them monthly under navy orders, the number of cars required weekly for its movement and its destination.

The mines affected are served by the Baltimore & Ohio, Pennsylvania, Cumberland & Pennsylvania, East Broadtop & Cambria and Indiana R.R., and lines connecting with these roads were directed to form routes over which the commandeered coal may move to destinations specified in the order.

New Commerce Commission Order Ends One Assigned-Car Abuse

A NEW rule, effective Oct. 1, governing assignment of open-top cars, was issued by the Interstate Commerce Commission Sept. 28. It provides that private cars and cars placed for railroad fuel loading will be designated as assigned cars. All other cars will be designated as unassigned. Railroads may not assign cars for their own fuel and fail to count such cars against the mine's distributive share unless the entire output of such mine is taken by the carrier for a period of not less than six consecutive months.

Contracts or arrangements for the purchase of coal made by a railroad on or before Nov. 1, 1920, which terminates at the expiration of the coal year ending March 31, 1921, shall be regarded as a compliance with this rule.

The new ruling, designated as Service Order No. 18, is as follows:

It appearing in the opinion of the commission that because of a shortage of equipment and congestion of traffic which continue to exist upon the lines of each and all common carriers by railroad within the United States subject to the Interstate Commerce Act and because of the inability of said common carriers to secure an adequate supply of coal without resorting to the confiscation of commercial coal an emergency exists which requires immediate action;

It further appearing that by the the order of the commission entered the 15th day of April, A.D. 1920, and described "Notice to Carriers and Shippers" rule 8 of Railroad Administration Car Service Section Circular C. S. 31 (Revised) was amended so as to provide that private cars and cars placed for railroad fuel should be designated as assigned cars in accordance with the decisions of the commission in Railroad Commission of Ohio vs. H. V. Ry. Co., 12 I. C. C., 398, and Traer vs. C. & A., 13 I. C. C., 451;

It further appearing that rule 8 of Railroad Administration Car Service Section Circular C.S. 31 (Revised) as amended by the said order has been and is being applied by particular carriers in a manner inconsistent with and contrary to the principles approved in the Hocking Valley and the Traer cases, thereby causing confusion, uncertainty and undue preference and prejudice.

It is ordered that effective Oct. 1, 1920, and until the further order of the commission all common carriers by railroad hereinbefore described be, and they are hereby, authorized and directed to establish and observe the following rule, which is just and reasonable and shall be governed thereby in the assignment of cars:

Private cars and cars placed for railroad fuel loading in accordance with the decisions of the Interstate Commerce Commission in R.R. Com. of Ohio, et al., vs. H. V. Ry. Co., 12 I.C.C. 398, and Traer vs. Chicago & Alton Railroad Co., et al., 13 I.C.C. 451, will be designated as "assigned" cars. All other cars will be designated as "unassigned" cars. Provided that common carriers by railroad may not assign cars for their own fuel and fail to count such cars against the mine's distributive share unless the entire output of such mine is taken by such a carrier for a period of not less than six consecutive months.

It is further ordered that any contract or arrangement for the purchase of coal made by a carrier on or before Nov. 1, 1920, which terminates at the expiration of the coal year ending March 31, 1921, shall be regarded as a compliance with the rule hereinbefore prescribed.

It is further ordered that all rules, regulations and practices of said carriers with respect to car service be, and the same are hereby, suspended and superseded only in so far as they conflict with the provisions of this order.

It is further ordered that the order of the commission made and entered on the 15th day of April, A. D. 1920, hereinbefore described, be, and the same is hereby, rescinded effective Oct. 1, 1920

And it is further ordered that copies of this order be served upon the carriers hereinbefore described and that notice of this order be given to the general public by depositing a copy hereof in the office of the secretary of the commission in Washington, D. C.

Confer on Supplying Fuel Needs of New England Railroads

NEW ENGLAND railroads continue to be uneasy about their coal supply. Representatives of these lines were in Washington last week conferring with officials as to how their needs are to be taken care of. The railroads form the only group of New England coal consumers which will require special attention during the remainder of the season, it is believed.

Rulings of Importance to Coal Industry To Be Made by Supreme Court

COAL men from various parts of the country are expected to hear the arguments in the U. S. Supreme Court during the week of Oct. 11 on cases testing the constitutionality of the Lever Food and Fuel Act. While cases attacking the Lever fuel control law have not been instituted directly by coal companies, a decision as to the constitutionality of this law will affect such control over coal, hence the interest of coal men in these cases, which are the U. S. vs. Cohen Grocery Co. and H. B. Tedrow, U. S. Attorney for the District of Colorado, vs. the A. T. Lewis & Sons Dry Goods Co.

A number of other coal cases are on the docket of the court for consideration during the current term. Of considerable importance is the anti-trust suit of the Government against the Lehigh Valley R.R., which is up for reargument, previous arguments not having satisfied the court on many points at issue. This case has been pending some time and is an effort of the Government to prevent the Lehigh Valley from further restraining, monopolizing or attempting to monopolize trade and commerce in anthracite coal and to prevent the railroad from transporting anthracite coal in interstate commerce not intended for its use as a railroad. The Government was defeated in the District Court for the Southern District of New York in 1915, and the case is now up on appeal.

Another coal case comes from Colorado, involving a dispute over entry to coal lands in that State. Michael Quinn seeks by mandamus to compel the Court of Claims to allow his appeal in an entry case, the Interior Department having held that lands sought by him were not subject to entry. The Court of Claims dismissed Quinn's petition for refund of purchase money on the ground that his claim was tinctured with fraud.

A North Dakota rate case also pending is a suit by the Merrick Co. to recover from the Minneapolis, St. Paul & Sault Ste. Marie R.R. a sum alleged to have been unlawfully exacted from the company on coal in excess of the legal rate between July 1, 1907, and March 5, 1910, it being charged that the rates were in excess of those fixed by the Legislature of North Dakota in 1907. The lower court held that the Merrick Co. was entitled to recover and the case is on appeal by the railroad. A similar case, brought by the Washburn Lignite Coal Co., also is pending.

Another case is that involving a lien on coal brought by the Piedmont & Georges Creek Coal Co. against the Seaboard Fisheries Co. This is a suit to establish a maritime lien for coal furnished for use by factories and vessels under the act of June 23, 1910, establishing liens. The lower court held that the coal company, having in mind a maritime lien upon the vessels, was entitled to such a lien but the Circuit Court reversed the judgment on the ground that all of the transactions were with the corporation and there could be no holding of the vessels inasmuch as they were not mentioned in the invoices.

A case also pending is one brought by the Government against the Diamond Coal & Coke Co. to void patents to coal lands alleged to have been obtained through fraud by the company. The company admitted the fraud but set up the statute of limitations suit not having been commenced by the Government until thirteen years after the alleged perpetration of the fraud while the statute of limitations bars an action six years after its committal. The lower court ruled that the Government had not proved exceptions from which the United States has taken an appeal.

Irregularity of grant of patent to coal lands is involved in the case of Truman & Ketchum against the Pleasant Valley Coal Co. The District Court issued a decree declaring the coal company to be owner of certain coal lands and the Circuit Court held the grant by one Marx to the patentee to be valid, the deed to the coal company giving him title.

The Lower Vein Coal Co. seeks an injunction to restrain the Industrial Board of Indiana from compelling it to operate under the Workmen's Compensation Act on the ground that it can elect to operate under the act or to respond to suits for damages for its negligence whereby employees are injured as it sees fit. The company attacks the act on constitutional grounds alleging that it deprives the company of property without due process of law and is not only discriminatory but its classification of hazardous industries is oppressive and unjust.

In the case of Henry Friedman vs. the U. S., Friedman seeks to recover money paid for Government coal lands which he claims was in excess of charges for the lands authorized by law. This is an appeal from the decision of the Court of Claims which denied Friedman's right to recovery.

An important case involving strikers is that of the Coronado Coal Co. vs. the United Mine Workers of America. The coal company sought damages for destruction of its property and that of other coal companies by acts of striking miners. To unionize the mines the union members sought to prevent coal being mined, resorting to violence, in which much property of the coal companies was destroyed. Judgment was given the companies for treble damages under the Sherman Act by the lower court, from which the miners appeal to the Supreme Court on the ground that unincorporated unions cannot be sued or be liable for acts committed in a strike. The lower court held that an unincorporated union could be sued by anyone whom it had injured in its business.

Coal rates also are involved in a case by the McGraw Coal Co. against the Missouri Pacific R.R. The coal company obtained recovery of rates paid on coal on alleged violation of the long- and short-haul provisions of the State law. The railroad admitted that the rates were excessive and illegal but questioned the right of the coal company to recover, arguing that only the purchaser of the coal had the right to recover. The coal company contended that it, and not the customer, paid the freight charges on the coal, which contention was upheld by the lower court and which ruling the railroad attacks in appealing the case to the Supreme Court.

Court of Appeals Grants Injunction in West Virginia Profiteer Hunt

JUDGE ROSE, of Baltimore, sitting for Judge B. F. Keller at the Huntington (W. Va.) term of court for the southern district of West Virginia, having declined to grant an injunction to the coal companies under investigation by the Federal Grand Jury on the charge of having profiteered in the sale of coal, an appeal was taken to Judge Jeter C. Pritchard of the U. S. Circuit Court of Appeals at Asheville, N. C. On Friday, Sept. 24, Judge Pritchard granted a temporary injunction to the Argyle Coal Co. restraining the U. S. Attorney for the southern district of West Virginia from prosecuting that company and its representatives. The injunction was made returnable on Oct. 4 and bids fair to stop proceedings against fifty or sixty other companies.

Under an agreement reached on Monday, Sept. 27, between counsel representing the Government and attorneys representing a number of southern West Virginia coal companies, the Government will not make any effort to have returned indictments against companies other than the Arygle until the question of making Judge Pritchard's restraining order permanent can be argued and determined. In the meantime, however, investigation of the books and records of the various companies summoned continues except in the case of the Argyle company. Should counsel for the Government be unable to show cause as to why the restraining order should not be made permanent it will bring the hearings against the various coal companies to an end.

Smokeless Operators Meet

THE Smokeless Coal Operators' Association will hold a meeting at Waldorf-Astoria Hotel, New York, on Oct. 14. The board of directors will meet the day preceding.

Railroads and Operators Move to Meet Critical Situation in the Middle West

RAILROAD executives headed by Daniel Willard, coal operators represented by Colonel Wentz and J. D. A. Morrow, large distributors, Mr. Robbins, director of the Bureau of Service of the Interstate Commerce Commission, together with C. P. White and others of the Lake coal shippers and Chairman Marshall of the Ohio Public Utilities Commission met in Washington on Monday and Tuesday of this week to work out a solution of the increasing difficulties in meeting the Lake program and taking care of essential consumers and retail dealers in the Middle West. It is understood that the meeting was called at the instance of the Association of Railway Executives, who realize that the situation in Western territory is not satisfactory and who are anxious to improve it while good weather lasts. Public-utility officials in Ohio and Michigan have been apprehensive for some time as to their coal supply with the Lakes getting such a large proportion of the total output, and with the advent of cool weather the domestic consumer has begun to push the retail dealer for coal and the dealer is having trouble to get deliveries with the Lake priority in effect.

One of the most important questions discussed, it is understood, is the program for boosting bituminous coal production to the 12,000,000 ton mark. The meeting was held behind closed doors and represented no unanimity of opinion as to who is to blame for the present situation or as to how conditions are to be corrected, but it is confidently expected that a satisfactory solution will be worked out.

Central Pennsylvania Operators Refuse To Grant a Tonnage Increase

BY a decision of the operators against granting any further concessions to the mine workers the conference in District No. 2 (central Pennsylvania) came to an end Sept. 29. The mine workers had at one time formulated fourteen demands, but these were reduced to eleven and then to three. As the day labor increase of $1.50 a day had been readily granted to accord with the advance in the Central Competitive Region, the advance asked was limited to one on the tonnage rate. This was made equal to that granted the day men. To this demand was added one for an abolition of car pushing and another for ending the collection of penalties for strikes in violation of the contract. Many of the mine workers opposed a strike, and recriminations marked the proceedings of the convention, from which the public was excluded.

Strike Against Subcontracting in Hard-Coal Region Is Resumed

CLAIMING that promises made by the Pennsylvania Coal Co. and the Hillside Coal & Iron Co. to the mine workers in their employ have not been kept, the men, who struck on July 16 last and returned to work Sept. 27, began to quit work almost as soon as they started and on Oct. 3 all who were still working were ordered by their strike leader to quit work on Oct. 4.

It appears that W. P. Jennings promised about Sept. 22 that "in case all of the men decide to go back to work" the company will "give every man the same place that he worked in on July 15, 1920." This was the agreement suggested and even written by the Chamber of Commerce of Pittston and agreed to by W. P. Jennings. Captain W. A. May, the president of the companies, made by letter a further promise that he would have the graft charges probed and would discharge all colliery officials or mine contractors found guilty of graft.

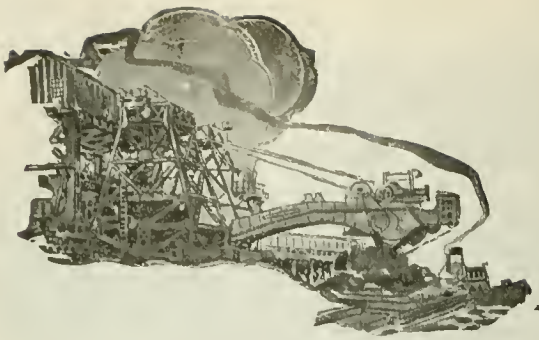
Apparently the Chamber of Commerce and the strikers believed that there were other promises made, some clearly contrary to those above quoted. For instance, the men declared that all subcontractors should be discharged and that all the men returning to work should be given the privilege of working on a tonnage basis. The promise as made in writing is not susceptible of any such interpretation, and seems clearly to suggest that no such understanding existed. Furthermore, the mine workers claim that a promise was made that no state police would be placed round the works. A further understanding alleged to have been made by the company was that all tools lost by the miners during the strike as the result of their being left in the mines would be replaced and that by Oct. 4 a scale would be made for those places now to be worked by contract miners which before were worked by consideration men. Another agreement alleged to have been made was that there would be no discrimination in the distribution of cars and that the checkweighman and check docking bosses elected by the men would be recognized.

When, on Sept. 28, the mine workers found the state police at No. 4 shaft of the No. 7 colliery, at Sebastopol, and noted further that they were exercising their office by arresting Samuel Ruta on a charge of disorderly conduct, they went on strike. The miners at Butler No. 6 and Barnum collieries also struck, asserting that the mine bosses refused to undertake that they would be paid by the ton instead of by the day.

James R. Joyce, chairman of the Greater Pittston Chamber of Commerce, who holds to the belief that the companies made all the promises just described, is backing up the men in their strike and has been since Sept. 28. For one reason and another the number of men on strike has increased and the strike now seems likely to be long and bitterly waged. At last reports the strikers were calling out the pump and fan men and trying to flood the mines and let them fill with gas. Alexander Campbell, president of the miners' grievance committee, says it will now continue till the company agrees to abolish entirely the sub-contracting system. Meanwhile the Pennsylvania and Hillside books are being examined by Judge Tracey, of Philadelphia, and a committee of assistants to endeavor to see if there has been any fraud and, if such should prove to be the case, who are the persons involved.

Williamson Operators Report Increasing Tonnage; Strike Waning

IN SUPPORT of their claim that the strike in the Williamson field is waning operators in that district point to the fact that whereas on July 15 only 107 men were working at the mines affected by the strike of July 1, on Sept. 15 728 men were at work. In further support of their contention the operators state that at the same mines affected by the strike order production in July was 2,852 tons; in August 29,813 tons and for the first half of September 29,224 tons, leading the operators to believe that September production in the strike area would reach 70,000 tons, or just about twice as large a tonnage as was produced in August.



Production and the Market

Weekly Review

INCREASE in production of bituminous coal and a general resumption of work in the anthracite region marked the week ending Sept. 25. Bituminous production was the largest of any week since last January.

Prices are steady in a market of undiminished demand, calls from other sources absorbing what coal has been released by a weaker industrial situation. Labor discontent is still evident in various localities, but these troubles seem to be of a temporary nature.

BITUMINOUS

A general lessening of industrial activities lowered the demand on the spot market. This, however, has been more than offset by lively call for export, which has led the market. Gas coal is in good demand at a premium. Cold weather has brought the domestic consumer into the market and dealers are placing heavy orders to cover.

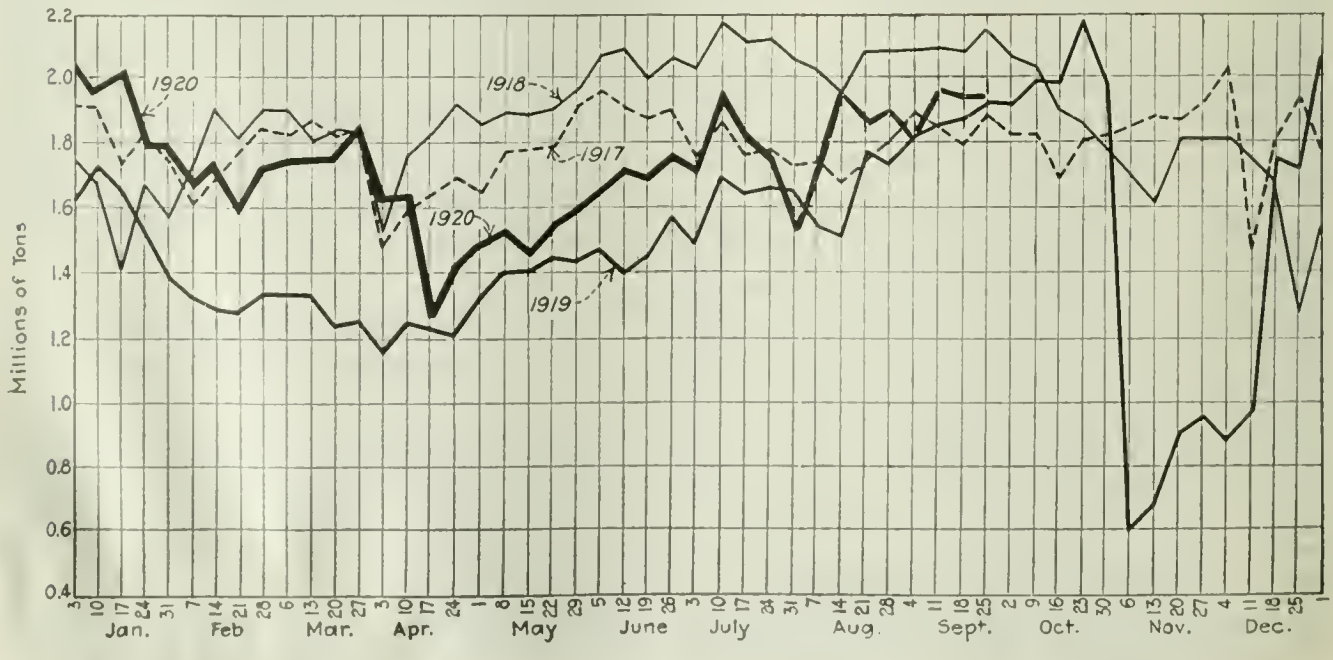
Production Averages 1,969,000 Tons Per Day

Bituminous production for the week was 11,817,000 net tons, according to the Geological Survey. Rate per working day was 1,969,000 tons. Car supply was better in general for this period, the Middle Appalachian and Belleville sections reporting improved placements, Southern Appalachian unchanged, while a decline was noted in the Northern Appalachian district. Labor trouble was a factor limiting production in several fields. According to the review by the Geological Survey, which gives conditions to the middle of September, extensive strikes in western Kentucky, the Williamson field and Alabama were responsible for bringing the average loss of time from labor troubles for the country up to over 10 per cent, compared with less than 5 per cent a year ago. Of the Western fields, Iowa, Arkansas and western Kentucky reported serious losses because of strikes. The time lost on account of labor in Iowa increased from 5.6 to 14 per cent; in Arkansas from 23.6 to 30 per cent. In western Kentucky more than half the capacity was shut down, either on account of labor shortage or strikes. In the East significant labor losses were confined to central Pennsylvania, Virginia the Kenova-Thacker field, and Alabama. In Virginia a loss of 21.5 per cent was ascribed by the operators to labor shortage. The deadlock in the Kenova-Thacker field continued with two-thirds of the capacity closed down by the strike. The second full week of the strike in Alabama brought little change. Reports were received from 130 Alabama mines, which produced 223,000 tons and worked on the average 58.1 per cent of the time. More recently, in the week of Oct. 2, as a result of controversy over the prices for removal of over slate in eastern Ohio, many miners were out and the total time lost is reported as half, with corresponding loss of output. In the same week 23 miles in the Clinton (Ind.) field were closed because of a strike.

New England Movement Declines Slightly

New England demand for bituminous coal has eased off in the last week except on the part of the railroads, which are reported to be short of their desired storage. The part that emergency orders have played in filling the coal bins of New England is indicated by the record of tidewater shipments since the agitation for preferential treatment of this section was begun. From about three-quarters of a

Average Daily Production of Bituminous Coal*



*From weekly report of Geological Survey

Lake Coal Dumped Season to Oct. 2

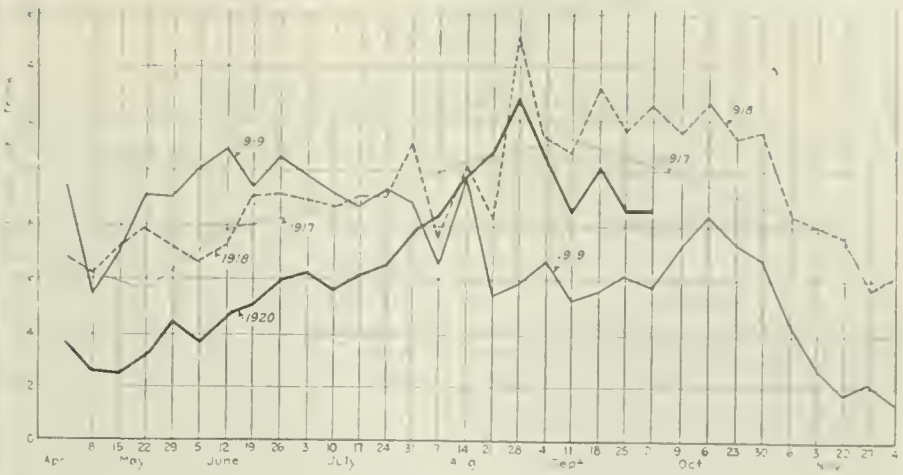
(NET TONS)

	1919	1920
Cargo	18,208,956	15,203,732
Fuel	855,596	866,061
Total	19,064,552	16,069,793

Week of Oct. 2, 1920

Cargo	840,330
Fuel	42,249
Total	882,579

Weekly Dumpings, Bituminous Coal at Lake Erie Ports*



From weekly report of Geological Survey

million tons in June, tidewater dumping at Atlantic ports destined for New England increased to a little more than a million net tons in July, and were about the same in August, with preliminary estimates for September showing no substantial change from the proceding two months. The average for the four weeks ended Sept. 25 was 272,000 net tons compared with an average of 248,000 tons in the four weeks ended Aug. 28. Three months at the rate of 1,000,000 net tons was well below the rate of 1,250,000 tons asked by New England, but it has been sufficient. Perhaps the reason demand for tidewater coal fell off so rapidly is found in the large movement of all-rail and cheaper coal, for which the demand appears to be holding up. Although shipments through the Hudson gateways fell off slightly in the week of Sept. 25, the average is still above 5,000 cars, or in excess of 250,000 net tons a week, which is at a rate much greater than has ever been attained before for this movement.

Tidewated Dumpings Drop at New York

The movement of tide again declined slightly during the week ended Sept. 25. Total dumpings as reported by the Geological Survey were 24,272 cars, a decrease of 164 cars when compared with the preceding week. The decrease occurred at New York. At Philadelphia dumpings held their own, and at Baltimore, Hampton Roads and Charleston they increased.

CARS OF BITUMINOUS COAL DUMPED OVER TIDEWATER PIERS AT THE FOUR NORTH ATLANTIC PORTS AND CHARLESTON

Week Ended	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Total
Aug. 28	9,927	3,632	3,322	8,320	405	26,116
Sept. 4	10,109	3,745	3,191	7,672	358	25,275
Sept. 11	8,304	3,421	3,009	7,271	323	22,328
Sept. 18	7,966	3,563	4,131	8,501	275	24,436
Sept. 25	7,316	3,527	4,238	8,743	448	24,272

The destination of coal dumped at tidewater, so far as known to the railroads handling it, is shown in the following table. Out of a total dumped amounting to 1,277,000 net tons, 264,000 tons went to New England and 582,000 were for export.

TIDEWATER BITUMINOUS COAL SHIPMENTS FOR THE WEEK ENDED SEPTEMBER 26, 1920

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Total Dumped
Coastwise to New England	96,000	9,000	16,000	143,000	....	264,000
Exports	....	89,000	145,000	328,000	20,000	582,000
Bunker	82,000	9,000	14,000	79,000	....	184,000
Inside capes	....	29,000	28,000	6,000	1,000	64,000
Other tonnage	164,000	....	3,000	16,000	.....	183,000
Total	342,000	136,000	206,000	572,000	21,000	1,277,000

A decrease was reported in the tonnage of soft coal passing the Hudson gateways bound for New England. The total forwarded during the week ended Sept. 25 was 5,387 cars, as against 5,824 during the week before and 5,790 in the corresponding week of 1919.

CARS BITUMINOUS COAL FORWARDED THROUGH HUDSON GATEWAYS DESTINED FOR NEW ENGLAND

Week Ended	1920	1919
September 11	5,044	4,795
September 18	5,824	4,885
September 25	5,387	5,790

Lake dumpings for the week ended Oct. 2 were 882,579 tons as compared with 888,993 for the preceding week.

Navy Priority Request Granted

In connection with the I. C. C. order for preferential movement of coal for the Navy, it was learned that the Navy had requested this order to obtain coal for its ships because under the existing priority order only public institutions and public utilities could be given priority. It was said that the operators concerned has also asked for an assigned car order. Under the Transportation Act the commission may grant priority order for movement of material for the government in case of emergency, which was invoked in this case because of the need of the Navy for coal. The prices at which the coal will be bought are those recently fixed.

ANTHRACITE

A general resumption of work in the anthracite region brought the total production for the week ended Sept. 25 to 1,650,000 tons, or within 168,000 tons of the figure for the last pre-strike week. The upward trend of production will again be halted by a new walk-out of 10,000 Pittston miners. The men are acting in protest against alleged interference by state police, asking fairer treatment by bosses, etc., but the chief issue is the old one of absolute abolition of the contract system. A conference was held in Canton, Ohio, Oct. 5 between the policy committee of the anthracite workers and Secretary of Labor Wilson regarding the re-opening of the wage award.

The Geological Survey points out in the current weekly report that the strikes in the anthracite region in September cost the country about 3,120,000 net tons of total production, which is equivalent to about 1,800,000 to 2,000,000 net tons of domestic sizes. Production from the beginning of the coal year, April 1, is now lower than in any year in the last eight. Already there is fear in some sections of a serious shortage of hard coal this winter and care must be exercised in distribution to prevent the spread of this fear.

Reports From the Market Centers

New England

BOSTON

Price Firm, but Inquiry Is Light—New Wage Discussion Has Not Yet Influenced Buying — All-Rail Movement Slackens—Gas Coals in Strong Demand —Domestic Anthracite in Short Supply.

Bituminous—Current quotations remain firm. Doubtless much of this is due to quiet railroad buying, although such has been largely confined to coal of only average grade. Consumers generally are out of the spot market and only those show any interest who are not getting coal on contracts and did not buy heavily in June and July when prices were at the peak. Throughout New England the market is extremely dull.

The wage discussion is beginning to attract notice. It is realized here that many of the long-established operators are having great difficulty keeping their men and at the same time keeping faith with other operators. The trade will watch proceedings the next fortnight very closely but thus far the demands of the men seem to have caused hardly a ripple here.

Receipts are less both by water and via all-rail. The latter has fallen off materially. There is no longer any fear of embargoes at the Hudson River gateways and spot coal in transit is being absorbed only after much canvassing. Several large utilities have cancelled orders that called for movement in assigned cars and frequently spot quotations are heard at prices not very much higher than the spring contract level.

Several Tidewater piers have lately shown a very marked reduction in the tonnage dumped for coastwise delivery. At Hampton Roads there have been serious cases of delay and much of the coal now arriving here for inland shipment is costing so much that $9 at the mines all-rail looks less like a forbidding figure than it did a short time ago.

Gas-coal shippers have been so hampered by Lake priority and other circumstances that several of the special industries are in straits for late October coal. There has developed an active spot market for the best grades. Prices have risen very near to the $13 mark.

Bituminous prices at wholesale range about as follows for spot shipment:

	Clearfields	Cambrias and Somersets
F.o.b. mines, per net ton	$8 00@ 9 50	$8 50@ 10 25
F.o.b. Philadelphia, per gross ton	11 62@ 13 30	12 18@ 14 00
F.o.b. New York, per gross ton	12 00@ 13 75	12 65@ 13 50

Pocahontas and New River have been quoted this week $13.85@$15 per gross ton f.o.b. Boston and Providence.

Anthracite—The outlook for domestic the next 60 days is not at all promising, at least for New England. Much is heard of special action taken in favor of other areas, but distributors seem once more to have lost track of the fact that so much of New England begins using coal early. Effort is being made to catch up with usual season shipments to the Northwest and meanwhile New England is being obliged to wait.

It is difficult to see how there can possibly be much increase in movement to this territory until well into November. It is significant that several barges and tugs belonging to anthracite lines are being put out of commission until coal appears in better volume at the piers.

Tidewater

PHILADELPHIA

Anthracite Trade Is Stirred by Cold Spell — Deliveries by Companies Grow Better — Steam Coal Mostly All Covered — Bituminous Price Fluctuates, with Downward Tendency—Tide Business Moves Forward.

Anthracite—The strongest kind of a demand descended upon the retailers this week with a spell of real fall weather. Fortunately for consumers the mines are again reaching close to the production mark prior to the suspension a few weeks ago.

The Philadelphia & Reading showed a gratifying improvement in deliveries and while the tonnage is still far below what the dealers are asking for, it came just in time to meet the strong demand which suddenly arose. Dealers generally apportioned the coal out to the best advantage.

The credit situation is at this time causing the trade some little thought, especially among the class of people who buy fuel only as they expect to use it. Due to the slackening in industry there is less ready cash on hand than has been the case for the past 3 or 4 years. Retailers are now frequently requested to grant credit but every one is using the greatest caution as they fully realize that shippers are not at all inclined to allow bills to stand.

One of the more important independents has added a slight amount to its prices. However, it is believed now that all circulars are fixed for the winter season.

Stove and nut sizes particularly are in demand but no dealer is able to meet these calls. Bulk of coal received has been pea size and dealers insist on the buyers taking a share of this with some of the larger coal.

The trade is entirely hopeful that it will get through the season in good shape, if the miners continue at work. That phase continues to be a source of anxiety as men having gone to work with the promise that something be done are likely to grow restless if that something is not forthcoming promptly. Already this discontent has caused several thousand miners in the Pittston district to again come out.

The call for steam sizes grows. Most houses have simply refused to make any quotations on buckwheat as they are obligated so far ahead that there is little chance of getting out any extra coal. Rice comes close to the same position. Barley can still be had but soon even this size will be unobtainable.

Bituminous—With reports of strikes and car shortages there are slight increases in spot prices, but the quickness which these subside and a lower level is assumed indicates that a real settling is under way. With the approach of winter this is likely to be gradual.

There is a tendency to softness in Pennsylvania steam coals with prices in Pool 10 $8@$9.50. For a time, at least, it is almost a case of not knowing what the market price is. With so many industries working on short time and even then moving their product at a reduced price, the buyer is quite reluctant to get fuel at the old figures.

Pool 11 for the very top grades has recently been heard of at $9, with shadings well under the $8 mark. In fact, most of the sales on spot coal have been closed at less than that.

Without export trade there is not the least doubt that there would be a bending in the market. This is proven by the way priority orders are being modified or withdrawn entirely. The principal preference orders are now those that cover public utilities and they are being well taken care of.

Gas coals are in greatest demand at this time. Westmoreland and Youghiogheny still bring $10.50@$12 at the mines. Fairmont coals also remain relatively high, Pool 34 selling around $10.75 at the mines and Pool 40 about $10. A good deal of this coal is going to export, yet it is also certain if movement over the B. & O. were in better shape even these prices would be difficult to maintain.

NEW YORK

Dealers and Consumers Are Anxious— Further Mine Complications Upset Expectations—No Fear of Famine—Local Demand for Bituminous Slow — Many Inquiries for Export—Prices Stronger After Wage Negotiations End

Anthracite—Hope that conditions would soon become normal was again partially shattered when the workers of the Pennsylvania Coal Co., at Pitts-

ton resumed their strike. Shipments were steadily increasing but most of the coal was transhipped by water to New England where there is considerable lack of supply, consequently local dealers did not benefit to any great extent. New England was also receiving a heavy tonnage by all-rail. Considerable tonnage was also sent into Long Island.

With the advent of cooler weather, the trade and consumers are anxious regarding the future. It is not, however, thought that there will be any great difficulty, provided the consumer asks for just sufficient coal for immediate needs.

Quotations for independent coals are no higher than a week back and in some instances have been lower. There is a heavy demand and operators have no difficulty in disposing of their tonnage. Buckwheat is quoted $5.50@$6 at the mine, rice around $4, and barley, which is the longest of the steam coals, $2.25@$2.50.

Quotations for company coals, per gross ton, at the mine and f.o.b. New York Tidewater, lower ports follow:

	Mine	Tidewater
Broken	$7 60@$7.75	$10 21@$10 36
Egg	7 60@ 7 75	10 21@ 10 36
Stove	7 85@ 8.10	10 46@ 10 71
Chestnut	7 90@ 8.10	10 51@ 10 71
Pea	6.10@ 6.55	8 57@ 9 02
Buckwheat	4 00@ 4 25	6.47@ 6.72
Rice	3.00@ 3.50	5 47@ 5 97
Barley	2 25@ 2.50	4 72@ 4 97
Boiler	2 50@ 2 75	4.97@ 5 22

Quotations for domestic at upper ports are generally 5c. higher on account of the difference in freight rates.

Bituminous—Strengthening of prices which followed the breaking off of wage negotiations is believed to be only temporary. As soon as the situation calms down a further slump in prices in looked for.

Car supply remains good, notwithstanding the return of many empties to the hard coal fields. The slowing up of industrial operations will soon show its effect in reduced consumption of coal. As a rule manufacturers are well stocked and are not now inclined to do further buying until they are better able to judge what to expect in the future.

Coal is being rushed to the Lakes, some mines sending as much as 40 per cent of their output. The situation in New England has been clarified through the co-operation of operators, railroads and distributors. Consumption has been considerably reduced through the curtailing of operations in factories.

Locally the situation is quiet. Demand is not strong for local consumption but is heavy for export. There is also a heavy bunker business.

Small boats are not in great demand, those carrying between 500 and 600 tons or larger being taken in preference.

Quotations for the various grades were stronger at the mine than at this Tidewater. They ranged about as follows: Pool 10, $10@$10.50, Pool 11, $9@$9.50 and Pool 34, $10.75@$11. In the harbor the average quotation for the various grades was about $13.75 alongside.

BALTIMORE

Great Rush of Export Coal — Bunker Demand Is Exceptional — Bituminous Prices Very Firm—Hard Coal Is Scarce —Prices Are Up in Some Cases.

Bituminous—This locality was caught in a great month-end rush of export coal handling, and some records were broken. The last day of September saw 11 vessels loaded and cleared from the piers. The rush brought the export total close to the record figures of August when about 500,000 tons were exported as cargo fuel.

The figures for September will certainly run over the 490,000-ton mark. About 35,000 tons additional were taken as bunker coal by these ships. Of the 86 ships clearing from Baltimore in September, 55 took coal for bunkers, 25 coal burners left here to get bunker coal elsewhere and 6 were oil burners.

The demand for bunkering in general has been so lively as to prevent any possibility of a sag in the strictly local market. Coal on bunkerage shipment under permit is watched so closely and dumped so quickly that those in open market for immediate bunkering must go to general supplies.

The movement of cars from mines to Tide and the supply to the mines of empties on all roads have entered a less satisfactory class, and at the end of the past week the Baltimore & Ohio R.R. was giving only about a 60 per cent run to eastern mines, while daily loadings were only 2,500 cars.

The line price weakness that came with the agreement of West Virginia operators to co-operate with Government agencies to hold down prices was unable to continue in the face of the natural law of supply and demand. At the present time, while not as high as some weeks ago, prices are well maintained.

On the Baltimore & Ohio R.R. and Western Maryland, best coals are bringing around $10 per net ton f.o.b. mines. Even the least desirable coals are worth $8@$8.50 and in some cases up, while intermediate grades are generally $9@$9.50. Best Pennsylvania coals are around $10.50 for the most part.

Anthracite—The fact that hard coal is still very scarce here, despite a somewhat better run recently, was shown strongly in the rush of consumers that has been noted since the cool spell arrived so suddenly.

Some in the trade now feel that a plan of apportionment may have to be worked out. A few dealers are probably taking advantage of the situation and selling coal above the schedule set by the leading dealers. These justify their course on the statement that they have been forced to buy all coal at independent company prices. Nevertheless, the practice is discouraged by the more important handlers, who believe that both dealers and public are best protected by having a uniform schedule.

Lake

MILWAUKEE

Cold Weather Starts Rush of Orders— Anthracite Advanced—Bituminous Receipts Grow More Satisfactory.

October was ushered in by a frigid wave and started a demand for coal from both city and country sources which dealers find it difficult to meet.

The inward movement of hard coal is practically dead at the present time, but bituminous is coming in more satisfactorily than at any time during the year. This is the one ray of comfort to the trade.

While the outlook for the coming winter is somewhat dubious, there are some coal men who scout the idea of anything like a serious famine. The remaining two months of navigation will tell the story.

Receipts of coal by Lake up to Oct. 1 are 583,646 tons of anthracite and 1,466,600 tons of bituminous, against 665,832 tons of hard coal and 2,498,563 tons of soft coal during the same months last year.

There is no change in the soft-coal schedule. Anthracite prices have been advanced $1.15, with indications of further raise, due to increased freights on all-rail coal.

Anthracite prices, f.o.b. dock yards follow:

Stove and nut	$16 20
Egg	16 00
Pea	14 65
Buckwheat	12.50

CLEVELAND

Outlaw Strikes Disturb Production— Lake Quotas Increased as Result of Slumping Shipments — Spot Market Weaker — Retail Prices Unchanged.

Bituminous—Outlaw strikes in the No. 8 District have upset production schedules of operators, and unless the men return to work soon they will check improvement that was being made in fuel conditions in and around Cleveland. Representatives of the conservative miners have voted to end the strike and return to work.

In the meantime, receipts of coal are dwindling. In recent weeks the spot market for No. 8 steam size has been giving ground. The price now is around $8.25@$8.50. Diminished industrial activity, tightness of the money situation and anticipation of lower prices have combined to cause buyers to hold back from dipping heavily into the market. Better car movements have made it possible for industries to depend upon their contract coal in large measure. If production is seriously interrupted by the strike, however, stiffening of price is inevitable.

Pocahontas and Anthracite—Both grades continue painfully scarce, while the demand grows more pressing. Re-

tailers are still waiting for fulfillment of the promise made by operators and railroads some time ago for an increase in shipments. Circumstances have combined to prevent this as yet. It was expected the cutting off of the New England priority would release additional coal for this territory, but seemingly all the surplus is being absorbed by the export trade.

Lake—Increase in the quotas demanded of mines on a majority of the railroads supplying fuel for the Northwest was made necessary by the continued decline in Lake receipts. At no time in September have receipts attained the record established in August. It was seen that the quotas assessed against mines were not supplying the required 4,000 cars daily.

The increase in the assessment averages about 15 per cent. One operator reports that his assessment now amounts to 75 per cent of his output. The railroads also have undertaken to enforce the regulation and to bar the billing of coal to points other than Lake ports until the fixed quota has been met.

Retail prices of coal per net ton delivered in Cleveland are:

Anthracite—Egg $16@$17.50, chestnut and stove $16.25.

Pocahontas — Shoveled lump $16, mine run $12.50.

Domestic Bituminous—West Virginia splint $13.25, No. 8 $12, Millfield lump $14.50, cannel lump $15.

Steam Coal—No. 6 and No. 8 slack $12.60@$12.75, No. 6 and No. 8 mine run $13.60@$14.25, No. 6 3-in. lump $14.45.

BUFFALO

Bituminous Demand Light — Coal Is Hard To Move—Much More Plentiful—Anthracite Picking Up Fast — City Trade Is Short of Coal.

Bituminous—Consumers seen to have plenty of stocks. They sometimes will offer not over $8, while the producer holds out for $8.25@$9. This deadlock is steadily growing worse and it promises to last till the mines cannot be run at a profit on present wages. The miners are uneasy but as things are now turning, they will soon be glad to get present rates of pay.

With the trade as it is the jobber does not dare to buy anything unless he has a ready sale for it.

Not much complaint is heard of car shortage. While they are not really what they should be it is plain that the roads are making all possible effort to meet demands and are succeeding much better. Even the increased movement of crops does not reduce the supply as it usually does. It now looks as if all the difficulty is to be on the price.

The jobber believes that a real break would improve the trade, for as soon as the consumers are convinced that prices will go no lower they will buy liberally. Most of them are staying out of the market as far as high-priced coal is concerned and depending on their contracts.

A little smithing coal is moving, but it is selling at high prices, some Blossburg being reported $11@$12 at the mines. Gas coal is also nearly as high as ever, seldom selling at less than $11. Not much of either is coming this way.

Anthracite—The city consumer is making all possible effort to get a full winter supply, sometimes paying an exorbitant price for it. Miners are at work again and coal is coming this way at a good rate. It is even reported that certain non-union miners, who have been out a long time, are coming back, so that if there is no new disturbance the fall production may be better than the average so far.

Some high prices are still reported. One lot sold at the mines this week at $15 per gross ton.

Lake—Shipments are good again, being for the week 119,350 net tons, of which 40,700 tons cleared for Duluth and Superior, 35,100 tons for Chicago, 16,800 tons for Milwaukee, 11,150 tons for Fort William, 10,000 tons for Port Arthur and 5,600 tons for Ashland.

Freight rates are strong on account of scarce tonnage, 75c.@85c. to Chicago, 70c. to Milwaukee, 60c. to Duluth, Ashland, Fort William and Port Arthur.

Coke—The market is quiet, as the demand is light. Prices have not changed materially, being $18.50 for 72-hour Connellsville foundry, $17 for 48-hour furnace and $14.50 for low grades.

South

BIRMINGHAM

State Control Is Proposed — Railroad Tonnage Is Heavy—Inquiry Holds Up for All Grades—Car Supply Ample for All Operations—Labor Conditions Improving Steadily.

Inquiry for both steam and domestic coal is holding up in a satisfactory manner, demand for domestic grades continuing very strong. There is a slight weakening in the market for steam grades though the tonnage still sought is far in excess of the available supply of free coal.

The probability of the state assuming control over prices and distribution of free coal is no doubt causing some hesitancy in the buying movement. Operators controlling about 75 per cent of the output of this field have proposed a schedule of prices at which they will throw all their output, over contract requirements, into spot trade channels. Such surplus fuel to be distributed to consuming interests by a state fuel administrator to be appointed by the Governor, at prices ranging from $3.50 for Big Seam mine run to $4.50 for Black Creek and Cahaba mine run, a differential of 50c. being proposed for prepared sizes. These figures are practically the same as are now being received on contract deliveries and much less than for spot coal under the stress of competitive bidding. These schedules would be effective during the present coal shortage or during any like condition prior to Feb. 1, 1923 and subject to labor cost adjustments.

All mines have received an ample car supply during the past week and the output will show a material increase. Rail lines continue to confiscate much coal originating on their rails, the Seaboard Air Line R.R. having secured an injunction against the Frisco for taking over fuel coal from a number of mines in the Walker County field with which the former holds fuel contracts and has been unable to get much of the output recently.

The labor situation is very much better than a week ago at almost every point in the district and the strike menace is gradually passing. Many old men have returned to work this week and new labor is also being brought in. Quiet prevails throughout the field.

LOUISVILLE

Demand Is Good—Prices Are Softer—Supreme Court Decision Awaited on Lever Act — Modification of Assigned Car Ruling Is Welcomed.

New service orders of the Interstate Commerce Commission, relative to supplying cars for public utilities, and forcing utilities to quit gobbling coal, have resulted in a little smaller movement to this class and a softer market, as a result of more spot coal being available.

The Louisville & Nashville R.R., announced that it would distribute cars for shipment of spot coal to Kentucky consumers ahead of assigned cars for utilities out of the state. Lake movement will not be affected, but home industries and domestic consumers now stand a chance of securing fuel, of the rules are not again changed. As the situation now stands it looks as though it is an open market again and that utilities will have to buy in competition with others.

Demand continues very good as a whole. Export buying has been light, although some coal is moving through South Atlantic points. Industries of the South appear fairly well stocked. Domestic consumers and retailers are still far from supplied. Railroads are buying well, and are better supplied than for some time past. Car supply is about 35 per cent, and many mines have been idle for weeks under the old assigned car plan.

The refusal to grant an injunction to the Marrowbone Coal Co., against interference and prosecution by Federal officers was expected by many operators. However, it is not believed that there will be much prosecution undertaken until after the Supreme Court decides the constitutionality of the Lever Act, which is expected to take place in October. After reporting fair prices the Covington Jury adjourned until Oct. 12, pending decision of the high court on Sec. 4, of the Lever Act. When the jury re-convenes it plans to ascertain whether compan-

ies have complied with the finding on prices.

That will hardly be necessary inasmuch as coal operators are paying no attention to the prices set. In many cases operating expenses have been running from $4.50 a ton upward, due to the fact that many mines have been getting practically no cars. Most operators are so satisfied that the Supreme Court will knock out Sec. 4, that they are willing to await developments.

Prices quoted in the Eastern Kentucky field show gas, mine run $8.25 @$9.25, steam $8.25@$8.50, block $10.50 @$11.

Northwest

MINNEAPOLIS

Dock Shortage Grows More Serious—High Price-Level Is Maintained—Lake Dumpings Must Be Increased To Avert Shortage.

The trade has been working for 6 months to secure an adequate supply on the docks against approaching winter. Despite every effort which has been made the present situation is, that with less than 60 remaining days of navigation on the Lakes, there is likely to be a shortage of 5,000,000 tons of soft coal.

Anthracite was supposed to be moderately provided. But the recent vacation has thrown things behind there also. With both grades short, there is no chance for any substitution of one for the other.

Prices ranging on soft coal up to $13 a ton add further uncertainty to the situation. Dealers do not dare stock beyond urgent needs on this high priced coal. It is true that any decline at present seems remote. But it does not seem possible for the extreme figures to continue after the panic rush has been supplied. Hence they are seeking to move cautiously.

The announcement has gone forth that the National Association promises sufficient coal for all, available after Dec. 1. The need of this district is before Dec. 1, and calls for adequate cars. Coal available after Dec. 1 is going to help but little toward filling the docks, and unless the coal goes to the docks, it must go right to the dealers bins.

There will be some help if coal is available from Illinois and Indiana mines after Dec. 1, for that is an all-rail source of supply. If cars are available, it will mean some relief from that section. But there is absolutely nothing to base the expectation upon, save this promise. It is doubtless well intentioned, but it makes no coal for this district should it prove impossible to fulfill, which most men in the trade believe it will be.

Operation of the railroads of the Northwest is showing a slight improvement, but far from enough to give assurance of being able to handle the extra tonnage called for. At any rate, it is not the problem of the Northwestern roads but of the Eastern lines running to the lower Lake ports. Unless they can meet the situation, the Northwest will be confronted by the most serious coal shortage in its history.

Inland West

DETROIT

Increasing Demand from Domestic Consumers Follows Cooler Weather—Bituminous Receipts Improve—Some Reduction in Retail Price—Lake Movement Still Inadequate.

Bituminous—The chill of near-winter, has stimulated a more urgent inquiry for coal from domestic consumers, some of whom apparently had been rendered rather indifferent by the reassuring announcements recently coming from Washington. There is a continued active demand also from industrial consumers, many of whom are desirous of building up reserves before cold weather adds to the hazards of transportation.

Shipments of bituminous are still much short of requirements though some dealers report a slight improvement in supply. Jobbers and wholesalers find free coal is almost unobtainable and at times encounter considerable difficulty in providing for the requirements of steam plants dependent on a frequent renewal of supply.

Some interest in the retail trade was created during the week by the announcement of a 10 per cent reduction in price of bituminous to steam and domestic consumers by one of the local firms. A statement accompanying this explained the reduction was intended to offset the effects of a recent announcement from Washington that there would be plenty of coal for everyone at cheaper prices.

The effect, in conjunction with the mild weather then prevailing, was to cause cancellation of a number of orders from local consumers. With the discount offered, Pocahontas that has been quoted $12.50@$16 is made available $11@$12.40 a ton to small consumers.

Anthracite—Shipments are not yet of sufficient amount to assist materially in solving the fuel problem. Retail dealers say they are unable to give assurance of any early improvement in supply or that they will be able to fill orders that have been standing on their books for many weeks. The hope is expressed that anthracite will be available in more liberal supply after the close of navigation.

Lake—Movement of coal over the Lake routes continues to fall short of the 4,000 cars a day regarded as the minimum necessary to provide for requirements of the Northwest. The deficit to Oct. 1, is approximately 3,100,000 tons, compared with 1919.

COLUMBUS

Steam Demand Is Easier—Prices Break—Retail Situation Acute and Prices Are Strong—Lake Trade Progresses.

There has been a slight recession in the extreme high prices for steam grades. This is attributed largely to falling off in demand from large consumers as a result of curtailed operations. The recession is expected to be only temporary however, in view of the colder weather and conditions in the Eastern Ohio field. The trade is still fairly active.

Retailers are now coming into the market in full force. Cooler weather is causing some anxiety among consumers. Dealers are bringing pressure to bear for shipments, claiming that suffering will follow unless something is done to relieve the situation.

Priority orders for the Lakes and public utilities still maintain and only a small tonnage is being shipped to dealers.

Retail prices are still firm. Hocking lump sells $9.50@$11, mine run is $9.25@$10.75. West Virginia splints are selling $10@$12. Pocahontas is still scarce and sells $12.50@$15. Some Kentucky lump is being sold around $11.

Steam trade shows a little easing up because of recession in business and the flooding of certain areas with other coals. Many factories are on part production and this naturally restricts the fuel demand. Railroads are still taking a large percentage of the production. Public utilities are fairly well supplied for the present.

Production has held up fairly well at the levels maintained for several weeks. With the strike in Eastern Ohio the output is restricted far below the 40 per cent mark with indications of even less.

Lake trade is running along smoothly with a good tonnage being moved from Ohio mines. Vessel movement is generally good and little congestion is reported at the lower docks.

Prices at the mines of the principal coals sold in Ohio are:

Hocking lump	$6 50@ $8.50
Hocking mine run	6 00@ 8.00
Hocking screenings	6 00@ 7 50
Pomeroy lump	6 50@ 9 00
Pomeroy mine run	6 25@ 8 00
Pomeroy screenings	6 00@ 7 75
West Virginia splints, lump	6 50@ 8 50
West Virginia splints, mine run	6 25@ 8 25
West Virginia splints, screenings	6 00@ 7 75
Pocahontas lump	7 75@ 9 00

ST. LOUIS

Steam Conditions Are Easy and Coal Is Plentiful Locally—Domestic Is Short and Prospects for Future Not Good—Car Supply Poor, and Railroad Demands Heavy—Outlying Districts Are in Bad Shape.

The local steam situtation is easier than for the past three months. Standard screenings off the short line roads are down to $4 at the mine. Two weeks ago they were strong at $6@$7.50. This is brought about partly by the Federal investigation of profiteering in Chicago. The domestic situation is still in bad shape.

There is no anthracite coming in, but such as is here is retailing at about $18 a ton for all sizes. No smokeless was moving in last week. This is retailing at about $16 for lump and egg, which is the price of smithing coal. No coke is available.

St. Louis enters upon the winter months with a somewhat uncertain future. The first touch of cold weather brought a realization of what the city may have to contend with a little later.

Mines in the Standard field are working fairly well but car supply is short. The average working time is 3 days on domestic and 5 or 6 days on railroad coal, which is growing heavier daily, taking the coal away from commercial avenues. In the Mt. Olive field working time has been better.

Carterville field had fairly good working time on all roads, excepting the Iron Mountain and Illinois Central. The Iron Mountain is furnishing but few more cars than they need for company coal. Working time averages between 3 and 4 days in general in this field, with no labor troubles.

Prices in the Standard field for St. Louis are $4@$8 for domestic sizes and as low as $4 for screenings, with outside screenings as high as $6. Similiar prices obtain in the Mt. Olive field, excepting on St. Louis business and contracts, which run $4.50@$5 for domestic sizes. Carterville domestic sizes sell at $4.80@$8, the latter being the price the independent operators are securing. This price is practically obtained in the Duquoin field.

All operators show that they are from 3 to 5 months behind in shipments, with the railroads continuing to demand more fuel daily. The movement of cars is fairly good right now, but there is a lot of bad-order equipment and motive power is not in first-class condition in the Middlewest as a rule.

CHICAGO

Aggregate Demand Still Exceeds Supply — Industrial Curtailment Lowers Steam Demand — Domestic Trade Is Heavy — Illinois Coal Is Strong with No Decline in Sight.

A slight betterment in car supply was not sufficient to ease the local demand. Troubles in the Clinton field in Indiana added to the shortage of available fuel. The industrial demand, however, has lessened considerably. Buyers are not actively in the market, partly because immediate needs are filled, but for the most part due to curtailed operations of plants.

Prices are unchanged, holding firm in the face of heavy domestic demand. Retail dealers have plunged into the open market for prepared sizes, urged by the calls for deliveries on orders placed weeks ago by householders. The advent of cooler weather has caused an insistent demand for immediate deliveries.

Domestic users are becoming convinced that the scarcity of anthracite and Pocahontas will necessitate a substitution and are placing orders for high-grade Indiana and Illinois coals. Little of this is to be had, however, and the retailers are only able to obtain that from the fields of poorer grades.

Apportionment of available stocks has been resorted to by some dealers to relieve the immediate demands made upon them. Should coal be received later in sufficient quantity to fill all orders delivery facilities of the retailers will be taxed to the limit.

Retail prices on southern Illinois coal are $10@$10.75, smokeless, when obtainable went as high as $16.25, delivered. A strong demand for all the Illinois coal that can be produced is indicated by the scarcity of the usual domestic fuels such as smokeless and anthracite. Because of this, there is little likelihood of any early decline on Illinois coal, either for domestic or commercial consumption.

BUTTE

Freight Rates and Labor Increases Add to Cost of Local Coals—Committee Is Endeavoring to Relieve Shortage.

Due to increases in freight rates and labor costs, the price of coal in this state has advanced 25c@$2. The increase is greatest on coal for domestic use.

A year ago San Coulee coal sold at $3.75 f.o.b. mines, with freight to Great Falls of approximately 65c. Mine price is now $4.75 with $1.15 haul, making a retail figure of about $8.50. Mine run has advanced to $6.50.

Bear Creek coal now costs the consumer $12 and little is to be had at that price. Dealers are far short of their normal supplies.

Coal prices in Butte are higher than in most Montana cities. A special committee of the city council has been appointed to ascertain a reason for the wide difference in price, as well as to undertake to relieve the existing shortage.

West

DENVER

Wage Increase Tentatively Accepted by Miners — Demand for Union Recognition Not Abandoned.

One of the serious obstacles threatening interruption of the coal industry in Colorado, particularly in the lignite fields, apparently has been eliminated, in the granting by independent operators of a daily increase of $1.50 to workers and 82c. to "scrapper" boys. It affects about 4,000 miners in the lignite fields, and another 4,000 in bituminous fields.

The advances, retroactive to Sept. 1, have been tentatively accepted by the men through officials of District 15. They demanded an increase of $1.73 during an 8-hour day.

The paramount issue, involving recognition of the union, and made a part of the union demands, has not been abandoned by leaders, and may flare up after Oct. 8, the official date for a show-down under the state industrial law. The agreement was negotiated through the Victor-American Coal Co., and likewise affects 18 smaller companies. These have no contractual agreement with the union at present.

The Colorado Fuel and Iron Co., employing about 4,000 men, has granted its employes an increase of $1.25 a day, corresponding to day work of other companies, under the Rockefeller industrial plan. The union is not recognized. Statements that company employes have asked for a strike vote is being denied by President J. F. Wellborn.

Robert Foster, an international organizer, is urging labor unions generally to contract for the entire output of certain union-controlled mines, the cars to be billed to groups of consumers. Officials of the Colorado Federation of Labor are considering the feasibility of the plan.

Coal prices, in most instances, were advanced early in September, from 30c. to 50c. a ton, in anticipation of the demands of mine workers.

SAN FRANCISCO

Receipts Are Adequate — Prices Have Reached the Peak—Retailers Have Accumulated Some Surplus.

Although railroad cars are not by any means plentiful the Pacific Coast is getting sufficient coal from Utah and Wyoming to answer present demands and to provide a bit of a surplus for the early winter calls. Much of the equipment formerly used in transporting coal to San Francisco has been diverted to other business in the last few months.

Local coal men agree there will be no further advance in prices, saying the "peak" has been reached.

Bituminous prices, f.o.b., mines, wholesale, Utah and Wyoming, per net ton, are unchanged. Stove and lump remain at $5.

Canada

TORONTO

Export Order Amended — Permits To Ship to N. S. Will Be Issued

An order in Council has been issued by the Canadian government amending the order adopted some weeks ago, forbidding the export of coal from Atlantic ports except to the United States and Newfoundland. The new order provides that in the case of each shipment by water to the United States an export permit must first be secured from the Board of Railway Commissioners.

The object, it is explained, is not to restrict exports across the border, but to make consignees satisfy the Board that the coal is really for United States consumption. The issuance of permits will also make it easier for the Board to keep track of the export movements of coal.

News From the Coal Fields

Northern Appalachian

PITTSBURGH

Monongahela R.R. Opening at Both Ends Improves Distribution and Stiffens Market—Export Demand Lighter.

The restrictions placed by the Monongahela R.R. on coal and coke deliveries to the Pennsylvania R.R. whereby deliveries would be made only against equal numbers of empty cars furnished, have been lifted, and there is now a fairly free movement. The coal that had been forced out on the Lake Erie, the other connection of the Monongahela R.R. had depressed the market as noted in last report, and the restoration of normal delivery conditions has since caused this to rebound. Prices are up to where they were two or three weeks ago.

With a continuance of fairly heavy coal production in the Pittsburgh district, and on the whole a slight increase, the failure of prices to settle down to something like a moderate level requires further explanation. This seems to be furnished in the argument that consumers are more eager to buy coal for stocking purposes on account of the near approach of winter.

While transportation conditions are fair at present, it has been the common theory for months that they would grow worse with the advent of winter. There is, however, a slowing down in not a few consuming industries that may in the course of a few weeks lessen the actual demand for coal, so that altogether the market output is rather uncertain.

A decided decline is reported in the export demand for coal and this change seems to balance the fact that the Western Maryland embargo continues, so that while only limited tonnages can be shipped to Tidewater there is also a limited demand. The market for spot coal is quotable $9@$10 for steam and the lower grades of gas and by-product and $10@$11 for best grades of gas and byproduct, per net ton at mine, Pittsburgh district.

CONNELLSVILLE

Offerings and Demand Both Lighter—Pennsylvania Deliveries Difficult—No Interest in Contracts—Spot Market Is Unchanged.

On the whole, the amount of Connellsville coke, both furnace and foundry, available in the spot market is decreased as compared with conditions of two or three weeks ago. There is also somewhat less buying pressure and the two changes appear to balance as the spot market remains as formerly quoted.

While some buyers have dropped out of the furnace coke market in the past few weeks others are buying as much as formerly and those who remain are having somewhat more to say as to prices they will pay.

While the Monongahela R.R. is now making some deliveries of loaded coke cars to the Pennsylvania R.R. without the restriction formerly imposed, that the Pennsylvania furnish an equal number of empties, shipping conditions on the latter are decidedly poor, most of the yards, if not all, being congested and a shortage of motive power being apparent. The Pittsburgh & Lake Erie R.R., on the other hand, is functioning well.

The result of these conditions is a plain split in the market, whereby spot furnace coke by Pennsylvania is quotable at $17 and P. & L.E. deliveries are readily available at $16.50. Sales are reported at $16@$16.25 but seem to cover coke of somewhat uncertain quality.

Demand for spot foundry coke, while generally lighter than a few weeks ago, has picked up somewhat in the past week, the change being attributed to a desire on the part of coke foundries to get a few carloads ahead for the winter.

The spot market is quotable as a week ago at $16.50@$17 for furnace and $17.50@$18 for foundry, per net ton at ovens. Contract coke is unquotable. One or two operators have named asking prices for first half of $14 for furnace and $15 for foundry, but buyers are in no mood to negotiate at this time, particularly as the blast furnace and foundry industries now seem marked for lessened activity in the not distant future.

The *Courier* reports production in the Connellsville and Lower Connellsville region in the week ended Sept. 25 at 202,840 tons, an increase of 1,910 tons. The merchant ovens alone, however, showed a decrease of 5,490 tons, 74,500 tons being produced.

UNIONTOWN

Car Supplies Decline — Coal and Coke Prices Have Advanced—Yard Congestion Clearing.

Still lessened car supply, coupled with an export coal order of some size, combined to boost prices last week. The market tone is firm and slightly bullish. Coke is now $17.50 and $16.75 for Pennsylvania and Lake Erie shipment, respectively, and the remaining three months of the year are expected to guarantee this price with little fluctuation.

At the mines, Pool 44 coal is now $9.50@$9.75 with Baltimore & Ohio and Pennsylvania R.R. Pool 34 coal respectively $10.75@$11 and $10.25@$10.50. By-product coal still holds fast to its $10 figure with no immediate prospect of change either way. P. R.R. steam is now $9, while B. & O. steam has scored a sharp advance to $9.50. This was caused by the export order that accepted best B. & O. steam coal for its requirements.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

BITUMINOUS COAL

	1920		1919 (a)	
	Week	Calendar Year to Date	Week	Calendar Year to Date
Sept. 11b	10,685,000	369,258,000	11,046,000	318,410,000
Daily average	2,016,000	1,710,000	1,841,000	1,475,000
Sept. 18b	11,673,000	380,930,000	11,253,000	329,663,000
Daily average	1,945,000	1,717,000	1,876,000	1,485,000
Sept. 25c	11,817,000	392,747,000	11,613,000	341,276,000
Daily average	1,969,000	1,723,000	1,936,000	1,497,000

ANTHRACITE

	1920		1919 (a)	
	Week	Calendar Year to Date	Week	Calendar Year to Date
Sept. 11	546,000	59,160,000	1,408,000	57,376,000
Sept. 18	699,000	59,859,000	1,665,000	59,041,000
Sept. 25b	1,650,000	61,509,000	1,760,000	60,801,000

BEEHIVE COKE

United States Total

Week Ended				
Sept. 25 1920c	Sept. 18b 1920	Sept. 27 1919	1920 to Date	1919 to Date (a)
401,000	403,000	344,000	15,694,000	14,485 00

(a) Less one day's production during New Year's week to equalize number of days covered for the two years. (b) Revised from last report. (c) Subject to revision. All figures in net tons

Car supply continues to dwindle, the Pennsylvania scoring some of the poorest records in many weeks. For four successive days the P. R.R. failed to place a coal car on the Redstone branch and for three days delivered no coke cars to the Monongahela.

On the Monongahela Ry. the Pennsylvania made 35 per cent coal car placement. In the same period the Lake Erie placed over 2,000 cars on the M. R. against requirements of about 2,500. On the Southwest the Pennsylvania made a 20 per cent showing, dropping, however, on the Redstone to less than 10 per cent.

The Pennsylvania placed less than 140 coke cars on the M. R. against meagre requirements of some 380. The Lake Erie, as usual, shouldered the bulk of the M. R. coke demand, placing about 1,500 cars with requirements of 1,200. On the Southwest the P. R.R. placed 40 per cent, falling to 30 per cent on the Redstone. Placements by the B. & O. were very light.

Yards have been slightly cleared this week, Youngwood's total falling from 1,900 to 1,100 and Rainey's from 225 to 135.

FAIRMONT

Car Shortage Grows Worse—Little Available Commercial Coal—Assigned-Car Loading Is Heavy—Railroads Broach Fuel Question—Export Shipments Decline.

For the week ended Sept. 25 there was an extremely poor car supply, production being cut to a point much below that of the previous week. This was due no doubt to the fact that empties which might have been distributed were being diverted to the anthracite regions.

The tonnage of railroad fuel was heavy, loadings being largest when in fact the car supply was shortest. Because of this large tonnage, for a time during the week commercial shipments were extremely limited.

Officials of the B. & O. R.R. and other roads are said to be anxious to make overtures to the coal producers about the question of railroad fuel supplies but inasmuch as the operators have been ignored when making the same suggestion they are in no mood to move with alacrity in meeting railroad officials.

Curtis Bay and other Tidewater shipments were much less in volume during the week, principally because of the limited car supply. While for a time coal was being exported from points off the Mongahela Ry. an embargo was imposed toward the end of the week insofar as shipments via the Pennsylvania and Western Maryland were concerned. It is thought that in view of limited export shipments there might be a slight recession in prices.

EASTERN KENTUCKY

Car Supply Improves—Lake Shipments 3,500 Tons Daily — Demand Is Heavy and Prices Are Unchanged.

Car supply was improved for mines on the Chesapeake & Ohio R.R. during the period ended Sept. 25. During the first four days C. & O. production averaged about 20,000 tons daily.

Between 3,000 and 4,000 tons a day were consigned to the Lakes. The balance of the output for the most part was going to northern and western markets. It is doubtful, however, even in view of improved transportation facilities, if eastern Kentucky mines during the last half of September were producing at the rate of 50 per cent of capacity.

While prices may have been slightly off as compared with those prevailing during August, nevertheless there continued to be a stiff demand.

EASTERN OHIO

Outlaw Strike Cuts Production in Half — Radical Element Is Cause of the Trouble—Miners' Representatives Vote To Return.

Interest in the No. 8 Field during the past week has centered chiefly around the outlaw strike situation. About half the mines in the district have been idle since Monday, notwithstanding a resolution sent to all local unions by district and sub-district officers and scale committee of the United Mine Workers directing them to have their members continue working and to prevent any suspension until after a meeting called for Sept. 29. At this meeting it was proposed to explain to delegates the reason for the union officers' belief that a strike at this time is illegal and untimely. The original number of strikers has increased somewhat each day.

This illegal strike is the result of agitation on the part of the radical element to reopen the existing contract with the operators to secure payment for moving slate less than 12 in. thick. This question was fully submitted to the President's Bituminous Coal Commission and decision rendered by that body that the mining scale always has and does include proper compensation for this work. The radical element, however, recruited a considerable following, demanding further increase in the scale at this time for loading all stone.

The meeting on Wednesday was a stormy one, resolving itself into a contest for control between the officers and outlaws. An agreement was not reached and the meeting adjourned in a near-riot to meet again Thursday.

Late reports indicate an early end of the trouble, when representatives of 5,000 miners voted to end their strike.

Production figures for the week are not available, but will be considerably less than half of normal, as such mines that worked were short-handed.

CENTRAL PENNSYLVANIA

Production Is Slow — Smaller Mines Are Sluggish — Little Adherence to Wage Scale — Domestic Receipts Are Inadequate.

Conditions are not at the present conducive to the rapid supplying of coal either for domestic purposes or for shipping. The wagon mines in the Allegheny mountains which supply Altoona and other towns in Blair County are not being operated to any extensive degree. Trucks hauling coal from the mines for domestic consumption experience much difficulty in getting more than one load a day.

Operators claim they cannot keep the miners at work; that if they could, the entire demand could be filled. Miners are averaging $15 a day in the wagon mines and usually leave the mines before noon. But two of the 17 mines in the Buckhorn district are paying the scale of District 2. The others all pay more.

Following the granting of the increase to day men several weeks ago of $1.50 a day, the price of coal at the mines in Cambria County which supply Altoona and many other towns, was advanced from $4 to $5 a ton and this has been passed to the consumer. Coal in Altoona from the Buckhorn region is selling at $9.

NORTHERN PAN HANDLE

Stone Controversy Curtails Eastern Ohio Production — Northern Pan Handle Industries Affected—Lake Tonnage Is Heavy.

The most important development of the week ended Oct. 2 was a strike of 5,000 miners affecting many of the mines both in the Northern Pan Handle and in Eastern Ohio.

It was estimated that fully 50 mines were closed by the strike, which lasted from Monday until Friday, shutting off to a great extent production of coal and even causing a suspension of work at a number of industries in the Northern Pan Handle. The strike grew out of a demand for pay for stone work, operators declining to accede to the demands made.

Until the strike, mines were operating on about a 70 per cent basis, with a large part of the coarse coal going to the Lakes. There was comparatively little free coal available.

Middle Appalachian

KANAWHA

Cars Are Freer—Lakes Absorb Heavy Tonnage—Strong Demand—No Price Fluctuations.

Rather marked improvement was observed in the transportation situation, at least insofar as the Chesapeake & Ohio Ry. had anything to do with the car supply. Distribution at no time during the week with the possible exception of Saturday was below 70 per cent.

The week was opened with nearly a 100 per cent supply of empties available. Even on Tuesday mines were favored with an 88 per cent supply, 582 cars being loaded at C. & O. mines on that date.

Coal River mines were also favored with a fairly large placement during the greater part of the week. Transportation conditions were not so satis-

factory on the Kanawha & Michigan Ry. Mines on that road had at no time more than a 70 per cent supply and by the end of the week this had declined to 19 per cent.

Western markets received the larger part of the output, approximately one-third being consigned to Lakes. This proportion was even larger on the Kanawha & Michigan.

Renewed demand for Kanawha coal was due to a growing market for domestic, there being many inquiries for splint. Price fluctuations, however, were reduced to a minimum.

NEW RIVER AND THE GULF

Better Car Supply Increases Output—Prices Are Firm with Strong Demand—Tide Gets Heavy Volume of Tonnage.

A better car supply both on the Chesapeake & Ohio and Virginian Railroads made for an increased production in both regions during the period ended Sept. 25. Market conditions were such as to encourage a larger output.

The output of New River was still limited to about 60 per cent of potential capacity and on Tuesday production was as low as 40 per cent.

Not more than 30 or 40 cars of New River coal a day were being shipped to Lakes and no coal was going to New England to speak of, except on contract, the tonnage heretofore consigned to the Northeast finding its way to Tidewater and Inland East points. Inland West shipments were at a minimum. Little change in prices was observed in view of a strong demand in all markets.

Impetus was given production in the Winding Gulf by an improvement in the car supply, though this was more marked on the Virginian Ry. than on the Chesapeake & Ohio R.R.

POCAHONTAS AND TUG RIVER

Car Supply Shows Improvement—Labor Losses Grow—Price Is Held Down—Lakes and Export Tonnage Heavy.

Ground was gradually being regained during the latter part of the month. Increased transportation facilities on the Norfolk & Western R.R. brought about this result.

During the last 10 days of September the car supply made for a larger production in the Tug River field Operators were still experiencing trouble in securing a large and regular turn-out of miners and were somewhat inclined to believe that the increase in wages instead of stimulating the miners to greater efforts was having opposite effect. Labor shortage caused the loss of more tonnage than a scarcity of cars.

There was a healthy demand for the output. Large as was the tonnage going to the Lakes, there was an even larger amount for Tide and for Inland East delivery, suspension of the New England priority being a factor in leading to greater promptness in dumping at Tidewater.

Greater regularity in the operation of Pocahontas mines and a larger production was made possible during the last days of September by an adequate car supply on the Norfolk & Western R.R. The output averaged between 325,000 and 350,000 tons as September ended. Labor shortage here also overtopped car shortage losses.

There was a stiff demand in evidence but producers sought to see that prices were held to a conservative basis. Tidewater shipments were large in volume, although the Lakes and Inland West markets were getting a fair percentage of Pocahontas production.

VIRGINIA

Production Is at 75 Per Cent of Capacity—Car Supplies Are Slightly Improved—Prices Are Firm.

The end of September brought little change in conditions, production still being limited to about 75 per cent of potential capacity. About 30,000 tons, however, were used in the coke ovens. The greater part of the loss in production was due of course to car shortage, though losses from such a source were not quite so heavy at the end of the month as they had been at the beginning.

While there had been a slump in prices for a time and while there had been less activity in spot coal, as the month came to an end prices appeared to be on a somewhat firmer basis, but there was an absence, to a great extent, of the wildly speculative buying which formerly ran prices up to such a high level. The fact that Virginia mines were no longer compelled to ship to New England also gave such mines a broader market.

LOGAN AND THACKER

Production in Williamson Increasing Satisfactorily—Logan Output Declines—Lake Shipments Heavy—Prices Advance Slightly.

A growing production in the Thacker field during the week ended Sept. 25 was met by a lessened production in the Logan region, where the car supply affected the output. Market conditions generally were conducive to large production in both fields.

In the Williamson field there was a marked improvement in production conditions. Output for September was fully twice as large as that for August, owing to the number of additional mines at work.

By the middle of September there were about 750 miners working as against 107 men on July 1. It is estimated that in September 70,000 tons of coal were produced within the strike zone.

Logan mines were unable to produce as much coal as during the preceding week, empties not being so plentiful.

The Lakes were securing a very large percentage of Logan's output, at least during the first three days of the week, when Lake shipments aggregated about 35,000 tons. In addition to Lake, a very considerable tonnage was being sent to northern and western markets. There was a strong demand for steam coal and also for splint. While there was a good deal of fluctuation in prices for mine run spot, the maximum reached was about $9.50, an advance of 50c. over the preceding week's figure.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Assigned Cars Rule the Field—Prices Have Slumped—Labor Situation Is Materially Improved.

Events for the past week and the series of happenings have served to seriously demoralize the market, both as to prices and production. The renewal of the assigned car order has practically cut off production from mines that do not have assigned car business. Many mines are reporting that they have not received cars in more than two weeks. Railroads report that they are barely receiving enough cars to fill assigned car orders and that they have no encouragement to offer as to a better car supply in the near future.

Prices have slumped to a point where some of the "Snowbird" type of mines are barely making expenses. The actual market price is rather hard to state, but quotations for assigned business are about $5@$7 with a still further decline in sight.

Middle Western

WESTERN KENTUCKY

Situation More Promising with Strike Sentiment—Demand Is Good at Firm Prices—Production Is About Normal.

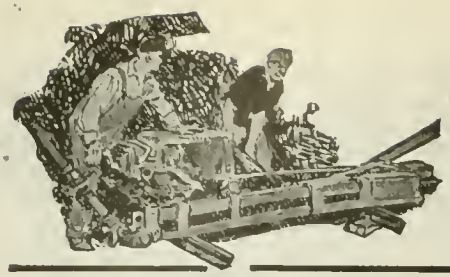
For the past week or 10 days negotiations between operators and union leaders have been going on. A meeting was held at Central City last week by the operators, and a joint meeting at Louisville later. There were further conferences during the week.

Operators have been threatening to bring suit against the unions, under the Danberry Hatters ruling, charging that the miners have violated a contract which was to have run until 1922. At Drakesboro, circulars threatening violence were posted. Union operators repudiated the threats.

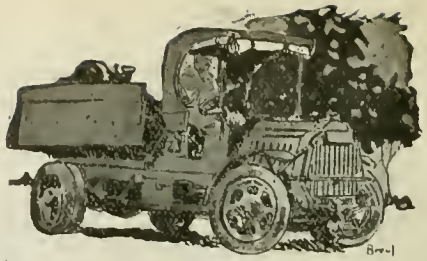
Union officials instructed striking miners to return to work on Monday, following the reaching of an agreement by a committee of operators and men the latter part of the week.

Operations in the field as a whole were not held back, especially in view of the fact that operating mines took all cars available. There was a smaller supply than in August, when strikes in fields North of the river resulted in better local placements.

Prices as a whole are firm with no change shown. Coal is selling $7.50@$8.25 a ton, for all grades. Demand is from railroads, utilities, industrial concerns and retailers for domestic consumption, with a fair movement South.



Mine and Company News



ALABAMA

Birmingham—Nine men have been arrested, charged with complicity in the recent murder of Leon M. Adler, general manager of the Corona Coal Co., who was shot during an encounter with striking miners.

ILLINOIS

Minonk—Work is being pushed at the Minonk coal mine in preparation for the erection of the steel tower, which will take the place of the frame tower recently destroyed by fire. It has been decided to make temporary arrangements to hoist enough coal for local demand.

Duquoin—The Kanawha Fuel Co., of Milwaukee, operating a mine north of this city, has started loading coal from an old slack pile. The coal has been out in the air for over twenty years. The slack pile being within easy distance of a railroad switch, a viaduct was built and the coal is loaded into pit cars and hauled to the track and dumped into coal cars.

INDIANA

New Goshen—The Ft. Harrison Mining Co., is sinking a new mine near its Clovelly operation, south of here. This mine will work the No. 4 vein. Machinery is beginning to arrive, and it is expected to start working entry before the end of the year.

Boonville—Fire of undetermined origin resulted in the loss of the tipple and blacksmith shop of the Erie Canal Coal Co., six miles west of here. The loss is placed at $25,000. The company, which was working on a railroad contract, will rebuild immediately, requiring about three months' time. The mine is owned by Dr. T. D. Scales, William F. and Kenneth Weyerbacher, of this city.

IOWA

Essex—The coal pocket belonging to the Essex Lumber and Fuel Co. has been destroyed by fire. The building was erected seven years ago, and cost several thousand dollars. Owing to the scarcity of coal the building was practically empty with the exception of some slack.

KENTUCKY

Ashland—No time is being lost by S. S. Porter of Ashland in developing coal territory under lease by him on the Right Fork of Beaver Creek. Rails for the new road being built to the tracts under lease have been assembled. Mr. Porter is proceeding with the work of driving an entry for the new mine. Material for the construction of the mining plant is beginning to arrive.

Bastin—The Elkhorn Collieries Co. is having plans prepared for the erection of a new coal tipple on its properties in this district, and installation of machinery will be commenced at an early date. Plans have also been perfected for housing development.

MISSOURI

Jefferson City—Governor Gardner in response to complaints from all over the state has asked the Public Service Commission to work in conjunction with Attorney General Frank W. McAllister to investigate coal conditions and to secure by mutual co-operation, promises from Illinois operators to take care of the actual needs of the eastern part of the state. The same influence may be brought to bear to care for the western part of Missouri in connection with Kansas operators.

MONTANA

Billings—A new branch line connecting with the Billings and Central Montana terminal at Shepherd is to tap a coal field in the Bull mountains believed to be on a par with the Carbon County field. The coal is the so-called Glendive vein. Grading on the new road will be commenced in a short time.

OHIO

Corning—The Faye Coal Co., recently chartered at Columbus with a capital of $150,000 has taken over the mine of the Corning Coal Co. The present capacity is 300 tons daily, which will be doubled in the near future. Output will be sold through the Consolidated Coal Co., of Columbus, of which R. C. Kyle is the head.

PENNSYLVANIA

Johnstown—The Valley Smokeless Coal Co. operating mines in this vicinity has sold its interests to the Weston Dodson Co. The Smokeless company was owned by Brown Brothers & Co., of Philadelphia, and while the consideration was not made public, it was close to the million dollar mark. The output of the mines averages 300,000 tons annually. The company employs normally about 200 miners.

Altoona—While the wagon mines in the vicinity of Altoona are working steadily enough, they have been unable to supply the demand for local consumption. Haulers have increased the price from $6.75 to $8 a ton delivered to the curb. About 600 tons weekly reach the city from these mines.

Uniontown—An explosion of dynamite wrecked the entry to the Boyle Coal Co. mine at Edenborn, 20 miles south of here, near the Fayette-Greene County line. The mouth of the mine was completely closed, tons of earth and rock being brought down by the blast. It is believed at least a dozen sticks of dynamite were exploded.

No motive is known for the dynamiting, although there is said to have been some dissatisfaction in the district. John Boyle, of Scottdale, is head of the company.

Pittston—An effort is being made to compare the record of Michael Hanahue of this city with that of any other miner in the country. He is now retired on pension, but during 40 years of continuous work, working on an average of 200 days every year, Hanahue mined in round numbers, 32,000 tons of coal. He worked over 48,000 hours.

Ebensburg—The Ebensburg Coal Co. has broken ground for the erection of 30 frame dwelling houses at Revloc, twin town of Colver, Cambria County. The homes will be for mine workmen and their families.

UTAH

Park City—Preparations are under way for resumption of work at the New Quincy mine. Supplies are being hauled up and the hoist put into operation at the Little Bell, through which this mine will be developed.

Salt Lake City—Chief Engineer J. N. Paul of the U. S. Bureau of Mines, accompanied by State Coal Mines Inspector C. A. Allen, has made a trip of inspection through Carbon County's coal fields. Mr. Paul came to Utah especially to see the wide veins of bituminous coal here and to note how it is being handled. Utah has the widest bituminous coal veins in the nation, it is claimed, the veins in Carbon County reaching to 32 feet.

The State of Utah is contesting a claim of 160 acres of what is believed to be valuable coal land in Carbon County, George W. House of Long Beach, Cal., being the defendant. Mr. House filed on the land several years ago under the mineral entry. The land was set aside, however, by the government as state school land and the state now seeks to substantiate its claim on the ground that the land was not known to be of a mineral character when it was so set aside.

WEST VIRGINIA

Riverview—The Riverview Coal Co., recently organized, is planning for the development of 150 acres of coal property, to have a daily output of 100 tons. The installation of mining machinery is being arranged.

Clarksburg—Few mines in West Virginia are more completely equipped than the new Lewis mine of the Hudson Coal Co. at Reynoldsville in Harrison County. This mine represents an investment of $500,000, of which $25,000 was expended in the construction of a tipple. Construction work on the mine plant was begun in Feb., 1919. While such construction work was in progress, however, the operation of the Lewis mine was continued. With a new plant ready for operation it will be possible to secure a production of 3,000 tons a day. About 400 miners will be employed. The officers of the Hudson Coal Co. are: C. S. Elliott, Clarksburg, president; J. M. Orr, Clarksburg, vice president and general manager; Harry Sheets, Clarksburg, treasurer; E. M. Pendergast, treasurer.

Charleston—J. B. Hart and associates of Charleston have organized the H. & H. Fuel Co., the capital stock of which consists of 2,000 shares without par value, the company having been organized under the provisions of a recently enacted West Virginia law. The company will operate in Kanawha County.

Capitalized at $100,000, the Pure Coal Co. will undertake the development of coal properties in Woodville district of Lincoln County. Back of the new concern are: I. G. Williams, Spring Hill; J. K. Nelson, Bell; C. H. Williams Cinco; H. B. Gibson, Dante; W. S. Holmes, Charleston

Organized with a capital stock of $200,000, the Eskins Coal Co. plans the development of a tract on a small scale at Chelyan in the Cabin Creek field. Closely connected with the new company are: R. W. Eskins, E. H. Eskins, C. D. Francis, and R W. Francis, all of Chelyan; J. S. Newberger of St. Arbans.

Fairmont people have organized the Howard Coal Co. for the purpose of operating in Marion county, having fixed the capital stock at $75,000. Among those interested in the concern are: W. A. Reed, Clyde A. Cole and C. H. Mardesty, of Fairmont; H. S. Fergusen and C. P. Hood of Shinnston.

Newburg—Following its incorporation, the Raccoon Valley Coal Co. has perfected its organization by the election of the following officers: Francis Borgman, president; J. J. McKane, Jr., secretary and treasurer, and W. F. Horchler, vice president. Others interested in the company are: Thomas Fisher of Tunnelton and J. V. Gibson of Kingwood. The company expects to operate near Newburg.

Kingwood—The Craig Coal Mining Co. will engage in the general coal and coke business, having been organized in large part by Morgantown men, with an authorized maximum capital stock of $200,000. Behind the new company are: C. W. Craig, E. F. Hall, C. E. Hodges, W. E. Arnett, H. G. Hodges, L. S. Core and J. K. Buchanan, of Morgantown, W. Va., and W. O. Barnard of Kingwood.

Wheeling—Mining operations are to be conducted on a large scale in East Wheeling by the East Wheeling Coal Co. in which a number of well known Wheeling citizens are interested. This company has an authorized capital stock of $100,000. Identified with the new company are: H. C. Ogden, H. C. Clark, F. J. McNell and A. C. McNell of Wheeling; H. F. Carter of Elm Grove.

Beckley—The E. E. White Coal Co. is having 6,000 acres of coal land which it has under lease tested for the purpose of ascertaining the coal available in the lower measures. It is stated that the company is testing the various measures down to red shale.

Morgantown—The Penn-Mary Coal Co. is undertaking, on an extensive scale, the building of a number of homes for its officials and employees, the houses to be of the best construction possible. Houses for the officials are to be built at Reedsville, the base of operations of the company. The Penn-Mary Co. is preparing to materially extend its scope of operations.

Industrial News

Pittsburgh, Pa.—The Iron Trade Products Co. announce their appointment as exclusive sales agents for the entire output of coal and coke from the properties formerly belonging to The Westmoreland Gas Coal Co. on the P. R.R in Westmoreland County and now belonging to J. L. Kendall. Thse properties are producing Pool 61 gas coal and standard furnace and foundry coke.

Chicago, Ill.—Announcement is made by the American Steam Conveyor Corporation of a change in their corporate name to the "Conveyors Corporation of America." The change in name is due to the rapid growth of the corporation, the addition of new lines of business and the purchase at South Bend, Indiana, of a large and completely equipped machine shop to which foundry facilities will be added.

Philadelphia, Pa.—The Fuel Corporation of America has opened an office in Morgantown, W. Va., in charge of C. M. Lyons.

Pineville, Ky.—A report that the Riddle Coal Co., mine agents, were closing the local offices, is denied by D. S. Riddle. The company will continue its activities in Southeastern Kentucky.

Traffic News

The Southern Ry. Co., has since March 1, added 1,093 freight cars to its traffic, including 538 steel frame coal cars, rebuilt from bad-order cars which were unfit for service ,and 555 new steel underframe box cars.

Northwest Freights. An examiner for the Interstate Commerce Commission has been working on the coal freight charges in the Northwest, and has made recommendations for revising the rates to conform to the Minnesota distance tariff. This would mean about 35 per cent reduction to many points and would just about offset the recent freight increase. The rate to the Twin Cities from the docks being based upon the shortest haul, would not be affected.

Interstate Commerce Commission—In a complaint to the I. C. C. the Clay Products Co. of Brazil, Ind., attacks as unreasonable the rates on coal from nearby mines to Brazil during and since Federal control.

The Commission has declined to reopen the case brought by the Wholesale Coal Trade Association of New York, for refund of demurrage charges on coal shipments after the armistice.

The Commission has authorized the Kansas City, Mexico & Oregon R.R. to sell at par, receiver's certificates amounting to $1,000,000, in order to pay for coal and other supplies necessary for continued operation of the road.

Hearing was had by the I. C. C. in the request of Tidewater Coal Exchanges for modification of its order in regard to time for credit on freight. Representatives of the exchanges and railroads pointed out that it takes from 20 to 30 days to get the bills to the members of the exchanges, and argued that members were entitled to 96 hours after receipt of same in which to settle the accounts. No adverse testimony was offered.

The I. C. C. has ordered the Railroad Administration to refund $1,088 to the P. Koenig Coal Co. for excessive charges on coal shipments.

In the case of the Central Steel Co. vs. the C. & O. R.R., a brief has been filed with the I. C. C. by the C. & O. R.R., C. & O. Northern R.R. and Pennsylvania companies, to the report of the examiner which recommends that the rates from West Virgina mines are on a low basis, having been established to enable the operators to secure some of the business of the so-called by-product or special purpose coal in competition with the less distant Pennsylvania and Ohio mines. It also objects to the examiner's recommendation that the commission find that the rate in this case was unreasonable because it exceeded $1.55 per ton. The brief contends for a $1.93 rate.

Pending investigation as to their reasonableness, the I. C. C. has suspended until Dec. 29 proposed increases in rates on coal from North Carolina and Virginia points to Norfolk and Suffolk, Va.

The I. C. C. has discontinued its proceeding as to rates on coke from Virginia points on Interstate RR. Co., it appearing that the carriers concerned have canceled the proposed increased rates and allowed the present schedule to remain in effect.

The I. C. C. authorized coal-carrying roads to waive the collection of the $10 charge per day for storage on open-top cars and cars loaded with coal and coke not released within free time.

In a complaint to the I. C. C. the Southern Fire Brick & Clay Co., of Chicago, attacks as unjust and unreasonable the rates on bituminous coal from Clinton, Ind., and mines in that district and from Ehrmandale and Burnett, Ind., to Mount Silica, Ind.

Tufili Bros. Pig Iron and Coke Co. of St. Louis in a complaint to the I. C. C. attacks the rates on smithing and coke-smithing coal from the Douglas, W. Va., fields and from Pennsylvania fields to destination on the C. B. and Q. R.R.

Association Activities

Smokeless Operators' Association of West Virginia

The monthly meeting was held on Sept. 9 at White Sulphur Springs, W. Va., the members of the association being the guests of the New River Operators' Association at a banquet held on the night of Sept. 8 at which E. W. Knight of Charleston presided as toastmaster.

Among the speakers at the banquet were J. J. Tierney of Philadelphia, Captain D. H Barger, J. G. Bradley of Dundon, C. J. Wall of Richmond, Va., E. J. McVann, secretary of the association, and C. W. Dillon of Fayetteville.

At the meeting of the Board of Governors and the general meeting, the question of the commandeering of coal by the Navy formed one of the important topics. A special committee appointed to confer with the Navy Department had met with no success in their efforts to work out a satisfactory plan. The Navy was continuing

to commandeer coal at a rate of $4 per ton. It was pointed out the Navy was commandeering only from such mines as were on its acceptable list. The effect of such a policy, it was explained was to take the tonnage of a comparatively few firms instead of pro-rating the tonnage to be commandeered.

Discussion was also devoted to the subject of a coal supply for Virginia, representatives from the four smokeless districts making reports concerning what had already been done.

Election of officers featured the meeting. All the old officers were re-elected as follows: J. G. Bradley of Dundon, president; Walter H. Cunningham of Huntington, secretary; A. H. Land of Charleston, treasurer.

Representation of the different districts in the Association at the White Sulphur meeting were: John L. Dickinson of Charleston for the Kanawha Coal Operators' Association and the Kanawha Coal Shippers' Association; A. H. Land of Charleston and A. J. King of Huntington for the Logan Operators' Association; M. L. Garvey for the Mason County Coal Operators' Association; G. H. Caperton, S. A. Scott, William McKell and C. P. Musich for the New River Operators' Association; J. J. Tierney and W. D. Ord for the Williamson Operators' Association; E. J. McQuail, J. E. Jones, D. H. Barger, J. J. Tierney, W. D. Ord and W. E. Koepler for the Pocahontas Operators' Association; J. T. Wilson for the Tug River Operators' Association; William Leckie, A. J. King and George Wolfe for the Winding Gulf Operators' Association; E. J. McVann for the Smokeless Operators' Association.

The death of **J. S. Richardson** of Huntington, assistant secretary of the association, was reported by President Bradley, at whose suggestion a suitable resolution of respect was adopted.

Indications were that the Northern West Virginia Coal Operators' Association, which had given notice of its withdrawal from membership at the Washington meeting, would return to membership.

Northern West Virginia Coal Operators' Association

About 50 members attended a meeting, attracted because of the fact that consideration was to be given to the profiteering proceedings in which many northern West Virginia operators had been subpoened to appear at Martinsburg. Interest in the profiteering probe to be made at Martinsburg was general. Special consideration was given to the procedure to be followed by the operators when they appeared at Martinsburg. While little was given out as to what transpired at the meeting, it is known that the expression was freely made that the Lever Act was so vague in its terms as to make difficult to say just what the law did provide. It was generally understood following the meeting that counsel representing the National Coal Association would aid the operators.

Winding Gulf Operators' Association of West Virginia

A large number of operators were in attendance at a meeting held in Charleston, when the question of an increase in wages for day and monthly men in the Winding Gulf field was given consideration. No request for an increase had been made by the mine workers in the Winding Gulf region—a non-union field, but in keeping with its policy of extending appreciation for the loyalty at all times manifested by the mine workers, the association decided upon a substantial increase, keeping wages still in advance. It was said, of those in union fields.

Publications Received

Stocks of Coal in Hands of Consumers, March 1 and June 1, 1920. Published by the Geological Survey, in co-operation with the U. S. Bituminous Coal Association and Council of National Defense. Contains 2 pages text, 8 figures.

Mineral Resources of the United States in 1919. Geological Survey. Pp. 128, 6 x 9 in.; charts. Preliminary summary, introduction by G. F. Laughlin statistics assembled by Martha B. Clark. From data furnished by specialists of the Division of Mineral Resources.

Personals

Richard H. Barker, Jr., prominent mine owner and operator in Bell County, Ky., is convalescing from an attack of typhoid fever. Mr. Barker has been confined in his home in Louisville, but is expected to resume his duties shortly.

Chas. Meyers, mine manager of the Kanawha Fuel Co., at Du Quoin, Ill., has resigned. His intentions have not been announced for the future.

Bruce H. Grimm of Fairmont has been appointed superintendent of the Power and Mechanical Department of the West Virginia Division of the Consolidation Coal Co. Mr. Grimm had been acting as assistant to the head of the department, having been associated with the Consolidation Co. since 1914.

S. S. Huber has been appointed Mine Manager of the Ernest Coal Co., operating at Meadowbrook, in Harrison County, W. Va.

John C. Higgins, who has been acting as Superintendent of Mines 22, 43, 63 and 68 of the Consolidation Coal Co. at Monongah, W. Va., has been appointed as Superintendent of the New England, West Fairmont shaft and O'Donnell plants of the company.

John Crawford has been appointed Superintendent of the Oakmont mine of the Abram's Creek Coal & Coke Co. He succeeds **John F. Sommerville,** resigned.

Arthur P. Burdiss has been appointed District Mine Inspector of the 12th West Virginia District, with headquarters at Thurmond, W. Va. He succeeds **M. E. Quenon,** transferred to the 8th District, with headquarters at Charleston. **Inspector William M. Chapman,** who had headquarters at Charleston, has been transferred to the 11th District, with headquarters at London, succeeding **J. G. Vaughan,** resigned.

R. A. Walter has resigned his position with the Woodward Iron Co. of Mulga, Ala., and accepted the position of general superintendent of coal mines with the Wisconsin Steel Co., at Benham, Ky.

R. C. Lawless is appointed deputy commissioner of the Tidewater Coal Exchange, Inc., for the Port of New York, with offices in the Grand Central Palace, New York City.

R. A. C. Magroder is appointed Assistant Commissioner of the Tidewater Coal Exchange, Inc., with office in the Grand Central Palace, New York City.

R. A. Evans has been promoted to mining engineer for the Lehigh Valley Coal Co. in place of **H. Otto,** resigned. Mr. Otto has accepted the position of mining engineer of the Lehigh Coal & Navigation Co. at Lansford, Pa. **L. W. Winters,** formerly division engineer, Luzerne Division, is appointed division engineer of the Lackawanna Division, vice Mr. Evans. **K. F. Arbogast,** formerly Susquehanna Division engineer, will succeed Mr. Winters. **John E. Anderson,** formerly of the mining engineer's department, succeeds Mr. Arbogast.

Thos. B. Powell, for the past few years connected with the Hulburt Oil and Grease Co. of Philadelphia, has been appointed district agent for the Miller Supply Co. of Huntington, West Virginia. Mr. Powell will have his headquarters at Charleston and will look after the Kanawha coal fields for his company.

H. D. Elvidge, since last winter Assistant to the Advertising Manager Reading Iron Co., was appointed Assistant Advertising Manager in the same company.

William A. Leonard has been elected vice-president and general manager of the Imperial Brass Manufacturing Co., of Chicago, well known makers of Imperial Oxyacetylene welding equipment, Watrous plumbing supplies, and a general line of automobile accessories and brasswork. Until recently Mr. Leonard was associated with Belding Brothers & Co., of Chicago and New York, as organization and sales promotion manager.

H. B. Hess of Bluefield has been appointed as the Field Manager in the Pocahontas and southwest Virginia fields for the Mathew Addy Steamship and Commerce Corporation.

William W. Miller, formerly general mine manager of the Pittsburgh Mining Co., after spending two years of a well-earned vacation in California, has taken up his residence in Glenawr, Kentucky. He has assumed his duties as general mine manager for the Reliance Coal & Coke Co., Lincoln Coal Co., and the Mitchell-Willis Coal Co.

Ernest Stockton and **E. W. Colegrove,** formerly located in Taylorville and well known in southern Illinois, have purchased a coal yard in Richmond, Indiana, and will now have their headquartere in that city.

C. E. Lesher, editor of *Coal Age,* addressed a large gathering of retailers identified with the Denver Coal Merchants' Association, while in Denver recently. He reviewed in an interesting and instructive manner the important phases of the general conditions leading to the prsent coal situation, making his talk applicable to Colorado production and distribution. His talk was the more important because of his knowledge of Colorado, his home state.

J. R. Pill, who has been connected with the Galloway Coal Co., Corona Coal Co., Alabama Fuel & Iron Co. and other Alabama operations for 25 years or more, has gone to Newfoundland where he will be in charge of coal development work for the Canadian Government.

W. T. Burgess, former safety inspector in the coal mining department of the Republic Iron & Steel Co., has been appointed superintendent of the Palos Division of the company's operations, succeeding **W. W. Kicker,** resigned.

J. W. Bischoff is appointed general manager of the West Virginia Col and Coke Co. with headquarters at Elkins, W. Va.

David L. Wing, recently assistant chief economist with the Federal Trade Commission, announces the opening of an office as consultant on the economics and statistics of commerce and industry; and for research work both in the United States and in foreign countries, especially Latin-American; for the conduct of inquiries and the preparation of briefs of fact and reports for submission to Congressional committees and to federal, state and local commissions and boards, and for use in litigation, 1731 H Street, N. W., Washington, D. C.

Obituary

R. B. Strickland, prominent retail coal dealer of Galveston, Texas, died at his home in that city as result of a stroke of apoplexy. Mr. Strickland was for 25 years associated with the coal firm of E. O. Flood & Co., and was then one of the members of the firm of the Galveston Coal Co., successors to the E. O. Flood Co.

Hubert W. Adams, president of the Southern Fuel Co. of Dallas, Texas, successors to the Texas Coal Co., died at the Biltmore Hotel in New York. Mr. Adams came to Dallas from St. Louis in 1895 and has been prominent in the business life of the city since that time.

George Nasmyth, widely known American sociologist and internationalist, head of the administrative division of the United States Fuel Administration during the war, died recently in Geneva, Switzerland, of typhoid fever.

Thomas Morrison, former Sherodsville (Ohio) citizen and state deputy mine inspector, died recently in his home at Newton Falls.

Coming Meetings

Coal Mining Institute of America will hold its annual meeting Dec. 8, 9 and 10, 1920, in the Chamber of Commerce Auditorium, Pittsburgh, Pa. Secretary, H. D Mason, Jr., Chamber of Commerce Bldg., Pittsburgh, Pa.

American Mining Congress will hold its annual meeting at Denver, Col., Nov. 15 to 19. Secretary, J. F. Callbreath, Munsey Building, Washington, D. C.

The National Association of Purchasing Agents will hold its annual convention at the Congress Hotel, Chicago, Ill., Oct. 11, 12 and 13. Secretary, L. F. Boffey, 25 Beaver St., New York City.

The Canadian Institute of Mining and Metallurgy will hold its second annual Western meeting at Winnipeg on Oct. 25, 26 and 27; the headquarters of the meeting will be at the Hotel Fort Garry. Local secretary, W. W. Berridge, 905 Union Trust Building, Winnipeg, Canada.

National Conference of Business Paper Editors will hold its annual meeting Oct. 20, 21 and 22 at the Hotel Astor, Broadway and 44th Street, New York City, in conjunction with the annual meeting of the Associated Business Papers. Secretary-treasurer, R. Dawson Hall, 36th St and 10th Ave., New York City.

COAL AGE

The Weekly Journal of the Coal and Coke Industries

Volume 18 NEW YORK, THURSDAY, OCT. 14, 1920 Number 16

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Using Byproducts

HABIT is strong even in the use of coal, and many a householder who the first cold days of autumn cannot get coal because of insistence upon chestnut, egg or stove sizes of anthracite could well be warm were he to be satisfied with pea coal. Not many years ago pea anthracite was known as a steam size. Since 1916 it has been more generally known as the domestic size, although comparatively few householders have learned the value of this fuel.

The producers and shippers of anthracite have done much to encourage the use of pea as a substitute for chestnut and the larger sizes in the household furnace, and in many instances this year, as in previous years, have forced retailers to accept shipments of pea in order to obtain the larger sizes. It remains, however, for retailers more generally to educate the householders in the use of this size of coal. Many of the furnaces that are now in use can be used just as advantageously with the smaller size as with the larger, although more care and labor are involved. The cost, some $2 less per ton, should be a forceful inducement to move this coal.

Meeting the Schedule

LAST July it was stated that production of bituminous coal must be increased in the Appalachian fields by 5,000,000 tons a month to meet the necessities of the situation, that a large share of this increase must be diverted to New England and more particularly to the Northwest, and that to accomplish this increase there must be no diminution of car supply or production in the Middle West fields. A study of the preliminary figures up to Oct. 1 shows how far short of this mark we have fallen.

The program of the operators and the railroads contemplated no curtailment of off-shore exports, and there has been no curtailment. New England was to be given 1,250,000 tons of coal a month by tidewater—a million a month was shipped for two months and the demand was satisfied. The Lakes were to have 4,000 cars a day, or 1,200,000 tons a week, and that figure was reached but one week in the past two months. While the Lakes were getting their quota the consumers in neighboring states were to suffer no decrease in their supplies but the states of Ohio, Indiana and Michigan have been so pressed for coal that their special plea for assistance has just been met on the part of the operators and railroads by a promise of 2,000 cars daily for emergency distribution.

Recent statistics published by the Geological Survey showing production by states for July and August throw light on the situation. Whereas, the East was to have had a monthly increase of 5,000,000 tons, we had in August but 2,600,000 tons and the Middle West fields gained nearly 1,400,000 tons. The railroads have not so far met the schedule in the East as regards total output nor in the West on the Lake program. Notwithstanding these unsatisfactory results the country is in better position than in July as regards soft coal. Production during August and September was almost 11,400,000 tons per week on the average and we estimate that stocks were increased by at least 7,500,000 tons from Aug. 1 to Oct. 1, bringing the total for the country up to nearly 30,000,000 tons—a figure still 10,000,000 tons below the safe line.

Will Wages Rise or Fall?

SINCE 1914 wage increases to coal miners in Great Britain have approximated 130 per cent compared with as high as 300 per cent to day labor. In the same period increases to miners in the United States have been less than 100 per cent and to day labor 164 per cent. The relatively greater increase in wages in Great Britain doubtless accounts in part for the relatively higher prices for coal produced in Great Britain now as compared with pre-war times. It is particularly significant that the day wage labor, normally the lowest paid, has received the highest percentage increase both here and abroad. And it is to be further noted that this condition holds generally throughout the world—viz., that the lower paid labor of pre-war times received during the war and subsequently the greater increase as measured by percentage.

Some observers in England are of the opinion that the next step in wage adjustment in Great Britain will require that miners paid on the tonnage basis must be granted a further increase if any increase in production is to be obtained. In this country, following the lead of Illinois and Indiana, coal operators are now increasing the rate paid for day labor. Evidence is not lacking, considering labor the country over, that the tide has turned and that instead of increases in wages decreases are about due. The problem of the Miners' Union from now on would appear to be to hold the gains that they have made rather than to try to force further increases, although their strategy may be to attempt the latter. So long as the demand for coal is strong and prices are high, the operator dare not risk the effort to force a readjustment downward, but just as there were operators who violated their contract with other operators and the miners to maintain a certain wage scale, and this summer voluntarily raised wages above the accepted rate for the purpose of holding or increasing their supply of labor when they had opportunity to produce and sell coal at high prices, there will be found operators who, when the market falls, will seek and quite possibly obtain wage adjustments in their favor. Wage contracts notwithstanding, the law of supply and demand for labor cannot be set aside and the next two years will show as great and sudden deviations as have those since 1916.

Having based their demand for increased earnings on the "American standard of living," the coal miners will have difficulty in answering the demand for reduced earnings when costs of commodities have decreased and this same standard of living requires less income.

What the Consumer Buys

TESTIFYING before the Interstate Commerce Commission last July, Eugene McAuliffe stated that when you read of the $6, $10 or $12 prices for coal it is transportation that is being sold and not coal. He further stated that the public utilities and general public are engaged in buying the use of coal cars and that they are paying the tariff freight rate and, in addition, to someone other than the railroads, even greater sums to secure the use of a coal car and its collateral and attendant train service. The same point was made by Senator Calder in his investigation of the coal situation last summer, when he stated that the foreign buyers of our coal were not paying high prices for the coal but were buying our transportation.

Under normal conditions, however, when the market is really competitive, it is coal plus service that the consumer buys—service that involves the analysis of the consumer's need and the delivery of the particular grade and kind of coal at the right price and in the proper quantity, and that often, in addition, gives the consumer the benefit of technical knowledge in the combustion of the particular coal furnished.

The sellers of coal today who expect to be in business tomorrow, whether producers of the coal they sell or jobbers and, therefore, buyers of the coal they sell, are thinking about the fundamentals of coal merchandising and endeavoring to maintain their reputation for selling service with their coal today in order that they may have the pick of the market tomorrow, when coal will be seeking an outlet. An example of this forward thinking is to be found in the well-written advertisements appearing in New York papers emanating from the Wholesale Coal Trade Association of New York. It is one thing to agree that the public needs education in what the coal industry is and what its aims are and another to spend your money to educate that public.

Good Resolutions

WHATEVER be the fruits in other directions of the numerous investigations of profiteering in coal now being conducted by the Department of Justice, it is certain that the evils and malpractices of the coal industry are being well advertised. Honest confession is said to be good for the soul, and we therefore read with interest the rather lengthy resolutions adopted by the Northern West Virginia Operators' Association and presented to the Attorney-General at Washington, which are reported to have led to a suspension of direct action on the part of the Government to correct conditions alleged to exist in the sale of coal in that region.

The general purport of the document drawn up in Fairmont is that the signers, after enumerating all the undesirable things that may be done in selling and reselling and overselling coal, promise not to do it any more. In brief, the signers of this document agree to limit the hands through which each consignment passes to two wholesale dealers, to fulfill contracts before selling coal on the open market, to take care of local requirements before shipping to tide, to co-operate with the railroads by obeying embargoes and preventing overshipment on genuine permits and frowning on false or forged permits, to limit export sales to actual export business and, to accomplish these results, to form a Committee on Fair Practices and, finally, to co-operate fully with the Department of Justice.

If we did not know the high standards of business ethics of many who have voluntarily signed such a remarkable document of self-indictment we would, indeed, be ready to believe many things that have been said in public and otherwise regarding the iniquities of the coal trade. Someone must lead the way, however, and if to influence the real offenders the innocent must come forward and share the adverse criticism that has fallen upon the industry, both locally and nationally, those who have prepared the way for cleaner dealings are to be commended. They have nothing to fear from the investigation of the Department of Justice, and if they have removed from their districts the possibility of having the stigma of indictment for profiteering, they have indeed done well.

Waning British Coal Profits

STATISTICS of production, costs, and profits of the coal-mining industry in Great Britain for the quarter ending June 30, 1920, have recently been published. Compared with the report for the first quarter of this year these figures show a decline in operating margin from more than £14,000,000 to slightly less than £8,000,000. The principal reason assigned for this large decrease in margin is the fact that export tonnage from Great Britain declined in the second quarter by a quantity in excess of two and one-quarter million gross tons, compared with the first quarter. The total production declined 3,913,000 gross tons in the second quarter, due mainly, is is stated, to the greater number of holidays observed by the miners.

These figures show that the cost per ton for wages and supplies increased by 4s. 2d., whereas the price at the mines of coal sold increased but 2s. The average earnings per man employed in the production of this coal increased by 47s. 9d., due to a wage advance on March 12. Whereas the gross margin per ton received by the operators was a trifle over 3s. in the second quarter of 1920 as against 5s. 2d. for the first quarter there remained to be deducted from this margin depreciation, interest and the profit to which the owners are entitled under the law in Great Britain, which together are estimated by one authority to have been approximately 2s. 8d., leaving a net profit for the second quarter of about 4d. per ton.

It is the export trade which gives the British coal operator his margin of profit. Statistics compiled by the South Wales Coal Owners' Association, one of the largest exporting groups in Great Britain, shows that coal for consumption inland for the second quarter was sold at a loss estimated at more than 5s. per ton. A sharp restriction on the quantity of coal allowed to be exported since June is expected to cause a still further decrease in the operating margin available to the British coal producer for the second half of the year. This loss, however, is a result of the policy of the Government stocking up coal consumers with ample supplies in anticipation of the strike of the coal miners, forecast so long in advance, and now, perhaps, forestalled.

Brooklyn Edison Co. Official Admits Coal Profiteering

Harry P. Wood, until recently operating engineer in charge of the coal purchasing for the Brooklyn Edison Co., Inc., appeared before Judge Mayer in the Federal District Court Oct. 8 and entered a plea of guilty to indictments charging him with engaging in a conspiracy with the Brooklyn Edison Co., Inc.; Walter F. Wells, its vice-president and general manager, the Adelphia Coal Co., Inc., and the B. J. Lynch Coal Co., Inc., to profiteer in and hoard coal in violation of the Lever Act.

Lynn Put on Coal Ration

Lynn, Mass., went on a one-ton coal ration Oct. 8. Residents must make application to the Health Commission before dealers will supply them. The situation resulted from an agreement between Mayor Creamer and local dealers.

Roads Make New Traffic Record

Leading railroads set a new high record for the year in the volume of freight traffic handled during the week ended Sept. 25, it was announced by the American Railroad Association. Cars loaded with commercial freight numbered 994,687, compared with 987,041 in 1919 and 991,980 in 1918. The best previous record for this year was the week of Aug. 28, when 985,064 cars were loaded. During the week of Sept. 25 increases are shown as compared with the corresponding week of 1919 in the loading of grain, coke, ore, and merchandise, while decreases are shown in livestock, coal, and miscellaneous freight.

Coal Appeals Telegraphed to President Wilson

Telegraphic appeals to the White House from many sections of the country for relief from threatened coal shortage and for an agreement on methods of preventing serious conditions this winter have been referred by the President to the Interstate Commerce Commission. Announcement that the commission would deal with the situation was made by Secretary Tumulty after he had conferred with Daniel Willard, president of the Baltimore & Ohio, and Howard Elliott, chairman of the board of the Northern Pacific R.R. The suggestion that it might be necessary to name a coal controller has not been considered, Mr. Tumulty said.

League Labor Congress Offers Seat to America

The International Labor Congress of the League of Nations, in session at Geneva, decided unanimously Oct. 6 to offer the seat of one governmental delegate in the International Labor Commission to the United States. It was also decided to create an international office of statistics, prices and quantities, one section of which will be devoted to coal, this section to be attached to the financial and economic section of the League of Nations. The decision of the Congress was intended to satisfy a demand formulated by the recent International Congress of Miners.

Seek Owners of Confiscated Coal

The Railroad Administration announces that owners of a million tons of coal which was confiscated and consumed by the railroads during the strike of 1919 are yet to be located. Marion J. Wise, manager of department of materials and supplies, Division of Liquidation of Claims, is attempting to trace the ownership of the coal in order that settlement may be made. During August and September payment was made for about 266,000 tons of confiscated coal, while new claims for a like amount of coal were received.

NEWS BRIEFS

Terse Items Chronicling Events of Interest to the Industry

Canada Returns to War-Time Fuel Regulation

Fuel control regulations similar to those enforced in Canada throughout the winter of 1918 were issued Oct. 7 by the Dominion Board of Railway Commissioners acting for the Federal Government. The order regulates the amount of available coal to be allotted to each province and to individual consumers.

Governor Cox Revives Ohio Fuel Control Board

Governor Cox has revived the Ohio State Fuel Committee, which in 1917, up to the time of Federal fuel control, supervised distribution of coal in Ohio. His action followed word from Washington that 2,000 cars of coal would be furnished daily in Ohio, Indiana and Michigan to prevent a shortage. The committee is to distribute the available coal, giving priority to shipments for municipalities and regions most in need of it.

To Force Separation of Reading Coal and Rail Holdings

Steps to force the Reading Company, holding company, and the Philadelphia & Reading Railway and several underlying railroads to dissolve their relationship with their coal companies, as was ordered in the recent decision of the U. S. Supreme Court, were taken in Philadelphia Oct. 6. A. F. Myers, an Assistant Attorney General from Washington, presented a petition to U. S. Circuit Judges Buffington, Woolley and Davis, requesting them to fix a date when the Reading Company and its operating companies must submit a plan for the severance of relations with the coal companies. Ninety days was allowed.

Welcomes Clear and Definite Railroad Policy

One of the most important domestic events of the year in the opinion of Allen B. Forbes of Harris, Forbes & Co., was the enactment of the Transportation Act of 1920, involving the return of the railroads to private ownership. Mr. Forbes stated that for the first time in three years we have a clear, definite policy from Congress for railroad operation under private control. He commended the Interstate Commerce Commission, saying it had demonstrated its intention to fully carry out the provisions of the Railroad Act and to do its part in the restoration of railroad credit.

"Soo" Canal Coal Traffic

According to the monthly report of the U. S. District Engineer's office of freight traffic through the "Soo" canals during September, 2,040,774 net tons of soft coal and 177,123 net tons of hard coal passed through westbound.

Panama Canal Tolls Exceed $1,000,000 a Month

During September tolls exceeding $1,000,000 were collected from ships using the Panama Canal. For more than six years this has been the goal for which the canal authorities have been aiming.

Lowering of Dams Helps the Movement of Coal

Fully 1,000,000 bushels of coal were transported to the Cincinnati market during the last days of September on the crest of an artificial wave created in the Ohio and Kanawha Rivers by the lowering of the dams in the rivers named. All the dams in the Ohio River beginning in the Pittsburgh district were lowered. It is estimated that the coal thus transported by boat would have required 1,000 railroad cars or approximately twenty-five freight trains.

A Careless (?) Miner and a Rock Fall

As is well known, falls of roof and coal take as great a toll of life in the mines as all other accidents put together. A mine explosion, a flood, a fire, a powder flare are all spectacular and each is accorded prominent "scare heads" in the newspapers. A fall of rock, on the other hand, snuffs out only one or at most only two or three lives at a time. Consequently little ado is made over it in the press. In the aggregate, however, the "fall" takes many more lives each year than does either the fire or the explosion.

The great ally of the fall is

—*"Carelessness"*

Despite the Dime-a-Day Wage Labor-Saving Is Practiced at a Manchurian Mine

At Two Fushun Mines 16,200 Men Are Employed They Produce About 8,000 Tons, or Half a Ton Per Man Per Day, at a Cost of 75c Per Ton — Material Excavated Is Promptly Backfilled — Seam Is from 120 Ft. to 170 Ft. Thick

By George Frederick Zimmer
London, England

NOT only is it a triumph for the material-handling engineer but it is also an unmistakable sign of the times when a country like Manchuria—where labor is as cheap as 10 to 18c. per day—adopts mechanical devices for the handling of coal.

The Fushun coal mines employ 15,000 Chinese and 1,200 Japanese, making a total of 16,200 men in and about the mines. The bed from which the Fushun coal is obtained is the thickest yet discovered on this planet. It may be well, therefore, to briefly enumerate, by way of introduction, a few details of general interest.

George Frederick Zimmer
An authority on coal handling, being the author of a standard book on the subject "The Mechanical Handling and Storing of Material"

The South Manchurian Railway Co., owner of the Fushun mines, was organized in 1906, the line having been transferred from Russia to Japan at the Portsmouth Convention in 1905. The main line of the railway from Dalny (now Dairen) to Kwanchengtzu is 439 miles long; the line was originally built in 1900-1901 and forms an arm of the Trans-Siberian route, the Russian (5-ft.) gage being employed. In order to accommodate Japanese rolling stock this gage was converted during the Russo-Japanese War to the Japanese standard of 3 ft. 6 in. On April 1, 1917, the South Manchurian Railway Co. took over the line from the Japanese Government, and in June, 1908, the gage was altered a third time to the standard of 4 ft. 8½ in.

Production and Backfill Cost 75c. per Ton

In 1909 Head, Wrightson & Co., of London and Stockton-on-Tees, was requested by the South Manchurian Railway Co. to send out a representative to advise on the laying out of a surface arrangement for the exploitation of the mines. In response to this request Henry Clark, the London representative of the firm (to whom I am much indebted for information concerning this plant) went East and designed on the spot an installation for a total output of 6,000 tons of coal per day. This has been increased considerably since, for on the occasion of Mr. Clark's last visit to the mines, in 1916, the output was 8,000 tons per day. The cost of this production was less than 75c. per ton f.o.b. cars, exclusive of depreciation and interest on capital expenditure. At the present time 10,500 tons of coal are being brought to the surface per day.

Fushun is the terminus of a short branch line thirty-four miles long, from the Suchiatun Junction. It lies, roughly speaking, about thirty miles to the east of Mukden. The coal belt stretches a distance of about ten miles east and west, while the width of the workable deposit is about one mile. The bed dips toward the north on an average of 30 deg. and is from 120 to 175 ft. thick. It is estimated that this deposit contains 800,000,000 tons of coal. Owing to the great thickness of the bed it has to be worked in steps or benches 10 ft. at a time, beginning at the lowest point and working up on hydraulic stowage. Sand for this purpose is brought from the River Hun in cars after screening. It is washed down the shaft by water in pipes and thus conveyed by gravity to the desired point. This sand packing absorbs much labor, but this is, nevertheless, all included in the 75c. per ton already given as the production cost.

May Not Be Stored Over Ten Feet Deep

The valley of the River Hun, parallel to and under which the coal field lies, is hemmed in to the south by a range of hills at the foot of which the outcrop may be traced. Gneiss, the oldest formation of the earth's crust, forms the bed upon which the coal-bearing strata rest. Two beds are found which alternate with shale, sandstone and conglomerate. At present only the upper of these is worked and it yields the famous Fushun coal. This deposit was formed in the Tertiary period, as is true of most Japanese coals. The bed is overlain with a thick layer of shale containing plant fossils.

The quality of the coal is good and runs quite uniform. The color is of a lustrous black and the material is rich in volatile matter, the heating value of the

coal being 7,500 calories (13,500 B.t.u.). Ash and clinkers are scarce, while sulphur and other objectionable matter is almost entirely absent. This coal is undoubtedly fiery—i.e., it possesses a tendency toward spontaneous ignition—and it is recommended that it be not stored more than 10 ft. deep unless adequate ventilation is provided.

Disregarding the minor workings, the Fushun coal mines consist essentially of two distinct installations—viz., that at the Oyama pit and that at the Togo pit. Since these are similar it is proposed to describe first, somewhat minutely, the general layout on the surface at the Oyama pit, following this with a briefer description of the Togo surface plant.

Conveys Coal to Shallow Stockpile

The general surface layout of the Oyama pit may be seen in Fig. 1. At the top of the illustration on the left-hand side is the downcast shaft, and at the right, 180 ft. distant, the upcast. The usual tramways of 24-in. gage proceed away from both shafts for a distance of about 50 ft., when they curve on ample radii 90 deg. toward each other, and combine, after again curving toward the screening plant, into one double tramway. Before reaching the screening plant, however, there are installed as an emergency precaution two side tracks, each passing through a dump, whereby the mine cars, if necessary, may be discharged onto two Marcus conveyors, one extending to the right and one to the left. These convey run-of-mine coal to two extensive stockpiles. The conveyors are 200 ft. long and located about 25 ft. above ground level.

Under normal conditions, however, the mine cars pass by these dumps, and by means of a network of sidings and switches the loads can be shunted to any of three dumps, discharging the coal to three corresponding Marcus screens, designated in Fig. 1 as Nos. 1 to 3. These extend at right angles to and span five parallel railroad tracks, so that the coal can be classified into different sizes prior to loading. Each Marcus screen first sifts out the "duff" (slack), and all three deliver this fine coal into a long but shallow hopper over the railroad cars on the duff track.

In like manner the nut coal from each of the three screens is delivered to an apron conveyor over the nut road. The three remaining roads receive "best," or lump, coal and are marked in the illustration "best roads." The coal delivered to all of these last three roads is of the same quality and size and has been picked on Marcus picking conveyors. After passing the

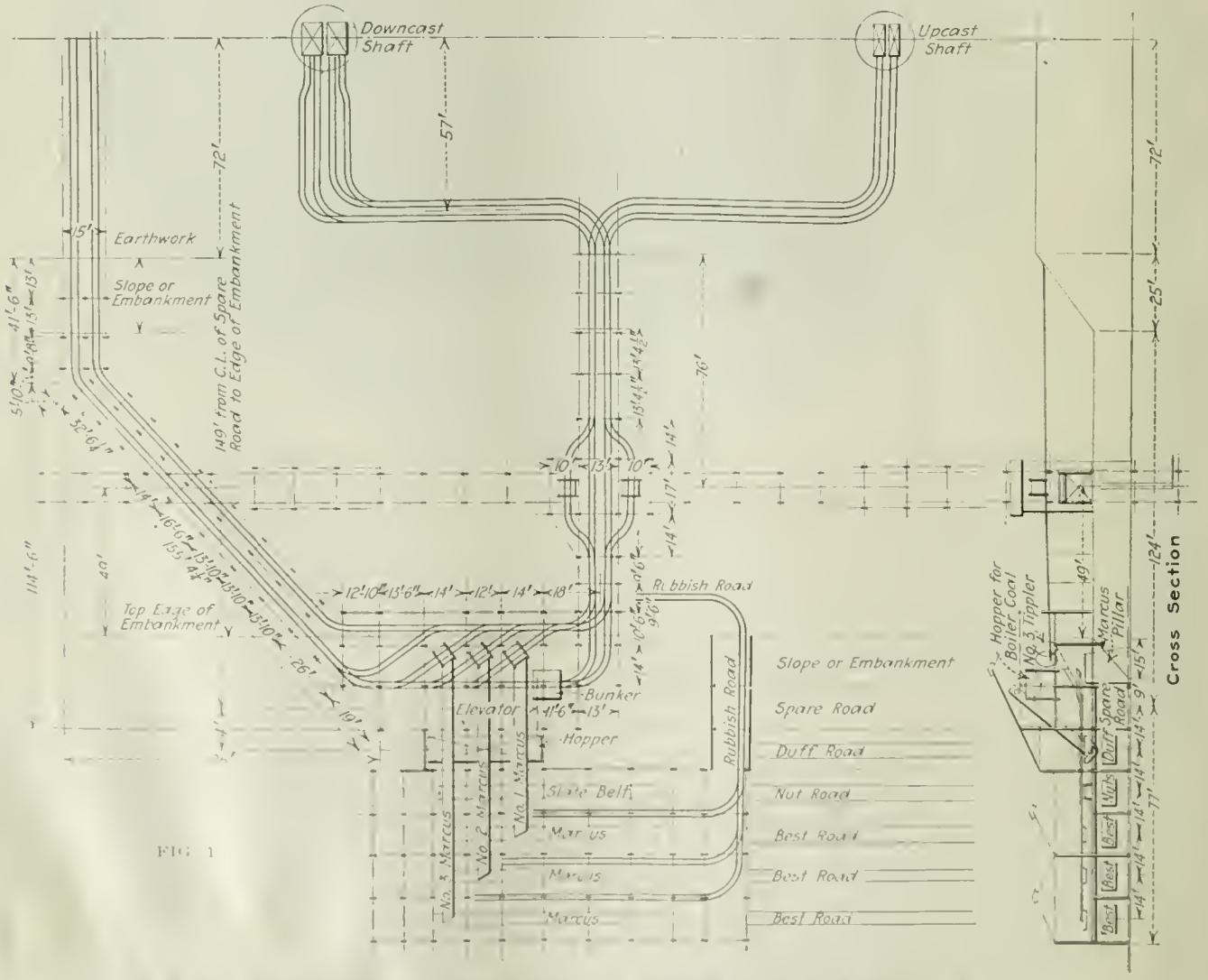


FIG. 1

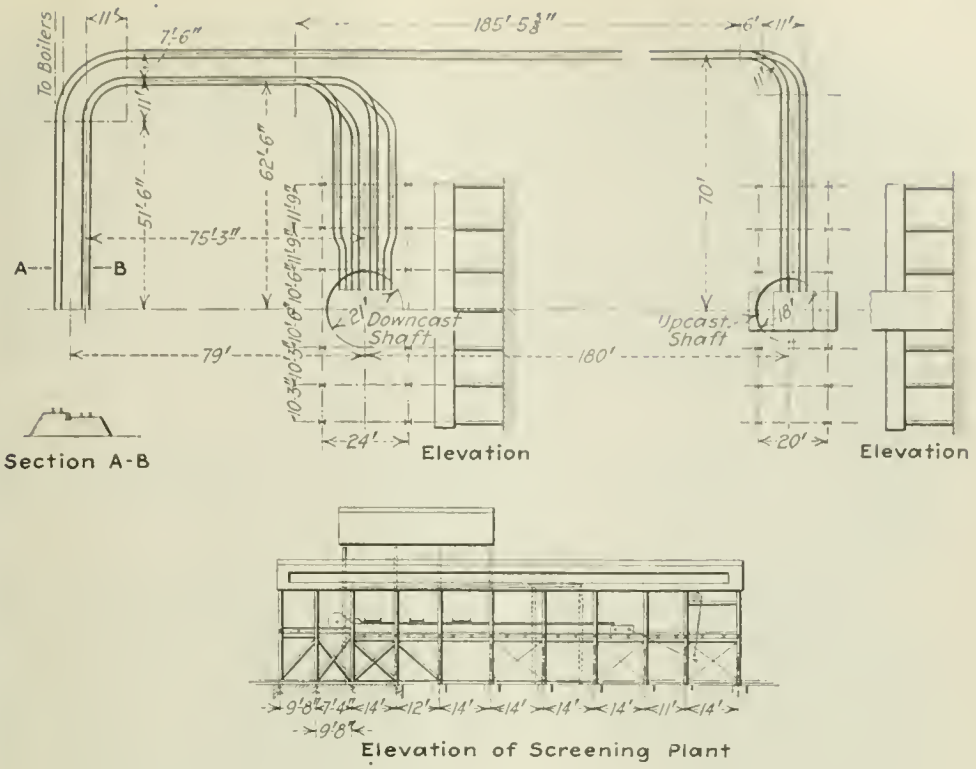
FIG. 1 OYAMA PIT IN THE CELEBRATED FUSHUN DISTRICT OF MANCHURIA

Downcast shaft has two cages, each carrying four cars; the upcast also has two cages, each of which carries two cars. The cars travel toward the railroad tipple, but in passage they can be switched to one of two revolving dumps, where they can be discharged to conveyors which deliver the coal to a large stockpile parallel to the railroad. The return road to the shafts is shown in Fig. 2.

FIG. 2

Return Tracks Oyama Colliery

After being discharged over one of the three railroad-tipple dumps or over one of the two stockpile dumps, the cars return toward the shafts, a car haul lifting them up a 25-per cent grade so that gravity will provide facilities for the return. The self-dumping cage and the skip hoist have not yet been adopted by British engineers. Either of these arrangements greatly simplifies operation.



three dumps the empty mine cars return by gravity to the shaft, suitable elevation being re-secured on the way by means of a creeper or car haul with an inclination of 25 per cent.

When fuel is required for the boilers at the power plant it is withdrawn from the shallow slack hopper, already mentioned, by an inclined bucket elevator and is raised to an overhead hopper, from which it is taken to the boilers by cars on a narrow-gage track. A cross-section through the plant is shown in Fig. 1, and will doubtless render the foregoing description more readily intelligible. The return delivery of empties to the down- and upcast shafts is shown in Fig. 2, which is a longitudinal elevation of the screening plant.

Conveyor Transfers Coal 200 Ft.

In the surface layout of the Togo plant, Fig. 3, the upcast shaft is located on the left-hand side and the downcast shaft 180 ft. to the right, toward the center of the drawing. The tracks from this latter shaft on their way to a set of three dumps, which are similar to those installed at the Oyama mine, are provided with an alternate line to a tipple which loads run-of-mine coal onto a Marcus conveyor 200 ft. long. Only one dump for run-of-mine coal is here installed. The tracks from the upcast shaft lead, after traversing a gentle curve by an incline first of 2.222 per cent and then of 1.25 per cent, to the three dumps over the screening plant. As this plant is practically the same as that at the Oyama installation it need not be described further.

All the empties from both shafts of the Togo plant return on the same track via a creeper, or car haul, ascending an incline of 25 per cent. The down gradient is for the first part 1.626 per cent and for the latter part of the journey 0.581 per cent. The spurs leading to the downcast shaft have an inclination of 3.33 per cent while those for the upcast are inclined 1.66 per cent.

Fig. 4 embraces a number of sectional views taken at various points through the plan shown in Fig. 3. The two upper sections represent a portion of the track lying between the upcast and downcast shafts respectively and the screening plant, while the next section shows an elevation of the track by which empty cars return to the two shafts. Then follow various sections of minor importance until the lower diagram shows a section *H-H*, the left-hand portion of which is the gravity run from the upcast shaft to the screening plant, while the right-hand portion depicts the ascent of the empty cars to the point from which they gravitate to the two shafts.

Oyama Shaft Brick-Lined and 1,200 Ft. Deep

A general idea of the Marcus screen for classifying the coal will be gained from Fig. 5.

At the Oyama pit the downcast shaft is 21 ft. in diameter, brick lined, and 1,200 ft. deep; the upcast shaft is similar but is 18 ft. in diameter and has steel-plate air boxing. The fan drift is 12 ft. wide and 15 ft. high and has therefore a sectional area of 180 sq.ft.

From center to center of the two shafts is a distance of 180 ft. and the elevation of the pit mouth is 32 ft. above the railway grade. The elevation of the stockyard is 18 ft. below that of the pit mouth, or roughly midway between the level of the collar of the shaft and the railway level. Such an arrangement is highly favorable to reclaiming, partly by gravity, such coal as has been put into storage. As may be seen from the drawings, the sloping ground has been levelled into two terraces. The coal is brought across the stockyard to the screening house.

The headframes are practically the same in shape for both down- and upcast shafts and are of the lattice girder type. The height from the surface landing to the center of head sheaves is 75 ft. Both frames are of steel construction throughout.

Cages for the downcast shaft are single-decked with balance-ropes underneath. They are built to carry four coal cars. Those for the upcast shaft are single decked,

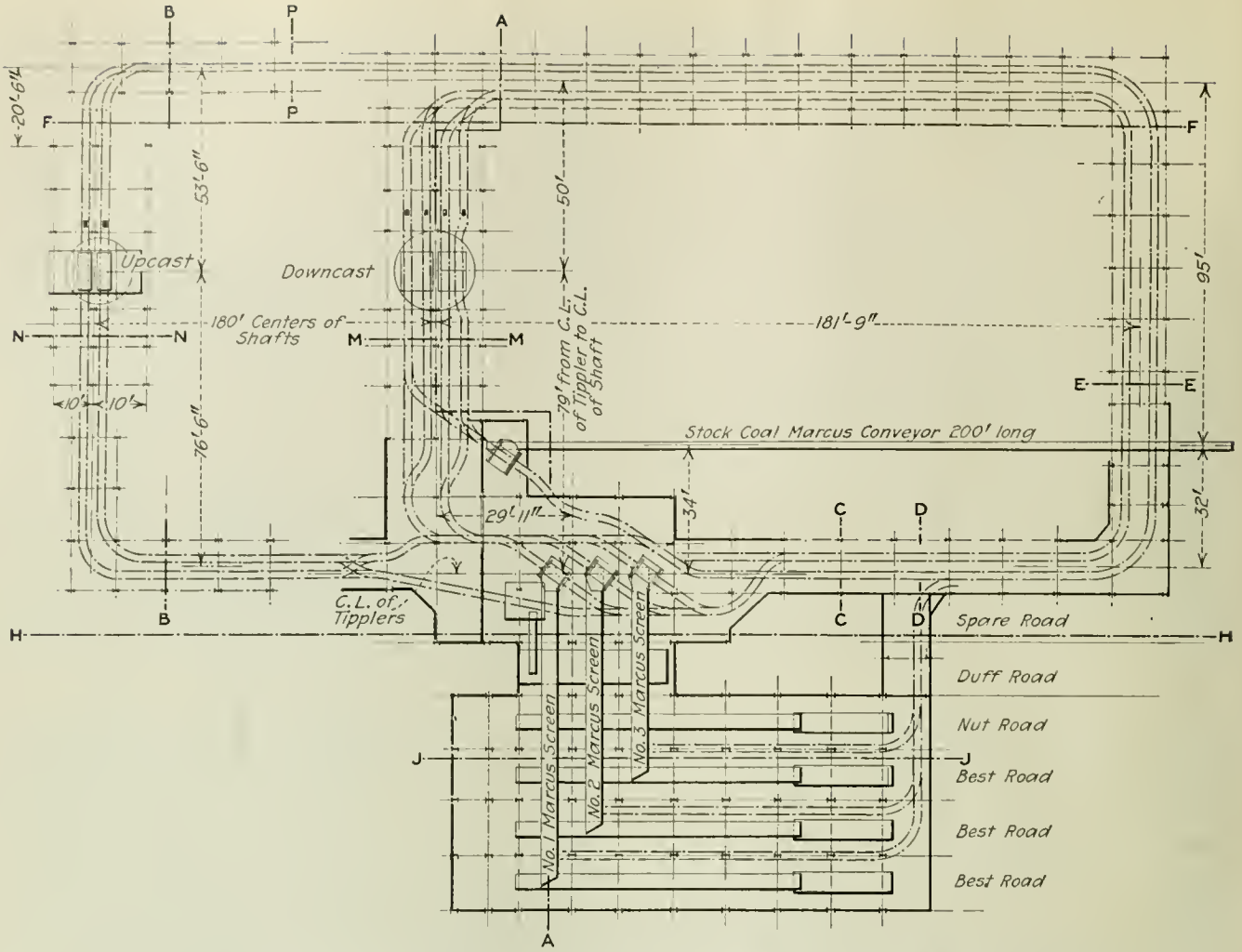


FIG. 3. TOGO PIT HAS SURFACE LAYOUT QUITE SIMILAR TO THAT OF OYAMA COLLIERY
Here, however, the tipple instead of being symmetrically located is to one side of the shafts. There are three rotary dumps on the tipple, but only one over the stockpile. It will be noted that the Manchurian trade apparently is satisfied with the four kinds of coal—lump, nut and slack with run-of-mine from the stockpile.

carry two cars and have no balance-ropes. All cages have tilting bottoms and those for the upcast are fitted with side plates. These cages travel on four 1¼-in. guide ropes in the downcast and on 1⅛-in. rope guides in the upcast shaft.

The mine cars are built entirely of steel and for a track gage of 24 in. They have a body 4 ft. long, 3 ft. 2 in. wide and 2 ft. high; the wheels are 12 in. in diameter on the tread while the wheelbase is 16 in. Each car has thus a content of 25 cu.ft., sufficient to hold 1,350 lb. of coal. The track rails weigh 24 lb. per yard.

The hoist engine for the downcast shaft is designed for a maximum load of ten tons, including cage, loaded cars, rope, detaching hook, etc. The speed is timed for one hoist per minute, including "banking"—that is, caging and decaging. The quantity of coal raised in one hoist is 2.4 tons, and the maximum quantity brought to the surface in eight hours is 1,152 tons. A cross-compound Corliss type of engine is employed. This is designed for a boiler pressure of 160 lb. per square inch. The diameter of the high-pressure cylinder is 25 in., that of the low-pressure cylinder 41 in., while the stroke is 54 in. The cylindrical hoisting drum is 14 ft. in diameter and 11 ft. 6 in. long and is designed for a rope 1⅝ in. in diameter. The cylinders are steam-jacketed and the machine is fitted with steam reversing gear, reheating receiver, Witmore brake engine controller and the usual overwind governor. There are also installed speed governors, depth indicators, and a steel-plate guard for the drum. Two overhead traveling hand-operated cranes are provided over each engine. These cranes are of 122 tons and 5 tons capacity respectively.

The engines for the upcast shaft are built for a maximum load of 6 tons; the time of hoisting is the same, one minute, including banking, as in the case of the downcast shaft. The quantity of coal per hoist is 1.2 tons with a maximum of 516 tons in eight hours. The engines are of the duplex Corliss type with cylinders 18 in. in diameter and 48-in. stroke. The cylindrical drum is 10 ft. in diameter and 8 ft. long. All other conditions and fittings are the same as for the downcast engine. These machines were built by Fraser & Chalmers.

Fan to Provide Six-Inch Water Gage

The fan engines are capable of exhausting 300,000 cu.ft. of air per minute against a water gage of 6 in. The fan is 18 ft. in diameter and 6 ft. wide. This machine is of Walker's indestructible type, with anti-vibration shutter. The fan engines are of cross-compound Corliss type with a high pressure cylinder 17 in. and a low pressure 34 in. in diameter, while the stroke is 42 in.

The flywheel is 16 ft. in diameter and grooved for

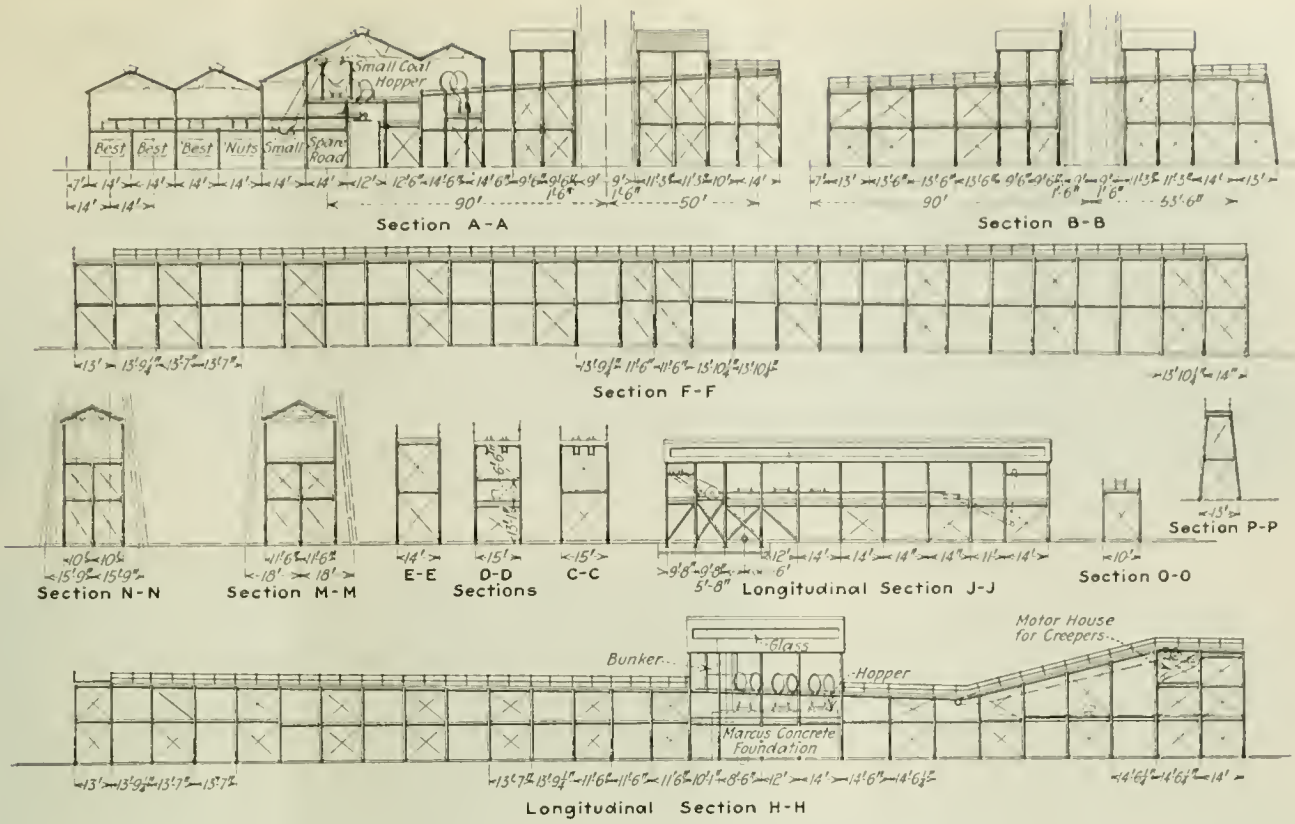


FIG. 4. PROFILES OF THE TRACKS AT THE TOGO COLLIERY

A short gradient of 1.626 per cent is followed by a lighter gradient of 0.581 per cent, which is a somewhat low gravity gradient, especially for a cold country. The grades leading to the downcast shaft are on a gradient of 3.33 per cent, while those leading to the upcast are on a 1.66 per cent grade.

eleven 1¾-in. ropes. It weighs 13 tons. The speed of the fan is 170 r.p.m., while that of the engine is 70. The condenser is of the jet type with vertical air pump driven direct from the main engine. The fan engine can be run by either the high-pressure or the low-pressure cylinder independently, and the fan may be operated either blowing or exhauting. The fan engines were built by Walker Brothers.

The central power plant generates electric current for the operation of the surface and underground equipment at all the pits of the Fushun mines. It furnishes power also for the central workshops, water works and for lighting. This current is 3-phase, 60-cycle, 2,200-volt. The generators comprise two 500 kw. Parsons turbo-alternators with direct coupled exciters, and two 1,000 kw. Parsons turbo-alternators also with direct coupled exciters. All four machines operate at 8,000 r.p.m. Each is fitted with horizontal surface condenser having electric vacuum pump, circulating and lifting pumps and vacuum augmentors. A 10-ton overhead traveling hand crane also is provided.

The cooling pond for the condensing water has an area of 3½ acres and contains 1,200,000 cu.ft. of water. The water pipes from the pond to the power house are 22 in. in diameter. The boiler house contains seven Babcock & Wilcox boilers, each having 4,020 sq.ft. of heating surface and an evaporating power of 12,300 lb. of steam per hour. They are equipped with stokers of the Babcock & Wilcox chain-grate type. The superheaters, integral with the boilers, superheat the steam 100 deg. to 200 deg. F.

Three feed pumps of the duplex Worthington type are installed. These have steam cylinders 10 in. in diameter with a 10-in. stroke. The plunger diameter is 6 in. Green economizers also are provided. These are installed in four sets, each consisting of 240 tubes 9 ft. long and 4⅛ in. in diameter. The smokestack is 150 ft. high and has a diameter of 10 ft. at the top.

The salient features of this extensive plant are not centered in the individual machines and devices of which it is composed—though these, as will readily be seen, are all of the best type—but in the arrangement of the whole. This is in every respect an ideal solution of the problem involved and allows ample space everywhere.

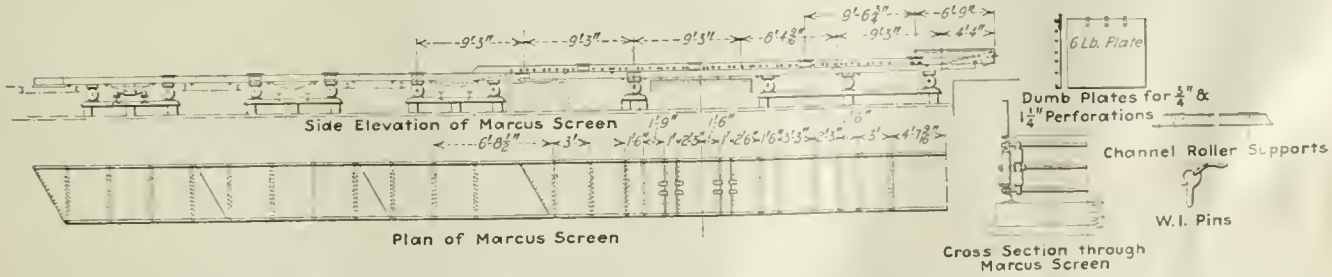


FIG. 5. SIDE ELEVATION AND A PLAN OF SCREEN

Three screens are used at each tipple, handling the coal from three distinct revolving dumps and separating the coal into three sizes: lump, or as the British say "best," nut, and slack, or "duff." There are three lump-car railroad tracks, one nut-car and one slack-car track.

Removing Boiler Ash, Burned Coal and Slate From the Coal in a Culm Bank

Culm Is Even More Difficult to Prepare Than Freshly-Mined Coal—By Selection in Shoveling and in Hydraulicking, by Hand and Mechanical Picking and by Jigging a Clean Domestic Product Is Obtainable

By Dever C. Ashmead
Wilkes-Barre, Pa.

PROBLEMS involved in the preparation of anthracite from culm banks are frequently more intricate than those encountered in the preparation of freshly-mined coal. Not only must the preparation process involved in treating this material eliminate the slate and other impurities that are found in the freshly-mined product but they must also reject extraneous matter of a different type that has been added to the culm from time to time.

When the material of which the culm bank is composed was mined it was considered worthless, and as a result no care was taken for its preservation. It was originally believed to be too small in size to be of value, but as time progressed improvements were made in the construction of grates and other burning devices that permitted the use of the smaller sizes. Consequently a market has arisen for this rejected material, and the culm banks have, in some instances, become highly valuable.

Upon the existing culm banks boiler-house ashes have, in many instances, been dumped; the banks have sometimes caught fire and have been completely destroyed. In others they have been only partly burned away. Culm-bank fires naturally produce ashes, and in order to prepare the coal remaining in such banks it is necessary to provide some means whereby these ashes may be removed.

Unless such a removal of ash is effected the value of the product will be greatly reduced. It is said that 2 per cent of ashes will reduce the selling price of the coal more than twice that amount of slate. This is largely because of the fact that the ashes are visible while the slate can be detected only with difficulty. Besides there is a disposition to regard ashes as evidence that the coal has at some time been rejected and to argue that the product should therefore be sold for little or nothing.

Methods employed at the preparation plant of the Phoenix Coal Co., operating a culm bank of the old Phoenix Mine, owned by the Lehigh Valley Coal Co., near Pittston, Pa., are highly interesting and well illustrate the problems encountered as well as their solution. A description of the bank and its contents will help to show how existing difficulties have been met.

No slate of large size is found in this bank, but there is an appreciable quantity of this material chestnut size and smaller. When about one-half of the bank had been formed boiler ashes were dumped upon it to a depth

FIG. 1.

Reclaiming Unburned Culm

A cut is being driven to get around the burned part of the bank so that the good coal back of it may be reached. As the bank is low, the coal has to be shoveled into the dragline scraper, by which it is carried to the main line in the foreground.

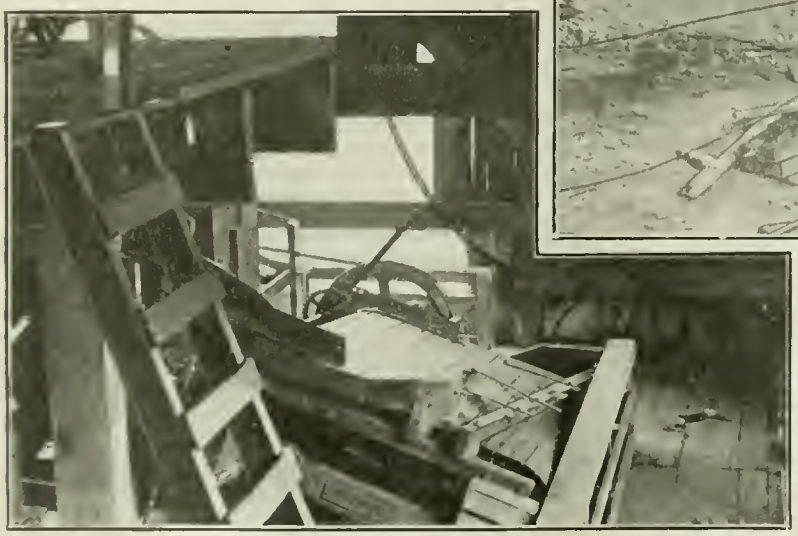


FIG. 2.

Chestnut Coal Picker

Picker removes the sluggish flat ash and slate from the rounder and, therefore, more nimble coal. All spherical boiler ash is removed by hand. By these means a valuable mineral product discarded for many years and mixed with rubbish is now doing its part to meet the coal scarcity.

FIG. 3. A MOUNTAIN OF CULM WITH STRATA OF BREAKER WASTE AND BOILER ASHES

To the right is a bank that has been entirely burned away and beyond the illustration there is much culm which has burned till it is now a pile of worthless ash. The main dragline scraper can be seen to the right of the picture. The firm which is utilizing the culm and saving it from incineration in place (which is the ultimate fate of the coal in many culm piles and ever likely to be the fate in all) is the Phoenix Coal Co.

of approximately 25 ft. After this, for some unknown reason, the dumping of ashes was discontinued, and more fine coal was deposited on the top of the existing bank, with here and there a small amount of ashes intermixed. This makes the recovery of the coal difficult and its preparation for the market, consequently, more interesting. On top of all this the dump caught fire and is burning at the present time.

In order to isolate the fire from the rest of the bank, a cut was made through the unburned coal, separating the fire from the balance of the bank. The burned area may be seen to the extreme right of Fig. 3. Still further to the right, beyond the field of vision in this picture, is more unburned coal. Fig. 1 shows the men driving a cut through the pile to reach this coal. At the point where these men are working the material is so hot that from time to time it is necessary to thoroughly wet it down, otherwise the men would burn their feet.

As may be seen in this latter illustration, the coal is loaded by hand into a dragline scraper because the bank is not so high that the material in it can be successfully washed into the conveyor with water. This particular scraper line discharges to another operating at right angles with it, which extends to the breaker itself.

Ordinarily, the material is washed or hydraulicked into the scraper line. As far as possible, a first preparation is made in the pile itself, thus roughly separating the coal from the ashes. Where the material is loaded into the conveyor by hand this is comparatively easy since the men can readily throw the ashes to one side. In the main bank, however, where the stream of water is used, the attempt is made to separate the coal from the slate and other extraneous materials by hydraulicking them separately.

By a system of troughs the ashes are carried away to a point beyond the bank, after which the coal is washed to the scraper line. This method saves handling in the preparation plant a large part of the ashes that are found in the culm bank, but no matter how much care is used in this process it is impossible to remove all the ash in this manner, and some of it finds its way into the coal that goes to the breaker, where as much as possible is removed by hand and by the aid of various types of machines.

Two kinds of ashes are encountered in the bank. One is boiler refuse and in general is approximately spherical; the other is flat and is such as will ordinarily result from the burning of coal in the bank or in such fires as generate a lower intensity of heat than a boiler fire. Both shapes are exceedingly hard to remove. The main conveyor to which two gathering draglines discharge takes the coal to the foot of the breaker and delivers it into a hopper. From that point it is elevated to the top of the building by a bucket conveyor. This discharges the material onto a shaking screen, where it is sized. All sizes below pea go directly to their respective pockets, but it is necessary to give the chestnut and pea coal further treatment.

In this screening process a large amount of material larger than chestnut and in some instances larger than stove is separated. After the product is handpicked to remove the slate, this material is sent to a crusher and is reduced to chestnut size. This is done because it is difficult to make a car of egg or stove coal from a culm bank look as bright and clean as it should, since the surface of the coal is usually more or less discolored. This makes marketing difficult and the price obtained will be below that normally procurable for that size of coal. If the material is crushed, however, so that a freshly-broken surface is exposed, this will be as bright as that found upon freshly-mined material. It may, therefore, be readily disposed of.

Boiler Ash Must Be Diligently Hand Picked

The crushed material is returned to the screen for re-sizing and subsequent treatment. Ordinarily the boiler ashes are removed from chestnut by the simple but tedious process of hand picking, no other method successfully performing this operation. Flat ashes, on the other hand, may be removed by mechanical treatment. This is accomplished on an Ayers picker. One of the accompanying illustrations shows the chestnut picker which is in use in this breaker. This type of machine consists of a moving metallic apron placed on such a pitch that when the coal to be cleaned is discharged upon it from a chute at the proper point the round or nearly round particles roll down the belt to the lower edge, while the flat pieces, because of their shape and the fact that they will not roll, are carried away by the belt and discharged over the end. This belt travels at the rate of about 150 to 200 ft. per minute.

Flat slate as well as flat ashes may be removed in this manner. From the picker the nut coal is sent to Wilmot jigs, where the balance of the slate is removed. All the material treated, whether hand picked or passed over the Ayers picker, is finally treated in the same way in the jigs.

Rounded Coal Refuses to Pass Heads Down

Pea coal passing the shaker also goes to an Ayers picker, where the flat ashes and a portion of the slate is removed. It was found that when operating this picker on this size of coal a large proportion of good material was carried over with the slate. This was soon remedied by placing two boards slightly above the moving belt, at a height that would permit the slate to pass under them but would not allow the coal to follow. The slate in this size of material is thin and flat while the coal is more rounded and thicker; consequently the slate will pass through a smaller opening than will the coal. When the picker is wet, sufficient cohesion exists between the belt and the coal to carry the coal over with the slate, unless some such arrangement is made as that above described.

From the size of the breaker it seems hardly possible that such a plant and equipment have prepared as much as fifteen railroad cars of coal in one day. This, however, has been done, and quite frequently an output of as much as twelve cars is attained, while the average production is about nine cars. The building is so constructed that it can be easily taken apart and moved to another bank. Thirty men and ten boys are required to operate this breaker, and this force attains the average output of nine cars a day, as already mentioned. The culm bank where this outfit is at work is estimated to contain a total of 100,000 tons of coal.

INSULATING AN ARMATURE COIL

After a coil is formed it must be insulated before being placed in the armature slot. The girl is applying varnished fabric insulation to one side of such an element, a service for which the material is well suited.

Cloths Treated with Yellow Varnish Make Flexible, Durable Insulating Fabrics

TREATED cloths for insulating purposes are soon to be placed on the market by the General Electric Co. These are all woven from long-fiber yarn, treated by a special process to remove the nap, thus eliminating the possibility of the varnish film being penetrated by the cotton fibers, which would reduce the insulation value. This process renders it unnecessary to starch the cloth to lay the nap.

The insulation value of treated cloths depends largely upon the quality of varnish employed and the method of its application. All the varnishes used in treating these fabrics have been developed by the research laboratory of the General Electric Co. The varnishes are extremely flexible and age well under all operating conditions. The use of special machinery for impregnating the cloth makes it possible to obtain complete saturation and highly uniform coatings.

Yellow-varnished cloths are extremely flexible, have high dielectric strength, and are oil-proof, moisture and age resistant. The film imparted by yellow varnish is much harder than that produced by black varnish, and resists abrasion to a more marked degree.

Yellow-varnished materials all have practically the same qualities, varying somewhat owing to differences in the base material, which makes them adaptable for a variety of purposes. Varnished silk, for example, forms a thin, tough insulating material for use where light weight and a minimum of thickness are the prime requisites, as in meter coils and the electric equipment of aëroplanes. Yellow-varnished cloth is a closely woven fabric treated with a high grade of yellow varnish which is baked in place, giving it a hard surface film. The other two varieties are yellow oiled muslin and oiled canvas. They are impregnated with insulating oil and oven treated to give them a hard, smooth surface. The thinner fabric is used for a large variety of purposes, such as wrapping armature coils, while the canvas is used for pads under railway-motor field coils.

Black-varnished cloths are highly flexible and have longer life under high temperatures than the yellow variety. Their oily surface renders them particularly impervious to oil and moisture, and they are preferable wherever a hard surface is not required because of their better insulating qualities. They are of three kinds, viz., a black varnished cloth of great mechanical strength, used either as a tape for wrapping armature, field and transformer coils and leads, or as a sheet for wrapping the slot portions of armature coils, and for phase insulation pads. This material exudes a greasy substance when allowed to stand, which produces a highly efficient moisture-resisting film. The second is a duck of an extremely close weave treated with a black japan of high insulating qualities, and oven cured. It is valuable for use under the binding bands of railway motors as a protective and moisture-excluding fabric. The third is a cloth similar to the first, except that it is thinner, being used to wrap the slot portion of coils.

Little Mines Make Big Profits for Owners

Small Coal Acreages on the Outskirts of Pittsburgh Are Proving to be Veritable Bonanzas—Royalties Amounting to as Much as $5,000 Per Acre Are Being Paid to Farmers

By Donald J. Baker
Wilkinsburg, Pa.

IF HORACE GREELEY were alive today he probably would alter his famous words of wisdom to "Stay East, young man; stay East!" The lure of the "yellow" as was exemplified by the rush to the Klondike regions is a tame means of making money when compared to working a small patch of coal on the outskirts of a large city.

Not in Old Japan

But in the U. S. A. The coal is loaded in this cart by the miner who dumps it on the platform. It contains 16 bu. of coal and the man is given $1.10 per cart. Don't overlook the harness by which the man is hitched to the cart like a mule. He does not mind, however, as he makes his $15 a day.

This Is a Coal Dock

Truck drivers load their own trucks and an allowance of $1 per ton is made on the price of the coal. The price is $1 higher where rude chutes have been constructed and where the coal is loaded in the truck bed by gravity. This "plant" brings the farmer who owns the land about $50 per day.

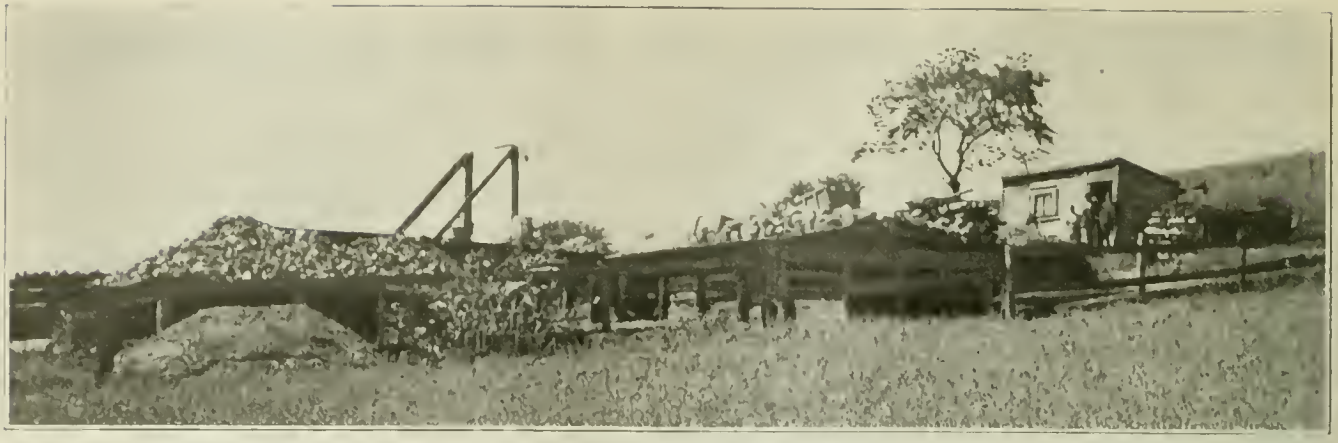
With the recent establishment of new high-price levels in the spot market small coal acreages in the Pittsburgh region have proved to be highly profitable investments. The Sandy Creek district, which is that section of country contiguous to the borough of Wilkinsburg, has witnessed within the last eight months the springing up of innumerable country banks. As in the early days of the California gold rush, the hillsides are dotted with chutes and tipples as were the mountains of the West when it was said that "prospect holes could be counted by the hundreds with a single sweep of the eye."

Though not given the publicity that attended the "mad march for gas" upon the McKeesport field a year ago, the excitement that attends the opening of a drift among those engaged in the business is no less intense than was caused by the erection of a new drill rig in the former district. Coal formerly deemed worthless is being mined and brought to the surface, where it is eagerly snapped up by waiting truck drivers. The domestic consumer of today is in dire straits and is willing to attempt the burning of an inferior coal in order that his bills may be lowered. He demands that the product be black, if not very black, and that is all.

Every available piece of coal land in this district from one acre in size upward has either been purchased outright or is being developed on a royalty basis. Farmers owning small patches of coal whose areas are clearly defined by outcrop limits have suddenly awakened to the fact that they can set their own price on their land. Most of these men never before entertained visions of realizing anything on their coal, and yet in some instances the royalties being paid for such mineral rights will aggregate nearly $5,000 an acre.

In many cases three parties are financially interested in the coal bank, namely, the farmer, the operators—who quite often are the miners themselves—and the truck drivers. Each class appears to be making money. The operators experience little difficulty in disposing of their product at $5 per ton to waiting truck drivers, after having paid the owner $1 a ton royalty for the privilege of developing the mine. The coal is then hauled by truck and sold to domestic consumers at a figure that will perhaps average about $8 a ton.

In most instances the coal is of the "crop" variety and quite rusty. Carelessly mined and given no preparation at all, the domestic consumer, nevertheless, sees in it a means of sidestepping the prices now paid at the larger mines, which run from $10 to $12 a ton.



GENERAL VIEW OF THE THORNE COLLIERY, SANDY CREEK DISTRICT, NEAR WILKINSBURG, PA.
It seems hard to believe that such plants exist, do business and make money in the year of grace 1920, but they do, and they will continue in business so long as prices remain high, which means so long as the railroads continue to be so beset that they cannot buy the necessary cars and locomotives.

The accompanying illustrations depict scenes around the "plant"—if such an expression may be pardoned—at Thorne's Farm, near the high point in the Frankstown Road, just outside of Brushton. Five miners are employed by the operator, who in this instance is the man owning the coal. Transportation from the face to the "tipple" is accomplished by means of specially constructed carts each holding 16 bushels of coal. The men are paid $1.10 per cartload, which figure includes the labor necessary for moving the cart to the surface. By utilizing carts, as in the early days of the industry, the operators are able to open a bank with a minimum of capital. The majority of the new openings, however, are equipped with second-hand cars and light rails. The picture showing the primitive cart in operation is interesting in that it was taken in a district famed today for its modern mining equipment.

Little trouble seems to be experienced by the operators in getting men to work in these operations, despite the fact that none of the mines, of course, is electrified, and the coal must be extracted by the use of the pick. A higher wage is paid the men than is demanded by the regular union scale, although there is little real ground for a just comparison of prices because of the great difference between the working conditions which exist in these mines and in the large operations of the Pittsburgh district.

MINE MOUTH JUST LARGE ENOUGH FOR CART
Note the planked floor for the carts to run on. It will be seen with what a notable economy timber is being used. Such openings as these are not intended to last more than a year or so.

To the older readers of *Coal Age* the methods of mining employed in these operations will recall those followed in the early days of the industry. In some places from eight to ten inches of coal is left on the floor because to take it up would involve going to the dip. Two wide planks laid loosely on the floor serve as rails for the easy movement of the carts. Rooms are driven directly off the main entry. No surveys are made and no maps drawn.

All in all, hit-and-miss methods are quite generally adopted. By reason of the small amount of cover over the coal, caves are frequent. Hence it is not necessary to use fans in ventilating the workings. In some of the larger operations underground furnaces have been constructed with a shaft leading to the surface.

When the loaded carts are brought to the drift mouth they are dumped by the miners onto a loading platform, as is shown in one of the illustrations. Truck drivers are forced to load their vehicles by hand in this case. When the banks are equipped with rough chutes the operators are able to demand $1 a ton more for their product, as in that case less time is lost in loading.

With the increased freight rates now provided, operators are studying the motor truck as an economical method of transportation for short hauls. Sometime ago I made the statement that the tipples of large producers would be so altered in design in the near future as to permit the loading of trucks with the same ease as is now experienced in filling railroad cars. It is expected that *Coal Age* will soon publish a description of a tipple designed for a large output wherein the motor truck may be filled and dispatched with much the same ease and precision as the railroad car. The first of its type to be erected in the Pittsburgh district; it will soon be but one of many.

Costs of operating motor trucks over short hauls no longer appear prohibitive. Thanks to small operations, such as the one here described, where trucks have been used by necessity, this means of transportation has been put to severe test. That the truck has not been found wanting is attested by the willingness of at least one of the larger operators to construct tipples specially equipped to ship by truck in large quantities. It will be interesting to follow the development of this newly recognized coal-transporting agency during the next few years. Predictions which when they were made appeared fanciful are soon to become realities.

Mine Safety Experts Discuss at Milwaukee Accidents, Health and Welfare—II

Examination of Hoisting Engineers—Dangers on Slopes—Failure of Dogs—Cage Signals and Their Advantages—Conduct of Mine-Rescue Work—Training of Apparatus Men—Use of Stenches and of Other Danger Signals

By R. Dawson Hall
New York City, N. Y.

ONE of the most important of the articles submitted to the Mining Section of the National Safety Council was that of L. F. Mitten, engineer of the Vulcan Iron Works, at Wilkes-Barre, Pa. The subject was "Safety Devices on Hoisting Engines." It is useless to attempt to publish it in brief as it fully deserves a far more complete reproduction. However, the discussion, which was not so intimately bound up with paper as to be unintelligible apart from it, may be presented in this article.

During the coming year the Mining Section of the National Safety Council hopes that it will secure the co-operation of the Bureau of Mines in providing a permanent secretary for the section. Without someone to take a continuous and exclusive interest in the safety work of the organization, progress in the safety program of the Mining Section is likely to be slow and beset with difficulties.

Mr. Mitten ascribes hoisting accidents to three causes: Failure of hoist to function, failure of hoisting engineer, failure of hoist from defective material or workmanship. Horace F. Lunt, of the State Bureau of Mines, Denver, Col., said that in Utah a physical examination was made of all men seeking to run hoists. An investigation of the men being employed revealed one man who was so deaf that he could not hear the signal bell on the hoist and was obliged to rely on seeing the clapper move to learn what signals were being made.

Martin J. Flyzik of the State Safety Board, Olympia, Wash., said that in that state he had required a rigid inspection before hoists were used, a reduction in the speed of hoisting, man trips for the sole purpose of hoisting men, cables around trips on slopes and physical examination of the hoist engineer. He said that some operators argued that inquiry into the personal fitness of the men was wrong as it prevented the awarding of the work as engineer to men whose services warranted their promotion.

Why Some Oppose Physical Examination

The operators argued that good and faithful men deserved the promotion even if they could not pass the examination. He held that the safety of men being hoisted was a paramount consideration with which principles of promotion should never be allowed to conflict. He declared that not only must men be physically fit but they must also be temperamentally suited to the job. A quarrelsome man might wreck a hoist and injure life if he allowed his temper to sway him over home quarrels or differences with persons on the job. He instanced one case where a difference at home made the engineer petulant when running the hoist, with the result that he caused an accident.

William Conibear, of the Cleveland-Cliffs Iron Co., Ishpeming, Mich., said that at all their plants cage-riders took care of the safety of the men and he strongly recommended their employment. H. F. Lunt said that he was desirous of learning of a safe device for stopping cars on a steep incline should the rope part, and he added that even in a vertical shaft the problem was not satisfactorily solved because if the rope was severed several feet above a cage the dogs refused to engage the guides with the degree of violence necessary for sustaining the cage. The rope had too much inertia and was sustained partly by striking the timbers as it fell. It accordingly held back the dogs from performing in any but a perfunctory way the work they had to perform.

B. F. Tillson said he thought that in all cases arrangement should be made for "bucking the motor," that is, reversing the direction of the current through it, should the brakes, through wear or other cause, fail to operate satisfactorily. Provision would have to be made, however, that the surge of current resulting therefrom would not throw the current entirely off the motor.

Are Steel Guides in Shafts Successful

Sim C. Reynolds desired to know whether steel guides had proved satisfactory. He felt they might avert the difficulty arising from the fact that if the cage falls the dogs are apt to strip out the guides. William Conibear stated that in one of the shafts of the Cleveland-Cliffs Iron Co. steel guides were used with runners on the skips. They had been found to give much trouble.

John T. Bradley, of W. J. Rainey Co., Uniontown, Pa., said that a dummy having heavy I-beams had been used on a steep incline. It was arranged that when the speed exceeded six miles per hour a governor threw out dogs which would wreck the trip. The men were kept well back of the dummy.

Following this discussion the paper of C. A. Allen, division engineer of the Bureau of Mines and chief mine inspector for the Industrial Commission of Utah, was presented. It was entitled "Signaling to and Controlling Mine Hoists from Moving Cages." This paper does not bear briefing, and consequently is entirely omitted in this record of the meeting.

William Conibear said he was opposed to anyone on the cage having the power to interfere with the hoisting. Dan Harrington, however, took the opposite stand. He

said that this ability to signal to the surface would be extremely helpful in mine fires. At the sadly celebrated North Butte fire, men were lowered down the shaft to attempt a rescue. They had no means of signaling from the cage, and the regular signals at the landing to which they were lowered were burned out. They could not signal that their help was vain and they were left down there to burn to death. When the cage was raised, the men were dead. Surely in this case, he said, it would have been desirable to have some means of signaling to the surface.

Orr Woodburn said that it was provided at Miami that the signaling could be done only when the cage was 25 ft. or thereabouts from the landing. R. H. Seip said that at the New Jersey Zinc Co.'s mine it was arranged that only the cage tender with a key could signal unless the man at the landing considered the occasion important enough for him to break a glass which protected an emergency signal. H. F. Lunt said that fifteen or twenty years ago the Cripple Creek shafts had used two wires in each shaft for signaling from the cage. He knew that this was not the case today, but he could not say why. Perhaps when they went out of repair their use was discontinued.

J. W. Reed said he was much interested in the matter. Suppose the cage left the guides, would it not be well to have some way of halting the cage before damage was done? W. W. Gidley was one of the doubters. His corporation—Phelps-Dodge—had not had a single fatal accident in their shafts for sixteen years. He did not believe in having too many wires in the shaft, and he felt that if anything went wrong, most men would not have enough presence of mind to operate the device.

In Globe Region Cages Have Telephones

Orr Woodburn declared that such cage signals were undoubtedly of value, as Harrington had declared. They were needed in wrecks and fires. In the Globe region telephones are being installed with reels on the cage for winding up the wire. Mr. Harrington asked whether, in case the cage loosened some timbers, it would not be well to have a means of preventing any further damage whereby the men on the cage might be killed. He related a case where a sick man fell when getting on the cage. The cage started and he was caught between the shaft and the cage platform. The hoist could not be stopped, for there was no cage signaling device.

Sim C. Reynolds said that in shallow coal shafts the men could shout up to the surface and use other means of attracting attention. B. F. Tillson recounted coming down on a man in the sump and being totally unable to stop the descent of the cage, as no cage signals were provided.

He said, however, that he did not approve of the practice described in Mr. Allen's paper of making a return through the hoisting rope, as the current would be apt to cause electrolysis and thus weaken it.

In the afternoon no session was held. A large number of men went to the Cutler-Hammer plant, where all kinds of switches and controllers are made. The company gave the members a good opportunity to see all the details of switch manufacture.

Loading Machine with Belt and Buckets

Some others went to see a model of a new loading machine for mines invented by H. S. Hunt, chief engineer of the Milwaukee Coke & Gas Co. The machine itself weighs eight tons and is 21 ft. long. The loading buckets in the front of the machine will lift over a ton. They are constrained to follow a roughly circular cam-directed course of such a character that they dump and are pulled back so as to clear the belt, which passes up at a 19-deg. slope, delivering the coal to a car at the rear over which that end of the machine overhangs. The device is so arranged that the virtual centre for its turning is not the point on which it turns but the rear end of the machine. Hence the dumping point is practically fixed over the car, no matter where the shovel is loading. The machine is only 36 in. high. Another shovel is being made of the same height, but it is only half as long and half as heavy.

One machine has been made up to the present. This was used at the Weeksburg-Powellton mine of the Elkhorn-Piney Coal Co. and is now working at the Mayville mine of the Steel and Tube Co. of America, loading iron ore. It loads a car in 31 sec., and in eight hours of actual running has filled 116 cars, each holding 2½ tons, handling large chunks of ore. E. S. O'Connor, the manager of the Mayville mine, who got the party together and took the engineers down to see the shovel, is quite enthusiastic about its performance.

Air for Avoidance of Gas Explosions

The first paper to be considered at the third session, held on Thursday morning, was that by R. A. Walter, general superintendent Wisconsin Steel Co.'s coal mines, Benham, Ky. Mr. Walter in his paper, which was read by Mr. Tillson, said that "150 cu.ft. of air per min. should be provided at the working face for every man and 500 cu.ft. for every mule, with such further volumes as may be necessary to dilute to a half of one per cent the gas in individual splits and to one-third of one per cent the gas content in the entire return of the mine. There should be two separate drives, preferably from entirely different sources of power. Clutches should be provided outside the fan chamber so arranged that not over five minutes will be required to change from one drive to the other. As this address will be printed in a later issue of *Coal Age*, no further quotations from it will be made.

Will Gas Make Hard-Coal Dust Explode?

H. H. Stoek, referring to Mr. Walter's declaration that where one per cent of gas was present the temperature at which coal dust would ignite was lowered, said that many reports had been spread that anthracite, which would not explode in pure air, would do so where one per cent of methane was present and that the experiments at the experimental mine clearly exhibited that fact. He thought it a pity that the information obtained by the Bureau of Mines relative to that subject had not been made public.

Later in the afternoon reference was made to Mr. Walter's statements that an electric drive did not assure operation at all times. There was a possibility of the cutting off of the electric current. Someone remarked that to this end it was a law in some states that two entire separate sources of power must be provided. On Mr. Tillson remarking that this would be quite expensive if it was necessary to put in a standby boiler and steam engine and keep the boiler constantly in operation pending such a failure of the electric current, C. A. Herbert of the U. S. Bureau of Mines, Vincennes, Ind., remarked that at most plants a supplementary source of power was found in the boiler that supplied steam for the washhouse. This, however,

did not furnish enough steam to keep the fan going at its accustomed rate of speed. Mr. Tillson believed that the prime mover which the condition indicated as best was an internal-combustion engine, which would not make necessary the erection, maintenance and continued firing of a boiler.

Mr. Tillson said that George S. Rice had assured him that anthracite dust would not explode, and in consequence he had installed a powdered-coal crusher at Franklin Furnace close by the boilers and there had been no symptom of trouble. He was extremely doubtful at first, because of the terrible explosions taking place in the anthracite mines of Wales. A member explained that the British use the word "anthracite"

C. F. Tolman

The New President of the Safety Council

Indefatigable as a worker, well equipped as an engineer, patient in research, Mr. Tolman represents the spirit of enterprise that so builds safety into a plant that emotional and inspirational safety work will relate to a mere fraction of the inherent dangers. Why discuss moral hazards until the mechanical devices have done their utmost to render accidents impossible?

more broadly than do Americans. In Great Britain the New River and Pocahontas coal would be considered anthracite. It is well to know that the dust of these coals will explode most violently.

B. F. Tillson said that it was all very well to talk of designing fans to meet the necessity for a given water gage, but what water gage was necessary? He was unable to ascertain that fact as the authorities were so contradictory when they came to discuss coefficients of friction.

Mr. Harrington in reply said that in his opinion it was extremely difficult to fix on any given coefficient. The Anaconda Copper Mining Co. had been making experiments at Butte, Mont., on the resistance of mine shafts to the passage of air and had discussed whether it paid to line a shaft with cement mortar or concrete. To ascertain the value of a smooth lining they had sunk three shafts each 150 ft. deep.

One was rectangular and unlined, one rectangular and lined with cement mortar and one circular and similarly lined. All were of equal cross-section. With a given water gage the second shaft passed 1.9 times as much air as the first, and the third 3.3 times as much. The company will sink a shaft solely for the passage of air. It will be 2,800 ft. deep and it will be lined by the cement gun with gunite. It is to pass 350,000 to 400,000 cu.ft. of air per minute.

Martin J. Flyzik declared that he believed that the industry should be the recipient of more information from the Bureau of Mines relative to specific mine accidents. He knew that the engineers of the bureau made careful reports of all the more important disasters to the chief mining engineer, but he also knew that these reports did not go to the public. He well understood that a veil of secrecy had to be maintained so long as damage suits might be instituted, but now, seeing that the operator had to pay compensation whether negligent or not and regardless of any of the old common-law defenses, the operator had no interest to serve in secrecy and could not object any longer to a critical analysis by the bureau's investigators.

Following this discussion Joseph J. Walsh's paper on "General Rules for Gas Explosion Prevention in Anthracite Coal Mines" was read by Mr. Tillson. Mr. Walsh is district state mine inspector at Nanticoke, Pa. Mr. Harrington declared that accidents continued to happen despite the use of permissible explosives. The operators at three mines where such explosives probably caused explosions were at a loss to explain what caused them. Samples of the explosives were sent to Pittsburgh for examination. They proved to fill the standard requirements of safety. Inquiry showed, however, that the men at the mines where the explosions took place were using 7 to 8 lb. of explosives instead of 1½ lb., which was the charge limit. No permissible explosive is safe when used in such excessive quantity.

Want Mine as Well Protected as Surface

The discussion of Mr. Walsh's paper was followed by the reading by the authors, Orr Woodburn, director, Globe-Miami District Mine Rescue and First-Aid Association, Globe, Ariz., and R. H. Seip, safety engineer, the New Jersey Zinc Co., of Franklin, N. J., of two papers entitled "Mine Rescue and Recovery Operations" and "Requirements of Rescue Training for Metal Miners" respectively.

Among other interesting matters, Mr. Woodburn said:

"Every *surface* dwelling and building [at the mines] is fully insured and protected by a separate system of fire lines, hose boxes fire extinguishers, central-hose station, and probably an alarm system. All of these are inspected by insurance representatives and kept up to the requirements by the operating departments as a part of the regular routine. All of this is to protect buildings that are fully insured.

"Within the mine insurance is not feasible and yet the hazard of fire is just as great, not to mention the much greater danger to life, and no such complete separate fire system is maintained. Not as much provision is made for the protection of a valuable stope as is made to protect fully insured surface buildings. The rescue crews must nearly always depend on water lines that are converted from air lines by cross-sections with a water supply, and probably make openings in the pipe where needed. Pipe lines of proper size must many times be laid and hose carried to the place. The

surface building has at least one fire extinguisher and a fire hydrant with available hose at a specified distance.

"With these facts in mind regarding the existing conditions it is hoped that every mining operation will face the situation squarely and provide as complete a fire system for the underground workings as is provided on the surface. By so doing fires could be extinguished at their inception, and serious fires from accidental means would be of rare occurrence.

"An almost general belief exists that the purchase of new oxygen breathing apparatus eliminates all of the evils of defective or questionable equipment. The new apparatus will not give the results expected unless it is kept in proper condition and this condition is proven by frequent use. No equipment can be expected to serve as intended unless kept in proper condition. If the old apparatus did not give proper service the same can be expected of the new. Storing it in a special cabinet and testing it at frequent intervals does not insure its safe condition for use. The proof of the condition is the wearing, and the more often it is worn the longer the life of the rubber parts.

"Often recharges and spare parts are not kept in sufficient amounts. The continuous use of all apparatus for thirty-six hours would exhaust the recharges of most plants. With the numerous strikes and freight embargoes it is important to maintain a high minimum regardless of the geographical location of the plant. A supply that will permit of 100 hours, or, better still, 150 hours, is advisable, especially as the advantage of borrowing from adjacent plants has been limited through the increased number of models of apparatus in use. The high minimum of supplies only requires a greater investment, as there is no deterioration or increased consumption.

Advises Large Use of Half-Hour Apparatus

"One of the serious drawbacks in the use of oxygen apparatus is the time required to get the crews equipped and into action. The history of all fires shows that the critical period for life and property is during the first few hours, and of that time the first thirty minutes is the most important. Providing cabinets with sets of half-hour oxygen apparatus that can be used by anyone without special training, with a complete set of emergency tools, carbon tetrachloride extinguishers, pipe fittings, etc., has proven to be of great value. This will make immediate action possible, and if a small fire is encountered it may be extinguished.

"By this advance force the location and extent of the area involved, together with the conditions existing, can be ascertained, so that when the heavy apparatus crews are ready they can go about the work intelligently. This light equipment is of great value in the further exploration and inspection work.

"Mine-rescue, first-aid and mine-fire prevention work is a most important part of mining operations and should be in charge of a specialist or a department specially created to take care of this work to the exclusion of all other. Where such work is made the part-time duty of someone, no matter how able he may be, the work is not satisfactorily performed, for he will regard it as only a side line and the outcome will be evident when an emergency arises. Where there are several plants within reasonable distances all apparatus should be pooled and a central mine rescue station established. With a large and efficient organization, completely equipped at a lower cost per company, the best possible service can be depended upon. By distributing the cost per company on the basis of the average number of employees, the smallest plant will have just as complete protection as the largest and at a cost that is not prohibitive.

Standardize All Pipe Openings in Mine

"Experience around fires has shown that large quantities of fire hose are needed if sufficient water is to be put on the fire without delay. All hose and pipe openings for fire use in the mine should be of the same size as the regular air hose in use and standardized to insure prompt use. If more lines and volume of water are required this can be arranged for in a reasonable time, provided a record is kept of the size and location of all surface fire hose.

"Fire doors should be so placed that fire may be quickly isolated and materials available for the temporary sealing off of the fire area. Cement guns are of great value in the permanent and efficient sealing off of any mine fire.

"All of the labor connected with the fighting of fire should be done as far as possible by the fresh-air men, who may be assisted and protected by the oxygen-apparatus crews. This can be done by building up air pressure with portable blowers.

"The value of special trucks with blowers and flexible piping and also large fire extenguishers with long hose cannot be placed too high. When 300 ft. of flexible pipe can be installed in an hour and its cost is moderate and it occupies such a small space in storage its use is to be highly recommended. Some of the materials used in making this pipe are highly flammable, and this must be considered in purchasing that material.

"Signal systems to call all the men out of the mine should be provided, and it would be well to have such systems standardized, at least in each district and, better still, nationally. Flashing signals on the electric circuits is apparently the most feasible and usual method.

"At times of fire and disaster it is of paramount importance to place one man at the scene of operations and another on the surface, through whom all orders must go. Each should keep a complete record of every order, its time, by whom and to whom transmitted, thereby providing a valuable and reliable source of information, saving much duplication and delay. Every boss and official should be instructed, and notices should be posted throughout the mine as to general rules to be followed in case of mine fires."

Men Material Vital as Apparatus Material

From Mr. Seip's remarks the following paragraphs may be taken:

"Obviously, it is of vast importance that the qualities of the men to be selected for places on rescue crews should be given careful consideration. It is just as essential to have physical fitness in rescue or recovery work as it is to have mechanical fitness in the type of apparatus used. Each of these factors is dependent on the other, and each without the other is dangerous, not only to the one man but to the entire crew. Therefore each candidate should be subjected to a thorough physical examination prior to any instruction.

"An examination given at this time saves not only money for the company but often embarrassment on the part of a man forced, by physical unfitness, to discon-

tinue the course of training. This examination should, of course, be made by a physician or surgeon. If the surgeon be in the employ of the company he will doubtless be familiar with the nature of the training and will conduct his examination accordingly.

"In addition to the general physical condition of the candidate, special attention should be paid to the condition of the nose, throat and lungs. Also, in consideration of the strenuous nature of the work and the prevalence of hernia among workmen, this important point should not be overlooked in the examination. Systolic blood pressure also should receive careful consideration, as high-blood pressure induces vertigo and dizziness.

Preference Given to Short and Husky

"There are other features also to be considered in the selection of men for training. It would be natural to suppose that men of large stature and corresponding strength would be the best fitted to wear apparatus, yet most of us know that this is not so. Experience has shown that men of average height and weight are able to handle themselves to better advantage while wearing apparatus than taller and heavier men.

R. C. Richards

Retiring president, National Safety Council

Mr. Richards, who is chairman of the Central Safety Committee of the Chicago & Northwestern Railway Co., is the man who is mostly responsible for the safety work on railroads. He it was who first realized that the way to promote safety on railroad systems was by making the subject a specialty. There is a human element in safety, and surely no warmer heart or more brightly beaming eye than that of Mr. Richards was ever devoted to the humanizing of that industry. He was present to open the meeting, but was taken sick soon after and was not able to attend the banquet.

S. J. Williams

Secretary and chief engineer, National Safety Council

The council work is not merely to hold an annual congress and, after that is over to do nothing for another year. Its function is to serve the industry with advice, information and bulletins. Mr. Williams is the source from which much of that service comes to members either directly or indirectly.

Rescue Men Should Be Mentally Fitted

"Inasmuch as a considerable part of actual emergency work with apparatus is dependent upon the absolute understanding and execution of instructions, men who are to be selected for the training should be mentally as well as physically efficient. This statement does not imply that the candidate should be highly educated, but, as Mr. Luke Keating, mine rescue foreman for the Lehigh Valley Coal Co., in his article on 'Picking Men for Mine-Rescue Training' has stated, 'Training in mine-rescue work should *not* be required to include a course of instruction in English.'

"All candidates should be thoroughly familiar with the mine workings and should know the conditions existing in each level and ladder-way. It also is important that they should be able to do any of the various kinds of work underground that might be necessary, such as timbering, constructing brattices, drilling, mucking, etc.

"There are certain phases of the mental fitness of the men that sometimes cannot be determined until later in the training period. These phases involve the coolness with which they are able to act in dangerous

atmospheres, the steadiness of their nerves, the excellence of their judgment and their ability to maintain their mental poise. Men who become easily excited or panic-sticken should be eliminated from the crews as rapidly as these symptoms become apparent.

"Furthermore, rescue work is not the most pleasant occupation that men engage in, and comparatively few men desire to undertake it. At best it is a hazardous occupation, so that men should not be coerced into taking the training. Every man to be trained should be a volunteer in the sense that he does not do the work against his will. The man who is forced into the work may at some time bring disaster to his crew due to the mental deficiency resulting from fear or other causes.

Should Rescue Men Be Trained in Mine?

"With apparatus and men selected, the next thing to be considered is the place of training. Upon this subject there is a diversity of opinion. The preliminary instructions must, of necessity, be given on the surface, so that any room large enough to accommodate the number of men in training will serve this purpose. Also, the first couple of days can be spent in the open air until the men become familiar with the apparatus and 'get the feel' of it while wearing it in the preliminary work.

"Following this period many instructors then take the crew into the mine for further practice. Whether or not this is advisable is an open question. I do not believe it to be essential. The course of training is for the purpose of teaching the men something entirely new—a phase of mining work that requires courage and one that is not without hazards. Therefore, the work must be done in a manner and under conditions that will instill in the men absolute confidence in their machines and in their ability to use them. It is of course important that they should be able to carry on their work under the same conditions as exist underground. To this end the training chamber, or smoke room, should be constructed so as to meet the conditions, and most metal-mine conditions can, with little work, be represented in the smoke room."

Mr. Seip then described in detail the smoke room with its equipment, slopes, timbered roadways, etc., and added that double doors were provided "on one side open to the outside of the building. These doors are equipped with electric door openers which may be operated from the apparatus room or the observation chamber. The doors are counter-weighted so that their operation in opening is entirely automatic. This feature, in addition to a window in the upper part of the building operated by a rope, provides for rapid removal of fumes in emergency.

Do Not Permit Trained Men to Forget

"It is natural that in the training period many unforeseen things will occur that the men will not understand. Reducing valves will require adjustment, bypass valves will accidentally become opened, men will overexert themselves, etc. It is the duty of the instructor to explain carefully the reasons for all such occurrences and tell the men how they may correct or prevent them. Too much importance cannot be attached to the method of instruction, for the value of the candidate as an efficient rescue man is almost entirely dependent upon the confidence in his instructor and in his apparatus which the neophyte gains at the beginning of the course.

"The cost of the preliminary training of but five men is not a small item and is increased directly as the number of men trained is increased. Yet, if this preliminary training is to constitute entirely effort on the part of the company, the money spent has been a poor investment. Most of us know how easy it is to forget simple first-aid training, provided we do not continually practice along those lines. For this reason first-aid contests have been inaugurated to stimulate practice in first-aid work.

"It would, therefore, seem advisable that a half day each month be allotted to each rescue crew for practice. In these periods the apparatus should be worn at least one and one-half hours and the work should be varied so as not to become monotonous. In case of the loss of members of the crew by resignation new men should be added, but they should receive individual instruction, provided there are but one or two vacancies. This method should not be employed if there is any opportunity to train new men as a crew, as better results obtain than from individual training.

Difficulty in Securing Mine-Rescue Men

In the discussion of the two papers that followed their presentation John T. Bradley, of the W. J. Rainey Co., Uniontown, Pa., said that the Connellsville companies found it hard to secure quotas for rescue teams. Mr. Woodburn said there was no trouble in the Globe-Miami district, where 25c. per day additional was paid to those who were enrolled as rescue men. J. T. Ryan, of Pittsburgh, said that where full pay was given for practice plus $5 a day extra for actual rescue and recovery work there was no difficulty in securing the necessary force.

Speaking about the undoubted advantage of carbon tetrachloride, Mr. Woodburn said that when a fire in a winze was so located as to be unapproachable several gallons of the compound were poured down it and nothing further was done. For months they were unable to reach the place. When they did it was found that the timbers were burned half through, but the tetrachloride had done its work and extinguished the fire completely and at but little cost considering the valuable work performed.

Warns Against Mining Equipment

Martin J. Flyzik asked whether the advice against mixing equipment in the outfitting of a team working together had the approval of those who were skilled in the use of oxygen breathing apparatus, and Dan Harrington replied that it was not well to assemble men using automatic feed apparatus with men equipped with apparatus having a fixed feed. The men using the first type would work in accord with the wider limits of their apparatus and the men with a fixed feed would use their bypasses to excess and soon exceed the ability of their apparatus.

Mr. Woodburn declared that he would like to see fire extinguishers in every stope. So far he had been unable to get the mining companies to provide them. There was always a risk that they would be broken by shots and then again it was hard to keep them distributed.

(To be continued next week)

Discussion by Readers

Edited by
James T. Beard

To Reduce Cost in Low Coal

Numerous points that have an important bearing on the cost of working low coal are often overlooked or, if brought to mind, are completely disregarded.

WHEN reading the inquiry of L. E. R., *Coal Age*, Aug. 19, p. 403, regarding the best method to be adopted in the working of a 32-in. to 35-in. seam of coal, a few points occur to me that may prove of value to the inquirer and others similarly interested:

First, I will assume that the coal is horizontal or nearly so. Probably mining machines are used as the mine is said to be well equipped. If gathering motors are employed, as I may suppose, and these enter the rooms the butt entries should be turned as far apart as possible, having due regard to the roof conditions and the practical working of the coal, all of which influence the length of the rooms. My purpose in making this remark is that since the work in low seams is expensive every advantage should be taken to increase the tonnage per yard of entry driven.

Points Worthy of Attention as Affecting Cost of Working

It is stated that bottom is being lifted to gain height on the roads. This would have the disadvantage of causing a considerable grade at the mouth of each room. My preference would be to rip the top to provide the necessary headroom; but, as stated in the reply to the inquiry, this will depend on the nature of the roof and may not be practicable.

It is further stated that the rooms are driven on 60 ft. centers, and, assuming they are of good width, this would indicate a fair roof. In that case, it would be possible to drive the entries 12 or 14 ft. wide and gob the refuse behind a row of posts, at the side of the road, instead of hauling it to the surface. Such a plan will not only avoid the necessity of paying yardage, but a single cut will throw down a fair day's work for the loader and give cheaper coal.

Judging from the sketch on page 403, the rooms are necked for laying the track along the rib. While this is good practice, and makes it easy to load the pillar coal in robbing, it may prove a disadvantage in loading the coal at the face when driving up the rooms, owing to the distance a miner must handle his coal, in this thin seam.

My experience leads me to conclude that it will be difficult to hold a full crew of miners under these conditions, without paying a high scale or making other allowances. To avoid this trouble, in working a thin seam, it is often preferable to lay the track up the center of the room and thus divide the distance the coal must be handled at the face.

One further suggestion has reference to the width of crosscuts or breakthroughs. Under a fairly good roof, in low coal, it is possible to avoid the expense of narrow work by making the breakthroughs and crosscuts wider. These are a few points that have occurred to me in reading over this article, and their observance will often seriously affect the cost-sheet.

Morgantown, W. Va. M. L. O'Neale.

Handling and Transporting Explosives

The terrible disaster that occurred some time ago in the Baltimore Tunnel raises the important question as to what is the safest method to adopt for carrying explosives into the mine.

WHAT is the safest means or method of handling and transporting explosives underground is the question that arises in one's mind after reading the article entitled "Many Men Have Kegs of Powder." commenting on the Baltimore Tunnel disaster, *Coal Age*, July 8, p. 50. The conclusion reached in that article seems to be that the safest plan is for each man to carry his own explosives into the mine. It would be interesting to have the opinions of many on this question.

At our mines a principal magazine of fire- and bullet-proof construction is located at a distance from the mine and other buildings where a possible explosion would not be likely to endanger anyone or damage property. A small distributing magazine is located within convenient distance of the mine and is only large enough to hold a day's supply of powder.

A thoroughly competent and reliable person is in charge of providing the powder for the day and distributing the explosives to the men, each morning, as they are about to enter the mine. At the gate, some distance from the magazine, is a conspicuous sign warning everyone to keep light and fire away. Nothing but electric lights are used for illumination.

Carrying Explosives Safely into the Mine

The amount of explosive required by each man for his day's work is placed in a container made of fiber. Each container is in good condition and has a top or cover that protects the contents. On entering the mine the men go to their several working places, each carrying his explosives in his container, which he is instructed to put in a safe place before proceeding to work.

However, I realize that the development of a mine makes the distance a man must travel to reach the live workings more than what he can conveniently walk. Moreover, it is often the case that no good travelingways are provided and a man must take his chances on the haulage road, which is particularly dangerous where the mine is electrically equipped, even though the distance to be traveled is not great. These conditions often lead a miner to look for work in mines having a smaller development or where these dangerous and burdensome conditions do not prevail.

In order to hold his men, many an operator is compelled to arrange some way of hauling the powder into the mine, either in a separate car or in one attached to the mantrip carrying the men, as was reported to have been the case in the Baltimore colliery disaster. The question I would like to see discussed in *Coal Age* is: What is the safest way of going about this hazardous undertaking of conveying the powder when the men are hauled to and from their work each day.

Pikeville, Ky. G. E. DAUGHERTY.

Why Contract Mining Is Not More Common

The numerous arguments that are frequently advanced against the contract system of mining coal have, for the most part, no foundation. That this system of mining is not more popular is because the jealousy of the mine foreman is aroused when he sees the contractor making more money than himself.

ONE who is familiar with the working of the contract system in coal mining can hardly avoid a feeling of surprise when reading such arguments as are advanced by John W. Jones in his letter, *Coal Age*, Aug. 19, p. 400; and the statements made by Henry Bock, page 402, of the same issue.

The former of these two writers argues that the desire of the contractor to mine a large quantity of cheap coal will cause him to rob the pillars, which can only result in a large loss of coal. The second writer, Mr. Bock, claims that the contract system puts a premium on brutal strength and discounts all efforts to secure safety and compliance with the law.

When working a contract myself for seven months and employing an average of 14 men daily there was but one accident and that was due to the man's own carelessness. As is well known, at the present time about 20 per cent of the miners employed are experienced men. The remaining 80 per cent are those who float from one job to another and must be closely watched to avoid accidents. Under these conditions the contract system, which insures a more careful supervision of the work, renders accidents less frequent.

MINE OFFICIALS ARE RESPONSIBLE FOR ANY VIOLATION OF LAW BY A CONTRACTOR

Speaking of the disregard of contractors for mining laws and mine regulations, it is hard to understand how a mine foreman or his superintendent would permit a contractor to violate any requirement of the law or fail to observe safety regulations. Certain it is that the superintendent or the foreman would be responsible in case of accident, as the mine is in their charge and under their control. No competent superintendent would consider a contractor in the same light as a mine foreman, or regard him as equally responsible. He would hold the foreman to account for any accident that might happen, or for any loss of coal due to improper mining.

A contractor is no more than a miner and should be compelled to respect both the mining law and the mine regulations. Without this no system of mining is practical, as questions of safety would become a secondary consideration. Though appearing to have a high regard for safety in mining, Mr. Bock seemingly fails to appreciate the advantage of the close supervision possible in contract mining.

There is one argument that no one can deny; namely, the fact that contract mining run on a safe and sane policy will increase production. In one instance, for example, the men working in a mine in this region were given on an average four cars, per man, per day. Under the contract system adopted in that mine a little later, the average turn was eight cars, per man, per day, an increase of 100 per cent.

Another instance that came under my observation showed an increase of 200 per cent in the advance work of driving the headings. At the same time there was a reduction of 50 per cent in the accident list in that mine. My experience is that men are more satisfied, work more steadily and are more efficient in contract work than when employed in the usual manner by the company.

Foremen who have dealt with contract work will readily admit that they are never obliged to promise anything in order to get their men to work and there is no grumbling about yardage or deadwork so common at other times. In fact, there is no more ideal condition than working by the contract system when the superintendent, foreman and contractor pull together and each performs his regular duties and there is real co-operation instead of fault finding.

ARE MINE FOREMEN JEALOUS OF CONTRACTORS?

It is my belief that the chief reason why contract mining is not more general is to be found in the petty jealousy that a mine foreman sometimes exhibits when he sees that a contractor is making more money than himself. Too often the foreman will then start to find fault with the way in which the contractor's work is done and trouble begins.

Let me say, in closing, Mr. Jones' last remark appears to repudiate all his previous arguments. He states, "A large class of miners now employed in our mines requires leadership and direct supervision that a good contractor is able to give, and the result is a larger output and cheaper coal." To this I would add, greater safety and more efficiency per man. S. W. F.

Johnstown, Pa.

Pillar-and-Stall, Panel System for Working Low Coal

A modified pillar-and-stall system where the coal is worked out in panels after dividing the panel into four blocks, is here suggested as being a safe and economical plan for the working of low coal, particularly when the seam is underlaid with a soft bottom, which is a disadvantage in longwall work.

REFERRING to the proposition presented by L. E. R., *Coal Age*, Aug. 19, p. 403, let me suggest the working of his 35-in. seam on a combined four-block panel system, using the pillar-and-stall method to work out the coal in each block.

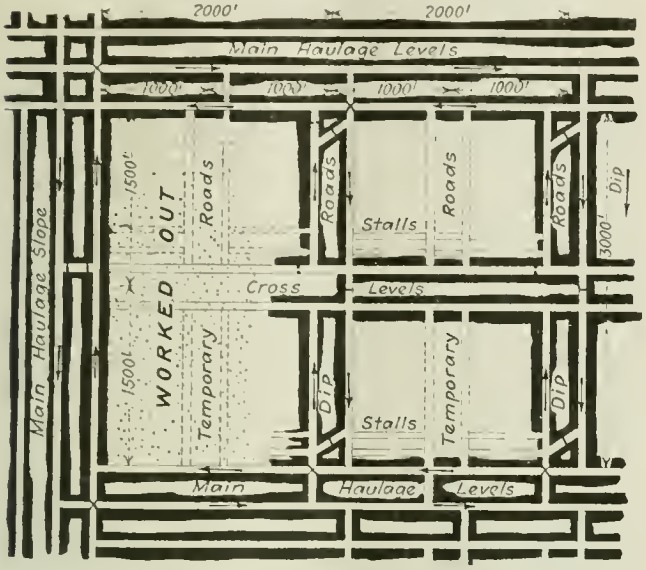
The four-block plan, as far as my knowledge goes, was first employed by C. H. Kerr, in the low mines of the North of England, where the coal was underlaid with a soft bottom. His plan, however, had the disadvantage that the coal was cut into small blocks 60 x 90 ft. and required the drawers to pull the coal 1,000 ft. to the main road.

The accompanying sketch illustrates a plan I devised that combines the best features of three systems of mining; namely, the pillar-and-stall method, the panel and four-block systems. The plan is particularly advantageous in respect to haulage and ventilation. In the

case in question, I have assumed that the coal has a slight dip and lies at a depth of, say 200 yards.

From the shaft bottom, main haulage roads are driven three abreast on the dip of the seam, while main haulage levels are turned off from these, at distances of 3,000 ft. apart, and dip roads driven between them, at distances of 2,000 ft. apart. In this manner, the coal is laid out in panels 2,000 x 3,000 ft., in area.

Each panel is then cut into four blocks by driving cross-levels and temporary dip roads, as in the figure.



FOUR-BLOCK, PANEL SYSTEM ADAPTED TO THE WORKING OF THIN SEAMS

The work of taking out the coal in each block is now started by driving stalls, say 24 ft. wide. These are turned off the dip roads and driven parallel to the main-haulage and cross-levels. The stalls are driven on 75 ft. centers, leaving large pillars between them. When these stalls meet in the center of the block, the work of drawing back the pillars is started and, to assist the haulage of the coal to the main level, temporary roads are maintained in the center of each block as indicated by the dotted line in the figure.

Extraction in First Working Should Not Exceed Thirty per Cent to Obtain Best Results

The main object of any system of work is to obtain complete extraction of the coal, as nearly as possible, with due regard to economy and safety. In working this seam I would advise not taking out more than 30 per cent of the coal in the first working, in order to obtain the largest possible proportion of lump coal and secure the best results in keeping the roads open and drawing back the pillars.

Where the bottom is soft, one important feature to be observed is to keep the long side of the pillar to the rise of the seam and, in all face entries, pack the refuse on the lower side of the place, which is better for the road and keeping the place clear of gas.

Always start the work of drawing back the pillars from the bottom of the level and advance up the dip. By so doing, the weight is not thrown onto the stalls, which might cause the tracks to heave and result in a loss of coal. The pillars should be taken out in skips of ten at a time, or twenty from both sides.

It is possible to employ eighty men in the four blocks of a panel, which can be finished in seven months. Indeed, I have seen where a hundred men could be employed. The plan affords perfect freedom from creep or squeeze. The coal being worked on the face or cleavage, it mines readily, which is a great advantage.

For safety and efficiency, the ventilation should be on the split system. The arrangement shown in the figure makes it possible for the current to be carried down from the top and up from the bottom, each block having its own circulation.

Those familiar with longwall work will recognize that a soft floor is a great disadvantage to the success of the work, not only because of the difficulty in drawing the timber as the work is advanced, but the roof may break short off along the face and cause serious trouble. In my experience, I have seen the circulation entirely cut off in low seams having a soft bottom and worked on the longwall plan. It is also very difficult to keep the roads open under such conditions.

New Castle, Col. V. Frodsham.

Longwall System for Low Coal

Conditions permitting, the longwall method of mining always promises a more complete extraction of the coal than any system that can be devised.

After reading the inquiry of L. E. R., *Coal Age*, Aug. 19, p. 403, asking for the best method of working a seam of coal varying in thickness from 32 to 35 in., I agree with the suggestion made in the reply by the editor. As he has stated, the description given in this inquiry is hardly sufficient to admit of a good judgment, in a particular case.

Generally speaking, however, my opinion is that a seam of coal as thin as this one cannot be worked, with any degree of success or profit, except by the longwall method of mining. In regard to "lifting bottom," instead of brushing the roof to gain the necessary headway on the roads, it must be assumed that there is some reason why that has been done in this instance.

Conveyor System Makes Easy Loading

Judging from experience, there should be no difficulty in attaining a daily output of one thousand tons or more, in the working of this coal, provided the mine is laid out properly with due regard to economy of operation. In this respect, an important feature is arranging for the easy loading of the coal by forming conveyor faces of suitable length.

The conveyor system of moving coal at the working face, in a thin seam, is particularly advantageous where there is no fixed tonnage price in the district. By this I do not mean to advocate a lesser daily wage paid to the miners. There is no question but that the conveyor system at the working face renders the work of the miner, in loading, far less laborious.

Generally, the tonnage rate will be sufficient to offset other expenses incident to maintaining a conveyor face. If, for any reason, such a system is practicable and it is necessary to use the more costly and wasteful method of mining the coal on the room-and-pillar system, the undertaking should be carefully considered beforehand. Even in normal conditions of the coal trade, such a system will scarcely insure any profit in the working of the coal described by this correspondent. The mine would have to be more favorably located geographically than I can conceive is possible in any part of Kentucky, from where this inquiry appears to come.

Linton, Ind. W. H. Luxton.

Inquiries of General Interest

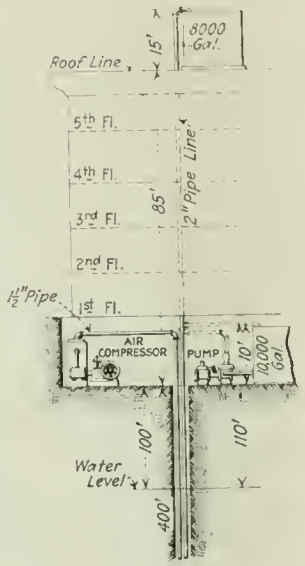
Answered by

James T. Beard

Air Lift vs. Pumping

While the importanee of an air lift for raising water has undoubted advantages in many instances, there are times when a combined air lift and pump will prove more efficient.

WE HAVE a large water-supply tank on the roof of a five-story-and-basement building. This tank will hold 8,000 gal. of water. Another tank having a capacity of 10,000 gal. is located in the basement of the building where there is also an air compressor. As shown in my sketch, herewith, a deep well has been bored beneath the building, to a depth of 400 ft., in which the water stands to a level of about 100 ft. below the floor of the basement. The height from the basement floor to the roof of the building is 85 ft. or to the top of the roof tank 100 ft.



SECTIONAL ELEVATION

At the present time, the air compressor is furnishing what air is necessary to raise the water from the well to the tank on the roof. The actual lift, or the distance from the water level in the well to the point of discharge at the top of the tank, therefore, is 200 ft. A 2-in. water pipe and a 1½-in. air pipe, each 165 ft. in length, are dropped into the well; and the 2-in. water pipe is further extended upward through the building to the top of the tank on the roof, a distance of 100 ft. This system has not worked with satisfaction, and I want to ask if there would be a saving effected by using the air lift to raise the water to the tank in the basement and then installing a small pump to force the water from this tank to that on the roof.

BUILDING SUPERINTENDENT.

Newark, N. J.

It is generally assumed that an air lift, wherever that system can be employed, is more efficient for raising water than a direct-acting steam pump. It has even been stated that the efficiency of an air lift may reach 80 or 90 per cent of the power required to drive the compressor, while the efficiency of the steam end of a direct-acting pump will average about 75 per cent. The estimated efficiency of an air lift, however, rarely shows more than 10 per cent, based on the ratio of the work performed to the power required to drive the compressor that furnishes the air.

The quantity of water to be delivered is not stated in this inquiry; but a flow of, say 20 gal. per min., in a 2-in. pipe, will require a velocity of 115 ft. per min., which is not excessive. The volume of free air required to lift 20 gal. per min., to a height of 200 ft., is

$$V = \frac{Gh}{125} = \frac{20 \times 200}{125} = 32 \text{ cu.ft. per min.}$$

The depth of submergence of the column pipe, in order to obtain the best results, should be 50 per cent greater than the actual lift, or in this case, 200 × 1.50 = 300 ft., and the air pressure required to overcome this head is 0.434 × 300 = 130 lb. per sq. in.

Now, taking the volumetric efficiency of the air cylinder as 85 per cent, the piston displacement in this cylinder is 32 ÷ 0.85 = 37.64 cu.ft. per min.; and, assuming a steam-cylinder pressure of, say 65 lb. per sq.in., the piston displacement in that cylinder is (130/65)37.64 = 75.28 cu.ft. per min. Again, assuming a steam-end efficiency of 70 per cent, the volume of steam required to drive the compressor is 75.28 ÷ 0.70 = 107.5 cu.ft. per min.

We will now consider using the air compressor to raise the water to the tank in the basement only, installing a direct-acting pump to force the water from there to the tank on the roof.

In this case, the air lift is estimated as from the water level in the well to the top of the tank in the basement, say 110 ft., which will require a submergence of only 110 × 1.50 = 165 ft. The volume of air required to raise 20 gal. per min. to a height of 110 ft. is (20 × 110) ÷ 125 = 17.6 cu.ft. per min., which calls for a piston displacement in the compressor of 17.6 ÷ 0.85 = 20.7 cu.ft. per min.

But, the submergence of 165 ft. in this case will require an air pressure of 0.434 × 165 = 71.6 lb. per sq.in.; and, taking the same steam-cylinder pressure of 65 lb. per sq.in., the required piston displacement in the steam cylinder is (71.6/65)20.7 = 22.8 cu.ft. per min.; and, for a steam-end efficiency of 70 per cent, the volume of steam required for the air lift is 22.8 ÷ 0.70 = 32.5 cu.ft. per min.

Pumping from the tank in the basement to that on the roof requires a lift of 90 ft., which corresponds to a pressure of 90 × 0.434 = say 39 lb. per sq.in. A flow of 20 gal. per min., or (20 × 231) ÷ 1,728 = 2.67 cu.ft. per min., assuming a water-end efficiency of 85 per cent, will require a piston displacement in the pump, 2.67 ÷ 0.85 = 3.14 cu.ft. per min. Therefore, again using steam at a cylinder pressure of 65 lb. per sq.in., requires a piston displacement of (39/65)3.14 = 1.88 cu.ft. per min.; and, assuming a steam-end efficiency of 70 per cent, we have for the volume of steam required to operate this pump, 1.88 ÷ 0.70 = 2.7 cu.ft. per min.

Finally, the total volume of steam required to operate the compressor furnishing air for the air lift and the pump is 32.5 + 2.7 = 35.2 cu.ft. per min., or less than one-third of that required by the air lift alone.

Assuming the weight of fuel burned is proportional to the steam generated, approximately the saving of fuel by the combined use of air lift and pump is in the ratio of 35.2: 107.5, or more than 67 per cent.

Examination Questions

Answered by

James T. Beard

Mine Foremen's Examination, Held at Pittsburg, Kans., Sept. 18, 1920

(Selected Questions)

QUESTION—*Name the different gases met with in coal mines. Give the chemical symbol and specific gravity of each. How are they detected and where are they found?*

ANSWER—The common mine gases are the following:

Methane or marsh gas (CH_4), specific gravity 0.559; detected by the action of the flame in a safety lamp and the flame cap formed in the lamp, the height of the cap being an index of the percentage of gas in the air. This gas is to be found in places or sections of the mine where it is generated and the air current is not strong enough or of sufficient volume to dilute the gas and sweep it away. Being lighter than air the gas accumulates at the roof and the face of rise workings.

Carbon monoxide (CO), specific gravity 0.967; detected by observing the behavior of caged mice or birds exposed to an atmosphere containing the gas. These small animals are prostrated by the gas in a far less time than a person breathing the same atmosphere. This gas is to be found in poorly ventilated places where slow combustion of carbonaceous matter is taking place in a limited supply of air, as is the case in gob fires or other smoldering matter. The gas is also the product of gas and coal-dust explosions in a limited supply of air.

Carbon-dioxide (CO_2), specific gravity 1.529; detected by the dim burning or complete extinction of the lamp; also by its effect on the system, the gas producing headache, nausea and general prostration when breathed for a sufficient time. This gas is to be found in poorly ventilated places and abandoned areas in mines, it being the product of the complete combustion of carbonaceous matter in a plentiful supply of air. It is also a product of mine fires and explosions of gas or dust. The gas being heavier than air accumulates at the floor, or in other low places or dip workings in the mine.

Hydrogen sulphide or sulphuric hydrogen (H_2S), specific gravity 1.1912; detected by its smell, which resembles that of rotten eggs. This gas is to be found in low damp places in mines where the coal contains much sulphur as pyrites, which is readily disintegrated by the action of the air and moisture.

QUESTION—*What form of airway will give the most air with the same power? Why?*

ANSWER—For the same length that airway whose form of cross-section most nearly approaches the circle, will give the largest air volume under the same ventilating pressure or water gage. The reason is that the circle presents the smallest length of perimeter for the same area, which gives the least rubbing surface, per square foot of sectional area, in an airway of a given length. This means a less resistance to the flow of air and a larger air volume for the same pressure or water gage.

QUESTION—*The water gage shows a reading of 2.5 in. when located on a door 5 ft. wide and 6 ft. high; what is the total pressure on the door?*

ANSWER—The unit pressure corresponding to a water gage of 2.5 in. is $2.5 \times 5.2 = 13$ lb. per sq.ft. The area of the door is $5 \times 6 = 30$ sq.ft.; and the total pressure on the door is, therefore, $13 \times 30 = 390$ lb.

QUESTION—*Which, if either, should be the larger, the main intake or the return airway, and why?*

ANSWER—The reason for making a return airway somewhat larger than the intake is that the volume of the return current is generally increased by its higher temperature and the addition of gases generated in the mine. The return air is also subject to a lower pressure as it approaches the discharge opening, which likewise expands its volume. On the other hand, where the conditions in the mine are such that men are compelled to travel an intake haulage road it is necessary to provide a good clearance space at the side of the track for that purpose. Also, when haulage is performed on the intake, as is common in gaseous mines, the cars block the passage and obstruct the flow of air. These conditions often make it advisable to give the intake airway a larger sectional area than the return in such cases.

QUESTION—*State fully how you would proceed in case an explosion occurred in a mine of which you had charge, and the ventilating fan was totally destroyed, and there were men to be rescued?*

ANSWER—At a mine where an explosion is liable to occur there should always be kept on hand and in condition ready for instant use breathing apparatus of a reliable type. A trained rescue team should also be available at such mines. At very gaseous mines duplicate ventilating fans should be installed against such an emergency. There is grave danger in attempting to enter a mine after a serious explosion has taken place, and this should only be done by experienced men equipped with breathing apparatus and the necessary tools and material for restoring the circulation of air in the mine, which must be entered by the intake. No advance should be made ahead of the air, except by men wearing breathing apparatus, as such an attempt can only result fatally, and be of no avail for the rescue of the entombed men.

Immediately following the explosion steps must be taken to organize and equip a rescue team, and put them in charge of an experienced leader who is familiar with the mine and conditions therein. In such cases call for volunteers and do everything possible to restore the circulation that will permit the men to enter the mine. Assemble all needed tools and supplies and send for physicians, who must be ready to give the necessary treatment to any victims that may be rescued. Keep a cool head and avoid confusion.

Reported Retail Prices of Coal in Cities of the United States

Cost to Householders Has Increased About $2 Per Ton During the Last Year—Department of Labor Plans to Publish Coal-Price Data Monthly Instead of Semi-Annually, as Heretofore

AN APPROXIMATE increase of $2 a ton in the last year is shown by comparison of the average retail prices of coal on July 15, 1919, and on Jan. 15 and June 15, 1920, for the United States and for each of the cities included in the total for the United States, as shown in the *Monthly Labor Review* for August, 1920, of the Bureau of Labor Statistics of the U. S. Department of Labor. Prices for coal are secured from the cities from which monthly retail prices of food are received.

In addition to the prices for Pennsylvania anthracite, prices are shown for Colorado, Arkansas and New Mexico anthracite in those cities where these coals form any considerable portion of the sales for household use.

The prices shown for bituminous coal are averages made on the several kinds. The coal dealers in each city are asked to quote prices on the kinds of bituminous coal usually sold for household use.

The prices quoted are for coal delivered to consumers but do not include charges for storing the coal in cellar or coal bin where an extra handling is necessary. Whereas prices of coal have formerly been obtained semi-annually and published in March and September, the bureau now proposes to issue them monthly.

Retail Prices Per Net Ton of Coal for Household Use

City and Kind of Coal	1919 July 15	1920 Jan. 15	1920 June 15
United States:			
Pennsylvania anthracite			
Stove	$12 143	$12 588	$14 064
Chestnut	12 174	12 768	14 134
Bituminous	8 101	8 808	10.188
Atlanta, Ga.:			
Bituminous	8 250	9.050	12 545
Baltimore, Md.:			
Pennsylvania anthracite—			
Stove	[1] 11 750	[1] 12 500	[1] 13 500
Chestnut	[1] 11 850	[1] 12 600	[1] 13.600
Bituminous	[1] 6 893	[1] 7.500	[1] 8 786
Birmingham, Ala.:			
Bituminous	7 286	7 496	8.971
Boston, Mass.:			
Pennsylvania anthracite—			
Stove	12 000	12 750	14 500
Chestnut	12 000	12 750	14 500
Bituminous	9 000	9 500	13 500
Bridgeport, Conn.:			
Pennsylvania anthracite—			
Stove	11 750	12 500	15 000
Chestnut	11 750	12 500	15 000
Bituminous	8 000	8 500	12.000
Buffalo, N. Y.:			
Pennsylvania anthracite—			
Stove	10 700	10.890	12 000
Chestnut	10 800	10 990	12 000
Bituminous	8 000	.....	11 000
Butte, Mont.:			
Bituminous	9 836	10.381	10 444
Charleston, S. C.:			
Pennsylvania anthracite			
Stove	[1] 13 400	[1] 13 400	[1] 16 200
Chestnut	[1] 13.500	[1] 13 500	[1] 16 300
Bituminous	8 500	8 500	12 000
Chicago, Ill.:			
Pennsylvania anthracite—			
Stove	$12 200	$12 590	$14 150
Chestnut	12 300	12 690	14 288
Bituminous	7.017	8 020	8.414
Cincinnati, Ohio:			
Pennsylvania anthracite—			
Stove	12 000	12 500	
Chestnut	12 000	12 667	14 000
Bituminous	6 139	6.739	8 000
Cleveland, Ohio:			
Pennsylvania anthracite			
Stove	11 538	12 300	13 525
Chestnut	11 650	12.233	13 500
Bituminous	7 710	7.911	9.200
Columbus, Ohio:			
Pennsylvania anthracite			
Chestnut	12 000	12 000	14 650
Bituminous	6 056	6 513	9 982
Dallas, Tex.:			
Arkansas anthracite			
Egg	14 500	18 500	17 000
Bituminous	11 083	14 583	14 000
Denver, Colo.:			
Colorado anthracite—			
Stove, 3 and 5 mixed	13 150	14 000	14 600
Furnace, 1 and 2 mixed	12 650	13 500	14 530
Bituminous	8 348	8.908	9 371
Detroit, Mich.:			
Pennsylvania anthracite—			
Stove	11 890	12 650	14 250
Chestnut	11 980	12 750	14 200
Bituminous	7 988	8 781	10 933
Fall River, Mass.:			
Pennsylvania anthracite—			
Stove	$12 500	$13 000	$14 500
Chestnut	12 250	12 750	14 250
Bituminous	9 500	10 000	12 250
Houston, Tex.:			
Bituminous	10 000	12 000	11 500
Indianapolis, Ind.:			
Pennsylvania anthracite—			
Stove	12 250	13 000	13 750
Chestnut	12 250	13 167	14 250
Bituminous	7 375	8 188	9 313
Jacksonville, Fla.:			
Pennsylvania anthracite—			
Stove	15.000	17 000	
Chestnut	15 000	17 000	
Bituminous	10.000	11 000	14 000
Kansas City, Mo.:			
Pennsylvania anthracite—			
Stove	16 210	17 400	
Chestnut	16.470	17 625	
Arkansas anthracite—			
Furnace	13.593	15.950	15 150
Stove or No. 4	14 450	16.583	15.750
Bituminous	7 469	8.625	9 118
Little Rock, Ark.:			
Arkansas anthracite			
Egg	12 500		
Stove	13 250		
Bituminous	9 250	10.375	11.950
Los Angeles, Calif.:			
Bituminous	14 583	16.000	17 000
Louisville, Ky.:			
Pennsylvania anthracite—			
Stove	12 750	13 750	
Chestnut	12 750	13 750	15 000
Bituminous	6 816	6 836	9 813
Manchester, N. H.:			
Pennsylvania anthracite—			
Stove	12 750	13 417	15 000
Chestnut	12 750	13.417	15 000
Bituminous	10 000	10.000	12 000
Memphis, Tenn.:			
Pennsylvania anthracite—			
Stove	16 000	16 000	17 000
Chestnut	16 000	16 000	17 000
Bituminous	7 528	8.000	8 850
Milwaukee, Wis.:			
Pennsylvania anthracite—			
Stove	12 400	12 600	14 688
Chestnut	12 500	12 700	14.788
Bituminous	8 144	8 960	11 469
Minneapolis, Minn.:			
Pennsylvania anthracite—			
Stove	13 800	14 000	16.440
Chestnut	13 900	14 100	16.480
Bituminous	9 189	10 425	11 918
Mobile, Ala.:			
Pennsylvania anthracite—			
Stove	17 000	17 000	.....
Chestnut	17 000	17.000	
Bituminous	9 722	10.333	11 400
Rochester, N. Y.:			
Pennsylvania anthracite—			
Stove	10 600	10 800	12.100
Chestnut	10 700	10 900	12 200

[1] Per ton of 2,240 lb.

City and Kind of Coal	1919 July 15	1920 Jan. 15	1920 June 15
St. Louis, Mo.:			
Pennsylvania anthracite—			
Stove	12 900	13 100	14 433
Chestnut	12 900	13 225	14 433
Bituminous	5 425	5 970	6 650
St. Paul, Minn.:			
Pennsylvania anthracite			
Stove	13 800	14 000	16 380
Chestnut	13 900	14 100	16 420
Bituminous	9 875	11 531	13 277
Salt Lake City, Utah:			
Colorado anthracite:			
Furnace, 1 and 2 mixed	16 000	16 313	17 833
Stove, 3 and 5 mixed	16 000	16 583	18 167
Bituminous	7 250	8 236	9 256
San Francisco, Calif.:			
New Mexico anthracite—			
Cerillos egg	20 500	23 000	23 000
Newark, N. J.:			
Pennsylvania anthracite—			
Stove	$10 050	$10 483	$11 750
Chestnut	10 050	10 483	11 750
New Haven, Conn.:			
Pennsylvania anthracite—			
Stove	11.333	12 250	14 250
Chestnut	11 333	12 250	14 250
New Orleans, La.:			
Pennsylvania anthracite—			
Stove	16 000	17 500	
Chestnut	16 000	17 500	18 500
Bituminous	8 292	9 269	10 333
New York, N. Y.:			
Pennsylvania anthracite—			
Stove	10 800	11 536	12 800
Chestnut	10 857	11 600	12 814
Norfolk, Va.:			
Pennsylvania anthracite—			
Stove	12 500	13 000	14 500
Chestnut	12 500	13 000	14.500
Bituminous	9 375	9 750	11.727
Omaha, Nebr.:			
Pennsylvania anthracite—			
Stove	16.450	17.275	19 940
Chestnut	16 550	17.450	20 080
Bituminous	8.930	10 108	11 168
Peoria, Ill.:			
Pennsylvania anthracite			
Stove	11.667	13.000	
Chestnut	11.750	13 000	
Bituminous	5 550	6 000	6 375
Philadelphia, Pa.:			
Pennsylvania anthracite—			
Stove	[1] 10 850	[1] 11.881	[1] 13.286
Chestnut	[1] 10 950	[1] 11 906	[1] 13 250
Pittsburgh, Pa.:			
Pennsylvania anthracite—			
Stove	[1] 12 750	[1] 13 750	[1] 15 250
Chestnut	[1] 12 663	[1] 14 000	[1] 15 125
Bituminous	5 833	6.179	7 333
Portland, Me.:			
Pennsylvania anthrcite—			
Stove	12 200	13 440	15 360
Chestnut	12 200	13 440	15 360
Bituminous	8 573	9 370	12 650
Portland, Ore.:			
Bituminous	11 493	11 618	11 800
Providence, R. I.:			
Pennsylvania anthracite—			
Stove	[2] 12 000	[2] 12 950	[2] 14 500
Chestnut	[2] 12 000	[2] 13 000	[2] 14 500
Bituminous	[2] 9.000	[2] 10 000	[2] 13 167
Richmond, Va.:			
Pennsylvania anthracite—			
Stove	12 000	12 125	[2] 13 500
Chestnut	12 000	12 125	[2] 13.500
Bituminous	8 464	8 931	[2] 10 286
San Francisco, Calif. Concluded.			
Colorado anthracite			
Egg	19 400	21 750	21 750
Bituminous	13 591	15 100	15 645
Savannah, Ga.:			
Pennsylvania anthracite			
Stove		15 100	16 067
Chestnut		15.100	16.067
Bituminous		11.100	13.233
Scranton, Pa.:			
Pennsylvania, anthracite—			
Stove	7 683	8 233	9 100
Chestnut	7 783	8 300	9 100
Seattle, Wash.:			
Bituminous	[3] 9 103	[3] 9 588	[3] 9 463
Springfield, Ill.:			
Bituminous	3 976	3 950	4 420
Washington, D. C.:			
Pennsylvania anthracite—			
Stove	[1] 11 911	[1] 12 477	[1] 13 650
Chestnut	[1] 12 011	[1] 12 538	[1] 13 729
Bituminous	[1] 8 050	[1] 8 267	[1] 9 840

[1] Per ton of 2,240 pounds.
[2] Fifty cents per ton additional is charged for "binning." Most customers require binning or basketing the coal into the cellar.
[3] Prices in Zone A. The cartage charge in Zone A is $1.85, which has been included in the average. The cartage charges in Seattle range from $1.85 to $2.90, according to distance.

Byproduct, Steel and Electric Utility Plants In Relation to Coal Stocks*

Byproduct and Steel Companies, Unable to Store Immense Quantities Needed, Usually Have Their Own Mines—Steel-Plant Stocks Make Five-Week Gain in Six Months—Utilities Protected by Contracts, Rendering Large Reserves Unnecessary

BYPRODUCT coke plants and steel plants, including rolling mills and wire and tinplate mills, form two special classes of industrial consumers whose coal requirements and stocks can best be considered separately from the general industrial consumption.

Byproduct plants in particular require special qualities of coal, which are frequently in short supply when steam coal is plentiful. Because of the difficulty of storing the large amounts of coal they consume and because many of them have coal mines of their own, both byproduct and steel plants are likely to carry smaller reserves, measured in weeks' supply, than either the utilities or the general industrial group.

Both types of plants were the object of special concern to the Fuel Administration during the war period. Both suffered from the scarcity of coal during the winter of 1917-1918, and both by the day of the armistice had accumulated what for them was a very large reserve. Stocks at byproduct plants during the first quarter of 1918 averaged two weeks' supply. By the armistice the reserve had been built up to more than seven weeks' supply of low-volatile coal and between four and five weeks' of high-volatile. For many weeks after the armistice the byproduct ovens lessened their receipts of coal and drew on their stockpiles. The average supply declined to four weeks four days on Jan. 1, 1919, and to three weeks two days on April 1 of the same year.

Reserve Stocks Shrink Alarmingly

On March 1, 1920, the fifty-three plants reporting, which represented about 48 per cent of the total consumption, had on hand a supply sufficient for two weeks and one day. This was about the same as the stocks carried in the early part of 1918. During the three months from March 1 to June 1, 1920, when coal production was reduced by the switchmen's strike, byproduct stocks still further declined, reaching on the latter date the exceptionally low level of one week and one day's supply. This was a decline of 47 per cent.

*Abstract from report on consumers' stocks of bituminous coal, March 1 and June 1, 1920, by F. G. Tyron, U. S. Geological Survey, September, 1920.

By states the changes in byproduct coal stocks from March 1 to June 1 were as follows:

Decrease	No change	Increase
New England	Maryland	New York
New Jersey	Kentucky	Pennsylvania
Ohio	Tennessee	West Virginia
Indiana	Alabama	
Illinois	Colorado	
Michigan		
Wisconsin		
Minnesota		

The course of stocks at iron and steel plants during the war period colsely resembled that at byproduct coke ovens, except that the shortage in the winter of 1917-18 was more acute and the surplus accumulated by the date of the armistice was more pronounced. In January and February, 1918, many plants had less than a week's supply of gas coal on hand, and the reserves of steam coal were not much larger, seldom averaging more than two weeks. Thereafter a steady growth in the reserve was made possible by the increased production of coal, so that in the autumn of 1918 stocks of gas coal reached a maximum of about six weeks' and steam coal or about seven weeks' supply. In the steel plants, as in the byproduct plants, the post-armistice period was marked by diminished receipts and steady drafts on stocks, so that the reserve declined from an average of six weeks three days on Nov. 11, 1918, to six weeks on Jan. 1, 1919, and five weeks on April 1, 1919.

Stocks Change Little in Three Months

On March 1, 1920, stocks had fallen to a level not much above that prevailing in the opening months of 1918. Plants reporting on that date, which use about 39 per cent of the total consumption of the group as a whole, had on hand an average of one week two days' supply. During the following three months the steel plants were able to increase their holdings slightly in New Jersey, Maryland, Pennsylvania, Ohio and West Virginia, but the total on hand as of Jan. 1, 1920, averaged a supply for only one week four days. In New York, Indiana, Alabama and Colorado no change was reported. In Illinois, on the other hand, stocks decreased.

The representative character of these figures is impaired by the failure of certain large companies to report. It is possible that the receipt of reports from the delinquent establishments would raise the averages for both steel and byproduct plants. The conclusion is inescapable, however, that in comparison with the reserves carried during the later part of 1918 and the first part of 1919 stocks at both classes of establishments were very low indeed.

Electric public utility plants contribute a distinct element to the demand for coal. They consume between 5 and 6 per cent of the country's output of fuel. In 1917 they required 31,693,000 net tons of soft coal. Two years later, in the year 1919, the year of business readjustment, their combined consumption of bituminous and steam sizes of anthracite was 35,000,000 tons.

Electric Utility Reserves Important

The reserves at electric utility plants are therefore an important item in the total quantity of coal in storage. On the day of the armistice these plants had on hand nearly 5,000,000 tons of coal, or about 8 per cent of the total commercial stock.

As a group electric power plants carry smaller reserves than either artificial-gas plants or general industrial consumers. The typical electrical plant consumes so much coal that to carry more than a few weeks' reserve is difficult. It does not need the special grade of coal used by the gas plant; its requirements are generally protected by contract and the very fact that it is a large and steady consumer enables it to make permanent connections with the producers of coal. It is not surprising, therefore, to find that the average stocks at electric utility plants have been consistently lower than those at coal-gas and general industrial plants.

There are, of course, many individual plants which carry larger reserves; some of the little electric plants in New England, for example, had accumulated a year's supply by the close of 1918. As a class, however, the electric utilities stand midway between the byproduct and steel plants on the one hand and the gas and general industrial plants on the other, so far as the duration of their customary reserves is concerned.

Variations in Consumption Noted

Although the consumption of the group shows little fluctuation from season to season the rate of consumption at a particular plant may vary within wide limits. Especially is this likely to be the case where the plant is a unit in a system in which the load is transferred from one plant to another, as occasion may prescribe, or when the plant is an auxiliary to water power. In localities where hydro-electric plants are important the consumption of fuel may vary materially with the stage of the water.

The figures available on Jan. 1, 1919, and earlier dates include reports from a certain number of municipal water works; not enough, however, to destroy the comparability of the record. On these earlier dates the returns for most states were nearly complete. For the last three dates—April 1, 1919, and March 1 and June 1, 1920—the returns represent 52 per cent of the total consumption of the group.

The course of stocks at electric utility plants shows the same increase from the midsummer of 1918 to the armistice, and the same general decrease thereafter which we have seen is characteristic of other consumers. The average reserve on July 15, 1918, was sufficient for five weeks and four days' operation. From Nov. 11, 1918, to Jan. 1, 1919, stocks averaged about seven weeks' supply. During the first quarter of 1919 the average decreased from seven weeks to six weeks and six days; increases in some localities were offset by general decreases in others.

Coal Strike Affects the Northeast

On March 1, 1920, the average had dropped to three weeks' supply, or only 44 per cent of what it had been eleven months before. The percentage of decrease during those eleven months was greater for the electric utilities than for any other general class of consumers except the steel plants and the railroads. One reason for this condition appears to be that the very large group of electric plants in the industrial Northeast was especially affected by the coal strike of November-December, 1919.

If the stocks on March 1, 1920, be compared with those on April 1, 1919, it will be found that the decrease was most marked in the territory east of the Mississippi and north of the Ohio and Potomac. In comparison with this area, which may be termed the "Northeast," the West, the Lake dock territory, and the South were generally well off.

The dock territory was at that date still carrying considerable reserves made possible by the lake shipments of the preceding season. In only one state west of the Mississippi—Texas—did stocks decrease 50 per cent during this 11-month period, and in two Western States an increase was reported. In the Southeast stocks in general compared not unfavorably with those on the earlier date. In the South Atlantic coastal plants from North Carolina to Alabama, the average increased. A decrease of six weeks and two days in Florida still left on hand a five weeks' supply. In Virginia, Tennessee and Kentucky the decrease, though greater, was nevertheless under 50 per cent.

Severe Depletion in Industrial Section

Of the Southeastern States the position of Mississippi was the worst, for the six plants reporting from that state averaged only three days' supply. In the territory north of the Ohio and Potomac, however, there were only two states in which the decrease from 1919 to 1920 did not exceed 50 per cent. The reports of the electric utilities thus confirm the testimony of other consumers that the industrial Northeast (the region north of the Ohio and the Potomac) is the region where depletion of above-ground reserves has been most serious.

During the period from March 1 to June 1, 1920, stocks at electric plants increased slightly, amounting on June 1 to three weeks one day's supply. In this respect the electric utilities resembled the steel works, which also increased their stocks. All other types of consumers reported decreases in stocks. The area over which stocks of electric utility plants increased was large. It included all the New England States, the Middle Atlantic States except New York, and the adjoining regions of Maryland, Virginia, West Virginia, Ohio and the Southern Peninsula of Michigan. Stocks also increased in many of the Southern and Western States. In fact, broadly speaking, there were but two areas which did not partake in the increase. One of these areas—the South Atlantic States of North and South Carolina and Georgia—had been carrying large stocks on March 1, and in spite of the decrease retained a comfortable supply on June 1. The second area was a real exception to the general increase. It comprised a group of states in the Upper Mississippi Valley—Kentucky, Indiana, Illinois, Wisconsin, Iowa, Nebraska and Missouri—and in this region the arrival of June 1 found the electric plants with even smaller reserves than before. A decrease also occurred in Texas.

Deductions To Be Made by Comparison

In the absence of definite knowledge of what constitutes a normal stock on June 1, it may be instructive to compare actual conditions on that date with those prevailing on July 15, 1918, two years before. As stocks in the summer of 1918 were admittedly large, areas now carrying still larger stocks may be assumed to have a sufficient supply. Similarly, areas which stand out by comparison with 1918 as showing very marked decreases are presumably those in which a scarcity of coal will be found, if one exists anywhere. This test, like the others points unmistakably to the general area north of the Ohio and Potomac as the one characterized by depleted reserves in early 1920.

Large as were the stocks in July, 1918, they were still larger in June, 1920, in ten states of the Union. In three others they were at least as large, and in seven, though smaller, the percentage of decrease was less than 25. This made in all twenty states in which the depletion of reserves on June 1, 1920, did not appear serious in comparison with July, 1918. All but four of these states were south of the Ohio and Potomac or west of the Mississippi. Of the Southern States only two—Florida and Mississippi—reported a decrease of 50 per cent or over: in the former stocks were still considerable, in the latter they were very low.

In the Northeast (the territory north of the Ohio and Potomac), however, there were eight states where the decrease, as compared with 1918, exceeded 50 per cent. In that general territory the areas of especially low stocks on June 1 were New York and New Jersey, and Ohio, Indiana, Illinois and the Southern Peninsula of Michigan. Associated with the condition in Illinois and Indiana was that in Iowa and Nebraska, both of which showed comparatively low stocks. In Wisconsin also, dependent largely on Illinois, stocks were down to three weeks' supply. In Minnesota and the Dakotas the reserves compared not unfavorably with those for earlier dates, but in this connection it must be remembered that the reserves do not take into account the very low stocks on the docks at the head of the lakes.

The reports of the electric utility plants, therefore, indicate that the general region in which stocks were markedly depleted in the first half of 1920 was the region north of the Ohio and Potomac.

Navy Revises Its Smokeless List

THE navy has revised its list of mines in the smokeless fields. Prior to this revision pre-war records were used in making up requisitions for coal. The navy's requirements are now being distributed among a larger number of mines. All mines which are entitled to ship to Pool 1 are being called upon for their quota, and the intention of investigating the possibility of using Pool 2 coal has been announced.

Shortage of vessels at Hampton Roads has prevented any increase in exports of smokeless coal despite heavy demand from foreign buyers. As a result smokeless coal is moving in considerable volume to the Lakes and to Chicago. Chicago has been particularly insistent that it receive more smokeless coal since the New England order went into effect. Some 500,000 tons of smokeless coal will continue to move each month to New England on contract.

Doubts Constitutionality of Lever Act. Denies Injunction to Operators

JUDGE COCHRAN, of the Federal Court, Covington, Ky., in refusing an injunction to operators against the U. S. Attorney's office, stated that he had grave doubts of the constitutionality of section 4 of the Lever Act, stating that there is a certain unfairness where the producer cannot sell at the market price. Judge Cochran called attention to differences of opinion between various Federal judges in the matter, and said that until he was fully convinced that the law was not constitutional he would hesitate to enjoin prosecution, and that in view of the fact that the Grand Jury had fixed prices no further action would be taken at the time.

Seek Uniform Accounting, New Reconsignment Rules, and Unity in the Coal Trade

Colonel Wentz Warns National Retail Coal Merchants' Association Directors That Criticism of One Branch of the Coal Trade by Another Works to Discredit of All—To Co-operate with Traffic League

PRESIDED over by Peter Beck, chairman, the Executive Committee and Board of Directors of the National Retail Coal Merchants' Association held their annual meeting at the Commodore Hotel, New York City, Sept. 24 and 25. The sessions were well attended and matters of importance to the coal trade were considered and discussed.

A feature of the first day's meeting was the appearance of Colonel Daniel B. Wentz, president of the National Coal Association, who addressed the meeting informally regarding the bituminous situation and the outlook for the coming winter. He sketched in detail the different aspects of the bituminous situation, outlining the part taken by the National Coal Association, the American Railroad Association, and the Interstate Commerce Commission, with due regard for all others who appeared in the developments.

His most significant point was with regard to the future, and he laid emphasis upon the necessity for unity in the coal trade. This had reference particularly to co-ordinating the work of the national associations in respect to the trade at large, including publicity and defensive measures.

Advises Unification of Outlook and Effort

Colonel Wentz's remarks provoked prolonged and valuable discussion in connection with the report of the Governmental Relations Committee. The net result was to bring out the point that the different branches of the coal trade are too prone to criticize each other for unsatisfactory conditions, losing sight of the fact that the public does not differentiate nor would Government regulation differentiate among the three branches, the trade in each case being considered as a whole.

As a result of the helpful suggestions and discussion, it is probable that definite steps will be taken looking toward a unification of the viewpoint and activities of the organized coal trade on matters that affect the entire trade, rather than the respective branches. Such a plan will work to the interest of the public and of each branch in the coal trade. It will insure to the consumers full consideration and accurate information. It will avoid misunderstandings as among the branches of the trade and will work out for the best interest of the whole country in coal matters.

The Cost Accounting Committee recommended that every affiliated association appoint a cost committee of three, from which would be formed a National Cost Council, and that the so-called Rochester system, which has received the approval of the National Cost Committee, be submitted to the Cost Council for criticism and suggestion.

"What we have particularly in mind is *uniform* accounting," the committee report said. "We don't care how Jones and Smith and Brown run their books. If they all run their books on a radical plan the systems, no matter how good they are, are of no use for any purpose where comparison is necessary. Each retailer is not expected to take our system, but only to keep his books so he can report in the same way that other retailers may who adopt our system as a basis.

"In order to get the small man to adopt something we have to talk to him in very simple language. We try to say to him that he must keep account of his sales and of his purchases, so that he can analyze them. Our plan is for the small merchant, but the big one can follow it if he wishes, although we only ask him to adopt the general basis."

Urge Adoption of Uniform Claim Rules

The Transportation Committee made its report through the traffic counsel, Stanley B. Houck. Thereupon the members adopted a resolution which in specific reference to certain of its recommendations authorized and directed Mr. Womer, chairman of the committee, to attend the next meeting of the National Industrial Traffic League, which will be held at Louisville, and to "request the League on behalf of this association and its members to: (a) Proceed before the Interstate Commerce Commission with its present case involving the reasonableness of liability clauses of sidetrack agreements. (b) That said case be extended in scope to include the reasonableness of the rental charges made by carriers for the use of the sidetrack on property, or that the League institute a new case for that purpose. (c) That the National Industrial Traffic League be requested to direct its claims committee to insist upon the adoption, without modification as applicable to coal, of the uniform claim rules which were agreed to last year between this association and the U. S. Railroad Administration."

The traffic counsel was authorized and directed to institute such test cases as may be necessary to settle disputed legal questions arising in the settlement of claims, member associations to report all cases of such disputes and differences to the traffic counsel.

Consideration and recommendation by the Accounting Committee of some form or method of keeping a record of car movement from originating point to destination, including all details and phases of the movement, was directed by another resolution.

The chairman of the Transportation Committee was authorized and directed, personally, if possible, or through the traffic counsel, to take the necessary action to secure a change in the present reconsignment rules, and to intervene in or be present at any cases brought by others affecting reconsignment, if he deems it necessary, for the protection of the retailers, similar authority being given to intervene in and be present at such other cases involving traffic matters when he deems it necessary.

All member associations were directed to report to

the chairman of the Transportation Committee all questions of unreasonable or discriminatory rates growing out of the recent rate advances for its consideration, action, or recommendation.

Urge Co-operation in Settlements

Finally, it was resolved that the committee reaffirm its previous recommendations that all claims against carriers be handled by member associations, that no claim be settled for less than full legal liability, that associations exercise extreme care to handle claims similarly and settle them in accordance with the same principles; that carriers which confiscate coal be not allowed to replace same with other coal because of the likelihood of such coal having been confiscated from other merchants for the purpose of such replacement, and that member associations be extremely careful not to allow any of the progress heretofore made in settlement of claims to be lost.

The Trade Relations Committee through its chairman, John E. Lloyd, reported that arrangements had been perfected with the National Coal Association whereby retailers who were the subject of poor distribution during the conditions of the past summer would be assisted in getting their fair quota of tonnage.

The foregoing summary gives little idea of the significance of some of the features of the meeting. It might be said that the outstanding feature was the spirit of aggressiveness in transportation matters, in matters affecting the independence of the coal trade as a whole, in particular with regard to legislation in certain states and possible federal legislation; in cost education for the retail trade and general education of the consumer.

Winding Gulf Operators Voluntarily Give Their Men Large Wage Advance

EFFECTIVE Sept. 1 the following inside day wage scale became effective in the Winding Gulf district: Machine runners, $7.58; machine helpers, $7.22; motor runners, $7.58; motor brakemen, $7.05; trip riders, $7.05; drivers, one mule, $6.90; drivers, two mules, $7.05; bratticemen, $7.42; bratticemen's helpers, $6.83; tracklayers, $7.42; tracklayers' helpers, $6.90; timbermen, $7.42; timbermen's helpers, $6.83; drill runners, $7.42; slate shooters, $7.20; slate men, $6.90; trappers, men, $6.90; trappers, boys, $4.27; inside car pushers, $6.83; mine-door repairers, $7.42; pipemen, $7.42; pumpers, $6.96; skilled wiremen, $7.58; wiremen's helpers, $7.01; bottom cagers, $7.16; inside greasers, men, $6.83; inside greasers, boys, $4.27; inside car couplers, men, $6.83; inside car couplers, boys, $4.27; inside car droppers, $6.83; miners taking daymen's places, $7.68; all other inside day labor, $6.83.

The new scale allows for mining an increase of 10c. per car of two and a half tons or 43½ per cent per car over the August, 1919, wage scale. For machine cutting the advance is 43½ per cent over the rate paid per car under the August, 1919, wage scale.

Under the new scale outside day wages have been increased to the following amounts: Drum runners, $7.48; hoisting engineers, $7.87; top-of-tipple men, $6.80; picking-table men, $6.70; railroad-car trimmers, $6.70; railroad-car cleaners, $6.70; railroad-car droppers, $6.70; blacksmiths, $8; blacksmiths' helpers, $7.09; car repairers, $7.43; greasers, men, $6.70; greasers, boys, $4.07; couplers, men, $6.70; couplers, boys, $4.07; electricians, $8; electricians' helpers, $7.35; mine mechanics, $8; mine mechanics' helpers, $7.35; machinists, $8; machinists' helpers, $7.35; armature winders, $7.35; teamsters, $6.70; cart drivers, $6.18; carpenter foremen, $8; carpenters, $6.70; men in floating gang $6.18.

Pocahontas, Tug River and Thacker Coal Companies Grant Big Wage Increase

MINERS and all other employees of coal companies operating in the Pocahontas field of West Virginia will receive an increase of 25 per cent in their wages as the result of action taken toward the end of September by the Pocahontas Operators' Association, Colonel L. E. Tierney, of Powhatan, presiding over the meeting.

The wage increase in the Pocahontas field probably ranks as the biggest ever made in that field and not only includes day and monthly men but all miners, fire bosses, mine foremen, assistant mine foremen, etc. The increase, it was announced, was tantamount to a general readjustment of wages in the field. While the exact date at which the new wages would be put into effect had not been fully determined, an effort was being made to have them become effective on Oct. 1.

When the announcement was made it was also stated that the operators of the Tug River, Thacker and other adjacent districts had agreed to make a similar increase in the wages of their employees.

The new wage scale took the miners and other employees of the Pocahontas region by surprise inasmuch as no advance had been sought or expected. The advance is more general than that recently granted in the states of Pennsylvania, Ohio, Indiana, Illinois and the organized fields of West Virginia, for the increases in those states apply only to day and monthly men, while those in the Pocahontas and other non-union regions apply to all classes of mine labor.

This is the second increase granted in the Pocahontas region within a year, a 27-per cent advance having been provided in November, 1919, though that particular revision did not apply to so many different classes of mine labor as the one just announced.

In making the new scale items were so adjusted as to provide men in executive positions with bigger wages, it having been found difficult to keep men at such work owing to the fact that they were able to make more as miners.

The increase is not expected to add to the present price of spot coal. While the actual increase in the cost has not been determined, it will be added solely to the selling price of such coal as is being mined under contract.

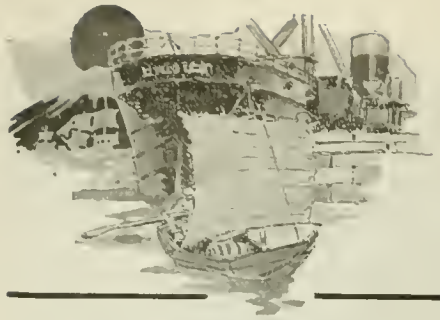
Mine Workers Begin to Recognize That The Day of the Strike Is Over

IN GENERAL the mine workers are beginning to see the fact that striking is not going to be profitable hereafter, and are settling down to work. At Martins Ferry on Sept. 30 the mine workers voted to return to work. Seven thousand workmen in Harrison, Jefferson and Belmont counties had struck for payment for all stone taken out of the mines instead of for all stone over 12 in. thick. The vote for resumption was 156 to 139.

In western Kentucky, 1,200 mine workers employed in the largest mines in Muhlenburg County met on Oct. 2, and almost unanimously voted to return to work under the new scale.

Some Iowa Miners Get Wage Increase

ACCORDING to George Heaps, Jr., secretary of the Iowa Coal Operators' Association, the miners of the first and fourth subdistricts of the thirteenth mining district have been granted an increase of 25.56c. per ton. The new scale becomes effective immediately and holds till April 1, 1922.



Foreign Markets and Export News

British Production Costs

According to an editorial in *The Colliery Guardian*, entitled "The Phantom Millions," the statistical summary of the output of coal and cost of production, proceeds and profits of the coal mining industry of this country, for the quarter ending June 30 last, issued by the Board of Trade, shows in a conclusive manner how illusory are the large profits estimated by the miners' leaders as a result of mere guesswork and hypothetical assumption. The miners, as might be expected, refuse to accept the Board of Trade statement as accurate, even though the figures are put forward as ascertained results furnished by the collieries. The miners' complaint, also, that the results shown by the figures are largely due to abnormally heavy expenditure in development and maintenance work, is particularly unfortunate, seeing that only a short time back they were complaining that the restriction in this work during the war was mainly responsible for the fall in output. At the same time the astounding statement is now made that the benefits accruing from development work are exclusively for the owners, whereas it is plainly evident that the miners themselves will receive in wages about 75 per cent of the value of any extra coal that is thus to be won. If, therefore, the object of the miners' reply to the Board of Trade statement was to impress the popular mind with the justice of their cause, they have made the great mistake of underrating the common sense of the public.

Coal Situation in Brazil

While the production of coal in Brazil is still quite small there are, according to Consul General A. T. Haeberle, Rio de Janeiro, several small mines in operation, of which the most important are the following: "Sao Jeronimo," "Butia," and "Jacuhy." The present production of these mines is approximately 25,000 tons monthly, but with the modern mining machinery which is being installed at the "Jacuhy" mine the production will be increased 15,000 tons monthly, making a total of 40,000 tons per month.

There are approximately 100,000 tons of coke produced annually, of which from 25 to 75 per cent is sold to manufacturing industries. The amount sold depends upon the price and supply of coal at all times.

The yearly consumption of coal in Brazil is approximately 1,250,000 tons, but would be much more if it were possible to obtain the full amount desired. It is used chiefly by steamships, railways, gas and electric light plants, and other industries in the following proportions: Bunkering, 50 per cent; railways, 25 per cent; gas and electric light plants, 15 per cent, and other industries, 10 per cent. These figures are an estimate, but have been verified by two of the largest importers of coal in this country.

TABLE I—COAL IMPORTS TO BRAZIL AND ORIGINATING PORTS

From—	1913 Tons	1914 Tons	1915 Tons	1916 Tons	1917 Tons	1918 Tons	1919 Tons
United States	274,798	260,594	635,711	614,213	642,428	480,382	744,297
Great Britain	1,927,387	1,266,578	525,756	209,812	172,866	152,267	171,851
Uruguay	55,289		2,126	462	3,026	4,837	5,636
Other countries					7		5,261
Total	2,257,474	1,527,172	1,163,593	1,024,487	818,327	637,486	927,045

TABLE II—COAL IMPORTS TO BRAZIL BY PORTS

Ports	1913	1915	1916	1917	1918	1919
Manàos	16,100	16,363	9,971	4,258		2,909
Pára	115,451	43,783	58,439	59,881	28,041	39,403
Maranhão	19,019	14,035	1,884	3,750	308	312
Fortaleza	4,183	3,209	2,179	2,264	712	606
Recife	114,902	93,189	77,672	68,806	33,087	73,625
Bahia	97,728	50,661	37,553	18,724	22,274	23,273
Rio de Janeiro	1,293,346	758,406	727,902	554,351	491,181	686,549
Santos	406,996	115,456	98,115	92,242	43,938	61,410
Rio Grande do Sul	66,275	60,755	5,120	7,308	7,058	18,589
Pelotas	2,110	2,257	4,264		601	3,308
Livramento	52,617	1,764	352	2,953	10,061	13,899
Other ports	24,619	3,883	1,036	3,790	225	3,162

Table I shows the importations of foreign coal from 1913 to 1919, in metric tons. Table II shows the importation in metric tons by principal importing ports.

Practically the entire production of national coal is consumed in the states of Parana, Santa Catharina, and Rio Grande do Sul, although much foreign coal is imported there also.

Costs of Production in Great Britain

	Summary for Great Britain for the Three Months Ended June 30, 1920. Amount	Per Ton Disposable Commercially	Summary for Great Britain for the Three Months Ended March 31, 1920. Amount	Per Ton Disposable Commercially
Output:	Tons.		Tons.	
Tonnage raised	58,144,000		62,057,000	
Mine consumption and miners' coal	5,883,268		6,376,122	
Tonnage disposable commercially*	52,260,732*		55,680,878	
Costs of production:	£	s. d.	£	s. d.
Wages	66,570,490	25 5 72	63,220,756	22 8 56¶
Stores and timber	13,638,605	5 2 63	12,758,171	4 6.99
Other costs†	6,250,094	2 4 70	4,569,566	1 7 70
Royalties	1,662,763	0 7 64	1,747,653	0 7 53
Total costs	88,121,952	33 8 69	82,296,146	29 6 72
Deduct proceeds of miners' coal‡	371,957	0 1 7‡	413,307	0 1 78‡
Net costs	87,749,995	33 6 98	81,882,839	29 4 94
Proceeds:				
Commercial disposals§	95,658,036	36 7 30§	96,260,541	34 6.91
Balance:				
Debits				
Credits	7,908,041	3 0 32‖	14,377,702	5 1 97
Number of work people employed	1,178,614		1,168,659	
Tonnage raised per person employed	49 33		53.10	
Earnings per person employed	£56 9s. 8d.		£54 1s. 11d.	

* Of the 52,260,732 tons disposed of commercially, 9,432,588 tons were shipped for export and foreign bunkers, mainly from South Wales and Monmouthshire, Northumberland, and Durham.

† Management, salaries, insurance, repairs, office, selling, and general expenses, etc.

‡ The proceeds of miners' coal, so far as it is supplied at special price, are treated as a reduction of the cost of producing the coal disposed of commercially, and the deductions in the "per ton" columns have been calculated by dividing the proceeds of miners' coal by the tonnage disposable commercially.

§ On May 12, 1920, the price of coal sold for home consumption was raised as follows:—(*a*) Coal for domestic use by 14s. 2d. per ton; (*b*) Coal for industrial use by 4s. 2d. per ton.

‖ Out of the balance shown in *Balance* item (Debits, Credits) provis on has to be made for—depreciation, interest on debentures and other loans, capital adjustments under the Finance Acts, and the profit to which the coal owners are entitled under the Coal Mines (Emergency) Act, 1920

¶ An advance in wages operated from March 12, 1920.

(From *Colliery Guardian*)

Middle West Retailers Given Emergency Coal

Open-Top Priority Extended to Rocky Mountains—Committee to Pass on Assigned Cars for Public Utilities—Twelve Million Tons a Week Required to Meet New Program

AN ABSOLUTE priority on open-top cars for use in the transportation of coal is allowed by the Interstate Commerce Commission in its Service Order No. 20, issued Oct. 8. When routed back to the mines these cars may be loaded with other freight, but must not be carried materially out of the direct line of return.

Assigned cars for public utilities are to be allowed in the future only upon special permit issued by the Interstate Commerce Commission. This ruling is contained in Service Order No. 21, which supersedes Service Order No. 16. In connection with the administration of Order No. 21 a committee of three is to be appointed to make recommendations to the commission on each individual application for relief. This commission is to consist of a representative of the railroads, a representative of the operators, and a representative of the public utilities.

Another important phase of the new orders is that they are to be effective west of the Mississippi as far as the Rocky Mountains.

The situation which culminated in the issuance of the new service orders was precipitated by the railroads when they called to Washington representatives of the operators, public utilities, and shippers to explain that it would be impossible to take care of the needs of the Middle West if the Lake program was to be carried out. At the first session of the interests mentioned it was apparent that no agreement could be reached to which all would subscribe. This resulted in the entire matter being laid before division 5 of the Interstate Commerce Commission. It has been erroneously stated in the press that the matter was first agitated by the National Coal Association.

Public Utility Men Present Demands

A determined fight was made by George W. Elliot, the head of the National Committee on Gas and Electric Service. He was supported by a large number of representative utility men from various parts of the United States. It was their contention that the public utilities are entitled to assigned cars as much as are the railroads.

The first proposal was to make the committee of three the agent of the Interstate Commerce Commission with authority to pass upon those cases where a public utility was to be allowed to have priority in securing its coal supply. Mr. Elliot strenuously objected to that proposal on the ground that the utility representative always would be in the minority on the committee. As a result it was arranged that the committee simply would make its recommendation and the Interstate Commerce Commission would exercise its own power.

It is believed that it will be possible under the present arrangement to allow the production of coal at the rate of more than 12,000,000 tons a week.

The week's session was accompanied by rumors that the President was disgusted with the manner in which the coal situation was being handled. These rumors were finally put at rest by a statement at the White House that the President is not considering the appointment of a fuel administrator. Some of the operators feared that Democratic pressure would be exerted on the President to appoint a fuel administrator. If such action were taken in the interest of the domestic consumer of coal, it was recognized a political advantage of no mean proportions would be secured. In case the new orders are not carefully policed and should fail to bring out the amount of coal necessary to meet both the Lake and Middle West program, there are some lingering doubts as to whether or not a fuel administrator would be named.

Under the new arrangement, 2,100 cars are to be allotted daily for the Middle West. Of this number Ohio is to get 800 cars daily, Michigan 500 and Indiana 200.

The text of Order No. 20 is as follows:

It appearing, in the opinion of the commission, that because of a shortage of equipment which continues to exist upon the lines of each and all the common carriers by railroad subject to the Interstate Commerce Act within the territory east of the eastern boundary of the States of Montana, Wyoming, Colorado and New Mexico, and because of the inability of said common carriers properly and completely to serve the public in the transportation of coal, an emergency exists which requires immediate action:

It is ordered that such common carriers by railroad in the aforesaid territory which serve coal mines, whether located upon the line of any such railroad or customarily dependent upon it for car supply, herein termed coal-loading carriers, be, and they are hereby, authorized and directed, until the further order of the commission, to furnish such coal mines with open-top cars suitable for the loading and transportation of coal (herein termed coal cars) in preference to any other use, supply, movement, distribution, exchange, interchange or return of such coal cars; provided that such coal cars may be used in service moving in the direction of the mine or mines to be supplied, on the return movement, after the discharge of the coal lading thereof, upon a route not materially out of line and to points not beyond such mine or mines; and provided further that the phrase "coal cars" as used in this order shall not include or embrace at-bottom gondola cars with sides less than 38 inches in height, inside measurement, or cars equipped with racks, or cars which on June 19, 1920, had been definitely retired from service for the transportation of coal and stenciled or tagged for other service.

It is further ordered that all common carriers by railroad within said territory other than coal-loading carriers, (herein termed non-coal-loading carriers) be, and they are hereby, authorized and directed until the further order of the commission to deliver daily to a connecting coal-loading carrier or carriers, empty or loaded coal cars up to the maximum ability of each such non-coal-loading carrier to make such deliveries, and of each such connecting coal-loading carrier to receive and use the coal cars so delivered for the preferential purposes herein set forth.

It is further ordered that all such common carriers by railroad in said territory be, and they are hereby, authorized and directed forthwith, until the further order of the commission to discontinue the use of coal cars for the transportation of commodities otherwise than as hereinbefore specified (a) as to each coal-loading carrier, so long as any coal mine remains to be served by it with coal cars, and (b) as to each non-coal-loading carrier, so long as deliveries of any coal cars to connecting carriers may be due or remain to be performed under the terms of this order.

It is further ordered that all common carriers by railroad within the territory hereinbefore described be, and they are hereby, authorized and directed until the further order of the commission, to place an embargo against the receipt of coal or other freight transported in open-top cars suitable for coal loading, as hereinbefore defined, by any consignee, and against the placement of such open-top cars for consignment to any consignee who shall fail or refuse to unload such coal or other freight so transported in coal cars and placed for unloading within twenty-four hours after such placement, until all coal or other freight so transported in coal cars and so placed has been unloaded by such consignee; provided that this authorization and direction shall not interfere with the movement of coal to any coal pool or pools when authorized by any order heretofore or hereafter entered by the commission or coal consigned to tidewater or the Lakes for transshipment by water, nor shall it apply where the failure of the consignee to unload is due directly to errors or disabilities of the railroad in delivering cars.

It is further ordered that all rules, regulations and practices of said carriers with respect to car service are hereby suspended in so far only as they conflict with the directions hereby made; and that this order shall suspersede and stand in lieu of Service Orders Nos. 7, 9, 12 and 15 of the commission, as heretofore made, entered and amended or supplemented, and that otherwise the authorizations herein contained are to be considered as not conflicting with or superseding any other service order heretofore entered by the commission; and that this order shall be effective Oct. 15, 1920.

And it is further ordered that copies of this order be served upon the carriers hereinbefore described, and that notice of this order be given to the general public by depositing a copy hereof in the office of the secretary of the commission at Washington, D. C.

Order No. 21 reads as follows in its entirety:

It appearing, in the opinion of the commission, that because of a shortage of equipment which continues to exist upon the lines of each and all of the common carriers by railroad subject to the Interstate Commerce Act within the territory east of the eastern boundary of the States of Montana, Wyoming, Colorado and New Mexico and because of the inability of said common carriers properly and completely to serve the public in the transportation of coal, an emergency exists which requires immediate action:

It is ordered that effective Oct. 15, 1920, and until further order of the commission, all common carriers by railroad within said territory to the extent that may be necessary in order that public utilities which directly serve the general public under a franchise therefore with street and interurban railways, electric power and light, gas, water and sewer works; also ice plants which directly supply the public generally with ice; also hospitals, schools and other public institutions of the United States, state or municipal

governments, may be kept supplied with coal for current use but not for storage, exchange, or sale, be, and they are hereby, to the extent that the commission or its agent or appointee thereunto duly authorized shall hereafer from time to time designate in individual cases, but not otherwise, authorized and directed to place, furnish and assign cars to coal mines for the transportation of such coal in addition to and without regard to the existing ratings and distributive shares for mines upon said railroad; provided that such coal shall not be subject to reconsignment and that a written report of the cars placed hereunder shall be made to the Interstate Commerce Commission by the railroad placing the cars, as often as once each week.

It is further ordered that Service Order No. 16, made and entered by the commission Sept. 16, 1920, be, and the same is hereby, suspended and superseded, effective Oct. 15, 1920.

And it is further ordered that copies of this order be served upon the carriers hereinbefore described, and that notice of this order be given to the general public by depositing a copy hereof in the office of the secretary of the commission at Washington, D. C.

In issuing the new service orders the Interstate Commerce Commission made public the following explanation:

The increased production this year over last has been consumed in a large part by industries, by railroads and other public utilities, by the Northwest and by New England, and by exportation. There has not been a sufficient production of the sizes of coal for domestic purposes to satisfy the present demands for such uses. Vigorous complaints have been received in behalf of the domestic users of coal in Indiana, Ohio and Michigan. Complaints have also been received from Oklahoma, Texas and other Western states. It is imperative that the production of coal be even further increased. To accomplish this it will be necessary to increase the car supply for coal.

As a means to such end, the commission has entered an order requiring all railroads east of the eastern boundary of the States of Montana, Wyoming, Colorado and New Mexico to furnish coal cars to coal mines in preference to any other use. The orders of this character heretofore issued have applied only east of the Mississippi River. The present order runs until the further order of the commission, and will be relaxed as soon as it appears practicable to do so. As a further means of accomplishing the object sought all outstanding permits for the use of coal cas for transporting other freight are canceled effective midnight Oct. 10. Thereafter, until the domestic coal situation is well in hand, permits of his character will be issued only upon a showing of public interest. Arrangements will be made for the continuance of the movement of certain essentials, such as sugar beets, to factories.

Plans have been worked out in conjunction with representatives of the coal operators and of the railroads by which it is expected the needs of the domestic consumers of coal will be substantially met. The program contemplates that approximately 2,100 cars will be transported daily for domestic use in Indiana, Ohio, Michigan, eastern Kentucky, eastern Tennessee, western Pennsylvania and West Virginia. Attention is also being given to the needs of domestic consumers in other states.

Although the railroads serving anthracite mines have furnished such mines close to 100 per cent car supply, and although the anthracite production up to Sept. 25 exceeds that of the same period last year, the production this year has been retarded by the recent coal miners' strike in the Pennsylvania anthracite mines and by the switchmen's strike which commenced in April. There is a shortage of anthracite coal in some of the New England states due largely to embargoes placed by certain New England railroads in effect during a substantial part of the time between April and Aug. 24. These embargoes have now been modified, and it is expected that the rail movement of anthracite coal to New England will proceed unhampered.

Request for Reconsideration of Wage Award Referred to Secretary Wilson

PRESIDENT WILSON has referred to Secretary of Labor Wilson for report the request of the policy committee of the anthracite coal miners for reopening of the recent wage award to permit of adjustment of alleged inequalities. The President sent the request to the Department of Labor and in the absence of Secretary Wilson the department forwarded it to the Secretary, who is at present in Ohio. The policy committee met Secretary of Labor Wilson at Canton, Ohio, on Oct. 5, when they presented their demands for reopening of the award, but no report has been received as to the nature of their request or the manner in which it was looked upon by Secretary Wilson.

Pennsylvania Coal Co. Strike Ends: Contracting Abolished

BY AGREEING that no contractors shall be allowed to operate in the collieries of the Pittston district and that such contractors as are laid idle by this provision shall not be permitted to work at all in the companies' mines unless the grievance committee consents to their presence, the Pennsylvania Coal Co. and the Hillside Coal & Iron Co. on Oct. 7 ended the eleven weeks' strike. The terms were arranged by James A. Joyce, of the Greater Pittston Chamber of Commerce.

Logan County, West Virginia, Has Fatal Shooting: One Killed, Five Wounded

EARLY in the night of Oct. 6 a deputy sheriff, Joseph Gore, present at a meeting of Blair Local Union 2887 of the United Mine Workers, was fatally shot by a miner at Blair, Logan County, West Virginia. Three other deputies were seriously wounded, and two miners were shot in the fight that ensued. Fred Mooney, secretary of District No. 17, says the deputy got into an argument with the miner during the progress of the meeting and the fight was the outcome of the disagreement.

Lehigh Valley Engages Eminent Counsel in Defending Anthracite Control Case

A DISTINGUISHED array of legal talent appeared before the U. S. Supreme Court on Oct. 5 in behalf of the Lehigh Valley Railroad Co. to defend the company in the suit brought by the Government to restrain it from alleged control in anthracite coal. The case came up on re-argument on appeal by the Government from the decision of the lower court in New York, which five years ago decided in favor of the railroad company. Former argument in the case did not convince the court on various points.

Mine Workers Become Impresarios

THAT the life of the coal miner is not entirely spent underground, and that some of the Western miners have a pretty good time after their day's work was revealed by Perry W. Karg, one of the American Federation of Labor organizers, in a report from Rock Springs, Wyo., which says the "coal miners are running their own opera house with picture shows and vaudeville.

Citizens Launch Campaign to Cut Coal Price

HIGH prices for coal in Washington are to be investigated by a committee of fifteen to be appointed by the Federation of Citizens of the District of Columbia. The aim is to bring down the cost. At its meeting on Oct. 2 nearly all of the delegates questioned the fairness of the present prices of coal.

Colorado Fuel & Iron Co. Takes Care of Its Day Workers

RETROACTIVE to Sept. 1, the Colorado Fuel & Iron Co. has established a wage scale whereby the day workers will receive an increase of $1.50 a day, with the exception of boys and trappers, who will receive an advance of 82c E. H. Weitzel, manager of the fuel department, in announcing the increase, is said to have declared that it would not involve any advance in the price the public was paying.

Producer Allowed Profit of $1.25 a Ton

AT THIS writing no indictments have been returned by the Grand Jury at Huntington, W. Va., against a number of coal mining and sales agencies. A special report was made public, however, in which the Grand Jury finds that a profit of $1.25 per ton over the actual cost of production is all that the producer is entitled to charge, while a commission of 8 per cent constitutes a reasonable profit for the broker.

THAT THE PRESIDENT has put his foot down decidedly on any price fixing became known when the Attorney General last week admitted that he would like to establish a fair price on coal as had been done on sugar and other commodities, but that such a plan did not have executive approval.

Judge Pritchard Dissolves Argyle Injunction

Failing to Prove Violation of Law, Government Counsel Moved That Suit Be Dismissed—No Indictments Returned—Resolutions of Northern West Virginia Operators Eliminate Alleged Selling Abuses

SITTING as judge of the District Court at Huntington, W. Va., on Monday, Oct. 4, Judge J. C. Pritchard of the U. S. Circuit Court of Appeals presided at the hearing to make permanent the temporary injunction obtained by the Argyle Coal Company restraining U. S. Attorney L. H. Kelly of the southern district of West Virginia from indicting or attempting to indict the company on a charge of profiteering under the Lever Act. Upon the conclusion of the arguments the Court dissolved the injunction and dismissed the suit. Judge Pritchard granted the temporary injunction at Asheville, N. C., when he set Oct. 4 as the date of the hearing of the argument on the question of making the injunction permanent.

It became apparent that Judge Pritchard would dissolve the restraining order when counsel for the Government made a motion to that effect and also filed a motion to dismiss the bill, accompanying his motion with the statement that the Government intended no prosecution against the Argyle Company, as no violation of the law on the part of the company had been disclosed by the Government. The order was dissolved and the bill dismissed because, for the reasons just assigned, the prayer of the bill to enjoin prosecution became merely a moot question and not a test case.

While the temporary restraining order of the Argyle Company was dissolved, at the same time it was announced by counsel for the Government that ample opportunity would be afforded companies desiring to do so to file bills similar to that of the Argyle Company before any indictments were returned. No indictments were returned at the Monday session of the District Court.

Postponement of Price Investigation Likely

That fact and the announcement of the U. S. Attorney that an opportunity would be given to secure restraining orders as well lends color, it is believed in some quarters, to rumors of an agreement or of a prospective agreement between coal operators in southern West Virginia and the Department of Justice under which there would be an indefinite postponement of the coal price investigation in the southern part of the state.

In view of the action taken in the case of the northern West Virginia operators it would seem that the Department of Justice could not with any degree of consistency refuse to give the operators of southern West Virginia an opportunity to create a fair practice committee or some other method of avoiding the pyramiding of prices. There also is a possibility that Judge Rose's charge to the grand jury may have had something to do with giving a new turn to the investigation before the southern district court.

U. S. Attorney Kelly has refused to confirm or deny the report of a prospective agreement, merely contenting himself with saying that if any such agreement were reached it would have to be reached at Washington and not at Huntington.

Resolutions adopted at Fairmont by the Northern West Virginia Operators' Association and presented to the Attorney General at Washington, which led to the suspension of subpœnas for appearance in the U. S. District Court for the northern district of West Virginia, were as follows:

Whereas at a meeting of coal operators of northern West Virginia and their attorneys, U. S. Attorney Stuart W. Walker and Assistant to the U. S. Attorney General Henry S. Mitchell, in the latter's office in Washington, on Saturday, Sept. 18, 1920, which meeting was arranged for the purpose of considering the Federal Grand Jury investigation into the coal industry then scheduled to begin Sept. 21, 1920, and the reasons for instituting same, the said U. S. Attorney and Assistant to the Attorney General severely criticized some of the trade practices alleged to be prevalent in the coal industry and

Whereas the said U. S. Attorney and Assistant to the Attorney General suggested that a meeting of all operators and wholesalers of coal in northern West Virginia be called and ways and means be devised to eliminate said practices, pending which meeting the said Federal Grand Jury investigation would be postponed; and wholesalers of northern West Virginia have been and are desirous of conducting their business in a manner satisfactory to the Department of Justice and in full accordance with the letter and spirit of the laws of the United States;

Therefore be it resolved by the operators here assembled, as follows:

(1) The term "producer," "purchaser," "dealer," or "wholesale dealer," whenever herein used shall include any person, partnership or corporation engaged respectively in producing, purchasing or dealing in coal.

(2) The producer will require every purchaser of coal to stipulate and agree in writing that the coal so purchased shall not be resold through more than one other wholesale dealer. This stipulation shall be endorsed on the order for the coal and upon the bill for the same.

(3) No attempt will be made by any producer to limit or fix the price at which any other producer shall sell his or its product, but each producer will in every way attempt to eliminate and prevent the creation of high or excessive prices by artificial bidding.

(4) All producers will give their moral support to the end of carrying out and fulfilling so far as practicable all contracts existing for the shipment and sale of coal, having due regard for physical conditions, car supply and Government regulations and railroad embargoes.

(5) All producers realize the moral obligation to furnish coal for local consumption in such sections of this state which naturally and regularly are supplied by the coal producers of northern West Virginia in such quantity as may be necessary for the current requirements of those consumers as directly as may be possible.

(6) The producers will co-operate with the common carriers in so far as practicable by individually complying with all embargoes and by discharging and preventing so far as feasible all overshipments on the genuine permits, and of shipments on false or forged permits.

(7) No purchaser will sell coal for export except upon an order containing a stipulation to the effect that the coal is intended for export, and that it will not be resold to the domestic trade, and not resold to more than one other purchaser before it shall reach the actual exporter. This stipulation shall be inserted in all card manifests and the purchaser's invoice, as well as in the original order for the coal.

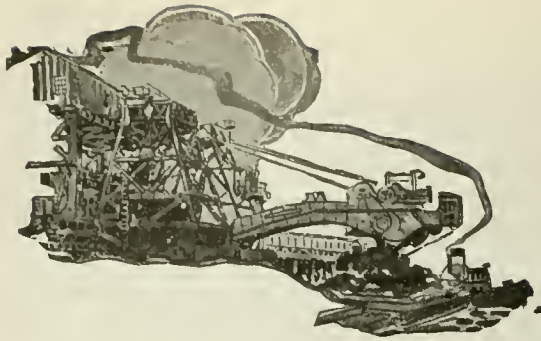
(8) No wholesale dealer who shall purchase coal from another wholesale dealer or dealers will resell the same to any other than a retail dealer or consumer. An exporter of coal shall for the purposes of this agreement be deemed and treated as a consumer. The contract of purchase and sale contemplated in this paragraph shall contain upon its face a stipulation binding the parties to carry out the provisions of this paragraph.

(9) The producers and wholesale dealers who shall be or become parties to this agreement will create a standing committee to be called the "Fair Practice Committee of Northern West Virginia," to consist of seven members and to be constituted and appointed in the following manner: Each of the following districts shall meet and select one member of the committee; preferably from that district, Wheeling, Morgantown and Kingwood, Fairmont, Grafton, Clarksburg and Elkins and Upper Potomac. The six members so selected shall select a seventh member at large. The Fair Practice Committee so constituted shall organize with the assistance of George T. Bell, executive vice-president of the Northern West Virginia Coal Operators' Association, as secretary. This committee shall meet regularly once a week and at such other times as may be necessary, and shall exercise a general supervision over the manner in which the parties to this agreement shall comply with the terms thereof, and carry out its provisions. This committee in the discharge of its duties will consult with the Department of Justice and its duly authorized agencies.

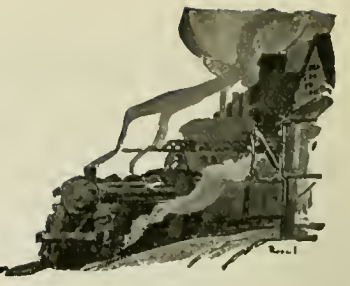
(10) A list as complete as feasible of all producers and wholesale dealers engaged in the production or marketing of coal in the northern district of the State of West Virginia who shall have become parties to this agreement and undertake to abide by and carry out its provisions shall be furnished to the Attorney General of the United States and the District Attorney for the consideration of the Department of Justice, on the 24th day of September, A. D. 1920, and for the joint consideration of the Department of Justice and parties entering into and becoming bound by this agreement. Supplementary lists of such producers and wholesale dealers as shall hereafter enter into and become bound by this agreement shall from time to time be furnished to the Department of Justice either by delivering the same to the Attorney General of the United States or to the U. S. Attorney for the northern district of West Virginia.

(11) Any producer or wholesale dealer engaged in the production or marketing of coal in the northern district of the State of West Virginia who shall not have been represented at the meeting at which the foregoing resolutions shall have been passed and adopted, and shall not thereby have become a party to the agreement contained in said resolutions may become a party thereto by a statement in writing signed by him, them or it, signifying an acceptance of the provisions herein contained and agreeing to abide by and keep and perform the undertaking herein outlined, and by delivering such statement to George T. Bell, executive vice-president of the Northern West Virginia Coal Operators' Association, or his successor, at Fairmont, W. Va., either in person or by mail.

(12) It is recommended that the Advisory Committee be enlarged to provide for representation from districts not covered by former appointments, and so constituted to further co-operate with the Department of Justice with power from this meeting to conclude an agreement substantially as above suggested and to take what further action may be deemed necessary to promote the welfare of the operators of northern West Virginia in this matter.



Production and the Market



Weekly Review

PRODUCTION of bituminous coal fell off sharply during the week ended Oct. 2. The decrease centered in the fields north of the Ohio and Potomac. Anthracite production was back on a normal basis. Beehive coke output decreased 22,000 tons for the week. Bituminous prices advanced slightly. An active call for domestic and renewed buying for reserves has offset a softer industrial situation. Labor has a distinctly better tone. Car movement is still unsatisfactory, but steps for improvement have been taken and better production may be expected.

BITUMINOUS

Bituminous coal production declined sharply during the week ended Oct. 2. The total output is estimated by the Geological Survey at 11,348,000 net tons, a decrease when compared with the previous week, of 506,000 tons, or 4.3 per cent.

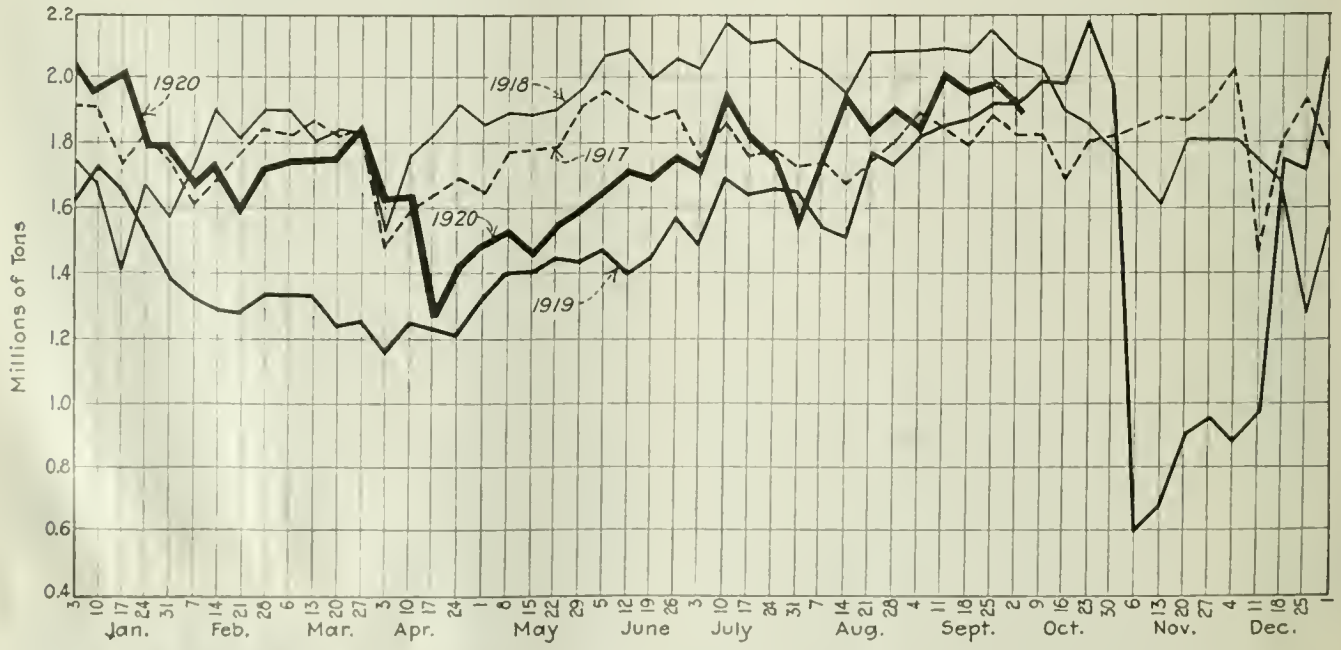
Labor is showing a distinctly better tone. Troubles in the eastern Ohio and western Kentucky field have terminated and the men are again reported at work. An influx of newcomers to the Alabama mines, as well as the return of many old workers has made for increased production in that strike zone. The Clinton field of Indiana is still tied up over the question of price of coal for mine workers. Rumbles of trouble are heard from Colorado, where the issue of recognition of the union is still being pressed.

Car supply shows little improvement at this writing. However, orders promulgated recently by the Interstate Commerce Commission will tend toward better placements and promised co-operation by railroads also indicates an increasing rate of production. Placement in the northern Apalachian region was generally improved although a sharp decline in the Fairmont and Kanawha fields was reported. The middle Appalachian region reports 100 per cent supply in the Pocahontas and Tug River field, improvement for Logan and Thacker, while the New River field reports a decline in cars placed. Southern Appalachian placements were better.

Export Prices Lead the Market

Pittsburgh district coal for export is quoted $10@$11.25; gas, $11, and steam coal, $8@$9. Coal for Lakes is around $7.25. Eastern Ohio quotations are firm at $6.50@$7.50. Kentucky coals are lower following the price fixing activities of the Government in that section, eastern Kentucky having practically accepted $6 as the figure for its product. Buffalo reports $11.50 for special grades, with buyers showing a tendency to keep out of the high-priced market. The Baltimore market for good grades is $10.50@$11.50, while New York prices are up—$10.50 for Pool 9, $10.25 for Pool 10 and $9.25 for Pool 11. Western lignite is quoted at $5@$5.80. Chicago and Boston markets report a decided slump in demand with consequent lower prices. Alabama's strike and fuel shortage have lead to the establishment of a state fuel administrator to regulate prices and distribution during emergencies. There was no evidence in the mine reports of a cessation in the very active demand for coal, according to the Geological Survey. Not an operator in the entire country reported loss of working time for lack of orders.

Average Daily Production of Bituminous Coal*



*From weekly report of Geological Survey.

Continued reports from the West and Middle West of slack freight movement and the laying off of railroad labor because of the decrease in business have so far not been reflected in the coal market. A general feeling of hesitancy is affecting business and before long this will be felt in lessened demand for coal, both because of shortened requirements by the railroads and by reason of a pronounced policy on the part of buyers for industrial plants of purchasing only from hand to mouth while the period of price recessions in other commodities is on.

In some sections, as New England, the industries are well stocked; in others, as the Northwest, they are still calling for coal. Retail dealers in the territory where bituminous coal is the domestic fuel represent the backbone of the market, while on the Atlantic seaboard the export market is setting the pace. The Lake buyers are urgently seeking coal, but are not setting the pace in price, depending on priorites instead. The action of the Interstate Commission last week in replacing the blanket order for assigned cars for public utilities by announcement that such preference will be given in the future only on investigation of each case by a special committee, whose report will be passed on by the commission itself, is somewhat of a damper on the free and easy way in which utilities have been obtaining coal all summer. The action is generally regarded as having resulted from disclosures of abuses of the previous order by utilities and shippers in New York.

Lake Movement To Be Stimulated

That the Government and railroads are still concerned over their failure to meet the scheduled Lake program is evidenced by the reports from Washington of the meeting there a week ago, which resulted in the issuance of Service Orders Nos. 20 and 21, providing, as outlined above, in less assigned cars for utilities and for extension of the priority on open-top coal cars to the Rocky Mountains, to cancellations of permits for the use of open tops for use other than coal and renewed pledges of 12,000,000 tons a week of bituminous coal.

A large share of the trouble in meeting consumers' requirements in the East is ascribed to the drain on production for railroad fuel, public utilities and the Lakes forced on operators by orders of the Interstate Commerce Commission. The following table furnished *Coal Age*, obtained from an authoritative source, shows that on three railroads serving Western Pensylvania and Northern West Virginia, whereas the car supply was from 50 to 75 per cent rating, the coal left over for meeting contract obligations and the attractive spot market is on the average less than 10 per cent under the rating at the mine, because priorities and private cars took the coal.

	Penna. Railroad	Monongahela Railroad	B&O R.R.	Average
Total percentage empty cars furnished	51.1	75.3	60.0	62 1
Distribution of total empty cars placed:				
Private Cars	13 2	20.0	10.0	14 4
Railroad Fuel	30.0	30.0	30.0	30 0
Public Utilities	10.4	10.0	20.0	13.4
Lake Coal	22.3	28.4	30.0	27.0
Percentage of total cars loaded for commercial shipments	24.1	11.6	10 0	15.2
	100	100	100	100
Percentage of cars available for commercial shipments based on 100% total railroad rating of the mines	12 3	8 7	7 2	9 4

Governor Cox is reported to have revived the 1917 Ohio State Coal Clearing House Committee for the purpose of making equitable distribution of the emergency coal, for which provision has recently been made. In Indiana the Special Coal and Food Commission, created at the last special session of the Legislature, has fixed prices at the mines for coal produced in Indiana, ranging from $2.80 to $5.85 per ton according to quality and preparation. The highest prices are for Brazil block. These prices are subject to readjustment at any time. Jobbers' commission of 15c. has been allowed.

Considerable apprehension is being displayed in the Northwest over the continued failure of Lake dumpings to attain the required figure of 4,000 tons daily. Dumpings for the week ended Oct. 2 totaled 882,579 tons. With the season of navigation nearing the close it is felt that considerable pressure must be exerted to provide against a shortage in the Northwest this winter.

Expressed in net tons the dumpings over tidewater piers as reported to the Geological Survey by the Tidewater Bituminous Coal Statistical Bureau were 1,280,000, almost exactly the same as during the preceding week. Dumpings for New England account declined sharply, amounting to 203,000 net tons, or at the rate of 870,000 tons per month. Exports rose from 582,000 to 653,000 tons for the week, or at a monthly rate of 2,800,000 net tons.

TIDEWATER BITUMINOUS COAL SHIPMENTS FOR THE WEEK ENDED OCTOBER 3, 1920a

(In Net Tons)

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Total Dumped
Coastwise to New England	71,000	12,000	16,000	104,000		203,000
Exports	.....	145,000	146,000	354,000	8,000	653,000
Bunker	91,000	10,000	19,000	68,000	1,000	189,000
Inside capes		39,000	28,000	4,000		71,000
Other tonnage	150,000	.....	.....	14,000		164,000
Total	312,000	206,000	209,000	544,000	9,000	1,280,000

Movement to tide increased again during the week ended Oct. 2. The total number of cars dumped at the five Atlantic coal ports, according to daily telegraphic reports to the American Railroad Association, was 26,361, the largest in any week since Aug. 14. Dumpings decreased slightly at Philadelphia, but increased at the other ports, particularly at New York.

CARS OF BITUMINOUS COAL DUMPED WEEKLY OVER TIDEWATER PIERS AT THE FOUR NORTH ATLANTIC PORTS AND CHARLESTONa

Week Ended	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Total
Sept. 4	10,109	3,745	3,191	7,672	358	25,275
Sept. 11	8,304	3,421	3,009	7,271	323	22,328
Sept. 18	7,966	3,563	4,131	8,501	275	24,436
Sept. 25	7,316	3,527	4,238	8,743	448	24,271
Oct. 2	9,121	3,673	4,197	8,872	498	26,362

The total tonnage handled at tide in September was approximately 6,300,000 tons as against 5,352,000 tons in August. September exports were about 2,270,000 tons, a slight decrease. The total shipped to New England approximated 1,110,000 tons, as against 1,048,000 tons in August.

For the second time in two weeks the movement of all-rail coal to New England has fallen below the 1919 level. Cars forwarded to New England through the five Hudson gateways of Maybrook, Harlem River, Albany, Rotterdam, and Mechanicsville are reported at 4,926, during the week ended Sept. 25. In comparison with the preceding week this was a decrease of 461 cars, or 9 per cent. It was less by 236 cars than the movement during the corresponding week of 1919.

CARS BITUMINOUS COAL FORWARDED THROUGH HUDSON GATEWAYS DESTINED FOR NEW ENGLANDa

Week Ended	1920	1919
Sept. 11	5,044	4,795
Sept. 18	5,824	4,885
Sept. 25	5,387	5,790
Oct. 2	4,926	5,162

ANTHRACITE

Shipments of hard coal for the week ended Oct. 2, amounted to 1,804,000 net tons, according to report of the Geological Survey. Production is now back on a normal basis as the week's output compares favorably with the figure of 1,818,000 tons produced in the last full week before the strike. A new wallkout of the men in the Pittston district was of short duration, the miners returning promptly an action taken by the Pennsylvania Coal Co., in discharging the contractors. Abolition of the contract system has been the main issue in this district.

The Geological Survey gives total anthracite production in 1919 as 78,502,000 gross tons, a decrease when compared with 1918, of 11 per cent. The decrease occurred almost entirely in the steam sizes and was most marked in the case of the washery product. The product obtained by dredging increased. The number of men employed rose from 147,121 to 154,686 largely as a result of demobilization. The average number of days worked was 266.

Reports From the Market Centers

New England

BOSTON

Market Is Quiet — Softening Trend in Prices — Labor Situation Is Easier — Railroad Buying Still a Feature — All-Rail Movement Continues Good—Tidewater About Normal—Anthracite Outlook Seems More Hopeful.

Bituminous—The market here is almost featureless. There is only a light scattering demand for small buyers. Textiles and many other industries have so curtailed production that present reserves of fuel are ample. Those who have coal due on low-priced contracts are insistent upon deliveries but should the gate open and coal pour in on commitments of early spring there would certainly be a lot of cancellations.

There is little chance now that this dullness will be relieved during the next few weeks. The railroads are moving coal in record time. Uneasiness over the traffic situation seems to have entirely disappeared and there seems no inducement for buyers to enter the market.

Unmistakable signs of softening prices have been observed the past few days. At first hand there is not yet so much change but for more than two or three middle houses to particiate is becoming difficult. It is noticed that operators are again trying to get in touch with New England houses. Car supply is adequate, and those grades that are not in demand for export are frankly seeking a market. Sales have been made at 50c. less than a week ago.

The flurry over wages at the mines seems to have blown over. The slackening in so many industries has released numbers of men whose usual employment is in the coal fields, and it is beginning to be realized that this fall would be no time to reopen the wage scale agreed upon last spring.

The present market level is sustained largely through railroad buying, in addition to the demand for export. The two situations remain about the only props for steam coal prices. For special grades certain of the roads have paid in excess of $10, and others are buying inferior coal rather freely at around $8. With assigned cars still in effect it is hard for the trade here to see why these moves are necessary.

Movement all-rail is fairly well sustained on the September average. This is about 70 per cent of what was coming forward in July but it is enough to care for New England requirements. There is but one embargo in effect, that against movement to the Boston & Maine via D. & H. Mechanicsville.

For the benefit of those who cry out about the tonnage for export it is interesting to notice that figures for recent weeks show that the total tonnage offshore from the Atlantic ports is but little more than the combined shipment to New England alone by rail and water for the same period. It is clear under present conditions that 500,000 tons per month is fuel enough to take care of this territory, notwithstanding all the large figures that were used early in the season.

At the loading ports coal is available in about normal volume. The excess of high volatiles at Baltimore has gradually been absorbed, largely by the railroads, and at New York and Philadelphia coal on hand is sufficient to care for boats as they arrive. The Hampton Roads situation has also improved; there is less steamer delay and daily receipts are more nearly uniform.

Current quotations on bituminous at wholesale range about as follows:

	Clearfields	Cambrias and Somersets
F.o.b. mines, per net ton	$8 00@ 9 25	$8 75@10 50
F.o.b. Philadelphia, per gross ton	11 60@13 00	12 45@14 40
F.o.b. New York, per gross ton	12.00@13 40	12 85@14 85

Anthracite—The anxiety last week due to the strike in the Wyoming district is somewhat allayed through the resumption of mining. Retail dealers here are much disturbed, however, over the extreme slowness with which deliveries are made.

The 3-ton provision still applies on all orders at retail, whether to households or to municipal institutions, and every effort is being made to spread present stocks where they will do the most good.

Tidewater

NEW YORK

Anthracite Production About Normal—Domestic Shortage Being Felt — Independent Prices Are High — Little Spot Bituminous Available—Demand Is Off, but Prices Are Firm—Little Free Coal at Piers.

Anthracite—Practically all the mines are now in operation. About all of the strikers have returned to work and with the cars which were diverted to the soft coal fields now being returned, production is getting back to normal.

The tonnage loss due to the strike is estimated in the neighborhood of 2,000,000 tons, which cannot be made up during the present season, and consumers as well as coal-men will have to make the best of a bad situation.

With tonnage coming from the mines once more it seems that every one wants to be taken care of immediately. Each buyer has some fear that his order will be overlooked if he does not keep after his source of supply with sufficient vigor. The sales agents, as a result, are having a strenuous time trying to convince their customers that no favoritism is being shown in distribution.

Retailers are also having similar experiences and it is now realized that the Fuel Administrator's rule of two-thirds deliveries on the first round had much to commend it. If the rule had been followed this year the chances are that every customer would have some coal ere this. As it is, the available supply has been distributed very unevenly, although all customers could be taken care of if they would forego their preference as to sizes. There is quite a little nut coal in stock but very little stove and egg.

Retailers are not buying much of the independent coal at top prices. With a careful allotment of independent and company coal secured at reasonable prices it is thought that the situation can be tided over until the Lake season closes and the usual diversion to this market takes place.

Dealers along the line who need coal badly are paying upward of $14 for a limited tonnage that is now available to the highest bidder. The larger steam sizes are strong and active while barley is plentiful and in poor demand.

Quotations for company coals, per gross ton, at the mine and f.o.b. New York Tidewater, lower ports are:

	Mine	Tidewater
Broken	$7 60@ $7 75	$10 21@ $10 36
Egg	7 60@ 7 75	10 21@ 10 36
Stove	7 85@ 8 10	10 46@ 10 71
Chestnut	7 90@ 8 10	10 51@ 10 71
Pea	6 10@ 6 55	8 57@ 9 02
Buckwheat	4 00@ 4 25	6 47@ 6 72
Rice	3 00@ 3 50	5 47@ 5 97
Barley	2 25@ 2 50	4 72@ 4 97
Boiler	2 50@ 2 75	4 97@ 5 22

Quotations for domestic at upper ports are 5c. higher on account of difference in freight rates.

Bituminous—The responsibility for the continued high prices are attributed by some who have studied the matter to Service Order 10, combined with the heavy export shipments, although it was thought for a time that the anthracite strike and the threatened strike of English miners had something to do with prices continuing on a high level.

After the requirements of the Lake and export trade have been met and contract obligations taken care of there is not much free coal left to break the market even in the face of a limited spot demand.

Since the slump a few weeks ago trade interests have been somewhat cautious about buying coal in the region and shipping it to Tide to sell on the open market, and as a result coal handled over the piers has fallen off in demand sharply. There is comparatively little free coal at the piers or afloat, this being particularly true of the better grades—there being days when buyers were unable to locate any Pool 9 and very little Pool 10 coal.

What Pool 9 coal is to be had is usually disposed of at $14.75@$15 alongside while on Pools 10 and 11 the bulk of the sales are $14@$14.50 per ton. Lower grades are to be had at prices down to $13.50.

At the Pennsylvania R.R. mines Pool 10 coal has been around $10@$10.25 and about a quarter less on the B. & O. Pool 9 has been quoted $10@$10.50, Pool 71 $10.50@$10.75 and Pool 11 $8.75 @$9.25, while Pool 34 has been strong at $10.50@$10.75. On the lower grades the price range is from $8 up.

PHILADELPHIA

Strong Demand for All Anthracite—Some High-Priced Coal Offered—Steam Sizes All Taken—Bituminous Demand Strong, Especially at Tide—Little Change in Prices.

Anthracite—There is no lessening in the demand for all of the family sizes. Unfortunately the dealers are not getting the amount of coal needed to meet current requirements. They are spreading out the few cars they do get to the greatest advantage. The outside markets are getting the bulk of the production and will continue to do so for some time to come.

So far as production is concerned the mines are close to normal, although at times there is just the least tendency to a shortage of cars. At no time since the last suspension has the car supply been equal to the early days of summer. However, this is not serious and there is every reason to believe that all mines will have sufficient empties in the course of the next week or two. A new walk-out in the Pittston district has further hampered production.

All sizes are in strong demand. Egg and pea which were somewhat laggard in the late summer have again reached the point where there is very little chance for either size to accumulate in the yards. Inasmuch as stove and nut are the most wanted sizes we hear occasionally of offers of this coal for sale in one or two car lots at a price of $13@$14 at the mines. Even though a few sales may have been made locally at these prices it is far from indicating a price trend, as such purchases have only been made to meet some particularly pressing business.

Steam trade is close to top notch. All shippers are in receipt of inquiries for spot coal in all sizes, even including barley. The point has now been reached where the amount of free coal is becoming limited. There is a good business in all the steam sizes at Tide, but this is mostly on business closed some time ago. On such new trade as might be taken on buckwheat the mine price is close to $5.

Bituminous—The demand for spot coal keeps up and some buyers are actually in sore straits for additional supplies. The complaint generally is that while they have notices of shipments from the mines the railroads are often two weeks in making the deliveries.

The export trade is developing added strength and the amount of tonnage consigned to the local piers comes close to being the heaviest on record. Probably the bulk of this business is on the high-volatile coals. On the best Pennsylvania gas grades the prices have been $11@$11.50 per net ton at mines. The Fairmont coals have kept close behind with the bulk of the sales closed at $10.75.

Railroads are calling for quite heavy shipments and it is believed they are making extra efforts to lay by a stock for the season of bad weather. There is a general tendency throughout the trade to take steps to increase stocks upon the ground.

Concerns with contracts were recently notified that in accordance with the recent wage settlements their contract prices had been increased. These increases ranged from 30@50c. a ton and in some few instances there was an inclination on the part of the buyer to question the increase. Consumers report that their contract shipments continue quite good.

Prices on good steam coals on the spot market run from $9.75@$10.25 for the Pool 10, with Pool 11 bringing $8.75@$9.50. Pool 18 can be had at $8 at the mines. There is plenty of spot demand for Pool 9 coal but this grade is almost impossible to get, as the bulk of the production is absorbed on the various preferential orders.

The car supply recently has been reported fairly good, although the trade is beginning to feel the real effects of the diversion of the many thousands of cars which during the anthracite strike had been used in the bituminous trade.

On the B. & O. it is believed the average distribution of cars recently has been about 30 per cent of rating. Shippers complain that the movement of loaded cars is particularly slow despite the most favorable weather conditions of the year. The Penn. R.R. allotment has been about 40 per cent.

There is some uneasiness felt in the trades, especially that portion using gas coals, at the request of certain interests in the West that diversions be made of this grade to help out those districts. This has also had a tendency to hold prices strong on these grades.

BALTIMORE

Lessened Car Supply Stiffens Bituminous Demand—Prices Advance—Congestion at Tide — Genuine Concern Now Felt About Hard-Coal Distribution—Some Dealers Jacking Up Prices.

Bituminous—The market has tightened and there is now little prospect of another downward movement on prices, which with best coals selling at $10.50@11.50 a net ton f.o.b. mines, are 50c.@$1 above a week ago. Several things are operating to this end. One has to do with the car supply, which continues in less satisfactory form than some weeks ago. After the opening days of each week, when a record movement of empties on the roads makes toward a good run following the Sunday periods, there is a drop to between 60 and 70 per cent on most days on Eastern lines. In some cases it has gone to the 55 per cent class. The daily loadings show some improvement despite this condition, and are now around 3,500 cars on the Baltimore & Ohio R.R.

Another cause of the tighter market has to do with the growing demand as cooler weather gives consumers warning that they should have reserve supplies on hand to meet the calls of wintry weather, which is likely to further hold up transportation.

The local shipping situation has considerable to do with the case, as there is a new jam of ships in the harbor waiting for coal cargoes or bunker supplies. At this writing between 40 and 50 ships are at the Curtis Bay and Canton piers awaiting coal cargoes, while a number of other ships with general cargoes are delayed in sailing because of lack of bunker coal. The supply at the local pool for the first time in months has dropped on some days below 1,000 cars, while the dumpings are running around 700 cars. One day's record the past week at Curtis Bay alone was 537 cars of coal.

The big spurt in export movement the last part of September brought that month close to the record of over 490,000 tons made in August. With three cargoes still not officially tabulated in the total for September the loading showed 472,415 tons.

Anthracite—There is now genuine concern here over the hard coal situation. True, the run is better to the city as compared with July and August, but is far below the amount needed and hundreds of cellars are still unfilled with coal. In some blocks of the city not a single house has a ton of coal, while in others only two or three houses in a dozen have fuel.

The demand for fuel has now gone in many cases beyond a question of price and it is not strange that some dealers are reported as charging above the recognized schedule for retail sales. The larger concerns are discouraging this, but some dealers who put on a retail premium are claiming that right because they cannot get company priced coal and must pay extra on all they secure from independent sources.

Lake

MILWAUKEE

Lake Receipts Fall — Coal Shortage Threatens—Public Urged To Conserve Fuel—Prices Are Firm.

Lake receipts of coal, which maintained a hopeful gait during the month of September, have slowed up materially and the October record to date is far from reassuring.

State insitutions are feeling the pinch, only about 15,000 of the neces-

sary 45,000 tons having been received thus far. The state is paying $2.45@ $6 per ton for soft coal at Western mines.

It is now reasonably certain that the rail supply will have to be kept at a top-notch gait the coming winter if suffering is to be averted. Public utilities are displaying signals of distress in the form of paid advertisements in the newspapers, urging the strictest conservation on the part of the people. Coal prices in Milwaukee continue unchanged.

Statistics compiled in the United States Engineer Office show that to meet the average receipts of coal in the entire Northwest by Lake for the past 3 years by Dec. 1 would require total receipts daily of 175,748 tons.

It will require 36,929 tons daily to supply the deficiency in the Milwaukee district. The September record gives an average of only 18,633 tons. Figures for the other Lake districts are not at hand, but it can be reasonably assumed that these will not show any greater daily ratio than the record of the Milwaukee district. The average daily receipts at Milwaukee during October thus far are only 17,499 tons. The receipts to date, since the opening of navigation foot up 600,572 tons of anthracite and 1,537,171 tons of soft coal.

BUFFALO

Bituminous Situation Unchanged — Prices Mostly Hold—Buyers Are Not Taking High-Priced Coals—Anthracite Shortage Only Temporary.

Bituminous—Prices have held better than predicted, though at the same time the movement is light. Jobbers have about given up searching for low-priced coal for they have no market for it. Consumers seem determined to hold off till the price comes down.

With miners getting a large part of the entire receipts and clamoring for more pay operators consider it would be foolish to come down in price till some weakening is shown on the part of labor. It is not pretended that anything of the sort is taking place, so operators hold to prices as tenaciously as possible. The Buffalo trade believes that the consumers will win and that before winter. A leading jobber is on record as saying this week that prices are bound to be lower soon.

The shipper who has a good lot of low-priced contracts and is getting a fair amount of coal out of them is the king of the trade, for the shipper who used to be making all sorts of money selling coal to consumers at $12 a ton and perhaps more is just now not active, unless he, too, has workable contracts. The great part of business now is falling into line.

At the same time the price of gas coal and for the most part smithing also, has not come down much. They are selling at $11 or more at the mines. The car supply is fair and improving.

Anthracite—Supply was running up fast and had about arrived at normal, when it was announced that men of the Pennsylvania Coal Co. at Pittston were out again. A good part of them had been out most of the summer but they went to work when the late "vacation" came to an end and it was hoped that all difficulties were past. While the situation is no worse than it was through the summer it is not good.

The city is more or less alarmed over the shortage. It is hard to get a supply and nobody knows when the situation will improve. At the same time the shippers see no great difficulty unless there is still more labor trouble. Their policy is to cut the city short as long as the Lake trade is open. When that shuts down the city can be filled up in a fortnight.

Prices remain as before on the basis of $13.25 for stove and chestnut and $13 for larger sizes net at curb. The Federal Grand Jury at Canandaigua ordered a reduction of 10c. a ton on retailers' charges, but nothing has been done about it, as no official notice has been received. The charges were $2 net, with putting into cellar extra. Acting Mayor Kreinheder has called the anthracite shippers to his office on the 11th for a conference when the matter will probably be taken up.

Lake—Shipments for the week were 120,700 net tons, of which 46,500 tons cleared for Milwaukee, 39,100 tons for Duluth and Superior, 15,000 tons for Chicago, 14,100 tons for Ashland and 6,000 tons for Fort William. Shipments to October were 2,412,761 tons, as against 2,841,018 tons to same date last season.

Freight rates are strong on account of lack of tonnage, at 85c. to Chicago, 75c. to Milwaukee, and 60c. to Duluth, Fort William, Ashland.

Coke—This market is always rather spasmodic so far as the city jobbing trade goes as the large consumers depend mainly on their contracts. Jobbers quote $18.50 for 72-hour foundry, $17 for 48-hour furnace and $14 for low grades, f.o.b. ovens, to which must be added $3.24 freight.

CLEVELAND

Northern Ohio Cities Guaranteed Coal Under New Agreement—No. 8 District Labor Troubles Allayed — Car Supply Better and Operations Improve — District Attorney Probes Coal Price—Market Weakens.

Bituminous — Hope is entertained that the problem of tiding northern Ohio communities over in the matter of emergency coal supplies until the end of the Lake season has been solved by the agreement reached at Washington between the Interstate Commerce Commission, retailers, mine operators, railroad men and representatives of chambers of commerce. Under the new plan the railroads have undertaken to supply 800 cars of coal for domestic use daily to the cities in question. Cleveland's allotment is nearly 150 cars. For weeks the daily average has not exceeded forty cars. Definite assurance is now given by the roads that through increased efficiency and strict enforcement of priorities cars in sufficient quantities will be available.

The unauthorized strike in the No. 8 District which threatened to disrupt production and check improvement in the coal situation has ended. Mine operations are now about 70 per cent of mine capacity. Operators report the car supply and the efficiency of railroad labor notably improved. Supplies of steam coal continue to increase and the market has weakened to around $7.50@ $8 for spot coal.

Operators, retailers and brokers in Cleveland and northern Ohio are receiving questionnaires from the Bureau of Investigation of the Federal District Attorney's office. If provisions under the Lever Act prohibiting unreasonable and exhorbitant prices are being violated. At the District Attorney's office it was declared that prices were assumed to be fair in the main, although reports indicate to officials that in some cases retailers are paying more than the cost of production warrants. If the coal men refuse to comply with requests for information subpoenas are threatened. No attempt will be made by the Department of Justice to fix a price for coal.

Pocahontas and Anthracite—Stocks of Pocahontas and anthracite remain at low ebb, and nothing but run of mine Pocahontas is available. With the first taste of coal weather consumers are swamping retailers with orders. Deliveries are weeks behind.

Lake—The Washington plan just announced is designed to stimulate Lake shipments as well as shipments to local points. During September the Lake movement fell off considerably. Total for the month was 3,941,867 tons as compared with 4,160,500 tons in August. For the season up to Oct. 1 the movement to the Northwest has been 14,604,393 tons, against 17,681,223 tons for the same period in 1919. Better receipts at Lake ports are reported for October and continued improvement throughout the month is expected. It is hoped to get at least 8,000,000 more tons to the Northwest this season.

Retail prices of coal delivered in Cleveland follow:

Anthracite—Egg $16@$17, chestnut and stove $16.25.

Pocahontas — Shoveled lump $16, mine run $12.50.

Domestic Bituminous — West Virginia splint $13.25, No. 8 Pittsburgh $12, Millfield lump $14.50, Cannel lump $15.

Steam Coal—No. 6 and No. 8 slack $11@ $12, mine run $12.50, No. 6 8-in. lump $12.50.

MINNEAPOLIS

Prices Are Unchanged — Greater Rail Efficiency Sought to Overcome Shortage — Inadequate Supply in Outlying Districts.

There remains some 6 or 7 weeks of Lake navigation, in which it is necessary to ship in 6,000,000 tons of commercial coal. It may be possible to move 1,000,000 tons a week to the docks on Lake Superior but by all the performance of the present season it is exceedingly improbable.

It may be set down as assured that there will be a serious shortage of soft coal on the docks, also a smaller

shortage of anthracite. The big task at present is to confine this to the smallest possible amount. Hard coal will probably prove nearly sufficient, if there is a reasonable tonnage moved in the remaining weeks.

The only way that this shortage can be overcome is by increasing the tonnage from Ohio, Virginia and Pennsylvania mines or by increased tonnage from other points, Indiana, and Illinois being most likely; or by securing tonnage from sources not commonly drawn upon. The all-rail stocks from Indiana and Illinois will be called upon to the utmost. But they are contingent upon car supply, and it is lack of cars that has caused all the trouble in getting coal from the Eastern mines.

The third contingency, that of securing from sources not commonly drawn upon, will be resorted to. Unfortunately, the same causes which prevented them from supplying coal to the Northwest in the past are likely to continue. There is some coal coming to the Twin Cities from Montana, but it is doubtful if the total tonnage will amount to much.

The solution is one of transportation. By heavier loading, better handling through terminals, quicker return to service, the shortage of cars can be offset. Two prominent roads operating in the Northwest are working upon their organizations to attain greater efficiency. At a recent conference in Washington, rail officials gave promise of improved transportation facilities, to provide heavier Lake shipments.

A survey through the Northwest reveals that the interior is in very bad shape. Neither hard coal nor soft has been received in any quantity. Some communities report from 15 to 30 per cent of the required amount in consumers' bins. Dealers' yards are generally about cleaned up. Some towns have had no coal for weeks. An order of the Interstate Commerce Commission prevents public service corporations from stocking in advance of their current needs, which means that all are running without a reserve stock.

Inland West

DETROIT

Shortage of All Grades Continues—Domestic Demands Bound—Appeals Made for Priority to Increase Shipments for Michigan, Ohio and Indiana.

Bituminous — With prevailing temperatures making the use of domestic fuel desirable coal shortage is making it almost impossible for dealers to meet requirements of their trade. While efforts of the railroads and operators are concentrated on increasing Lake shipments, the all-rail movement to Detroit and other points in Michigan remains at an unsatisfactorily low level.

There is an active inquiry from steam and domestic consumers, which jobbers and retailers are able to meet only in part. Within the last few days hope of improvement has been aroused by an application presented to the Interstate Commerce Commission, requesting an order for priority of service for shipment of about 2,000 cars daily into Michigan, Ohio and Indiana. The plan offered does not contemplate reduction of Lake shipments but is to be rendered effective by the railroads increasing the car supply at mines, and is designed to supply the urgent need for coal in the interval before the end of Lake navigation. A favorable decision is expected.

With the small volume of present shipments there is almost no free coal in and around Detroit. A considerable proportion of the supply is being sent in from Indiana and Illinois mines, with only a small amount of the better grade coal from Ohio and still less stock from West Virginia and Kentucky mines.

Anthracite—Shipments of anthracite continue disappointingly small. Only a few of the retail dealers have been able to get any supplies and household consumers are finding it virtually impossible to get coal ordered months ago.

The situation is rendered more unsatisfactory by the circumstance that dealers are unable to offer any assurance that they will have coal later. The deficit in anthracite increases the demand for bituminous as a substitute, though use of the latter will prove a serious hardship to many whose heating equipment is designed for the burning of hard coal.

Lake Trade—Efforts to increase Lake shipments to 1,000,000 tons a week have proven unsuccessful since early in September and the season movement to date is about 3,000,000 tons less than for the similar period last year.

INDIANAPOLIS

Uncertainty of Conditions Has Not Affected Local Market — Prices Are Firm—Car Supply Improves, but Labor Situation Is Bad—New Ruling To Help Domestic Trade.

The day following the announcement of the coal commission that prices on various grades had been fixed, coal was being sold at figures far above those fixed by the commission and every evidence shows that coal men intend to fight to the limit the power of the commission. Indiana coal is retailing at $10@$12.50 a ton, while the commission's prices are about two to three dollars lower.

One of the chief causes of continued high prices and prevailing scarcity is the fact that the entire Clinton field has been tied up for more than a week by miners refusing to work until the companies cut the price of coal to them. This has lowered production materially.

The car situation is considerably better, but operators are convinced that unless the Clinton field returns to work the surplus cars in the state will be sent to other fields where the miners are more inclined to work.

It is the general belief that with severe weather and a suspension of Lake shipments the coal situation in Indiana will be greatly relieved. The domestic predicament will also be greatly benefited by the recent ruling of the Interstate Commerce Commission extending the preferential order for coal-carrying equipment, and the allotment of 500 cars per day of domestic fuel for this state.

ST. LOUIS

Local Steam Market Declines—Domestic Prices Firm with Little Coal Available—Railroad Fuel Orders Are Heavy.

Curtailment in manufacturing has lowered the demand for steam coal to the extent of $2 in the last two weeks. Declining shipments to Michigan and intervening territory have made an ample tonnage available for St. Louis. In districts west of here steam fuels are still scarce on account of restrictions.

Domestic coal is hard to obtain and the situation is unimproved. Some Carterville coal is being received, also a good tonnage from Mt. Olive, but only a limited tonnage from Standard field.

Retail prices in St. Louis are: Carterville, $9.50; Mt. Olive, $8.50; Standard, $7.50. No anthracite, smokeless or coke is available.

Standard mines are taking heavy orders for railroad fuel, owing to the depressed steam demand. Commercial mines are running on less than 50 per cent car supply. The labor situation is satisfactory, although men refuse to work to capacity in the railroad mines, where cars are more plentiful.

Mt. Olive reports better supply, more adequate labor and heavy railroad fuel orders. A slight improvement is shown in the Carterville field. However, inadequate transportation facilities on the Illinois Central and Iron Mountain roads still hamper production. Labor troubles are insignificant.

Standard prices range $4.25@$7.50 for domestic and $4@$5 on screenings. Mt. Olive lump is $4@$5. Carterville is $4.25@$8.

CHICAGO

Production Is Increased — Car Supply Improves—Prices Have Eased Considerably—Plans Laid To Effect Improved Distribution.

There was a marked improvement in production during the week ending Oct. 9, due to increasing car supply, which probably averaged 60 per cent. There has been some disarrangement of distribution because of priority assignment of cars under Service Order 16. The abrogation of Service Order 16 as of Oct. 15 will improve distribution and with continued improvement in car supply, which now seems almost certain, production ought to build up in October to an average of 75 per cent.

Quite a little easing off in prices is noted. There is no longer anxiety on the part of consumers for the high priced so-called free coal. Prices on this class of coal have eased off as much as $2 a ton on some grades. Improved

car supply will continue to bring out an increased proportion of contract coal, which will doubtless further reduce the prices of free coal.

There is good co-operation among all branches of the industry. The U. S. Attorney for the Chicago District has outlined a plan to work with a consolidated committee of producers, wholesalers and retailers to effect improved distribution of coal. With the help of these practical men the U. S. attorney will doubtless be able to considerably relieve the anxiety of consumers, especially buyers of household coal.

The labor situation is quiet. With no general question at issue with labor at this time the chances are that there will be none and that improvement in production will continue.

COLUMBUS

Reduced Car Supply Strengthens Market—Domestic Trade Continues Strong —Prices Are Maintained — Domestic Receipts Assured by New Ruling.

Reduced car supply has been reported from practically every producing field in the state. This has reduced the output to about 50 per cent of normal and has tightened the market. Prices have again come back to former levels.

Lake trade is progressing fairly well with a good tonnage moving from Ohio and West Virginia mines. While car shortage is cutting into the movement in certain producing fields the net result has not been bad.

Steam business is still strong, due mostly to lack of tonnage for commercial users. The falling off of industrial activity has had but little effect on the trade up to date, but this is expected to count soon. Michigan industrial centers have been supplied with Indiana and Illinois coal and this is reducing pressure at that point. Steam prices, which were weak, have regained a large part of the lost ground. Railroads are taking a good tonnage, while public utilities are also absorbing a larger quota.

Hocking lump retails $9.50 @ $11 while mine run is almost as high. West Virginia Splints and Kentucky grades sell $10.50@$12 and even higher. Pocahontas is scarce and sells $12.50@$15, delivered.

Prices at the mines for coals used in Central Ohio are:

Hocking lump	$6 50@$8 50
Hocking mine run	5 50@ 8 00
Hocking screenings	5 25@ 7 75
Pomeroy lump	6 75@ 8 50
Pomeroy mine run	6 50@ 8 25
Pomeroy screenings	6 00@ 8 00
West Virginia Splints, lump	6 50@ 8 50
West Virginia Splints, mine run	6 25@ 8 00
West Virginia Splints, screenings	6 00@ 7 75
Kentucky lump	6 50@ 8 25
Pocahontas lump	7 00@ 9 00
West Virginia Splints, screenings	6 00@ 7 75

The Interstate Commerce Commission has extended its preferential order for gondola cars for coal mines to apply to all states east of Montana, Wyoming, Colorado and New Mexico. In behalf of the domestic situation in Ohio, Michigan and Indiana an allotment of 1,800 cars daily has been made for those states. Ohio will receive 800 cars of domestic daily.

In order to bring about this result and maintain Lakes and other priorities, 2,110 additional cars will be secured from other lines of industry and hereafter no open-top equipment will be for other than coal loading, except upon a showing of public interest.

West

DENVER

Considerable Agitation Over High Prices — U. M. W. Firm on Union Recognition — Car Shortage Curtails Production 25 Per Cent.

Boulder newspapers have agitated the price question to the point where business shows a temporary setback, even in the face of implied threats by officials of United Mine Workers that demands for union recognition may unavoidably run up operating expenses through disorganized production.

If the union demands are to be made an issue, developments are due about Oct. 15, although the Colorado Fuel & Iron Co., the largest bituminous operator in the state, in continuing to pursue its policy of refusing union recognition, obviated difficulty when the pay of workers was advanced $1.50 in accordance with increases given workers in lignite fields. Some of the mines in lignite fields are under union contract. Trappers and boys got 82c. a day increase. The original increases, effective Sept. 1, were $1.25 for workers and 82c. for trappers.

There has been no further advance in mine prices by the Colorado Fuel and Iron Co., which is retailing lump bituminous here at $11.50, while similar Southern Colorado grades are bringing $12@$12.50. Louisville lignite costs $5.80 at the mine and $9.95 in retail markets; Weld County lump lignite, known as second grade, costs $5 at the mine and $9.15 retail, while Leyden lump brings $5.25 at the mine and $9.35 at retail.

In Sterling dealers believe the present prices mark the peak, and are hopeful. Lignite is selling $10.50@$14.50 retail. Operators have not yet attempted to make reply to the newspaper challenges.

Production in all fields in Colorado for the week ended Sept. 25 was 186,040 tons, 76.5 per cent of a possible full time output of 243,333 tons. Of the losses through lack of production, car shortage was equivalent to 22.4 per cent.

South

LOUISVILLE

Activity in Buying Is Renewed, Due to Lower Prices—Better Movement at Mines—Eastern Kentucky Coal Moves Freely Here.

As a result of the recent agreement to Eastern Kentucky operators, in many instances to a maximum price of $6. The question arises as to whether shipments to points out of the state or export will be limited to $6, it being held that the Eastern Kentucky Federal District Court would not have jurisdiction over movement outside of its own district, but such regulation would probably result in coal moving outside to the detriment of the state consumer.

Prospects are for retailers getting a very fair supply of coal from now on, at prices well under those that have been in effect. One operator has sold coal to several retailers at around $6.50 a ton during the past few days. It is held that most of the large operators will maintain the $6 maximum level.

Western Kentucky coal may not move into the Louisville market as freely as it has been if prices are not reduced, unless the difference in freight rate and heavy unfilled demand cuts a figure, as $6 at mine is a lower price than is being generally quoted in Western Kentucky.

BIRMINGHAM

Steam Sizes Ease Up Slightly—Domestic in Strong Demand—Car Supply Meets All Requirements — Production Gains Slowly—State Fuel Administrator Is Appointed.

Inquiry for steam coal in the local spot market has eased up slightly though the demand at this time is still far in excess of the amount of coal available. The tension has not been relieved sufficiently to cause a noticeable recession in prices, which range $7.50@$8.50 per net ton mines. There has been little or no improvement in the supply of free coal.

Domestic coal is in exceptionally strong demand, as no yards in this territory have been able to accumulate any stocks against winter requirements. Sales to consumers have kept coal moving off the yards of the retailers as fast as received. Many dealers are far behind on their deliveries. Retail prices range about $8.50@$13.25 delivered.

All the coal-carrying lines are now furnishing a good car supply and production is up to the highest notch obtainable under present labor conditions. Operations which have suffered practically no defections on account of the strike are not producing the full tonnage of coal which should be taken out by the men employed, due to their failure to work regularly.

Organizations have been strengthened numerically the past week by the return of old men to their positions and the importation of labor from other sections of the state.

A State Fuel Administrator has been appointed to provide for the distribution of coal within the state and the fixing of price thereon in emergencies such as now exists. A price schedule will be made for all coal mined in excess of contract obligations for state distribution and another for prices to be charged by retailers. The agreement will be effective until Feb. 1, 1923, prices to be relatively affected by any future wage adjustments.

News From the Coal Fields

Northern Appalachian

PITTSBURGH

Total Demand Is Unchanged—Steel Industry Buys Little Coal—Stocking Coal in Better Demand—Export Leads Market, but All Grades Are in Good Demand.

Demand for spot coal in the open market is as heavy as formerly, although there is a change in the alignment of demand. The iron and steel industry has practically disappeared as a buyer, through the double influence of its receiving better deliveries on contracts and from its own mines, and of operating under somewhat reduced pressure. In several mills this is on account of reduced demand for steel products.

On the other hand there seems to be more desire on the part of many consumers to stock up for the winter. Formerly there was little inclination to stock coal at the high prices ruling, declines being expected, but as the season of good weather is nearly ended there is more willingness to pay high prices for stock coal.

The common opinion in the trade now is that prices will experience little if any decline until after the Lake season closes. Whether there will be much reduction at that time will probably depend upon weather conditions, as affecting railroad movement. The inability of the railroads even at this late date to furnish full supplies of cars is regarded as making it doubtful whether they will be able to continue even their present service when the weather becomes inclement.

The Western Maryland Ry. embargo continues, and a recent wreck curtailed the amount of freight that could be moved over the road by special permit. Tidewater shipments accordingly continue at a low rate.

Export prices range $1.50@$2 above the ordinary market. Lake coal on the other hand is quoted at $7.25@$7.50, with a good movement on contract but little fresh demand. The spot market in general is quotable $10.50 @ $11 for best grades of gas and by-product and $8.50@$9 for ordinary steam coal, per net ton at mine, Pittsburgh district.

CONNELLSVILLE

Car Supplies Poorer, Stiffening Market in Face of Lighter Demand — No Interest in First-Half Contracts — Price Decline Is Seen.

The spot coke market has stiffened a trifle since last report. While demand on the whole is lighter, supplies are much restricted, car supplies being very poor.

The Lake Erie is doing relatively well, the Baltimore & Ohio R.R. only fairly so and the Pennsylvania very poorly. The Pennsylvania seems almost entirely choked, with congestion at nearly all yards and apparently a great shortage of motive power. The Pennsylvania is reported to have furnished at times not more than 20 per cent of its quota of coal and coke cars to the Monongahela R.R. Coke over the Pennsylvania is held 50c.@75c. higher than over the other lines.

Production of pig iron in September in the iron industry as a whole was at 2.8 per cent higher rate than in August, while at the same time demand in the open market almost disappeared and prices began to soften. The outlook is that eventually there will be less demand for coke and the Connellsville market is more likely to decline from there being less calls than from there being increased production.

Interest in coke contracts for the first half of 1921 has entirely disappeared, if there ever was any real interest, except on the part of one or two operators who recently offered contracts at $14 for furnace and $15 for foundry. Prospects now are that $10 would be the highest price consumers would seriously consider.

The spot market is quotable $16.75@$17.50 for furnace and $18@$18.50 for foundry, per net ton at ovens.

The *Courier* reports coke production in the Connellsville and Lower Connellsville region in the week ended Oct. 2 at 190,180 tons, a decrease of 12,660 tons. Production by the merchant ovens alone, however, increased 6,000 tons, from 74,500 tons to 80,500 tons.

UNIONTOWN

Car Supply Is Much Improved—Prices Are Steadier—Embargo Removal Permits Eastern Shipments.

Much improved car supply this week has stiffened the price situation in the local region, coupled with the fact that the Western Maryland embargo on Lake Erie loads has been removed, thus permitting materially larger tonnage for eastern shipment. The turn came just at a time when yard congestion, poor car supply and the oppressive embargo threatened the uninterrupted run of big production and high prices.

Late quotations showed Pool 34 selling at $11 on the Baltimore & Ohio R.R. and $10 on the Pennsylvania R.R. with steam coal on both roads $8.75 at mines. Pool 44 coal was $9.25 with by-product grades at $10.25. After a spotty condition for a day or two, the market has apparently settled on these figures for the present. Both P. R.R. and Lake Erie furnace coke are firm at $17@$17.50, with foundry coke of the very best grade at $18.50.

Little talk of coke contracts for the first quarter of 1921 is heard, operators apparently being quite content to take the chances of the open market. With mid-October here, this is figured to average high for the next 6 months.

Car placement for the first 5 days of the week was very high. On the Monongahela Ry. the coal placement averaged 70 per cent, with a total of 2,900 cars against requirements of 4,100. This was made up of 650 P. R.R. place-

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

BITUMINOUS COAL

	1920		1919 (a)	
	Week	Calendar Year to Date	Week	Calendar Year to Date
Sept. 18b	11,654,000	380,912,000	11,253,000	329,663,000
Daily average	1,942,000	1,717,000	1,876,000	1,485,000
Sept. 25b	11,854,000	392,766,000	11,613,000	341,276,000
Daily average	1,976,000	1,723,000	1,936,000	1,497,000
Oct. 2c	11,348,000	404,114,000	11,518,000	352,794,000
Daily average	1,891,000	1,728,000	1,920,000	1,508,000

ANTHRACITE

	1920		1919 (a)	
	Week	Calendar Year to Date	Week	Calendar Year to Date
Sept. 18	699,000	9,859,000	1,665,000	59,041,000
Sept. 25b	1,655,000	61,514,000	1,760,000	60,801,000
Oct. 2	1,804,000	63,318,000	1,845,000	62,646,000

BEEHIVE COKE

United States Total

Week Ended				
Oct. 2 1920c	Sept. 25 1920b	Oct. 4 1919	1920 to Date	1919 to Date (a)
380,000	402,000	312,000	16,075,000	14,797,000

(a) Less one day's production during New Year's week to equalize number of days covered for the two years. (b) Revised from last report. (c) Subject to revision. All figures in net tons

ments against requirements of 1,575, a 40 per cent showing, and 2,250 Lake Erie placements against requirements of 2,500, a 90 per cent record. This is the best in weeks. On the Pennsylvania branches the effect of Service Orders 19 and 20 has not yet been felt, a bare 6 per cent being placed on the Redstone and but 15 per cent on the Southwest.

Coke car supply for the past 5 days on the Monongahela Ry. has been a full 100 per cent, with about 1,800 cars representing placements and requirements. The Pennsylvania placed 505 cars against 780 required, while the Lake Erie placed 1,300 against 1,000, 70 and 130 per cent respectively. Pennsylvania placements on branches were about 50 per cent on both Southwest and Redstone.

Announcement was made this week of the establishment of scales at Smithfield on the Baltimore & Ohio R.R. to care for the tonnage originating in that region. This was weighed formerly at Connellsville.

NORTHEAST KENTUCKY

Slight Increase in Production — Lakes Quota Is Heavy — Little Free Coal Available — Domestic Demand Is Strong.

More coal was actually produced during the period ended Oct. 2 than during the preceding week, yet the percentage of production to capacity was smaller, there being a decrease of 5 per cent.

There was a heavier tonnage loss amounting to 103,000 tons. Production in the Northeast Kentucky field was thus not more than half of potential capacity.

Lakes drew a large part of the output, although at the same time the necessity of filling priority orders also used up much of the commercial fuel which might otherwise have been available for general distribution.

Export shipments by way of Charleston, S. C., were almost negligible. While there was a slight lessening of the demand for steam and by-product coal that was partly made up by an augmented demand for domestic fuel.

FAIRMONT

Sharp Decline in Car Supply — Railroads Absorb Heavy Tonnage — Little Coal Goes Elsewhere.

There was a most decided downward trend in production during the period ended Oct. 2, owing to a sharp decline in the car supply. Such a situation was in rather sharp contrast to conditions prevailing earlier in the month and there was no longer much doubt but what the idleness in anthracite fields during September had been responsible for the artificial spurt in the car supply in northern West Virginia.

At the very best, mines had no more than a 50 per cent run of cars. There was a marked shortage of equipment on the roads operating in the northern part of the state, the branch of the Western Maryland in the Fairmont region not having more than 50 per cent supply at any time during the week.

There was rather a sharp slump in both Eastern and Western shipments. Lake and export shipments dwindled very perceptibly. Many roads were bent upon securing as large a supply of coal as possible before the new order relative to assigned cars went into effect.

Many of the smaller companies, in order to insure a steady car supply, have contracted their entire output to the railroads for the next six months, some of such contracts being at $5.

EASTERN OHIO

Work Is Being Resumed, Following Strike—Cars Are Better — Prices Are Firm — Lakes To Get Coal in Larger Amounts.

Mines in the No. 8 and adjoining fields were about 50 per cent closed down during the week of Oct. 2 on account of the strike instigated by certain radical elements in the miners' organization on the question of pay for moving slate.

Such mines as worked were considerably affected by labor shortage owing to their men, who sympathized with the radical movement staying out of the mines. The men voted on Thursday to go back to work, but not many of the mines resumed operations until Monday, Oct. 4.

Some operators report that many of their men have not yet returned to work and production will probably show a shortage for the week of Oct. 9. Late reports show a resumption of operations on basis of about 70 per cent of capacity. Better car supplies aid an increasing production rate.

Prices still remain firm around $6.50 @$7.00. There seems to be a feeling that there will be some reductions as a result of the decision in Washington on Monday of the railroads to carry out literally the program of 4,000 cars per day to the Lakes, as originally contemplated under Service Order 10 of the Interstate Commerce Commission.

Production for the week of October 2 was approximately 125,000 tons, of which about 30,000 went to the railroads.

Middle Appalachian

NEW RIVER AND THE GULF

Chesapeake & Ohio R.R. Car Shortage Reduces Output—Lake Shipments Slump—Scarcity of Free Coal Causes Price Advance.

Inadequate transportation facilities furnished by the Chesapeake & Ohio R.R. were chiefly responsible for reduced production in both districts. As far as the Virginian Ry. was concerned there was an improvement in the car supply. The reduced output offset to a great extent the volume of coal made available by suspension of the New England service order.

During the first 2 days of the week only was production in the New River field anything like normal, an acute shortage of empties during the remainder of the week seriously retarding output.

Mines received not much more than a 50 per cent car supply. Lake shipments were almost insignificant, most of the product going to Tide on contracts. Limited output left little free coal available. Shortage of cars made the demand all the more apparent and tended to stiffen prices somewhat.

Owing to the poor car supply for Gulf mines dependent upon the Chesapeake & Ohio R.R., operators were forced to be content with less than a 50 per cent run. However, the Virginian mines averaged about 75 per cent. Speeding up of dumping at Sewell's Point was a factor in bettering the Virginian supply. With the New England priority out of the way there was a broader market for Winding Gulf production.

POCAHONTAS AND TUG RIVER

Car Supply Is Excellent — Demand Strong and Prices Are Firm — Lake Quotas Adjusted — Congestion at Tide Is Cleared.

Car supply of 100 per cent in the smokeless fields reached by the Norfolk & Western R.R. gave considerable impetus to production during the week ended Oct. 2. The only drawback was the refusal of a good many miners to work on the first and second days of the month, as is usually the case. Boats were more plentiful at Lambert's Point than had been true during previous weeks and dumpings were hardly sufficient to load all boats available. Insofar as the car supply in the Tug River field was concerned, loading was fully as good during the week ended the 2nd as it had been for the previous week.

While Tug River mines have been shipping 25 per cent of their daily rating capacity to the Lakes since Aug. 6, the percentage at times has amounted to 40 per cent of production, owing to labor shortage. However, with the Lake percentage cut to 11 per cent a good portion of Tug River coal will now be released for contracts and for old time customers who are badly in need of fuel. There was a very excellent demand for Tug River fuel, even aside from the demand for contract deliveries, and prices were firm.

As far as transportation facilities were concerned in the Pocahontas region, there was an upward trend to production. The usual idleness observed on the first of the month limited the output more than would otherwise have been the case, labor shortage losses exceeding car shortage losses.

Since the New England order was suspended Pocahontas and Tug River producers will share in meeting Lake requirements, so that the percentage of production for the Lakes required of the Tug River field has been reduced

and the percentage from the Pocahontas field has been increased.

There is more coal available now in the Pocahontas region for filling contracts as well as for the spot market, but tonnage is hardly sufficient yet to meet the continued strong demand in all markets.

LOGAN AND THACKER

Production in Strike Zone Improves—Logan Output Slumps With Poor Car Supply—Lake Shipments Are Small—Prices Advance.

Production in the Williamson field had reached a total of 75,000 tons, including portions of the field not affected by the strike, but even in the strike zone there had been an improvement in conditions. Operators were satisfied that mines directly affected by the strike would show for the month a total output twice as large as that for August. In the Williamson field as a whole, however, production had been curtailed during the week to the extent of about 95,000 tons. It was thought that with new men coming into the field such a loss would shortly be reduced.

Car shortage losses, naturally, were at a minimum. Virtually all of the coal produced in the Williamson field was being applied on contracts and in one instance at least a company had applied for an injunction to restrain organizers from attempting to unionize mines on the ground that it would prevent the company from filling its contracts.

Production was much below that of the previous week in the Logan district, owing to a curtailed car supply. By the middle of the week mines had not more than half enough cars. As a result of such inadequate transportation facilities, Lake shipments were extremely slim and numerous other restrictions upon shipments eastward rather narrowed the market for Logan coal, although the demand for all grades has been materially augmented and prices are therefore showing an upward trend.

KANAWHA

Car Supply Declines—Lake Shipments Are Reduced—Export Prices Lead the Market.

Car supply declined steadily during the week ended Oct. 2, although indications were, at the beginning of the week, for further improvement.

On Monday mines on the Chesapeake & Ohio R.R. had 3,000 cars and Kanawha district had a total car supply of more than 100 per cent. By Thursday it was only 52 per cent, so that mines were not able to operate on more than a half-time basis.

The car supply on the Kanawha & Michigan R.R. was even more discouraging, mines on that road having as low a supply as 32 per cent.

Of course, under the circumstances, Lake shipments were materially reduced. In general the larger portion of the output was billed to Western markets. Little tonnage reached Tidewater or Inland East markets. The market was strong, especially in view of an increased demand for domestic fuel. Export prices were firm at $10.50 with spot coal for Inland delivery probably about $3 a ton less.

Southern Appalachian

WESTERN KENTUCKY

Strike Settled and Miners Return—Demand is Keen—Prices Are Slightly Weaker—Northwest Movement Good—Price Reduction May Affect This Field.

Western Kentucky miners' strike has been settled after some weeks. Drivers get an increase of $1.75 a day, other day men $1.50, loaders 11c. a ton, machine runners and assistants 3 per cent. The mines are again operating as close to capacity as car supply will permit.

Movement to Detroit, Chicago and various Northern towns is good and production of the field is sought, with movement much better as a whole. Prices are reported to range $6.50@$7.50 a ton, some coal selling at above this level. Car supply is improved.

Western Kentucky is producing a good proportion of lump coal, which is in active demand for domestic use. Many mines, especially in Eastern Kentucky, are producing very little other than mine run.

Price restrictions in Eastern Kentucky may curtail movement to Louisville from the local field, as $6 seems to be the figure at which operators in the former district will dispose of their output. This may necessitate a like reduction to enable Western Kentucky operators to compete.

Western

IOWA

Normal Production in State—No Reason for Local Shortage This Winter—Close of Navigation Will Remedy Present Situation.

Approximately 170,000 tons of coal are being mined weekly in this state, according to George Heaps, Jr., secretary of the Iowa Coal Operators Association. This average is as high as ever attained in Iowa, considering the many difficulties to which the coal industry has been subjected recently. This weekly output represents the combined tonnage of about 125 mines throughout Iowa.

Most of this coal is used by industries within the state, the mines showing a willingness now to serve the interests which have patronized them in the past. Less than 5 per cent of the coal leaves the state, and practically all going outside is sold in territory immediately adjoining.

It is believed that there is no danger of a coal shortage in Iowa this winter. The northern part of the state will be more subject to a shortage than the southern, if there is any deficiency. After Dec. 1, when the order granting priority to the northwest comes to an end, about one million tons of coal will be released for distribution each week throughout the Middlewest.

Communities in the East, as well as in states like Iowa, where shortages in supply for immediate use exist, are being provided for just as rapidly as the operators, working in conjunction with committees of local retailers, can make provisions. Consumers have been asked to aid in the problem of adequate soft coal supply by taking at this time only enough to last until the Lakes situation is cleared up.

COLORADO

August Production 1,042,593 Tons—Year 1920 Ahead of 1919 Period—Lack of Cars Curtails Production.

Coal production for August, bituminous and lignite, totaled 1,042,593 tons. Since Jan. 1, the mines have produced 7,995,983 tons, an increase of 1,339,125 tons compared with the corresponding period during 1919.

There were 12,827 miners and laborers employed in August. Considering the first 8 months of 1920, miners have worked an average of 137.9 days of a possible 243. Routt County's decrease by 119,560 tons bituminous production during the first 8 months of 1920, compared with activities during a corresponding period last year, was due chiefly to lack of cars.

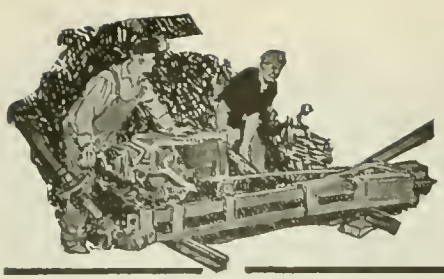
Production for the week ended Sept. 18 was 190,255 tons of a possible full time output of 234,671 tons, equivalent to 85.3 per cent. Car shortage conditions were equivalent to 12.1 per cent, or a loss of 36,562 tons.

WYOMING

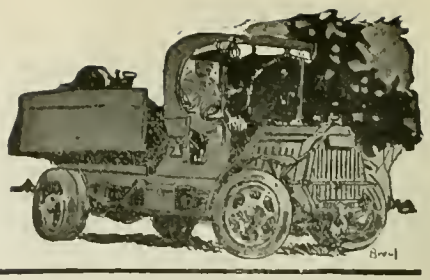
Union Pacific Threatens Confiscations—Retail Price Is Boosted by Low Production—Miners Back Congressional Candidate.

The Union Pacific R.R. has notified the mines at Rock Springs that it expects the entire production for engine use for a while, or it will confiscate all shipments, according to the William Smith Coal Co., following advices from the Rolapp Co. in Salt Lake City. Utah mines are only working half time, and the Rock Springs mines less than full time, sending up coal on retail markets to $12. Unusual traffic on the Union Pacific is the cause for greater consumption of engine coal.

An innovation in political campaigning was instituted when thousands of coal miners approved of a weekly assessment of 50c. each for two weeks for the candidacy of James Morgan of Cheyenne, farmer-labor candidate for congressman. Voluntary contributions to his expense fund may equal or exceed the funds of any one of the three candidates in the senatorial race.



Mine and Company News



ILLINOIS

Hallidayboro—The Jackson Coal Co., is completing a series of test holes which were drilled near here. It has not been announced as yet what the outcome will be, but it is the general opinion that a new mine is contemplated. The company recently experienced disaster when the large tipple, washer and re-screening plant and railroad chutes at the mine were destroyed by fire. A new steel tipple and headframe has now been built, making a better and more modern mine than before the fire.

DuQuoin—Work is progressing at No. 5 mine north of here, which is being re-equipped and remodeled by the Boehmer Coal Co., with offices in St. Louis. Under the efficient management of Supt. Greenwood the mine will before long be ready to ship coal.

Lincoln—Miners have resumed work at the Citizens Mining Co. after a layoff due to misunderstanding between the miners and operators over work on an old room or entry which was blown open by a shot. The miners contended there was a possibility of gas explosion as the result of the accidental opening of this old room and refused to work in the mine while the repair gang was busy fixing the opening.

Springfield—Presidents of all Springfield District sub-locals of the United Mine Workers have been urged by Stephen Sullivan, executive board member of District 12 to use their influence in keeping the men at work continuously until Nov. 15 so that fines imposed during the insurgent strike of Aug., 1919, might be refunded. This action followed advices from Frank Farrington urging the move.

INDIANA

Indianapolis—Articles of incorporation have been filed by the Durand Coal Co. The home office will be at Terre Haute, Ind., and the capital stock is placed at $80,000. The company will mine and market coal and has as its directors J. P. Karshner, C. E. Van Slyke and J. B. Pfister.

The Farmers' Coal and Mining Co. has filed articles of incorporation. The home office will be at Terre Haute, Ind. Directors are James A. Kearschner, Epsey B. Yaw and Seth V. Hunt.

Articles of incorporation have been filed by the Glendora Coal Co. of Sullivan, Ind. The company is capitalized at $300,000 and has secured coal leases on thousands of acres of land surrounding Sullivan. The directors are John L. Baker, John A. Templeton, D. Frank Culbertson, William E. Baker, Gustav Riesmeyer, Jr., Alfred Brocksmith and Frank P. Emison.

KENTUCKY

Louisville—Operators of the Eastern Kentucky field are feeling more optimistic concerning the future of the field. The Louisville & Nashville R.R. has set aside money, something like four million dollars, for improvement of coal yards, terminals, switches, sidings, etc., for improving service into the field. There has been such an increase in number of mines and tonnage that present facilities are far from being adequate. Most of the money will be spent on the Eastern Kentucky and Cumberland Valley divisions.

Pineville—Judge Moss and sons have purchased the mine operated by Culton, Yeager & Caton on the left fork of Straight Creek. It is understood that they are planning on increasing the output.

Messrs. Cawthorne & Watson are doing considerable development work on Dry Branch in the Lower Harlan field. It is said that they are planning on a production of about 500 tons per day from this mine.

The Banner Straight Creek Coal Co., with a capital of $25,000, has been organized by J. E. Settle, N. R. Patterson and A. H. Gregory.

MISSOURI

St. Louis—The Consolidated Coal Co. has completed arrangements for the purchase of the Big Muddy Coal & Iron Company's mining interests. This involves something like 3 million dollars' worth of property. The purchase takes Mines 7 and 8 at Herrin, and 9 and 10 at Murphysboro. Some of the officials of the Big Muddy Coal & Iron Co., it is expected, will be taken over by the Consolidated Coal Co. The Consolidated already has one mine in Williamson County at Johnson City and 6 others in the Mt. Olive and Standard fields, giving them a total of 11 mines. Kingdon Gould of New York is President, W. J. Jenkins, Vice President and General Manager; A. W. Carr, Secretary and Treasurer. General headquarters are in St. Louis.

OHIO

Athens—The Pomeroy & Hocking Valley Coal Co., have leased a 2,000-acre tract from Frank Leifheit and Oliver Brandbury. Property is in the Thomas Fork territory. The company is a new corporation, capitalized at $25,000, and it is understood that work will be immediately begun on an extension of the Middleport and Northeastern R.R. to the property, a distance of less than a mile. A tipple with a capacity of 18,000 tons daily will be erected. A switch for 40 coal cars will be put in at the same time.

PENNSYLVANIA

Waynesburg—Executors of the Spencer B. Kent estate, V. Kent, of Waynesburg, and H. C. Wood, of Pittsburgh, sold to J. G. Patterson, a prominent coal operator of Pittsburgh, two tracts of coal land in Franklin township for a price of $300 per acre.

The Whiteley Coal Co., has purchased one-sixth interest in the coal underlying a tract of land in Franklin township, containing 134,781 acres for a consideration of $10,052.09. The same company has also purchased from John E. Hess, of Uniontown, a tract of 68,678 acres in Whiteley township; the one-half interest in a tract of 17,955 acres located in the same township, and one-sixth interest in the coal under three tracts of land located in Franklin and Whiteley townships for a total consideration of $37,109,86.

UTAH

Salt Lake City—Commissioner Tallman, General Land Office, upheld the decision of Gould B. Blakeley of the local land office in the case of O. B. Barglund and Ludvig Ludvigson versus George F. Livingstone and Geo. W. Ivory, in which the former claim the title to valuable coal lands in the Gunnison Valley. In view of the great value of the lands it is probable that Berglund and Ludvigson will appeal the case to the Secretary of the Interior. The lands in dispute are located within a short distance of a railway and their possession has been a matter of dispute for several years.

WEST VIRGINIA

Charleston—Companies, resident and non-resident, organized in West Virginia during the month of August had a combined capitalization of $11,419,000, the aggregate capitalization of resident corporations alone being $9,819,000. There were in all 39 resident coal companies organized, that being the largest number during any single month in recent years, the capitalization also being larger than that for any other month in the same period. The large number of companies formed reflects not only continued

growth of the industry in West Virginia but also a healthy condition of affairs within the industry. As there were just 100 new companies chartered for all purposes in West Virginia during August, it will be observed that coal companies constituted nearly half of the new companies chartered. The largest company organized was the Low Volatile Consolidated Coal Co., in which C. H. Mead and others had a leading part, this company having a total capitalization of $3,000,000.

Other companies organized during August, together with their capitalization, were as follows:

Wilmore Pocahontas Coal Co., Iaeger, $50,000.

Big Four Coal Co., Fairmont, $250,000.

Iris Coal Co., Buckhannon, $50,000.

Sandberg Coal & Land Co., Charleston, $500,000.

Boone Block Mining Co., Huntington, $150,000.

Lick Run Collieries Co., Kingwood, $200,000.

Daubenspeck Coal & Land Co., Jesse, $100,000.

Jerry Run Coal Co., Grafton, $75,000.

Masontown Coal Co., Masontown, $25,000.

Apex Coal Co., Clarksburg, $50,000.

Houghton Gas Coal Co., Charleston, $50,000.

Glenn Coal Co., Charleston, $100,000.

Big Eagle Mining Co., Huntington, $400,000.

Gravine Coal Co., Hinton, $50,000.

Stone & Scott Coal Co., No. 2, Shinnston, W. Va., $5,000.

Bunker Coal Co., Cassville, $200,000.

Cub Creek Coal Co., Welch, $100,000.

American Export and Inland Coal Corporation, Huntington, $100,000.

Troll Coal Co., Fairmont, $100,000.

The Stottlemeyer Coal Co., Gassaway, $50,000.

Four Seam Coal Co., Charleston, $100,000.

Cobb Coal Co., Elkins, $50,000.

Grosvenor Coal Sales Co., Charleston, $25,000.

Basin Coal Co., Shinnston, $300,000.

Arthur D. Cronin Coal Co., Huntington, $500,000.

Sesamine Coal Co., Morgantown, W. Va., $100,000.

Fair-Mor Coal Co., Morgantown, $50,000.

Wilmar Coal Co., Shinnston, $54,000.

Whitby Coal Co., Fairmont, $100,000.

Pentridge Coal Co., Fairmont, $100,000.

Raccoon Valley Coal Co., Tunnelton, $250,000.

La Mar Coal Co., Morgantown, $250,000.

Elk-New River Coal Co., Centralia, $1,000,000.

Purity Pocahontas Coal Co., Bluefield, $150,000.

Sanford Coal Co., $10,000.

Maxwell Coal Co., Morgantown, W. Va., $50,000.

Dorkent Coal Co., Huntington, $500,000.

Mountain State Coal Corporation, Huntington, $500,000.

The following non-resident corporations with a total capitalization of $1,600,000 were organized during August: J. M. Coal Co., with general offices at Welch but operations in Ohio; Marshall Fuel Co., of Pittsburgh, $5,000; Bahopen Coal Co., of Hutton, Md., $20,000, with operations in Preston County; Superior Harlan Coal Co., of Huntington, with principal operations in Kentucky; Illini Coal Co., of Chicago, $300,000; Lookout Coal Co., of New York, $1,000,000.

Fifteen companies increased their capital stock as follows: West Virginia Bi-Product Coal Co., from $20,000 to $50,000; Raleigh Smokeless Fuel Co., from $100,000 to $300,000; Pine Bluff Coal Co., from $50,000 to $100,000; Soper-Mitchell Coal Co., from $250,000 to $500,000; Car-Diff Smokeless Coal Co., from $150,000 to $300,000; West Virginia & Pennsylvania Coal & Coke Co., from $75,000 to $125,000; Becco Fuel Co., from $50,000 to $100,000; Foy Splint Coal Co., from $100,000 to $200,000; Beaver Coal & Timber Co., from $100,000 to $300,000; Eagle Island Coal Co., from $125,000 to $500,000; Fayette Fuel Co., from $75,000 to $150,000; Adrian Hampton Coal Co., from $15,000 to $25,000; Lincoln Coal & Coke Co., from $50,000 to $100,000; Kanawha Consolidated Coal Co., from $1,000,000 to $2,000,000; Bowyer Smokeless Coal Co., from $200,000 to $300,000.

Traffic News

The Interstate Commerce Commission has scheduled for hearing at Chattanooga, Tenn., Oct. 23 the case of the Whitwell Coal Co. vs. the Railroad and Public Utilities Commission of Tennessee, which attacks the commission for refusing to permit increased intrastate rates on coal to go into effect, to the disadvantage of the complaining coal companies who ship interstate coal and who are required to pay the increased freight rates.

Pending investigation as to its reasonableness, the Interstate Commerce Commission has suspended from Oct. 5 to Feb. 2 the proposed cancellation by the Kanawha and Michigan Ry. Co., of joint through rates on bituminous coal from mines in West Virginia to points in Florida, Georgia, the Carolinas, Virginia and West Virginia. The proposed cancellation would put into effect combination rates which would result in an approximate increase of 70c. per ton.

Briefs have been filed with the Interstate Commerce Commission in the case of the Empire Steel and Iron Co., on rehearing, involving coal rates. In the former consideration of the case the Commission found that the maintenance of junction point rates on coal to points on the Morristown and Erie railroad while refusing to maintain said rates on coal to points on the Mineral railroad was prejudicial. The defendant railroad in a brief says the finding is inconsistent and unsupported by facts. The steel company has filed a brief opposing modification of the order.

The Interstate Commerce Commission has scheduled for hearing at Kansas City, Mo., on Oct. 18, the case of the Weir Smelting Co. vs. the Miami Mineral Belt R.R. involving the application of the railroad to continue to charge for slack coal from Pittsburg, Kansas, to Canay, Kansas, rates which are lower than the rates maintained for like traffic from Deering, Kan., and other intermediate points.

Brief has been filed by the C. B. and Q. R.R. in the case brought by the Minnesota By-Product Coke Co., alleging discrimination in coke rates in favor of Chicago, Milwaukee and St. Louis as against St. Paul, Minn. The railroad defends the rates.

The Interstate Commerce Commission has authoried carriers to establish a minimum weight of 40,000 pounds, except when loaded to full space capacity, on gashouse coke from Knoxville, Tenn., to Atlanta, Ga.; Charleston, S. C.; Columbus, Ga.; Girard and Phenix City, Ala., and Greenville, Memphis and Nashville, Tenn., without observing the long and short haul clause.

The commission has scheduled for hearing in Washington on Oct. 13 the case involving coal rates from West Virginia mines to Southern points.

The commission has scheduled for hearing at Washington on Oct. 15 the application of the Delaware, Lackawanna and Western R.R. for authority to issue additional capital stock.

In a complaint to the Interstate Commerce Commission the Reeves Coal and Dock Co., of Minneapolis, asks for a refund of demurrage charges on coal held by the Soo Line R.R. contrary to orders for its shipment.

The Interstate Commerce Commission has scheduled for hearing at Indianapolis on Oct. 26 the case of the Opp Coal Co. vs the Director General of Railroads, and the case of the Tuffli Bros. Pig Iron and Coke Co. vs. the Director General of Railways at St. Louis on Oct. 18.

Obituary

Wilbur Paul Graff, Treasurer of the Knickerbocker Fuel Co., died recently in Blairsville, Pa.

J. H. Zeller, of the American Coal Mining Co., was killed Oct. 3, in an automobile accident near Smith's Valley, Ind. **Harry E. Snyder**, of the American Coal Mining Co., an occupant of the same machine, was also killed.

Charles Miller, aged 60 years, manager of Mine 3 of the Mount Olive and Staunton Coal Co., at Edwardsville, Ill., was found dead at his home Sept. 26.

Personals

Charles E. Hobbs of Anchorage has applied to the United States Land Office at Juneau, Alaska, for renewal of permit to mine coal. Mr. Hobbs has been developing a mine at Houston, located at Mile 175 on the Alaska Ry. under a permit expiring last May.

C. L. Chapman has been appointed general superintendent of the Norton Division of the West Virginia Coal & Coke Co., with headquarters at Elkins.

Richard F. Cole has been appointed general superintendent of the Little Kanawha Division of the West Virginia Coal & Coke Co., with headquarters at Bower. Mr. Cole has been superintendent at the Bower plant.

Coming Meetings

Illinois Mining Inst. will hold its next meeting on Nov. 20 at Springfield, Ill. Secretary, Martin Bolt, Springfield, Ill.

Coal Mining Institute of America will hold its annual meeting Dec. 8, 9 and 10, 1920, in the Chamber of Commerce Auditorium, Pittsburgh, Pa. Secretary, H. D. Mason, Jr., Chamber of Commerce Bldg., Pittsburgh, Pa.

American Mining Congress will hold its annual meeting at Denver, Col., Nov. 15 to 19. Secretary, J. F. Callbreath, Munsey Building, Washington, D. C.

The Canadian Institute of Mining and Metallurgy will hold its second annual western meeting at Winnipeg on Oct. 25, 26 and 27. Headquarters will be at the Hotel Fort Garry. Local secretary, W. W. Berridge, 905 Union Trust Building, Winnipeg, Can.

National Conference of Business Paper Editors will hold its annual meeting Oct. 20, 21 and 22 at the Hotel Astor, New York City, in conjunction with the annual meeting of the Associated Business Papers. Secretary-treasurer, R. Dawson Hall, 36th St. and 10th Ave., New York City.

CURRENT PRICES—MATERIALS & SUPPLIES

IRON AND STEEL

STRUCTURAL MATERIAL—The following are the base prices, f.o.b. mill, Pittsburgh, together with the quotations per 100 lb. from warehouses at the places named:

	Mill	New York		St.	Chi-
	Pittsburgh	Current	One Year Ago	Louis	cago
Beams, 3 to 15 in.	$2.45@$3.10	$4.58	$3.47	$4.04	$3.97
Channels, 3 to 15 in.	2.45@ 3.10	4.58	3.47	4.04	3.97
Angles, 3 to 6 in., ¼ in. thick.	2.45@ 3.10	4.58	3.47	4.04	3.97
Tees, 3 in. and larger	2.45@ 3.75	4.63	3.52	4.09	4.02
Plates	2.65@ 4.00	4.78	3.67	4.24	4.17

BAR IRON—Prices in cents per pound at cities named are as follows:

New York	Pittsburgh	Denver	St. Louis	Birmingham
5.50	4.75	4.95	3.57@4.50	5.00@5.25

NAILS—Prices per keg from warehouse in cities named:

	Mill	St.			Birming-	San
	Pittsburgh	Louis	Chicago	Denver	ham	Francisco
Wire	$4.25	$3.35	$4.45	$5.40	$5.75	$6.45
Cut		None	6@8	....	....	8.95

TRACK SUPPLIES—The following prices are base per 100 lb. f.o.b. Pittsburgh for carload lots, together with the warehouse prices at the places named:

	Pittsburgh	Chicago	St. Louis	Denver	San Francisco	Birmingham
Standard railroad spikes ⅝-in. and larger	$4.00	3.40@4.00	$5.34	$5.50	$7.75	$6.00
Track bolts	6@6.50	4.60@5.80	7.00	6.75	8.75	8.00
Standard section angle bars	3@4	2.75@3.40	2.00	5.05	5.30	....

COLD FINISHED STEEL—Warehouse prices are as follows:

	New York	Chicago	Cleveland
Round shafting or screw stock, per 100 lb. base	$6.36	$5.90	$6.00
Flats, squares and hexagons, per 100 lb. base	6.85	6.40	6.50

HORSE AND MULE SHOES—Warehouse prices per 100 lb. in cities named:

	Mill				Birm-
	Pittsburgh	Chicago	St. Louis	Denver	ingham
Straight	$5.75	$7.00	$7.00	$8.15	$7.25
Assorted	5.85	7.15	7.25	8.40	..

STEEL RAILS—The following quotations are per ton f.o.b. Pittsburgh and Chicago for carload or larger lots. For less than carload lots 5c. per 100 lb. is charged extra:

	Pittsburgh		Chicago	
	Current	One Year Ago	Current	One Year Ago
Standard Bessemer rails	$55.00	$45.00	$45.00@$55.00	$45.00
Standard openhearth rails	57.00	47.00	47.00@ 57.00	47.00
Light rails, 8 to 10 lb.	2.88@3.50*	2.585*	2.45@ 3.50*	2.835*
Light rails, 12 to 14 lb.	2.84@3.34*	2.54*	2.41@ 3.34*	2.79*
Sight rails, 25 to 45 lb.	2.75@3.25*	2.45*	2.32@ 3.25*	2.70*

*Per 100 lb.

COAL BIT STEEL—Warehouse price per pound is as follows:

New York	Cincinnati	Birmingham	St. Louis	Chicago	Denver
$0.15	$0.16½	$0.18	$0.12	$0.15	$0.18

DRILL STEEL—Warehouse price per pound:

	New York	St. Louis	Birmingham	Denver
Solid	15c.	18c.	15c.	....
Hollow, ⅞ hex	17c.	21c.	....	21c

WIRE ROPE—Discounts from list price on regular grades of bright and galvanized are as follows:

	New York and St. Louis
Hercules red strand, all constructions	20%
Patent flattened strand, special and cast steel	20%
Patent flattened strand, iron rope	5%
Plow steel round strand rope	30%
Special steel round strand rope	30%
Cast steel round strand rope	22½%
Iron strand and iron tiller	5%
Galvanized iron rigging and guy rope	+12%

Western and California territory—20%, plow steel; 22½%, galvanized rigging and guy rope.

CONSTRUCTION MATERIALS

ROOFING MATERIALS—Prices per ton f.o.b. New York and Chicago:

Tar felt (14 lb. per square of 100 sq ft.) per roll	$3.55
Tar pitch (in 400-lb. bbl.) per 100 lb.	2.25
Asphalt pitch (in barrels) per ton	56.50
Asphalt felt (light) per ton	132.00
Asphalt felt (heavy) per ton	138.00

LUMBER—Price of pine per M in carload lots:

	1-In. Rough 10 In. x 16 Ft.	2-In. T. and G. 10 In. x 16 Ft.	8 x 8 In. x 20 Ft.
St. Louis	$.....	$.....	$57.25
Birmingham	50.00	50.00	48.00
Cincinnati	55.00	50.00	50.00

EXPLOSIVES—Price per pound of dynamite in small lots and price per 25-lb. keg for black powder:

	Low Freezing	Gelatin			Black
	20%	40%	60%	80%	Powder
New York	.....	$0.3325	$0.3625	.....	$2.30
Boston	.....	.28	.31	.34	.....
Kansas City	.2475	27	30	.34	2.40
New Orleans	.265	.295	.325	.3925	2.90
Seattle	18	.205	.225	.2925	2.60
Chicago	2175	.2525	.2975	.34	2.45
Minneapolis	2272	2629	2935	.....	2.90
St. Louis	.25	.285	.315	.3575	2.60
Los Angeles	.22	.27	31	.....	2.95

MISCELLANEOUS

GREASES—Prices are as follows in the following cities in cents per pound for barrel lots:

	Cincinnati	St. Louis	Denver
Cup	8.5	8.9	10½
Fiber or sponge	9.	12@15	20
Transmission	10.	12@15	20
Axle	5.	6@ 6½	7½
Gear	6.5	8@ 9	7
Car journal	12.0	23@25	...

BABBITT METAL—Warehouse prices in cents per pound:

	New York		Cleveland		Chicago	
	Current	One Year Ago	Current	One Year Ago	Current	One Year Ago
Best grade	90.00	90.00	61.00	80.00	60.00	75.00
Commercial	50.00	50.50	21.00	18.50	15.00	15.00

HOSE—Following are prices of various classes of hose:

	Fire	50-Ft. Lengths
Underwriters' 2½-in.		85c. per ft.
Common, 2½-in.		30%

	Air		
	First Grade	Second Grade	Third Grade
¾-in. per ft.	$0.60	$0.40	$0.30

Steam—Discounts from list

First grade	20%	Second grade	30%
		Third grade	45%

LEATHER BELTING—Present discounts from list in fair quantities (½ doz. rolls):

Light Grade	Medium Grade	Heavy Grade
30%	25%	20%

RAWHIDE LACING—For cut, best grade, 25%, 2nd grade, 30%. For laces in sides, best, 79c. per sq. ft.; 2nd, 75c. Semi-tanned: cut, 20%; sides, 85c. per sq. ft.

PACKING—Prices per pound:

Rubber and duck for low-pressure steam	$1.00
Asbestos for high-pressure steam	1.70
Duck and rubber for piston packing	1.00
Flax, regular	1.20
Flax, waterproofed	1.70
Compressed asbestos sheet	90
Wire insertion asbestos sheet	1.50
Rubber sheet	50
Rubber sheet, wire insertion	.70
Rubber sheet, duck insertion	.50
Rubber sheet, cloth insertion	.30
Asbestos packing, twisted or braided, and graphited, for valve stems and stuffing boxes	1.30
Asbestos wick, ½- and 1-lb. balls	.85

MANILA ROPE—For rope smaller than ¾-in. the price is ½ to 2c. extra: while for quantities amounting to less than 600 ft. there is an extra charge of 1c. The number of feet per pound for the various sizes is as follows: ½-in., 8 ft.; ⅝-in., 6; ¾-in., 4½; 1 in., 3½; 1¼-in., 2 ft. 10 in.; 1½-in., 2 ft. 4 in. Following is price per pound for ½-in. and larger, in 1200-ft. coils:

Boston	$0.32½	Birmingham	$0.324
New York	.29	Denver	.30
St. Louis	.26½	Kansas City	.30½
Chicago	.27½	New Orleans	.28½
Minneapolis	.29½	Seattle	.28
San Francisco	.27	Los Angeles	.31

PIPE AND BOILER COVERING—Below are discounts and part of standard lists:

PIPE COVERING		BLOCKS AND SHEETS	
Pipe Size	Standard List Per Lin. Ft.	Thickness	Price per Sq. Ft.
1-in.	$0.27	½-in.	$0.27
2-in.	.36	1 -in.	.30
3-in.	.45	1½-in.	.45
4-in.	.60	2 -in.	.60
6-in.	.80	2½-in.	.75
8-in.	1.10	3 -in.	.90
10-in.	1.30	3½-in.	1.05

85% magnesia high pressure: List +5%

For low-pressure heating and return lines: 4-ply 40% off; 3-ply 42% off; 2-ply 44% off

COAL AGE

The Weekly Journal of the Coal and Coke Industries

Volume 18 NEW YORK, THURSDAY, OCT. 21, 1920 Number 17

What Would Governmental Control of the Coal Industry Mean to the Public?

IN 1918 under strict Federal control approximately 8,600,000 tons, or 28 per cent, of the record output of 30,600,000 tons of coal in Indiana were shipped outside the state to consumers other than railroads. Under the Fuel and Food Control Act of that state now in effect any or all of this coal may be withheld from consumers in other states. To meet the emergencies of 1918 Indiana shipped 1,700,000 tons of coal to Michigan, over 600,000 tons of coal to Wisconsin, and more than 6,000,000 tons of coal to Illinois, mainly in the Chicago district, and today Indiana producers are assisting consumers in those states to meet their current requirements. Notwithstanding the evident needs of her neighbors, Indiana, a commonwealth of the United States, has said that until her citizens are fully supplied coal can be denied to all others.

What does this mean? Simply that if other coal-producing states take the same position and the Supreme Court upholds their right to do so, the 35 per cent of soft coal shipped outside the producing states for consumption will be subject to the beck and call of political intriguing commissions and supply in every state that does not produce sufficient for its own needs will be in jeopardy.

Who Is the Coal Industry?

WE ARE accustomed to say that the coal industry needs this, or did that, or is coming to something else. Who constitutes this entity we hear so much about? Industry is defined as the labor and capital engaged in a business. The coal industry, then, is all those who dig and handle coal and who finance the enterprises. Nationally there is one association representing the operators, another the jobbers, another the retailers, with a multitude of smaller subsidiary organizations, the exponents of particular groups with common interests.

It was the coal industry that came under government control during the war; it is the coal industry that today is facing a new brand of government regulation. Government regulation is impending because there has been cause given the public to seek protection both as regards supply and prices—a cause greatly magnified in many quarters for ulterior motives, but a cause of sufficient portent to spell disaster to the freedom of action of the coal industry unless counteracted.

Let us openly admit the facts. There is no unanimity of thought, desire or purpose in the coal industry today. Consider the published statements of the two national organizations representing the producers and the operators this past summer relative to the soft coal situation. On the one hand was George Cushing stating for the jobbers that there was no prospect and that there is no prospect of a coal shortage, and on the other hand Mr. Morrow throwing the strength of his organization into the gap to prevent a shortage. During the tenure of Dr. Garfield operators, jobbers, and retailers were constantly camped before his door, each charging the other with trying to obtain an advantage.

The magic wand of state or Federal control cannot touch just one branch of the industry; when it is laid on it whips all—producer, jobber, and retailer. It was so in 1917; it is so today. Witness the Indiana State law recently enacted and now functioning. Even before the constitutionality of this law can have been fully tested other states are considering like acts. The tendency is to nail the whole works up tight because the politicians and common garden variety of legislators know but one way to act and that is to pass a law taking control of the offending parties.

Recall the series of hearings presided over by Senator Frelinghuysen last year and the summer just past. The National Coal Association put up a clear-cut, convincing case before this tribunal for the bituminous-coal producers. The jobbers told their story, the retailers and anthracite producers presented still other facts and arguments in support of their actions.

When has one section failed to pass the buck to some other? Who do you suppose in the mind of *pro bono publico* is the coal industry? Is it not appropriate for all to pause and consider that the coal industry should have a policy and should meet the Government and the public on the same basis of fact?

Open-Top Priority Proves Worth

RENEWED assertions of the American Railroad Association, backed by statistical evidence, that the roads are now carrying as much freight as ever before in their history only serve to show the wisdom and necessity of the orders of the Interstate Commerce Commission discriminating in favor of coal in the use of open-top cars. Although the production of soft coal is nearly 52,000,000 tons ahead of last year, it is still more than 45,000,000 tons behind 1918 at the same date, notwithstanding the railroads are originating as much freight as in the previous record year of 1918. But one conclusion is warranted under the circumstances—coal has not had its share of transportation. Iron and steel, which were in great demand this past summer—a demand the greater because of foreign orders, added to local requirements—have shown a tendency to slump. There would be no drop in the steel market if buyers were as short of their needs as they are of coal. Higher class commodities than coal have obtained the transportation they required but coal will catch up with the procession by the end of the year, with the help of the open-top priority orders.

The "come-back" of the railroads under private management has been rapid. There is every reason to believe that they have come back to stay for good. As soon as our stocks of soft coal are ample for the winter, coal, like other commodities, will record a marked price recession. The performance of the railroads in the next six months will settle the matter one way or the other.

In this connection it is encouraging to read the statement of Alfred P. Thom, general counsel of the American Railway Executives, that:

"Aided by the new conception of the relationship of government to their own interests and responsibilities, the carriers are facing the future with courage and with confidence. Notwithstanding the difficulties, they are already performing with their impaired and inadequate facilities a better and larger transportation service than ever has been furnished under normal conditions to the American public. By voluntary action they are establishing the degree of co-operation with each other and of co-ordination of their facilities needed in the public interest and are manifesting a spirit, a purpose and an efficiency in keeping with the new trust which has been imposed upon them."

Get Under Cover Before the Storm Breaks

IT IS idle to pass lightly over the evident signs of danger threatening the political and economic freedom of the coal industry. The storm signals have been displayed and all have been warned that when Congress assembles in December the coal troubles of the nation will be aired in a way that will not help the industry. Senator Calder has accumulated a mass of data on the high prices of coal and a book of opinions of what should be done to the coal man. Senator Frelinghuysen may be expected to continue his hearings and he has become sufficiently familiar with the subject to make them interesting. The shortage of household anthracite, temporary though it may be, will inspire other investigations. On top of all this are the exposures of graft in New York in the distribution of coal, particularly with reference to the use of assigned-car priorities for public utilities.

Whereas many fair-minded men are willing to concede, with the judge in West Virginia, that in selling a product at the price offered in the open market, even though at what are exceedingly high figures, the seller is guilty of no crime if he has not participated in a conspiracy to artificially boost the prices, these same men are rightfully indignant over such evidences of graft as have been brought to light recently in the distribution of coal. In the long run coal men will injure themselves most by charging outrageous prices and are certainly inviting early trouble by permitting such practices as overshipping on permits and abusing every privilege given them by the Government.

The spread of the Indiana idea that coal can be controlled locally by State laws, futile as it is, is certain to result in a national feeling that better than that were a national control. This idea is certain to be proposed this winter and just at a time when our coal troubles will largely be over. New and important steps are being considered and are required to prepare the average men in the industry and the public as well for the clamor that is coming for national control. Reports are to the effect that the present administration at Washington is not in favor of such a step and we are convinced that the business interests of the country will throw their influence against such a move, but the burden of the fight must be carried by the coal men—large and small—producer, jobber and retailer. The evils in coal distribution are being perpetrated by a small minority of those in the trade, and even though the public be convinced of this fact, it may demand some governmental action to curb that minority, in which the majority will of necessity be compelled to participate.

The most important thing for the rank and file is to follow closely the work of their organizations and give them not only the financial support that comes easier with the better profits of today, but actual co-operation in attending meetings and adhering to the program that is adopted.

Labor Supply and Production of Anthracite

ANTHRACITE production in 1919, as shown by the Geological Survey in what are practically final figures, was 78,502,000 gross tons, or a decrease of about 11 per cent compared with 1918 and below 1917, which holds high record, but in excess of 1912, 1915 and 1916 figures. The decrease was approximately ten million gross tons, of which six million tons was in freshly-mined coal and about four million tons in washery product. As pointed out by the Geological Survey, the percentage of decrease in washery product was far greater than in freshly-mined coal. The significance of this is that during the war the maximum production of anthracite was attained by a large increase in the production of culm bank coal, which yielded a comparatively small percentage of domestic sizes but a large quantity of steam coal, for which there was a strong market. In 1919 the market for steam sizes fell off and that for domestic sizes, after the first four months of the year, was strong.

Not all regions fared alike in the decrease in 1919, the Lehigh region recording a drop of less than one million tons of freshly-mined coal, the Schuylkill district a decrease of about two million tons and the Wyoming region a decrease of about 3,500,000 gross tons.

The number of men employed increased from 147,121 in 1918 to 154,686 in 1919, a figure slightly greater than the number of men employed in 1917 but lower than any year preceding since 1903. The maximum number of men employed in the production of anthracite, according to the Geological Survey, was in 1914, when there were 179,679 men in the region employed in the production of anthracite. The average number of days work in 1919 is reported as 266, compared to 293 in 1918 and 285 in 1917. This record of days worked in 1919 is exceeded only by 1917 and 1918 in the period from 1890, for which records are available.

The average output per man per day, generally considered an index of the efficiency of the men, was 2.14 net tons compared with 2.29 in 1918 and 2.27 in 1917, which indicates a decrease in the average efficiency of the men compared with the war years. The record, as reported in the Geological Survey, for 1916 was 2.16 and for 1913, the pre-war year of highest output, the figure was 2.02 net tons. The average output per man for the year was 568 net tons in 1919 compared with 672 net tons in 1918, the highest record attained. The decrease in average tonnage per man per year in 1919 was due, of course, to the lesser number of days worked and to the slightly smaller average output per man per day.

Paris Lights Up Again

Paris is making an attempt to look nfter dark like it did before the war. Enough German coal, it appears, has been stored in the city's yards to justify the attempt and the almost complete darkness in which the city has been wrapped at night since February last is now to be ended. This month, thanks to the increased output from French mines as well as to the delivery of coal by the Germans, stocks are nearly the normal of before the war and the card ration to householders has been increased to a quantity almost sufficient to keep every one warm throughout the winter. Still there is the prospect of an English coal strike, and as this is the third time the streets have been lighted up since the armistice, Parisians are not overoptimistic that it will last.

Unfilled U. S. Steel Orders Continue to Decline

Unfilled orders on the books of the United States Steel Corporation at the end of September stood at 10,374,804 tons, a decline of 430,234 tons compared with the bookings on Aug. 31. The loss of new business, although not as great as had been predicted in some quarters, was regarded as another indication of the current hesitancy of buyers generally. The 1920 peak of contracts was reached in July, when a total of 11,118,468 tons was reported. September bookings compared with 6,284,638 tons in the corresponding month a year ago. The high record of unfilled business was attained in April, 1917, when war orders helped to swell the total to 12,183,083 tons.

N. Y. Public Utilities Increase Coal Supplies

Supplies of coal in the bins of New York public utilities amounted on Oct. 5 to 427,339 tons, compared with 399,676 tons on the same day in the previous week. Commenting on the situation the Public Service Commission said: "While the report shows an increase it is not sufficient to assure the several utilities of an adequate supply to last them through the coming winter."

German Miners Ask Wage Increase

A conference at Bochum of unions composing the Miners' Federation, says the Berlin *Vorwaerts*, has telegraphed to the German Minister of Labor a demand for an immediate increase in wages.

Railroad Consolidation Plan Nearly Ready

Work is said to be progressing rapidly on the tentative plan of the Interstate Commerce Commission for consolidation of railroads into a limited number of systems, as required by the Transportation Act. Various railroads are working out merger proposals to submit to the commission, but no propositions for pooling the management and operation of railways under one corporation can be effected, officials said, until a complete plan has been framed by the commission.

Senator Wadsworth Praises the Esch-Cummins Act

Before an audience composed largely of railroad men at Hornell, N. Y., Senator Wadsworth called the Esch-Cummins railroad law one of the greatest achievements of the Republican Congress. He said the railroads practically were ruined when turned back to the owners after twenty-two months of Government operation and that the Transportation Act was carefully built up to protect both the public and the owners.

NEWS BRIEFS

Terse Items Chronicling Events of Interest to the Industry

Unmoved Coal in Canada To Be Seized and Sold

To expedite coal movement on Canadian railways, the Dominion Board of Railway Commissioners on Oct. 9 issued an order empowering fuel administrators to seize contents of cars containing coal and coke unloaded eight days after arrival. The fuel is to be offered for sale to municipalities or dealers where it is seized.

What Is a Strike? Pennsylvania Industrial Board Asks

A representative committee of three employers and three employees, with officials of the State Department of Labor and Industry of Pennsylvania acting in an advisory capacity, has been asked by the State Industrial Board to settle the question of what constitutes a strike. The board received a report on definitions of other States, and the Attorney-General's opinion that the State Employment Bureau should determine when a strike is in progress and be guided by the ruling of the Industrial Board. The committee will be asked to meet in Pittsburgh Oct. 29.

Bureau of Mines Head to Retire

Dr. F. G. Cottrell, recently made chief of the U. S. Bureau of Mines to succeed Dr. Van H. Manning, is planning to retire from that post soon; probably around Dec. 1. H. Foster Bain, formerly with the Bureau and now with the Standard Oil Co. of India, is mentioned as a possible successor, and it is understood that cable communications on the subject have been sent to him. F. W. Denton, vice-president of the Copper Range Consolidated, also is mentioned as a possible selection for the place. It is understood that Dr. Cottrell will take up research work as a member of the National Research Council.

Coal Profiteer Prosecutor's Post Still Unfilled

The position of Assistant Attorney-General in charge of anti-trust cases and coal cases under the Lever Act, vacated by Judge C. B. Ames Aug. 31, remains unfilled. Frank C. Dailey, of Indianapolis, who was one of the prosecuting attorneys in the Newberry election fraud case, was offered the place, but declined.

C. A. Owen Heads Coal Exchange

Charles A. Owen was elected president of the Tidewater Coal Exchange of New York, Oct. 13, and J. W. Howe was elected secretary-treasurer and commissioner. The exchange was instituted by the Government as a war measure, and in the first eighteen months of its existence saved the expenditure of a large amount of money for new coal cars. Through the "pooling system" established in connection with the work of the exchange, the average saving now is .113c. on each ton coming into New York.

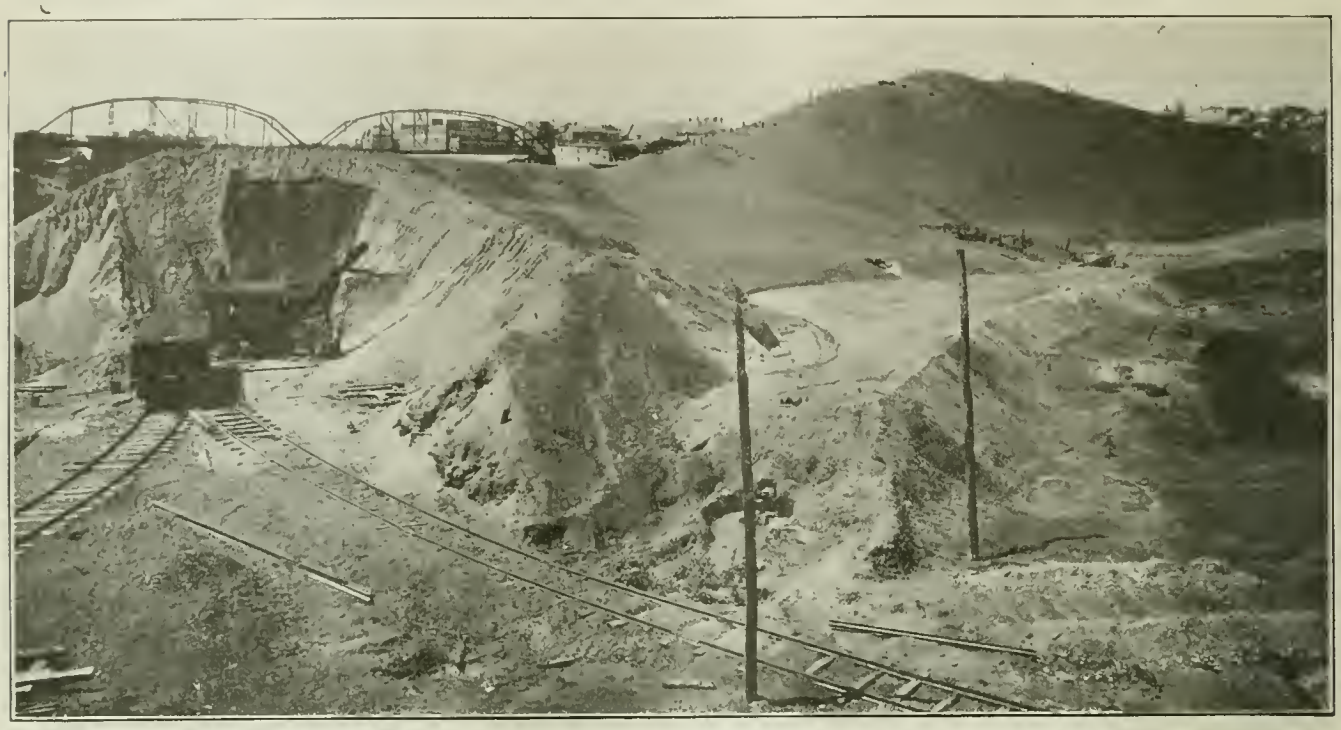
Stinnes Halts Nationalization of German Coal Mines

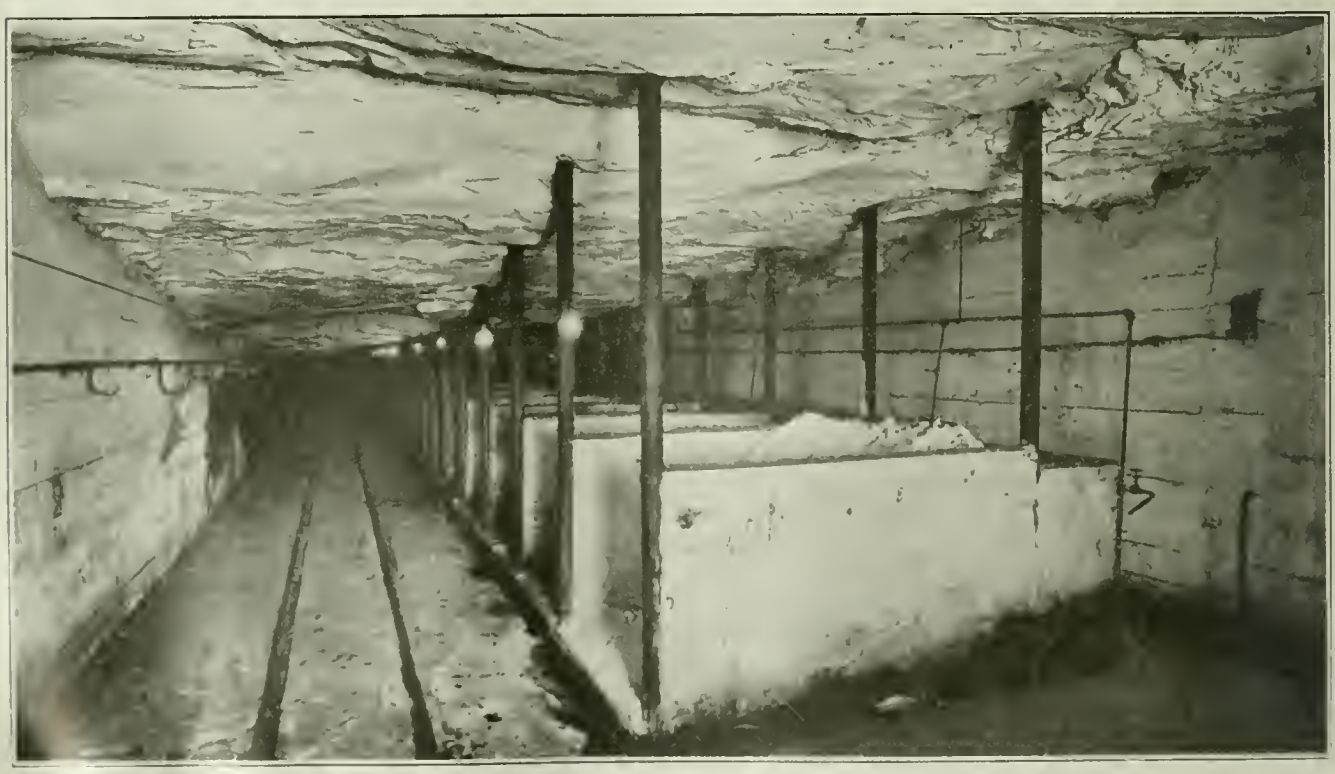
Nationalization of the German coal mines, as demanded by the Reichstag, has been halted, at least temporarily, in the Reichsrat by Hugo Stinnes, the German industrial king. Stinnes informed a committee of the Reichsrat that the nationalization of the mines would place Germany at the mercy of the Allies. He showed them a clause in the Treaty of Versailles which provides expressly that the Allies can seize Government property if Germany fails to comply with the reparation provisions.

Ohio's Coal Output Grows

In August, 1920, according to a recent report, the State of Ohio produced 4,124,000 tons of coal, an increase of 297,000 tons when compared with production in July. During the first eight months of the year the state produced 28,252,000 tons.

Through the Coal Fields With a Camera





Above and Below Ground in the Anthracite Field

Above—A steam shovel loading out a culm bank to railroad cars that transport it to the breaker for preparation. Below—A steel and concrete mule stable 1,200 ft. below the surface. Lime for disinfecting purposes in first stall.

By New Operating Methods Estimated Life Of Seneca Colliery Has Been Tripled

Many Difficulties, Such as Subterranean Outcrops in Glacial Drift, Mining Under River Beds, a Large Inflow of Water and One Bed Squeezed Over Practically the Entire Area, Have Been Encountered and Surmounted in Operating This Mine

By Dever C. Ashmead
Wilkes-Barre, Pa.

APPARENTLY it is the general opinion, frequently expressed or implied by operators of other fields, that mining in the Wyoming Valley is a much simpler proposition than in other parts of the anthracite region. It seems to be the general belief that conditions here encountered are comparable to those existing in the bituminous fields.

Frequent repetition of such assertions led me to make an investigation of conditions as they exist at the Seneca colliery of the Lehigh Valley Coal Co., at Pittston, Pa. While conditions here encountered may be more difficult than in some other mines throughout this field, there probably are many other operations that have similar or possibly worse problems to solve.

Mining was begun at this colliery about sixty years ago. Consequently one of the most important and most difficult problems faced by the operators of today is the conditions imposed by the old inefficient systems of mining that were in vogue when this operation was opened. From the long term of years that this mine has been worked it will be readily understood that first mining has been almost entirely completed and that practically all the coal now being produced comes from second mining or robbing.

Conditions in this colliery are such that much difficulty is encountered in obtaining sufficient territory where robbing may be safely done. To keep the mine operating requires continual scheming in order to procure these robbing areas, and the circumstances that enter into and influence final decisions are interesting in the extreme.

Coal at Seneca Colliery by No Means Flat

Apparently the general impression prevails that the coal measures in this section are approximately level and consequently resemble those of the bituminous region, and that as a result the mining methods followed are similar. While it is quite true that the methods pursued resemble those of the bituminous region, the belief that the measures lie flat is entirely erroneous, as may be readily seen from the typical cross-section, Fig. 1. While the generally flat character of the beds as differentiated from pitching measures is plainly visible, nevertheless there is a difference in elevation of over 200 ft. between the highest and the lowest points in the Marcy bed.

As a matter of fact, a topographic map of any of the coal measures here encountered would greatly resemble a similar map made in a country that has rolling hills about 200 ft. in height. It will be noted that at one point an S-fold in the coal occurs. One point worthy of careful consideration is the fact that contours of the different beds closely coincide; that is, anticline corresponds with anticline, flat with flat and swamp with swamp.

From the contours as drawn for any one bed of coal it is possible to lay out the workings in any other bed either above or below it. In fact, by changing the contour elevations it would be possible to substitute the map of any one bed for that of any other bed. This enables the engineers to lay out headings in such manner that there shall be the least possible adverse grade for the haulage.

Rivers and Flooded Flats Source of Danger

It will be noted from the map shown in Fig. 2 as well as from that of Fig. 5 that a large portion of this property underlies the Susquehanna and Lackawanna rivers. This circumstance tends to complicate mining methods to an appreciable degree, for great care must be taken that none of the workings breaks through to the surface. Not only must care be exercised under the river itself but also under the river flats, which during certain seasons of the year may be under water to a depth of from 6 to 8 ft. The nature and extent of these flats may be seen in Figs. 7 and 8.

Another serious problem is introduced by the circumstance that the famous Buried Valley passes through this and adjoining properties owned by this and other companies. This valley in places has a depth of 200 ft. and the Pittston and Marcy beds outcrop in it. During the glacial period this depression was completely filled with drift, and it is therefore impossible to locate the line of outcrop of the coal in its bottom except by boring.

Surface support also presents a serious problem. A large portion of the country over this mine is built up and it is necessary to provide support for the buildings there erected. Furthermore, a large area is overlaid by a cemetery which must likewise be supported.

Squeezes and Mine Waters, Other Problems

The above, while apparently sufficient problems to satisfy the desire of any engineer, are only a portion of those here encountered. Two of the chief difficulties have not yet been mentioned. The first of these is the fact that the Red Ash bed practically throughout the entire property has been squeezed, and the second lies in the large amount of water that has to be handled.

Before taking up the manner in which these problems have been met it might be well to give some figures as to the life of the mine. R. V. Norris, mining engineer, has stated that there is more coal in the anthracite fields today than there was twenty years ago, although mining has been pursued continuously throughout this period.

The Seneca colliery is a good illustration of what Mr. Norris means by this statement. In 1912 an estimate of the amount of coal available in this mine was made. It was found that there were 1,975,000 tons

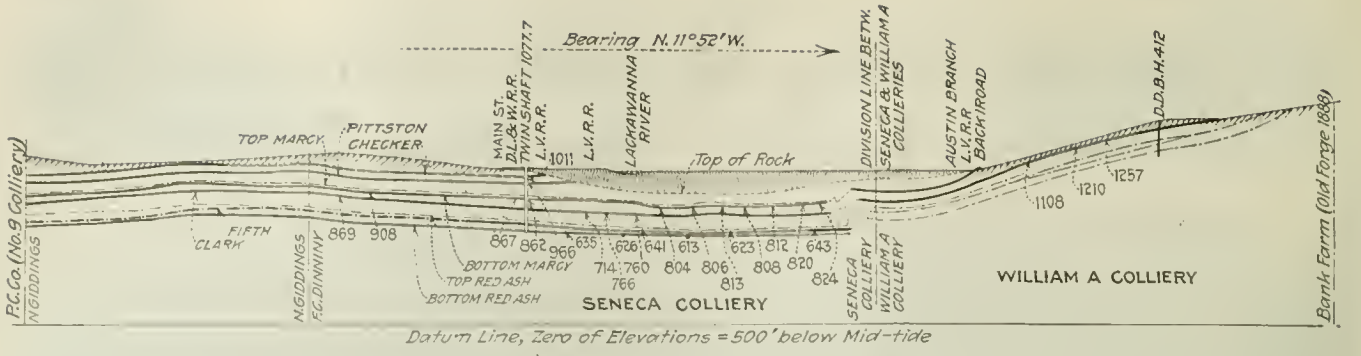


FIG. 1. CROSS-SECTION OF THE MEASURES AT SENECA AND WILLIAM A. COLLIERIES
It will be noted how gently the measures are folded throughout the Seneca mine. They rise somewhat steeply in the William A. operation to the north. The following beds occur: Pittston Checker, Top Marcy, Bottom Marcy, Clark, Fifth, Top and Bottom Red Ash.

of coal, which at the rate of mining then existing would last for about eight years. These eight years have now elapsed, and the mine is still operating.

Furthermore, the company is now remodelling its breaker at a considerable cost. An estimate was made in July of this year of the amount of minable coal yet in place. This was found to be 2,500,000 tons, or more by 500,000 tons than what was in sight in 1912. No more territory had been added during the interim. Thus not only is the mine yet in operation but during the eight-year period just passed there was produced 2,207,241 tons of coal, which exceeds by 232,241 tons the original estimate.

Will Last Three Times Estimated Period

In other words, including what has been mined and what is now in sight, the original estimate has been exceeded by 2,732,241 tons. Besides this amount 1,020,000 tons is now available from adjoining mines which in 1912 were considered unworkable. There is thus in sight about fifteen years of mining on a property which, according to the previous estimate, should have been worked out this year.

None of this coal is new but is what only eight years ago was considered unworkable. It has been rendered available through the intelligence and ingenuity of the mining engineers of the Lehigh Valley Coal Co. The advance in the science of mining during the last eight years, alone, has made more coal available now than there was eight years ago, although the mine has been working at capacity throughout this entire period. This proves Mr. Norris' statement.

On June 28, 1896, one of the greatest disasters in the history of anthracite mining took place in this colliery. At that time fifty-eight men lost their lives in a squeeze that crushed the Red Ash bed. The bodies of these men have never yet been recovered. In 1904 a second squeeze occurred which completed the destruction of the Red Ash workings over the entire property with the exception of some small areas. The squeeze not only affected this property but adjoining ones have felt its effect at various times. To some extent it displaced all the measures to the surface. Investigations conducted by the owning company have shown that the Red Ash bed has squeezed down to a thickness of about 24 in. over practically the whole area.

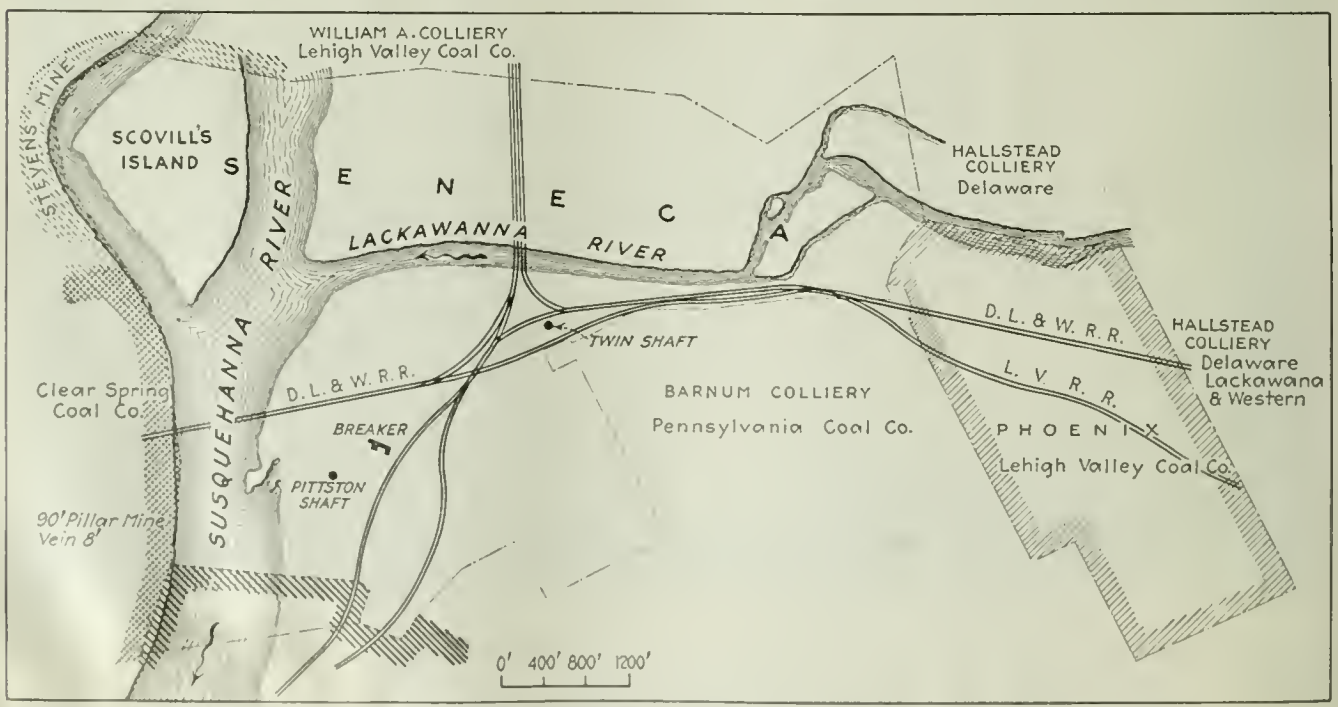


FIG. 2. SURFACE MAP, SHOWING LOCATION OF SENECA, STEVENS, CLEAR SPRING, BARNUM AND HALLSTEAD COLLIERIES
Some of these are worked out. Owing to the presence of the Susquehanna and Lackawanna Rivers and the extensive buried valley, the amount of water to be handled is immense. Of the coal mined three parts are shipped and one part is used under the boilers to clear the mine of water and to run the washer.

That portion of the Red Ash bed unaffected by the squeeze has since been worked out without difficulty. In this colliery this measure splits into two parts. The upper is known as the Fifth Vein and is separated by 6 to 12 ft. of intervening strata from the lower split. After the great squeeze, work was continued in this vein, and the first mining has been completed. Large reserve pillars have been left in this vein to support the upper workings.

Great difficulty was encountered in obtaining this coal, as the squeeze had broken the bottom rock, and when the coal bed was removed and the weight thrown on the pillars, the bottom heaved. It then became necessary to keep a large force of men cutting down the bottom in order to permit cars to enter the workings.

FIG. 3.

Large Underground Spring

Two hundred gallons of water flow every minute from under the coal. The material supporting the bed is open and it allows the water to flow freely, but there seems to be no pressure behind it, the speed with which it travels preventing the forming of a head of water anywhere near the point of discharge.

FIG. 4.

Spring Flowing from Coal

Here 100 gal. per min. is leaving the coal itself. Coal usually is resistant to the passage of water but at this point there has been a big squeeze and the coal is cracked, allowing the water to pass through. Both these springs occur in the Red Ash vein.

While working in this bed sinking a sump a miner's hat and some tools were discovered. These had evidently been left by the miners who were caught in the great squeeze. The finding of these indications of the buried men did not, however, warrant further search for their remains, as it would have been practically impossible to locate the bodies because the men were scattered over a large area.

Have Columnized the Pillars Successfully

Where the Fifth Vein is worked over that portion of the Red Ash unaffected by the squeeze, the pillars have been columnized. No difficulty was encountered in this operation, although only 6 ft. separates the workings. If the columnization had not been resorted to the pillars in the upper bed would have crushed through the floor into the lower measure and probably would have brought on a squeeze throughout this portion of the mine.

Above the Fifth Vein lies the Clark bed, which on this property is of rather poor quality. This bed is really the only one in which any first mining is now being practiced. This measure is normally about 5½ ft. thick and lies approximately 250 ft. below the surface. On the Duryea end of the property, where the coal is of better quality, it has been practically worked out, but on the opposite end there still is a considerable amount of virgin coal.

No exceptional problems are encountered in this measure except those imposed by the thinness of the bed in certain parts of the mine. It might at first seem as if the major portion of the mine output would be produced from this measure. This is not the case, however, as this bed is quite irregular in thickness and pinches down rapidly so that it is not profitable to work, and a comparatively small portion of the mine product comes from the Clark Vein.

Marcy Bed Outcropped in Now Buried Valley

The Marcy seam, which is the most important one on the property, presents many serious problems and has caused much trouble. This bed is not continuous over the entire mine area, although at no point does it outcrop on the surface. Its outcrop in the Buried Valley, however, becomes a source of difficulty, as the drift in this depression, as already has been stated, carries a considerable amount of water.

The bed itself is 4½ ft. thick with 1½ ft. of refuse. The old rooms were driven 24 ft. wide on 50 ft. centers, leaving 26 ft. pillars. The vein refuse and bottom rock furnished sufficient material to gob the chambers solid for a width of 12 ft. The pillars are then skipped for a width of 12 ft. and sufficient additional material obtained to fill the remaining 12 ft. of the chambers when the balance of the pillars can be removed.

Under the river and the river flats an interval of 13 ft. exists between the top and bottom Marcy, the top Marcy being too thin to mine here. The rock lying between the two splits is a sand slate that weathers rapidly and consequently readily breaks down. The caved rock acts as a support for the gob pillars, which are 24 ft. wide at this point, and props them solidly. This prevents the strata over the top Marcy from breaking. Iron pins, really old mine-car axles 4 ft. in length, have been placed on the surface upon which careful level readings are taken periodically. Thus far no subsidence has been observed. The only inflow of water that has been encountered was when the first pillar was removed. This influx amounted to 100 gal. per minute and has continued without interruption ever since. Eight and one-half acres under the river and the river flat are now being robbed in the manner above described.

Over a portion of this territory the top Marcy lies within 2½ ft. of the bottom Marcy. In this area, first mining operations were carried so far and such a high percentage of extraction was attained that robbing could not be executed without danger of bringing down the full territory. Wherever possible the Marcy is being robbed, but this can be done only where the top Marcy has not been mined. Where this upper split has been mined robbing would be apt to disturb the overlying rock, which is full of water fissures. Furthermore, if the Pittston bed were disturbed by the robbing of the Marcy, the water would be apt to pass from this measure into the lower vein.

Work in the Pittston bed is extremely interesting, as practically all the workings are under the river and a large portion of this measure outcrops in the Buried Valley. Practically all of the boreholes put down to test this measure are on 100-ft. centers. The minimum rock cover allowed is 35 ft. Approximately 48 per cent of the coal is removed from this bed. The rooms are driven 15 ft. wide on 45 ft. centers, leaving a pillar 30 ft. thick. With the crosscuts the amount of coal removed more nearly approximates 48 per cent than the 33 per cent indicated by the above figures.

One of the most interesting sights I have ever seen in a coal mine may be found in this measure. At the point marked X in the chamber marked 1 in. Fig. 5 a stream of water averaging 400 gal. per minute flows out from the rib. This stream may change from side to side of the chamber as the work progresses, or from room to room. The water comes from under the coal through a soft shale. Although the workings are here 140 ft. below the river, there seems to be little pressure behind the water. At the point marked X in the heading 2 an inflow of water amounting to over 100 gal. per minute comes from the coal itself and falls to the floor in a cataract. In the places marked 3 and 4 also the water gushes from the walls of the headings.

Why the water flows from the coal in one place and from the bottom rock in another may be readily explained. Where the water issues from the coal the measures have been affected by the squeeze and the coal has been cracked and split, permitting the water to flow through this channel and saving it from the necessity

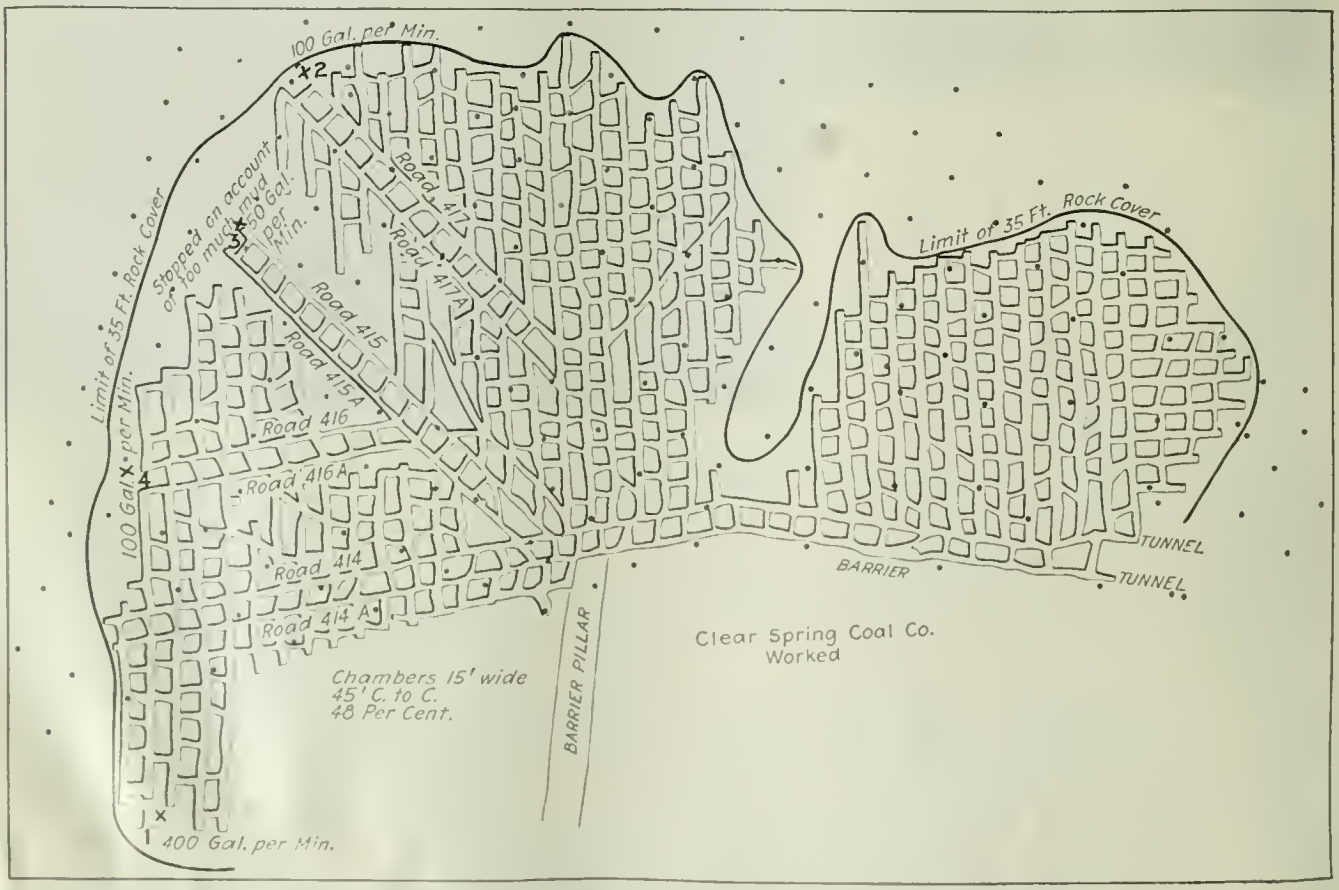


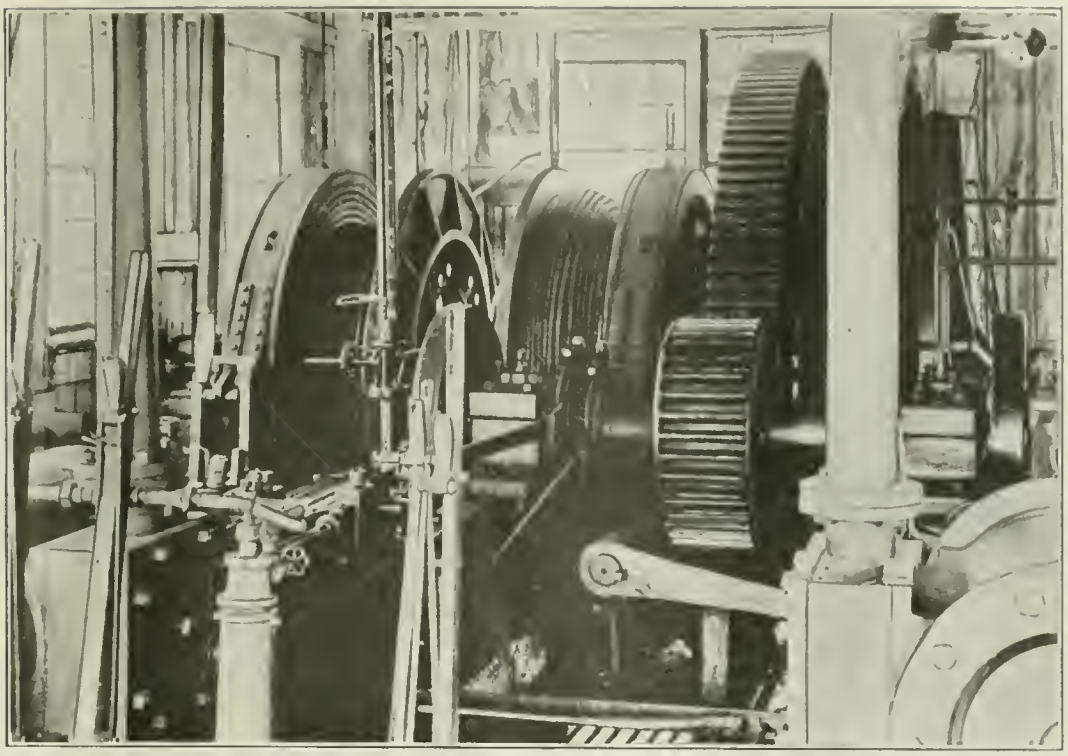
FIG. 5. WORKINGS IN THE RED ASH VEIN AT SENECA COLLIERY

Care has been taken to drill most thoroughly the whole area being worked so as to forecast the conditions to be met. The annotations marked 1, 2, 3 and 4 show the main points where water enters the mine. By keeping under sufficient rock cover it is possible to avoid the entry of such a volume of water as would make operation too expensive to be profitable.

FIG. 6.

Hoisting Engine at Seneca Colliery

An old back-geared double-conical drum, steam-driven hoist. Although it has been in use many years it is still on the job and performing its daily work with satisfaction.



of forcing its way through the bottom rock. Where, however, the water comes from the bottom rock, the measures are undisturbed. By reference to Fig. 5 it will be noted that the anticlines in the Pittston bed reduce the rock cover and consequently decrease the amount of workable coal available.

Another problem that must be taken into consideration is the fact that some of the leases under which the company operates permit the removal of only two-thirds of the coal, the remaining third being left to support the surface.

Will Mine Longwall, Using Drag Scrapers

In a small area of virgin coal in the Red Ash bed the company is planning to mine by a modified longwall method. The plan is to drive two parallel headings at a distance of 300 ft. and a third at a similar interval. The latter heading will then be connected to the first. The coal will be mined along this 300-ft. face, a dragline scraper being used to transfer the coal to the haulage road. This is said to be the first mine to use the scraper system for handling coal in thin beds, the idea having originated here.

Before leaving the subject of mining problems it might be well to mention that in the Fifth and Red Ash beds much gas is encountered. No gas is generated in the Fifth bed, but because of the disturbance caused by the great squeeze the strata between these two measures are cracked and broken, and gas from the Red Ash bed finds its way into the workings of the Fifth Vein.

Hoists Necessary, as Bed Is Irregular

Because of the unevenness of the coal measures the haulage problem is a serious one. Although the daily output averages less than 1,000 tons, ten electric locomotives are required. One of these is a 13-ton machine, one a ten-ton, three are of eight tons and five are seven and one-half tons in weight. Besides these haulage motors a large number of hoisting engines are employed. Slope No. 15 requires two engines in addition to one that operates on this slope and on slopes Nos. 9 and 11.

Slope No. 15 passes over three anticlines and a hoisting engine is required for each. Slope No. 6 has a hoisting engine that also operates on slope No. 16. There is another hoisting engine on slope No. 5. Besides these engines the Pittston shaft has a combination hoisting and tail-rope engine, shown in Fig. 6. This machine is particularly interesting because it is so arranged that it may be used for hoisting coal from the shaft or by the throwing-out of a clutch on the hoisting drum, and by the throwing-in of another clutch on the other drum it may be used to operate the haulage system, which is of the main- and tail-rope type. Not only is mechanical haulage used but a number of mules are required to assist in the gathering of the coal.

Four Pumping Plants in This One Mine

Four separate pumping plants are installed in this mine to hoist water to the surface. One pumproom is located in the Marcy bed and contains three Jeansville pumps. Another installation, also in the Marcy bed but near the Twin shaft, contains one Goyne and one Clark pump. The Fifth Vein has one Jeansville pump installed in it, while two pumps are located at the Pittston shaft. One of these is a Cox-Knowles and the other a Knowles. All of these pumps, with one exception, are duplex and all are operated under a steam pressure of 120 lb., except those at the Pittston shaft, where 85 lb. of steam pressure is employed.

Water from the pumps in the Marcy bed and Fifth Vein is sent to the surface through boreholes. These boreholes reach the surface in the river flats and it has been found necessary to build large concrete piers for the protection of the column pipes. These piers are 20 ft. high with the column pipe rising through the center. It was necessary to resort to this construction so that the outlet of the pipe might be of such a height above the river that when the stream rose the water would not enter the mine through thse pipes. Fig. 7 shows three column pipes from the pumps in the Marcy bed. All three at the time the photograph was taken from which the illus-

FIG. 7. TOWERS BY WHICH WATER IS DISCHARGED FROM THE SENECA COLLIERY
Water has to be pumped above the surface because in flood times the water is 6 or 8 ft. deep over the area occupied by the river flats. The standpipes carry the water from the Marcy Bed and the concrete towers, or piers, protect the pipes against the destructive action of floating ice.

tration was made were discharging water. Fig. 8 shows the same piers as well as the stream of water being discharged from the pumps. This stream carries 4,200 gal. per minute.

One interesting detail of the pumping problem in this mine is the fact that little margin exists between the maximum capacity of the pumps and the actual rate of pumping. All of the pumps except one operate for twenty-four hours a day. At times of high water, because of a rise in the river or heavy rainfall, when the influx of water into the mine is greater than the pumping capacity, the surplus is caught and retained in large sumps provided for this purpose.

At one time last spring the water stood 7 ft. above the pumproom floor in the Marcy bed. The pumps themselves, however, were dry because a dam had been constructed around them. In addition to the big pumps that discharge to the surface a number of smaller gatherers are scattered throughout the workings. Thus there is one pump in No. 15 slope, two at slope No. 16, one in the Red Ash bed and one in the Fifth Vein; also two in the Duryea side of the Clark bed.

FIG. 8. THE PUMP DISCHARGE TOWERS
These are 20 ft. high so that by no possibility could they be points by which water could enter the mine should the pumps not be working at the time. A stream of 4,200 gal. per min. is running away from the three column pipes and forming the stream that flows tumultuously in the foreground.

A Quarter of Coal Mined Is Used for Power

The pumps in the Marcy bed operate against a head of 258 ft.; those at the Twin shaft against a head of 228 ft. The Fifth Vein pump lifts the water 425 ft., while the Pittston bed pumps have a head of only 140 ft. to contend with.

It has been possible to secure some extremely interesting figures as to the quantity of water handled at this mine, and the cost of handling it. An average of 10,944,000 gal. is pumped each 24 hours, or 3,094,560,000 gal. (equal to 14,845,841 long tons) of water per year. These figures cover the year 1919. The coal output for the same period amounted to a total of 223,446 tons of coal mined and 167,999 tons shipped.

The difference between the amount mined and that shipped was the quantity of fuel used to produce steam for the operation of the preparation machinery and the pumps. The amount of coal consumed under the boilers alone thus amounted to 25 per cent of the output, or 33 per cent of the coal shipped.

Lifted 90 Tons of Water Per Ton Shipped

By dividing the number of tons of water pumped by tons of coal produced it will be seen that 66.4 tons of water were pumped for every ton of coal mined, while for each ton shipped 88.3 tons of water was removed from the mine. It is believed that this is a world's record. The cost of pumping this water was enormous. When compared to the amount of coal mined it amounted to 70.8c. per ton, or to 94c. per ton of coal shipped. Each 1,000 gal. of water pumped cost 3.95c. These figures do not include interest on capital investment, overhead expense, depreciation, obsolescence or amortization.

As has been previously mentioned, 1,020,000 tons of new coal will be brought out through the workings of this operation. Most of this will come from the old Phoenix and Stevens mines. In order to render this coal available it will be necessary to unwater these operations. This will be done by constructing a new pump-

room in the rock below the Red Ash bed, and drawing the water off from the old workings by means of boreholes. This new pumproom will contain two pumps, one of 3,000 gal. and the other of 1,500 gal. per minute capacity. Both machines will be driven electrically.

From the preceding description it readily may be seen that the coal measures in this section of the anthracite field may be rightly considered as being flat. The mining is in a measure comparable to that employed in the bituminous field, but it is extremely doubtful if any bituminous-coal mine could be operated at a profit under the conditions here outlined.

Although this mine has already passed its allotted life by mining 232,241 more tons than it was estimated to contain eight years ago, and although later estimation of its life is fifteen years more, it is not safe to say that it will be worked out by the expiration of that period. For by the adoption of new mining methods and by possible changes in existing leases, instead of a fifteen-year existence, as is now estimated for this operation, its natural life may be extended to thirty years or more.

In other words, no anthracite mine is worked out until the last pound of coal has been removed.

A Few of the Less Emphasized Causes Why Fine Sizes Ignite Soft-Coal Piles*

One Ton of Coal in the Solid Exposes 47 Sq. Ft. of Surface to the Air — Crushed So as to Pass a Sixteen-Mesh Sieve It Exposes About One Acre of Surface—The Extent and Freshness of the Surface Exposed and the Rapidity of Ventilation Are the Chief Factors Governing Spontaneous Heating

By O. P. Hood†
Washington, D. C.

THE best current practice in coal storage is well set forth in a publication issued by the Engineering Experiment Station of the University of Illinois and written by H. H. Stoek under the title, "The Storage of Bituminous Coal." A short résumé of the subject is given by the same author in Bureau of Mines Technical Paper 235.

On spontaneous combustion rests the whole problem of coal storage. It is useless to store coal if it is to be lost by fire from spontaneous ignition. I shall therefore consider only this small portion of the general subject. Every engineer is familiar with the phenomena of self-heating of coal. For all that, this phenomenon is a relatively rare one. If we were to carefully count the number of times in a year that small quantities of coal are stored where for a few weeks they are undisturbed, the figure we would obtain would mount into millions. Of these, a relatively small number show the phenomena of spontaneous combustion. Hence the risk per ton is small. Heating rarely occurs in coal piles of only a few tons. Anthracite never ignites spontaneously and rarely does the domestic consumer of bituminous coal experience trouble from the heating of his fuel. The main interest in the subject lies in the large piles kept in reserve by public-service utilities or set on one side for industrial purposes.

Can't Explain Phenomenon in Few Words

The public is desirous of receiving simple directions that will enable it to store with complete assurance against loss. Unfortunately, the matter is too complicated for a simple solution. Many of the factors involved are difficult to determine, as no practical means exist for quantitative measurement. The factors involve chemistry, physics and engineering, and the man who is in close contact with the problem of stored coal is not always a good observer in these several lines. The result is many incorrect theories, opinions and prejudices. It will be my attempt to set forth some of the main factors in the problem so that a working theory may be obtained and observation centered on the essential factors.

I remember reviewing a case involving spontaneous combustion on shipboard where in the hearings everything had been investigated, from the pennant on the mast to the barnacles on the rudder, but the observations that had a real bearing on the heating of the coal were extremely few and formed a notably unpretentious part of a formidable-looking document. It is necessary to know what to look for in order to draw reasonably accurate conclusions.

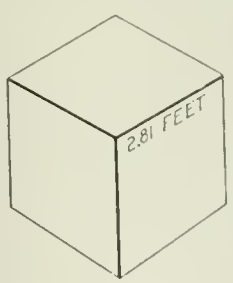


FIG. 1.
CUBE OF COAL
Weighs one ton; occupies 22.19 cu.ft., and has a surface area of 47.38 sq.ft.

The heating of coal is a surface phenomenon. If a ton of bituminous coal could be delivered in a single cube (Fig. 1), each dimension would be about 2.8 ft. If the coal heats, it is due to something that goes on with respect to the surface and not something that occurs within it. So far as we know, this is true no matter how small the piece may be. We are, therefore, interested in the amount of exposed surface in a ton of coal.

If this cube, having originally about 47 sq.ft. of exposed area, be continuously subdivided, the rate of increase in the exposed surface is shown in Fig. 2. If the size of each particle is reduced until it will pass a 16-mesh screen, the ton of coal will have an acre of exposed surface. It is obvious from this why it is that trouble from spontaneous combustion originates in fine coal, because the great increase in extent of surface

*Abstract of address entitled "Coal Storage," read before the Pennsylvania Electric Association during its meeting at Bedford Springs, Pa., Sept. 10, 1920.

†Chief mechanical engineer, U. S. Bureau of Mines.

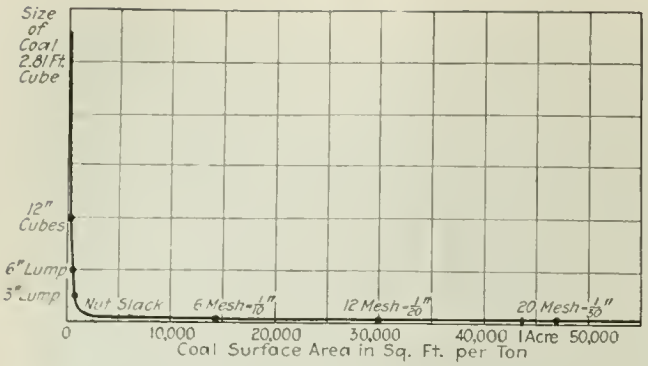


FIG. 2. SURFACE AREA EXPOSED BY A TON OF COAL WHEN DIVIDED INTO DIFFERENT SIZES

Note the interesting fact that until the size falls below 1¼ in. nut there is no large amount of surface area. After that the area exposed to the air increases with great rapidity.

does not begin until we get below 1¼-in. nut. If fine coal is kept out of the pile the heating surface is so relatively small that no cause exists for spontaneous combustion. But the consumer must remember that by buying lump coal he does not remove the possibility of heating, for the essential factor is how much fine coal actually gets into the storage pile. Coal bought as lump at the mine and handled with customary disregard for breakage may be far from its original condition when in the pile.

A unit of area of this coal surface generates a certain amount of heat, provided it can find combining material. The amount of heat generated depends upon the temperature of the piece of coal. That is to say, coal put into storage at a temperature of 80 deg. will generate much more heat per unit of surface than if put into storage at 60 deg. I cannot say just how much more, but the chemists tell us that in general the rate at which chemical reactions proceed doubles for every 10-deg. rise in temperature. If this general statement applies in this case, an increase of 20 deg. in temperature means a fourfold increase in the amount of heat generated. It has already been a matter of observation that coal stored during the hot months of summer and in heated areas is much more liable to spontaneous combustion than that stored in colder climes and in cooler seasons of the year.

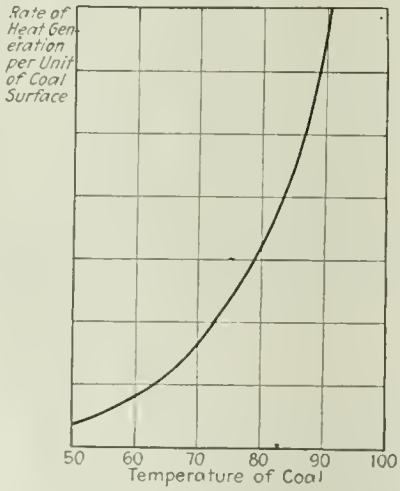


FIG. 3. HOW HEAT IS GENERATED BY HEATED COAL

In general, chemical reactions double in activity for every 10 deg. of rise in temperature. In consequence, coal may be more safely stored in cold weather than in hot.

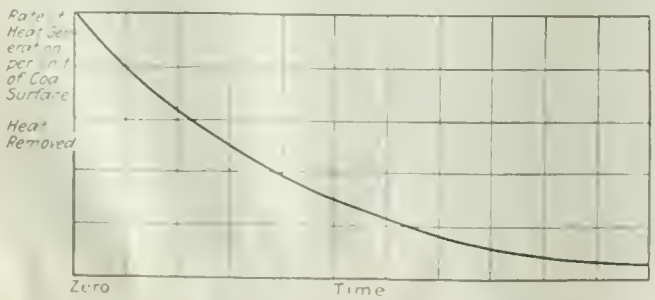


FIG. 4. GIVEN AN EVEN TEMPERATURE, CHEMICAL ACTIVITY WILL DECLINE

Freshly mined coal heats more than any other. Time reduces its chemical activity quite markedly. When newly crushed it is in its most fiery condition.

Another highly important factor is the freshness of the surface exposed. A freshly-broken surface of coal has a rate of heat generation that is a function of the kind of coal. That rate is practically zero with anthracite and is most rapid with the younger coals. The quantity of oxygen contained in the coal seems to be the fairest measure of this rate, although this is by no means a reliable criterion. The high-oxygen coals of the Middle West and the sub-bituminous coals and lignites of the West show increasingly active rates of heating.

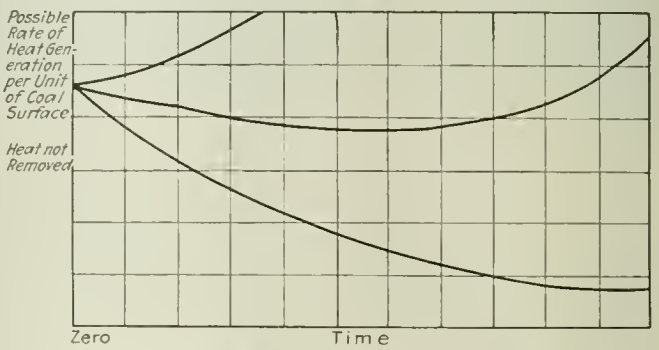


FIG. 5. IF THE TEMPERATURE IS RETAINED THE GENERATION OF HEAT MAY INCREASE INSTEAD OF DECREASE

When the heat cannot escape, the rise in temperature more than makes up for the aging of the coal surfaces. Thus the coal, which would be more inert with the progress of time only, becomes more disposed to catch fire. Three markedly different coals are shown here. One, apparently, despite all the increases in heat which are created in course of time, nevertheless becomes progressively less disposed to spontaneous combustion.

Special Objection to Newly-Crushed Coal

The coal surface apparently becomes satisfied in time and the heat produced falls to practically zero. The rate of heating then follows along a curve somewhat like that of Fig. 4. This means that for the first few days or weeks a freshly-broken surface is much more active than after a few weeks or months. This fact must be borne in mind when the question is considered as to whether it is wise to crush coal immediately before putting it in storage. Fires rarely occur after surfaces have been exposed for three months.

Since the rate of heating increases with the temperature, it is evident that if the heat generated is not removed, the process becomes a self-aggravating one, in which case the rate at which heat is generated, instead of falling as shown in Fig. 4, may rise with time, following one of the curves shown in Fig. 5. If the temperature of the pile reaches 140 to 150 deg. F. and continues to rise, it is probable that within a few days or a few weeks a destructive temperature will be reached, and the coal must be moved. Immediately the question how to get rid of the heat is presented.

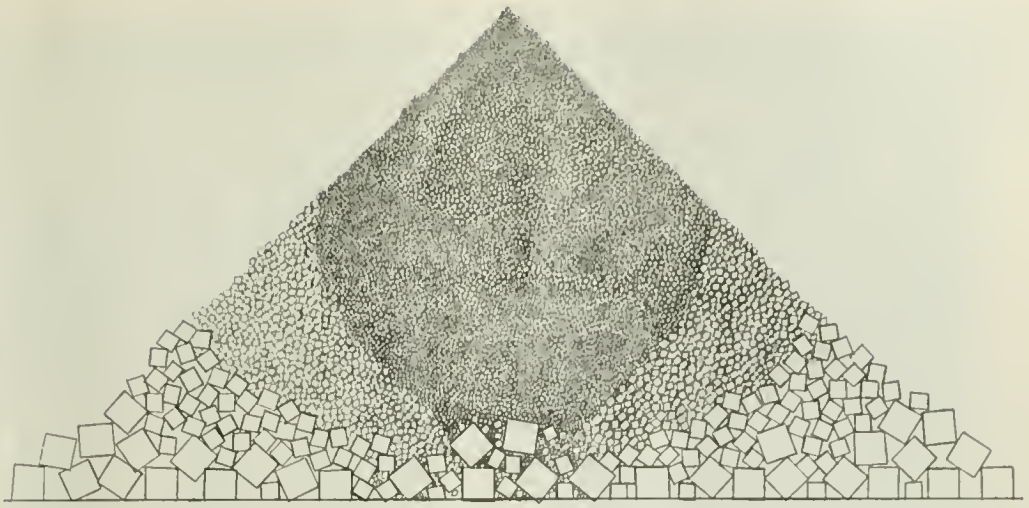
Air Changed Twenty Times During Voyage

A coal pile is cooled by radiation and by movement of air through the pile. Air moves rather freely through stored coal. In a certain case a partial cargo of coal was loaded into a bottom at New York and proceeded

FIG. 6.

Coal as Dumped in Pile

The big pieces continually roll to the bottom of the pile and leave the slack on top. Hence there is a separation according to sizes. The air cannot get to the center of the pile, and that portion does not fire. It plays, however, freely around the foot of the pile and cools it off, and as a result that portion of the pile does not ignite. Between those two areas are the danger points.



under sail to Norfolk. The general temperature of the pile at loading was known and on arrival at Norfolk the coal had so increased in temperature as to make it dangerous to add further cargo. Knowing the rise in temperature of this mass, it was possible to calculate roughly the exchange of air that must have taken place within the coal pile in order to supply the amount of oxygen represented by the heating effect.

This showed that all the air in the interstices between the pieces of coal must have been changed probably from twenty to thirty times during the time of heating. This coal was, of course, protected from winds, and this calculation shows the amount of the natural ventilation within a coal pile due to differences in temperature and the daily variation of barometric pressure. In many cases this natural change or breathing of air is enough to carry away the heat generated.

Suppose that coal was delivered in four uniform sizes and piles in a conical form by dropping it from a single point. The natural arrangement of particles would be such as to furnish a foundation, over nearly the whole pile, of larger sized pieces, while the lower flanks of the pile would likewise be of the larger sizes. Nearly all the smallest pieces would be in the central core of the pile. If one were to draw lines bounding the regions of these several sizes they would be something like those shown in Fig. 6.

In the region of large pieces air would move freely and the coal surface exposed would be a minimum; hence there would be little likelihood of heating. In the center of the pile the movement of air would be small, while the amount of heating surface would be great. If the fine coal is so densely packed as to prevent a movement of air, there will be no heating because there will be no supply of oxygen to combine with the active surfaces.

Somewhere between these two extremes, the central core of fine coal and the large-piece region, there may be areas where the ventilating current is just sufficient to supply oxygen for a maximum rise in temperature and insufficient to remove the heat as it is generated. In Fig. 7 lines have been drawn showing in general progressively difficult paths for the movement of cooling air.

Some observers have stated that, in general, fires in large coal piles originate on the flanks of the pile in the region from 5 to 8 ft. below the surface. The rise in temperature of a coal pile is therefore intimately connected with a complicated ventilating problem, while no means exist for observing or measuring the small and wayward ventilating currents involved.

It is well known that if coal can be sealed tight, as in a glass jar, the oxygen soon disappears from the interstitial air, and the coal cannot continue to heat because of lack of oxygen. In Fig. 8 horizontal distances represent the amount of ventilation in any portion of a coal pile and vertical distances represent rise in temperature. With no ventilation there will be no rise in temperature and the zero point will represent the condition of coal sealed from the air or so densely packed that air cannot circulate through it.

If, on the other hand, there is sufficient ventilation, the heat is all carried away as fast as it is generated

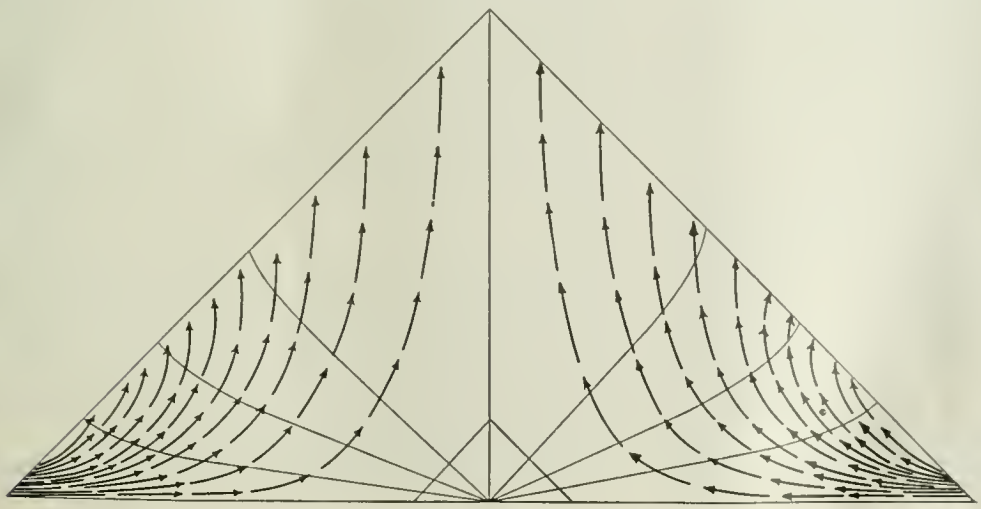


FIG. 7.

Same Pile Showing Ventilation

The frequency of arrows suggests the intensity of the circulation. In the zone between excess ventilation and no ventilation lies the area accessible enough to air to be made chemically active, but so inaccessible that the air cannot reach it in a volume that will suffice for its cooling.

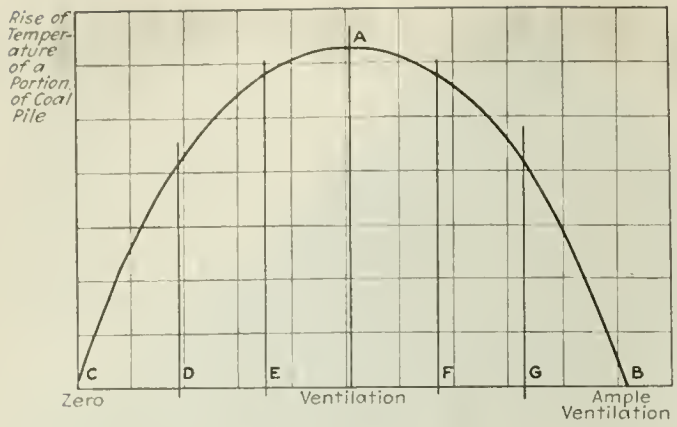


FIG. 8. CURVE SHOWING HOW HEATING IS RELATED TO VENTILATION

This graph exemplifies how a zero rise *C* in temperature may result from lack of ventilation and a maximum *A* from a ventilation that causes heating without any corrective cooling, and a zero rise *B* from such a draft that the heat is removed as fast as it forms.

and some point, as "*B*" on the zero line, must represent this condition, as in the case of coarse coal. At some point, as at "*A*" between these two extremes, there may be a condition of ventilation wherein just enough oxygen will be supplied to provide for a maximum rise in temperature. What sort of curve represents all of the intermediate conditions between "*C*," "*A*," and "*B*," is unknown, but that this curve must first ascend and then descend is quite evident.

This curve teaches that if we have a condition of ventilation as at "*D*" an increase in the ventilation to "*E*" will produce a more favorable condition for a temperature rise. On the other hand, if the original condition is at "*F*" and we increase the ventilation to "*G*" we can expect a reduction in temperature. Since we have no means of knowing just what the ventilation is in any given portion of a pile there is great hesitancy in advocating ventilating schemes to prevent heating, as we are as likely to make trouble as to prevent it unless extreme and uniform ventilation is assured.

These curves illustrate what are believed to be the principal factors in the problem of spontaneous combustion. There are many other minor factors. One of the chief difficulties encountered in the past has been that undue attention has often been given to minor factors, such as sulphur, height of pile, volatile matter, etc., while such important considerations as initial temperature, breakage in handling, freshness of coal and screening before storage have been overlooked or their importance minimized.

Mine-Safety Experts Discuss at Milwaukee Accidents, Health and Welfare—III

Dangers of Lighting Smudges in Mines for the Training of Mine Rescue Squads—Stenches and Other Devices as Mine-Fire Warnings—Cleaning Blocked Battery Chutes—Banquet Reminiscences and Pleasantries—Word from Great Britain—Mine Safety and Safety "Drives"

By R. Dawson Hall
Editor *Coal Age*

CONTINUING the interesting discussion of R. H. Seip's paper on "Requirements of Rescue Training for Metal Miners," B. F. Tillson referred to that author's advocacy of surface training, saying that he was opposed to creating a foul atmosphere in any part of the mine for the purpose of instructing men in rescue work, because if the persons employed underground got accustomed to smelling smoke, instead of becoming alarmed and proceeding to track it up and give a warning they would say, "It's only another of those smudges that have been lighted to try out some rescue team" and so saying would dismiss the matter from their minds.

Mr. Harrington said the right way was to create the smoke in a return where the miners would not smell it. There should be training on the surface and also in the mine. The first should be for convenient observation of the man in training and for safety, and the second so that the man would get accustomed to wearing his apparatus under the conditions that he would confront in real rescue and recovery work. One of the great difficulties was to use the apparatus in the high temperatures often encountered in the mine, which temperatures would unfit some men for the work.

Mr. Tillson responded that there was nothing to prevent a duplication of the high mine temperature by the use of steam heat. He recalled one time finding a fire in a mine. It was making quite a little smoke, which he knew must have been apparent to the men who were working at points to which the air current passing the fire was traveling. He asked the men why they failed to show the proper interest, whereupon they told him that they thought it was "just another movie."

The New Jersey Zinc Co. had been having some motion pictures taken of inside conditions. To this end a fire had been ignited in the mine so as to create the correct semblance for the work of the camera men. This had filled the mine with the smoke of burning wood, and for some time afterward the men were little disposed to believe that smoke was evidence that a fire had been ignited without the intention or knowledge of the management.

Mr. Woodburn said that such smoke areas could be created in parts of the mine above water level and on a Sunday when there were few or no men in the mine. In fact he did most of his work on that day, calling out thirty-two men and running his practices for a full eight hours. He used smoke from burning fuse and not wood smoke, so there was no risk of taking the smell of his fires for the smell of burning timber.

Mr. Tillson called attention to Mr. Woodburn's dictum, that "Flashing signals on the electric circuits is ap-

NEW OFFICERS ELECTED AT THE NINTH ANNUAL CONGRESS OF THE NATIONAL SAFETY COUNCIL
Reading from left to right: Treasurer, W. H. Frater; General Manager, C. W. Price; Second Vice-President, L. A. De Blois, manager of safety section, E. I. du Pont de Nemours & Co.; First Vice-President, W. H. Cameron, secretary-treasurer, Workmen's Compensation Bureau, New York City; President, C. P. Tolman, chief engineer, National Lead Co.; Third Vice-President, W. E. Worth, assistant manager, industrial relations department, International Harvester Co.; Fourth Vice-President, J. A. Oartel, safety engineer, Carnegie Steel Co.; Secretary and Chief Engineer, Sidney J. Williams.

parently the most feasible and usual" means of warning the men of a mine fire. He said it was certain that flashing signals could not be provided at the working face because the shots would dislodge the wires. He thought that it might be well to ascertain from the members present what success had been secured from the use of stenches.

Mr. Harrington said that by feeding valeric acid into the compressed-air pipe lines it was possible at the Butte mine where it was tried to get a stench in the most remote working face within five minutes, and that at a time when but little drilling was going on and the passage of air was comparatively slow. The experiment was tried between 4 and 5 p.m., when drilling had largely ceased. One of the members said that his company used both stenches and electric flashes, the stenches for the miners and the flashes for those working on the roads.

Mr. Tillson said that in his belief allyl sulphide (the active principle of garlic), while an effective odor in some ways, was too common a smell around the mines where European workmen were employed. It would, he feared, not seem out of place in mine workings and might occur without creating any inquiry. He would much like to know if oil of peppermint were being used. He had utilized it in the allocation of leaks in the pipe line and he was willing to state that it gave the required results. Mr. Martinson said that he had found it quite hard to obtain valeric acid in quantity to satisfy his needs.

Mr. Tillson spoke also of efforts being made to create apprehension, or at least a disinclination to continue at work, by shutting off the compressed air or electricity or to create inquiry and discomfort by replacing air by water in the compressed-air pipes. Mr. Woodburn said that it had been suggested that a vacuum be created in the compressed-air system, and the valves so arranged that the inflow of air through them would cause them to whistle a warning, but the time required to change from a positive to a negative pressure was too great for this plan to be successful.

H. H. Stoek said that after the Cherry disaster a law was passed in Illinois requiring the installation of warning gongs, but it was remarkable how the interposition of a pillar between the gong and the working place would render the sound entirely inaudible. Because of the proved inadequacy of the gong the law requiring its use was removed from the statute books within a year.

Mr. Tillson then requested those present to answer his question "What should be done to clear a blocked raise?" Mr. Gidley said that where the raise was blocked partly by fine material the application of water was often found of great value. In some raises an old rope or chain was made a permanent part of the chute. By shaking this the obstruction might be removed. The rope seemed to give a reasonable length of service and in no case was anything but scrap material used for this purpose.

Forster Roasts His Committee Associates

One member said that there were always plenty of 2 x 2-in. sticks kept in the tramroads. These could be spiked together and a stick of dynamite fastened to the end of the pole thus formed. An automobile storage light was used as a searchlight for the examination of the obstruction and the shot located accordingly. It was found that a yellow light would, as on the high road, penetrate the foggy atmosphere better than a white light. Mr. Stoek declared that trouble of this sort was quite frequent in the anthracite mines, but there a manway followed the raise and the obstruction could be barred loose from that point of vantage and the danger in starting the coal obviated.

In the evening a banquet was held in the Auditorium, the toastmaster being Phil A. Grau, business manager of the Milwaukee Association of Commerce. Well did he acquit himself of his duties. The principal speakers were R. W. Campbell, chairman of the Central Safety Committee, Illinois Steel Co., Chicago, and former president of the National Safety Council, and H. Walter

Forster, of the Independent Associates, Philadelphia, who has been a leading Executive Committeeman for years and now is inexorably thrust forth, much to everybody's regret—the victim of a constitution which forbids longer continuation in office.

Mr. Forster's "Impressions" will long be remembered, for in jocular vein he roasted every one of light and leading in the safety movement, without, however, leaving any soreness anywhere. R. C. Richards, the president, and Lew R. Palmer, a past president, were both sick and unavoidably absent. Messages of good cheer were sent to both. Mr. Campbell in his reminiscences recalled the growth of the National Safety Council in eight years from a body with $1,400 of a yearly budget and forty members to one with yearly expenditures of $233,000 and 4,051 members.

The election announced C. P. Tolman as president, W. R. Cameron as first vice-president, L. A. De Blois as third vice-president, J. A. Oartel as fourth vice-president, C. W. Price as general manager, S. J. Williams as secretary, W. H. Frater as treasurer and R. T. Solensten as assistant secretary. It was announced also that whereas there had been seven fatal accidents in Milwaukee a year ago, during the present safety week up to that date, Thursday, there had been but one.

New British Association Sends Delegates

Major H. F. Doidge was present and brought the greetings of Lord Levelhulme of the British Industrial Safety First Association. He said that while Great Britain had been early in providing legislation protecting the working man it had taken the cue of the National Safety Council in establishing an association for the creation of the safety spirit. The association, he said, was barely a year old, but "in the language of your country, it is already 'some kid.'" A dance followed the banquet.

On Friday morning the mining section held its final session with a paper by John L. Boardman, Anaconda Copper Mining Co., Butte, Mont., entitled "Accidents from Falls of Roof and Ground in Metal Mines." This paper will be given a minimum of space here though it was by no means without interest. The paper, of which W. S. Bates was co-author, showed that 37 per cent of the accidents were due to falls of rock and ore. It showed that drifting and crosscutting, comprising only 16 per cent of the mining work, caused 24 per cent of the accidents.

Is Danger Ever Its Own Defence?

The authors are at a loss to explain this except by saying that carelessness is the source of the great accident rate. They declare it is the safest kind of work, that the miners are close to the roof and with care in removing loose material it is quite easy to prevent accidents. The timbering is simple and easy. "Square-set stoping, which from the nature of the work should be considered more hazardous and which is estimated at 70 per cent of the total mining work, has caused only 63 per cent of the falling-ground accidents."

"From this information," they add, "we may deduce the fact that in the more dangerous mine workings the miner by increased vigilance renders himself less liable to injury than does the man working in the "safe place" who puts too much trust in the ground holding up. However, there is nothing to be wondered at in this. We all know the experienced repairman who is employed in mining through caved ground.

"He is always to be found around the most dangerous places in the mine, and is rarely if ever caught by a fall. It is a pleasure to watch him work. When he first comes on shift he proceeds to make himself safe, and when he starts mining he is ever on the alert and as quick as a cat, and if a fall of ground does come, he beats the fall to a place of safety by many feet."

The authors then describe a safety drive made at the many mines around Butte which lasted four weeks (27 days). The accident rate fell 52.6 per cent as compared with the record of two months in the year before and 47.5 per cent as compared with the record of the previous year, the comparisons being based on the number of menshifts worked. The leading mine worked 5,357 shifts without a single accident, and another mine with less tonnage had an equally good record. This was a splendid achievement, as every form of accident was included in the reckoning—fatal, serious and slight.

An interesting article by H. A. Kudlik, chief safety inspector of the Hudson Coal Co., Scranton, was then read. It was pointed out that systematic timbering does not attempt to say how many timbers shall be set but what shall be the minimum number used and where this minimum shall be located. The miner should always set what safety demands and no less than that number. Miners always resent setting timber anywhere near the face, saying that the shots will displace the posts. Even though only one post has to be reset in a month, the miner will oppose following the rules made to assure him of safety.

Mr. Conibear suggested that some of the accidents might be ascribed to the lowered quality of mine timber resulting from the scarcity of good stands of trees, but Mr. Flyzik stated that in the state of Washington, where there was plenty of timber, the accidents from falls of roof did not appear in any way abated.

New Inquiry into Roof Falls Suggested

He suggested that the Bureau of Mines would do well to ascertain how many were killed where timber was delivered at the working face and how many where the posts were placed so far from the end of the room or drift that the miner had difficulty in supplying himself. He believed that the labor and time involved in moving timber from a relatively remote point induced the miner to take unnecessary chances. Mr. Bagley, the state mine inspector in Washington, is preparing to make a statistical investigation of this character. Henry Roark said that the Clinchfield Coal Corporation places its own timber and W. W. Gidley remarked that he had noted the fact that the timber now being obtained did not equal that of past years.

In metal mines, Mr. Seip said, taking all accidents into consideration, accidents from falls of ground were not the predominant cause of injury. Mr. Gidley concurred with this statement. The old question came up as to the possibility of the mine foreman taking the time to compel a man to stand timber properly with the rapid-fire progress through the mine now required of him. Mr. Conibear said that at the twenty-two mines of the Cleveland-Cliffs Iron Co. he was the sole safety man. The company had doubled the number of shift bosses and expected them to spend the necessary time to see that timber was set so as to safeguard the men. With plenty of men in charge of the operation of a mine it was possible to obtain safe timbering without any special force of safety men.

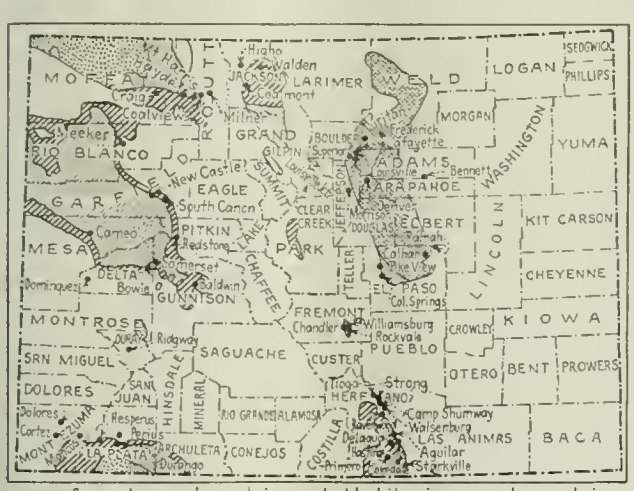
(To be continued next week)

Temperatures at Which Ash from Western Coals Fuses to a Sphere

Bureau of Mines Tables Show the Temperatures at Which the Ash of Several Coals in the West Will Fuse, the Types of the Various Coals, Places Where Found, Their Ash and Sulphur Content

IN OUR issue of Sept. 30, pp. 677-682, we published Bureau of Mines tables on the "Softening Temperatures of Coal Ash from Western Coals," the states covered being California, Idaho, Montana, Nevada, New Mexico, Oregon, Utah and Washington. The territory of Alaska also was covered by the same article, the authors of which were W. A. Selvig, L. R. Lenhart and A. C. Fieldner. The tables herewith, as also those preceding, are published by permission of the Bureau of Mines.

The three state maps which accompany this article were especially prepared by *Coal Age* to show the places that are mentioned in the tables and the areas of coal which the states contain. They will be found of interest, however, for general reference. In the table "L" stands for lignite, "Sb-B" for sub-bituminous and "B" for bituminous coal. It will be noted that nearly all the western half of North Dakota is underlaid with lignite or with strata that may contain workable lignite. It is remarkable how large a portion of Wyoming has coal measures, though in a large part of the southwestern section of the state the depth of the measures is so great as to make the possibility of their being mined extremely doubtful. Wyoming also has some small areas of anthracite.



Areas known to contain workable bituminous coals, contain also small anthracite deposits

Areas that may contain workable (bituminous and anthracite)

Areas probably containing workable coal but under heavy cover

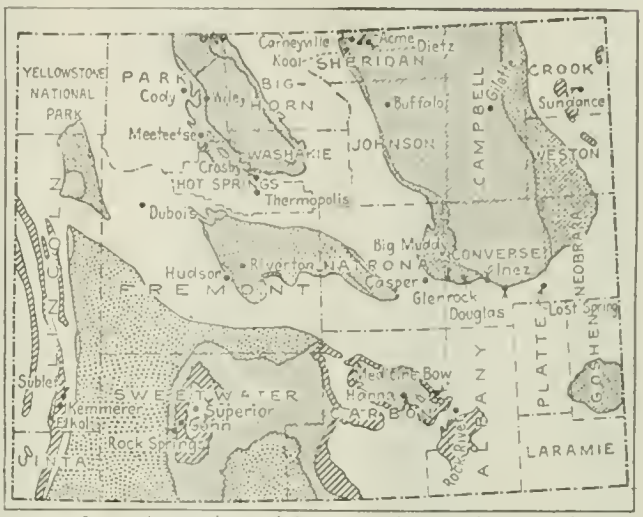
Areas known to contain workable subbituminous coal

Areas possibly containing workable subbituminous coal

Areas probably containing subbituminous coal under heavy cover

COAL FIELDS OF COLORADO

In the extreme northwest corner, in Moffat and Routt Counties, is the Tampa field. Eastward of that area is the North Park field, in Jackson and Grand Counties. Southward is the Grand River field of Rio Blanco, Garfield, Meas and Delta Counties, having at its eastern end the Crested Butte field, of Gunnison County. In the southwestern corner of the county is the Durango-Gallup field, in Montezuma, La Plata and Archuleta Counties. The small South Park field, in Park County, occupies the center of the state and east of it is the Denver region, stretching from El Paso County in the south to Weld County in the north. Canon City field, in Fremont County, is a small but valuable field south of the Denver area. Most important of all, the Trinidad field lies south of the Canon field on the New Mexico line.



Areas known to contain workable bituminous coals, contain also small anthracite deposits

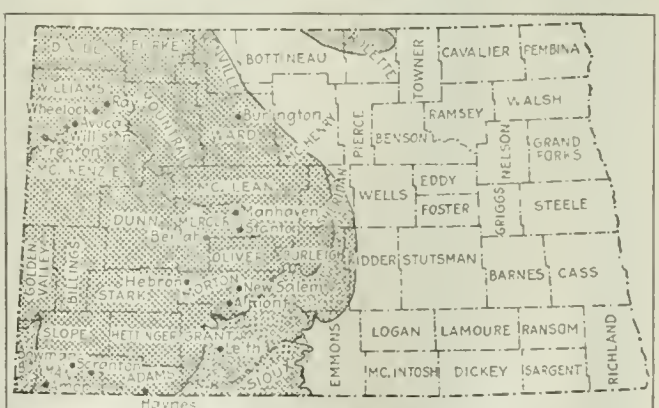
Areas known to contain workable subbituminous coal

Areas possibly containing workable subbituminous coal

Areas probably containing subbituminous coal under heavy cover

WYOMING'S AREA OF THICK COAL

In the southwest is the great Green River region, with the Rock Spring field in its heart and the Cumberland-Kemmerer field in the extreme southwest, Uinta County. In the center of the state is the Wind River region, in Fremont and Natrona Counties. The Powder River region lies toward the east and contains such well-known fields as Sheridan, Carneyville, Kooi and Dietz, in Sheridan County. The Big Horn Basin region lies in Big Horn Park and Washakie Counties to the west of the Powder River region.



Areas known to contain workable lignite

Areas possibly containing workable subbituminous coal

Areas that may contain workable lignite

LIGNITE FIELDS OF NORTH DAKOTA

This state produced only 719,733 tons in 1919, of which 173,744 tons was used locally and 29,943 was used for steam heat at the mines. The mines of the U. S. Reclamation Service are at Williston, Williams County, near the Montana line.

The Colorado fields are widely separated, the best known field being that which is most southeasterly, lying in Huerfano and Las Animas Counties and containing such well known towns as Walsenburg, Rouse, Delagua, Trinidad, Primero, Segundo, Aguilar, Hastings, Morley and Cokedale.

Softening Temperatures of Coal Ash from Western Coals

COLORADO

County	Town	Mine	Coal Bed	Type of Coal	No. of Samples	Softening Temperature, Deg. F. Lowest	Highest	Average	Average Analysis of Dry Coal. Percentage of Ash	Sulphur
Adams	Bennett	Thomas	Unnamed	Sb.-B.	1			2,120	11 35	0 48
Boulder	Lafayette	Simpson	Lower Simpson	Sb.-B.	2	2,030	2,130	2,080	4.45	0 48
Boulder	Louisville	Acme	Lower Acme	Sb.-B.	1			2,040	5.46	0 40
Boulder	Louisville June	Monarch No. 2	Unnamed	Sb.-B	2	1,990	2,030	2,010	6 54	0 33
Boulder	Superior	Industrial	Unnamed	Sb.-B.	3	2,060	2,140	2,100	6 89	0 37
Delta	Bowie	King	King	B.	2	2,470	2,740	2,600	5 05	0 60
Delta	Dominquez	Wells Gulch	Unnamed	B.	1			2,160	6.20	1 01
El Paso	Calhan	Mosby	Mosby	Sb.-B.	1			2,520	20 77	0 45
El Paso	Colorado Springs	El Paso	Unnamed	Sb.-B.	3	2,190	2,260	2,230	7 99	0 43
El Paso	Colorado Springs	Rapson No. 2	Lower	Sb.-B.	1			2,210	7 96	0 50
El Paso	Pike View	Pike View	"A"	Sb.-B.	6	2,070	2,350	2,250	7.37	0 41
El Paso	Ramah	Purdon	Purdon	Sb.-B.	1			2,510	27.45	0 48
Fremont	Chandler	Chandler	Canon	Sb.-B.	2	2,080	2,130	2,100	7 25	0 49
Fremont	Rockvale	Rockvale	Rockvale	Sb.-B.	2	2,080	2,350	2,220	10 43	0 65
Fremont	Williamsburg	Magnet	Magnet	B.	2	2,030	2,130	2,080	7 90	0 99
Garfield	New Castle	Vulcan	Allen	B.	5	2,060	2,370	2,220	5.75	0 50
Garfield	South Canon	South Canon	Wheeler	B.	2	2,360	2,410	2,380	8 78	0 58
Gunnison	Baldwin	Mount Carbon	No. 2	B.	1	....		2,310	7 30	1 05
Gunnison	Mount Carbon	Kubler	No. 2	B.	1			2,380	9 51	0 49
Gunnison	Somerset	Somerset	Unnamed	B.	2	2,240	2,240	2,240	9 74	0 46
Huerfano	Camp Shumway	Gordon	Cameron	B.	2	2,280	2,300	2,290	11 48	0 94
Huerfano	Camp Shumay	Vesta	Walsen	B.	1	....		2,670	9 89	0 68
Huerfano	Delcarbon	Brennan	Robinson	B.	2	2,180	2,350	2,260	8 09	0.72
Huerfano	Delcarbon	Turner	Cameron	B	1	....		2,240	7 33	0 71
Huerfano	Delcarbon	Turner	Walsen	B.	5	2,230	2,430	2,330	11 29	0 66
Huerfano	Delcarbon	Cameron	Walsen	B.	3	2,430	2,620	2,510	15 43	0 50
Huerfano	Farr	Lester	Walsen	B.	2	2,400	2,640	2,520	11 08	0 54
Huerfano	Lester	Maitland	Lenox	B.	1			2,680	13 70	0 76
Huerfano	Maitland	Maitland	Robinson	B.	1			2,400	15.31	0 64
Huerfano	Maitland	Pinon	Cameron	B.	2	2,330	2,340	2,340	10.30	0 78
Huerfano	McGuire	Oakdale	Unnamed	B.	3	2,130	2,690	2,360	10.50	0 57
Huerfano	Oakview	Oakdale No. 1	Mammoth	B.	1			2,330	8 19	0 50
Huerfano	Oakview	Pietou	Walsen		1			2,670	11 62	0 72
Huerfano	Pietou	Pietou	Walsen and Robinson	B.	1			2,210	10 48	0.59
Huerfano	Pietou	Ravenwood	Cameron	B.	2	2,500	2,520	2,510	8 38	0 77
Huerfano	Ravenwood	Sunnyside	Walsen	B.	2	2,480	2,530	2,500	9.24	0 65
Huerfano	Strong	Kebler No. 2	Robinson	B.	2	2,100	2,150	2,120	8 29	0 56
Huerfano	Tioga	Toltec	Cameron	B.	1			2,380	10 51	1 01
Huerfano	Toltec	Toltec	Walsen	B.	1			2,700	10 43	0 81
Huerfano	Toltec	Robinson No. 1	Robinson	B.	3	2,400	2,440	2,410	11 65	0 54
Huerfano	Walsen	Robinson No. 2	Walsen	B.	3	2,280	2,380	2,340	10 84	0 56
Huerfano	Walsen	Mutual	Walsen	B.	1			2,500	15 63	0 47
Huerfano	Walsenburg	Riach	Riach	Sb.-B.	1			2,580	8 94	0 91
Jackson	Coalmont	Mitchell	Mitchell	Sb.-B.	1			2,270	12 56	1 05
Jackson	Higho	Marr	Sudduth	Sb.-B.	1			2,440	4 31	0 19
Jackson	Walden	McCullum	Sudduth	Sb.-B.	1			2,370	7 78	0 33
Jackson	Walden	Sudduth	Sudduth	Sb.-B.	1			2,440	6 25	0 74
Jackson	Walden	Winscom	Winscom	Sb.-B.	1			2,190	14 80	0 98
Jackson	Walden	White Ash	Jumbo	Sb.-B.	1			2,290	8 12	1 05
Jefferson	Morrison	Cinder Butte	"B"	Sb.-B.	1			+3,010	19 13	0 68
La Plata	Durango	San Juan	Unnamed	B.	2	2,990	3,010	3,000	7 05	0 74
La Plata	Durango	Soda Spring	"B"	B.	1			2,550	15 74	0 72
La Plata	Durango	Hesperus	Hesperus	B.	2	2,710	3,000	2,860	6 37	0.71
La Plata	Hesperus	Mormon	Unnamed	B.	1			+3,010	14 18	0.90
La Plata	Hesperus	Wheeler	Upper No. 5	B.	1			2,950	7 12	0.62
La Plata	Hesperus	Hauert	Spencer	B.	1			+3,010	9 57	0 69
La Plata	Mancos	Perins Peak	Peacock	B.	3	2,060	2,540	2,320	5 88	2 42
La Plata	Perine	Empire	Walsen	B.	1			2,360	13 39	0.69
Las Animas	Aguilar	Royal	Peerless	B.	1			2,780	11 83	0.73
Las Animas	Aguilar	Royal	Walsen	B.	1			2,420	11 16	0 69
Las Animas	Aguilar	Bon Carbo	Primero	B.	1			2,300	14 17	0 50
Las Animas	Bon Carbo	Temple No. 9	Brodhead No. 4	B.	1			2,320	8 20	0 45
Las Animas	Brodhead	Temple No. 10	Rugby	B.	1			2,430	11 13	0 45
Las Animas	Brodhead	Cokedale No. 1	Cokedale	B.	4	2,710	2,990	2,920	17 74	0 54
Las Animas	Cokedale	Cass	Delagua	B.	1			2,430	8 65	0 75
Las Animas	Delagua	Delagua	Delagua	B.	4	2,310	2,480	2,420	11.51	0 56
Las Animas	Delagua	Delagua No. 1	Delagua	B.	3	2,550	2,610	2,570	7 51	0 60
Las Animas	Delagua	Delagua No. 3	Delagua	B.	1			2,300	8.63	0 53
Las Animas	Delagua	Forbes No. 9	Walsen	B.	4	2,310	2,580	2,400	10 04	0 73
Las Animas	Forbes	Hastings	Berwind (?)	B.	3	2,650	2,990	2,770	13 11	0 75
Las Animas	Hastings	Hastings	Hastings	B.	3	2,600	2,810	2,680	16 51	0 64
Las Animas	Hastings	Morley	Engle-Starkville	B.	5	2,340	2,960	2,660	15 01	0 70
Las Animas	Morley	Primero	Primero	B.	3	2,370	2,560	2,460	13 54	0 51
Las Animas	Primero	Piedmont	Lower	B.	2	2,740	2,930	2,840	15 02	0 66
Lar Animar	Sopris	Sopris No. 2	Cameron	B.	1			2,790	18 11	0 75
Las Animas	Sopris	Starkville	Engle-Starkville	B.	5	2,800	2,990	2,890	15 31	0 60
Las Animas	Starkville	Toller	Berwind	B	2	2,530	2,760	2,640	12 08	0 68
Las Animas	Tollerburg	Cameo	Cameo	B.	2	2,710	2,960	2,840	9 58	0 63
Mesa	Cameo	Battle Era	Unnamed	B.	1			2,220	7 17	1 04
Moffat	Axial	Ed Collom	Unnamed	B.	1			2,350	4 49	0 78
Moffat	Axial	James	Unnamed	B.	1			2,380	4 37	0 61
Moffat	Axial	Joe Collom	Collom	B.	1			2,430	2 51	0 36
Moffat	Axial	Shafer	Unnamed	B.	1			2,300	4 50	0 68
Moffat	Axial	Blevins	Unnamed	Sb.-B. (?)	1			2,210	7 76	0 79
Moffat	Craig	Hart	Unnamed	Sb.-B.	1			2,740	6 49	0 62
Moffat	Craig	Kimberley	Unnamed	Sb.-B.	1			2,190	5 57	0 92
Moffat	Craig	Roby	Unnamed	Sb.-B.	1			2,890	4 87	0 69
Moffat	Craig	Seick	Unnamed	Sb.-B	1			2,010	9 29	0 85
Moffat	Craig	Walker	Unnamed	Sb.-B.	2	2,080	2,090	2,080	7 36	1 06
Moffat	Lay	Lay	Unnamed	Sn.-B. (?)	1			2,440	6 75	1 04
Moffat	Mount Streeter	Dollom	Collom	Sn.-B. (?)	2	2,230	2,540	2,380	2 90	0 33
Montezuma	Cortez	Cortez	Unnamed	B.	1			2,980	15 42	0 62
Montezuma	Cortez	Hamilton Prospect	Unnamed	B.	1			2,710	13 64	0 50
Montezuma	Cortez	Jackson	Spencer (?)	B.	3	2,240	2,560	2,370	6 36	0 54
Montezuma	Cortez	Mowry	Unnamed	B.	2	2,110	2,130	2,120	16 13	7 64
Montezuma	Cortez	Todd	Spencer	B.	3	2,190	2,380	2,260	7 63	0 78
Montezuma	Dolores	Prospect	Unnamed	B.	1			2,810	9 11	0.59
Montezuma	Mancos	Old Spencer	Peacock	B.	1			2,430	5 82	1.08
Montezuma	Mancos	Spencer	Spencer	B	1			2,510	4 80	0.66
Montezuma	Mancos	Low Creek	Low Creek	B.	1			2,450	8 24	0.68
Ouray	Ridgway	Placita	Unnamed	B.	1			2,370	6 75	0.50
Pitkin	Redstone	Black Diamond	Lord	B.	1			2,990	8 95	0.55
Rio Blanco	Meeker	Cornrike	Unnamed	B	1			2,310	2.57	0.33
Rio Blanco	Meeker	Fairfield	Unnamed	B	1			2,370	6 97	0.96
Rio Blanco	Meeker	Meeker	Old Pollard	B.	1			2,310	6 68	0 50
Rio Blanco	Meeker	Montgomery	Unnamed	B.	1			2,210	7 00	0.81
Rio Blanco	Meeker	Sulphur Creek	Unnamed	B.	1			2,780	9 26	0.66
Rio Blanco	Meeker	Wesson	Unnamed	B.	1			2,730	7 02	0.95
Rio Blanco	Meeker	Routt-Pinnacle	Bear Run	B.	1			2,400	7 84	0.54
Routt	Coalview	Carey	Unnamed	Sb.-B.	1			2,480	6.52	0.47
Routt	Hayden	Dry Creek	Unnamed	Sb.-B.	1			2,340	4 54	0.45
Routt	Hayden	Green	Green	Sb.-B.	1			2,250	5 26	0.50

Softening Temperatures of Coal Ash from Western Coals—Continued

COLORADO—Continued

County	Town	Mine	Coal Bed	Type of Coal	No. of Samples	Softening Temperature—Deg. F Lowest	Highest	Average	Average Analysis of Dry Coal Percentage of Ash	Sulphur
Routt	McGregor	McNeil No. 1	Wolf Creek	B	1			2,780	12 07	0 53
Routt	McGregor	McNeil No. 3	Wadge	B	1			2,660	7 46	0 73
Routt	Millner	Elk Creek	Wolf Creek	B	2	2,540	2,980	2,760	10 72	0 50
Routt	Mount Harris	Bear River	Unnamed	B	1			2,420	5 64	0 57
Routt	Mount Harris	Colorado and Utah No. 1	Harris	B	3	2,580	2,870	2,710	6 96	0 49
Routt	Mount Harris	International	Wolf Creek	B	1			2,710	13 98	0 49
Routt	Mount Harris	Mount Harris	Wadge	B	8	2,570	2,940	2,820	6 30	0 46
Routt	Mount Harris	Wadge	Wadge	B	2	2,540	2,710	2,620	5 94	0 49
Routt	Milner	Curtis No. 1	Curtis	B.	1			2,420	8 53	0 73
Routt	Milner	Chergo	Wadge	B	1			2,430	6 41	0 49
Routt	Milner	Schuster	Unnamed	B	1			2,600	6 01	0 55
Routt	Oak Creek	Argo	Argo or Pinnacle	B	4	2,330	2,520	2,420	4 62	0 50
Weld	Frederick	Baum	Unnamed	Sb.-B (?)	1			2,030	5 29	0 49
Weld	Puritan	Puritan	Unnamed	Sb.-B	1			2,170	4 75	0 45

NORTH DAKOTA

Adams	Haynes	Nipper & Monroe	Haynes	L.	1			2,270	12 31	2 27
Adams	Haynes	William Pinkham	Haynes	L.	1			2,140	12 68	2 21
Bowman	Amor	Durkin Prospect	T Cross	L.	1			2,060	10 96	1 15
Bowman	Bowman	Open Pit	Unnamed	L.	1			2,130	18 39	
Bowman	Scranton	Scranton	Harmon (?)	L.	1			2,180	12 47	1 01
Mercer	Beulah	Beulah	Beulah	L.	1			2,270	9 51	1 07
Mercer	Manhaven	Volmer	Manhaven	L.	1			2,140	9 75	0 66
Mercer	Stanton	Teuber	Unnamed	L.	1			2,390	9 02	1 10
Mortun	Almont	Ramstand	Unnamed	L.	1			2,290	9 17	0 64
Morton	Hebron	Hebron	Unnamed	L.	2	2,030	2,070	2,050	13 14	1 56
Morton	Leith	Kolbank	Haynes (?)	L.	1			2,090	16 13	2 30
Morton	Leith	Jones	Haynes (?)	L.	1			2,150	13 63	1 07
Morton	New Salem	Dakota Products	Unnamed	L.	1			2,100	11 84	2 13
Morton	New Salem	Unnamed	Unnamed	L.	1			2,180	12 83	1 07
Ward	Burlington	Conon	Unnamed	L.	3	2,130	2 200	2,150	16 63	0 40
Williams	Avoca	Bruegger	"C"	L.	1			2,240	7 39	0 51
Williams	Ray	Pittsley	Unnamed	L.	2	2,240	2,310	2,280	8 02	0 62
Williams	Trenton	Geltz	Unnamed	L.	1			2,270	11 90	2 41
Williams	Wheelock	Monuen	Unnamed	L.	1			2,430	14 63	2 28
Wiliams	Williston	Husebye	Ellitbrope	L.	4	2,000	2,140	2,070	11 75	1 82
Williams	Williston	Powell	"C"	L.	1			2,190	9 28	1 24
Williams	Williston	U. S. Reclamation	Middle	L.	5	2,190	2,310	2,250	10 19	0 98

SOUTH DAKOTA

Harding	Buffalo	Hilton	Unnamed	L.	1			2,400	18 40	1 59
Harding	Buffalo	Mendenhall	Unnamed	L.	1			2,140	17 36	0 94
Harding	Ralph	Newcomb	Widow Clark	L.	1			2,140	13 95	1 46
Perkins	Lodgepole	Nelson	Unnamed	L.	1			2,180	15 73	1 14
Perkins	Strool	Phillips	Unnamed	L.	1			2,130	15 64	2 02
Perkins	Strool	Jones	Unnamed	L.	1			2,290	13 72	3 65
Perkins	Strool	Knudsen	Unnamed	L.	1			2,120	17 23	1 65

WYOMING

Campbell	Gillette	County Bank	Unnamed	Sb.-B.	1			2,090	14 66	2 06
Campbell	Gillette	Local	"B"	Sb.-B.	1			2,350	11 03	1 96
Campbell	Gillette	Prospect	"A" (?)	Sb.-B	1			2,230	9 31	1 76
Carbon	Hanna	Local	Unnamed	Sb.-B	1			2,110	5 18	1 20
Carbon	Medicine Bow	Johnson	Unnamed	Sb.-B	1			2,150	7 91	0 98
Carbon	Rock River	King	Unnamed	Sb.-B	1			2,430	9 59	1 32
Converse	Big Muddy	Big Muddy	Lower Big Muddy	Sb.-B.	1			2,100	9 15	0 77
Converse	Big Muddy	Big Muddy	Upper Big Muddy	Sb.-B.	1			2,240	6 37	0 97
Converse	Douglas	Outcrop	Lower Burned	Sb.-B	1			2,090	11 65	0 50
Converse	Glenrock	Country Bank	Unnamed	Sb.-B.	1			2,360	6 42	0 63
Converse	Glenrock	Fairview	Unnamed	Sb.-B.	1			2,210	7 15	0 92
Converse	Glenrock	Glenrock	Unnamed	Sb.-B.	1			2,110	7 79	0 92
Converse	Glenrock	Prospect	Unnamed	Sb.-B.	1			2,110	9 61	0 55
Converse	Inez	Diamond	Unnamed	Sb.-B.	1			2,110	15 30	1 68
Converse	Inez	Inez	Unnamed	Sb.-B.	1			2,180	11 54	0 98
Converse	Lost Spring	Harney Creek	Unnamed	L.	1			1,990	10 49	1 13
Converse	Lost Spring	Haynes Prospect	Unnamed	Sb.-B.	1			2,310	7 77	1 57
Converse	Lost Spring	Onyon	Unnamed	Sb.-B.	1			2,010	11 50	1 23
Converse	Lost Spring	Prospect	"D"	Sb.-B.	1			2,260	5 93	0 37
Converse	Lost Spring	Rosin	Unnamed	Sb.-B.	1			2,170	13 81	1 42
Converse	Lost Spring	Sunset	Unnamed	Sb.-B.	1			2,320	16 65	0 80
Crook	Sundance	Belshe	Unnamed	B.	3	2,150	2,490	2,260	14 99	6 09
Fremont	Dubois	Prospect	Unnamed	Sb.-B.	1			2,180	15 84	4 00
Fremont	Hudson	Hickey	Unnamed	Sb.-B.	1			2,150	5 46	0 90
Fremont	Hudson	Indian	Unnamed	Sb.-B	7	2,000	2,260	2,130	7 26	0 64
Fremont	Hudson	McKinley	Mesa Verde	Sb.-B	3	2,080	2,250	2,140	9 45	1 46
Fremont	Hudson	Mitchell	Unnamed	Sb.-B	2	2,280	2,310	2,300	9 55	0 98
Fremont	Hudson	Proposia	Lander	I	2	2,270	2,280	2,280	5 61	0 79
Fremont	Riverton	Shipton	Unnamed	Sb.-B.	1			2,320	9 42	0 90
Hot Springs	Crosby	Big Horn	Gebo	Sb.-B	5	2,050	2,380	2,170	5 58	0 71
Hot Springs	Kirby	Gebo	Gebo	Sb.-B	15	1,860	2,210	2,020	4 40	0 65
Hot Springs	Kirby	Gwynn Prospect	"B"	Sb.-B.	1			2,380	16 11	0 51
Hot Springs	Meeteetse	Dickie No. 1 Prospect	Unnamed	Sb.-B.	1			2,510	11 03	0 82
Hot Springs	Thermopolis	Berry Prospect	Unnamed	Sb.-B	1			2,210	7 67	1 31
Johnson	Buffalo	Prospect	"B"	Sb.-B	1			2,180	9 37	0 79
Johnson	Casper	Prospect	Unnamed	Sb.-B.	1			2,500	18 02	1 85
Johnson	Casper	Prospect	Unnamed	Sb.-B	1			2,360	9 30	0 70
Johnson	Casper	Prospect	Unnamed	Sb.-B	1			2,150	10 16	0 89
Johnson	Casper	Puggsley	Unnamed	Sb.-B	1			2,210	6 75	0 64
Lincoln	Elkol	Elkol	Elkol	Sb.-B	2	2,300	2,420	2,360	4 06	0 81
Lincoln	Kemmerer	Kemmerer No. 6	Unnamed	B.	7	2,170	2,310	2,250	6 73	0 63
Lincoln	Sublet	Kemmerer No. 5	No. 5	B	4	2,180	2,240	2,210	5 72	1 02
Natrona	Casper	Casper Prospect	Unnamed	Sb.-B.	1			2,120	7 18	0 92
Natrona	Casper	Prospect	Unnamed	Sb.-B	1			2,360	6 79	0 53
Natrona	Casper	Red Ash	Unnamed	Sb.-B.	1			2,290	7 60	0 67
Park	Cody	McGuffey	Unnamed	Sb.-B.	1			2,670	9 49	1 08
Park	Meeteetse	Black Diamond	Unnamed	Sb.-B.	1			2,910	9 50	0 24
Park	Meeteetse	Greybull	Unnamed	Sb.-B.	1			2,550	14 37	1 07
Park	Wiley	Eagle	Unnamed	Sb.-B.	1			2,530	13 69	0 63
Park	Wiley	East Wiley	Unnamed	Sb.-B	1			2,310	9 23	1 07
Park	Wiley	West Wiley	Unnamed	Sb.-B	1			2,370	13 59	0 89
Sheridan	Acme	Acme No. 1	Carney	Sb.-B	16	2,100	2,330	2,250	4 84	0 49
Sheridan	Acme	Acme No. 2	Carney	Sb.-B.	5	2,100	2,150	2,130	4 60	0 45
Sheridan	Carneyville	Carney	Carney	Sb.-B.	1			2,150	3 68	0 43
Sheridan	Carneyville	Carney No. 1	Carney	Sb.-B	13	2,050	2,270	2,140	4 48	0 47
Sheridan	Carneyville	Carney No. 2	Carney	Sb.-B	6	2,050	2,200	2,140	5 00	0 51
Sheridan	Carneyville	Model	Carney	Sb.-B.	4	2,130	2,270	2,190	9 26	0 45
Sheridan	Dietz	Dietz No. 4	Dietz No. 2 (?)	Sb.-B.	9	2,120	2,220	2,180	9 03	1 30
Sheridan	Dietz	Dietz No. 7	Dietz No. 7	Sb.-B.	8	2,040	2,220	2,150	6 39	0 64
Sheridan	Kooi	Hughey Prospect	Monarch (?)	Sb.-B.	1			2,150	6 48	0 41
Sheridan	Kooi	Kooi	Monarch	Sb.-B	22	1,990	2,240	2,080	6 36	0 83

Softening Temperatures of Coal Ash from Western Coals—Continued

NEW MEXICO

County	Town	Mine	Coal Bed	Type of Coal	No. of Samples	Softening Temperature—Deg. F. Lowest	Highest	Average	Average Analysis of Dry Coal. Percentage of Ash	Sulphur
Sheridan	Monarch	Monarch	Monarch	Sb.-B.	21	1,970	2,290	2,190	4 85	0 56
Sheridan	Monarch	New Monarch	Monarch	Sb.-B.	8	2,000	2,490	2,180	4 92	0 59
Sheridan	New Acme	New Acme	Monarch	Sb.-B.	4	2,150	2,410	2,320	4.32	0 67
Sweetwater	Gunn	Gunn-Onealy "B"	No. 11	Sb.-B.	3	1,900	2,030	1,970	2.44	1 06
Sweetwater	Rock Springs	Prospect	Tipton	Sb.-B.	1			1,980	15.33	7 52
Sweetwater	Superior	"B"	No. 1 Upper	B.	1			2,040	2.91	1 08
Sweetwater	Superior	"B"	No. 7	B.	4	2,190	2,410	2,330	3 92	1 05
Sweetwater	Superior	"C"	Unnamed	Sb.-B.	4	2,100	2,390	2,280	3 76	1 12
Uinta	Elkol	Elkol	No. 1	B.	2	2,380	2,400	2,390	4 61	0 75
Uinta	Frontier	Kemmerer No. 1	No. 1	B.	4	2,060	2,190	2,120	7.13	1 35
Uinta	Kemmerer	Prospect	Unnamed	Sb.-B.	1			1,920	3.05	2 38
Uinta	Susie	Kemmerer No. 4	Kemmerer No. 1	B.	2	2,040	2,270	2,160	6.82	1 42
Westor	Cambria	Antelope No. 3	Unnamed	Sb.-B.	3	2,600	2,980	2,790	18.38	5 40
Weston	Cambria	Antelope No. 4	Unnamed	Sb.-B.	3	2,750	2,870	2,810	16.85	5 55
Weston	Moorcroft	Prospect	Unnamed	Sb.-B.	1			2,400	8.13	0.76
Weston	Moorcroft	Prospect	Unnamed	Sb.-B.	1			2,310	9.62	1.31

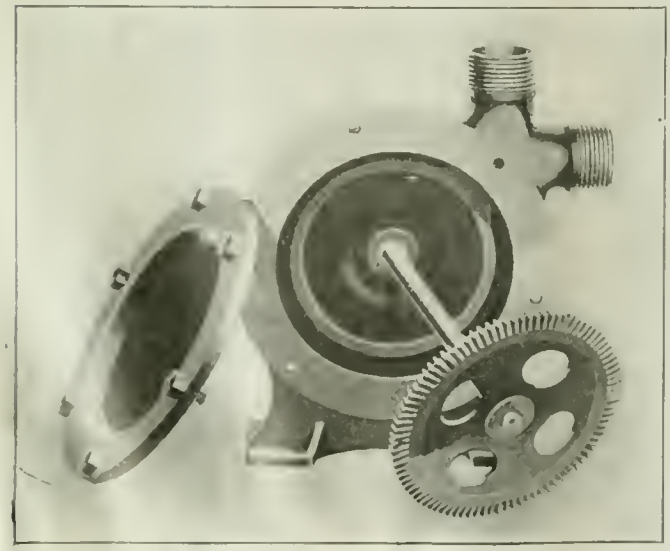
Centrifugal Pump Takes Water at the Outer Edge of Its Impeller

THE science of hydraulics or the art of handling liquids is one of the oldest as well as one of the most interesting problems with which the engineer has to deal. It is a far cry from the screw of Archimedes to the modern pump, yet the two are connected by a continuous chain of invention and improvement.

Probably the latest radical departure from the beaten path in pump construction is embodied in a machine for handling water recently developed and placed upon the market by the Western Pump Co., of Davenport, Iowa, and called the "Westco" pump. A line of sizes has been designed for this machine embracing a wide range of capacities against any pressure up to 200 lb. per stage, the sizes of the pump ranging from one no larger than an ordinary watch up to a machine that will deliver 1,000 gallons per minute.

Pump Contains Only One Moving Part

As has been stated, this pump is a radical departure from current practice in design. It contains but one moving part, known as the impeller. This, as may be seen in the accompanying illustration, is roughly a disk bearing upon its circumference a series of vanes upon either side of the central disk web. The impeller thus constructed revolves at high velocity within a casing that contains a suitable passage for the water beyond the tip of the impeller vanes.



CENTRIFUGAL PUMP OF NEW DESIGN

Instead of taking water at the center and expelling it at the periphery, this pump both takes and discharges water at the periphery, thus, it is claimed, greatly reducing the internal friction of the machine. A capacity of as much as 1,000 gal. per min. is attained by the larger machines.

In the ordinary centrifugal pump, as is well known, the water is drawn into the eye or central portion of the impeller and is discharged at the circumference. In the Westco pump the water is taken in at the circumference and is discharged from the circumference. The internal friction of the machine is thus largely reduced.

Simplicity and Extreme Skill Embodied

While the construction of this machine is extremely simple, considering the fact that its only motion is one of revolution, the principles of design call for a high degree of engineering skill and practical experience. The diameter, thickness and speed of the impeller, as well as the number, length and width of blades, also the diameter, area and cross-section of the water channel must all be accurately determined. The operation of the pump as a whole is dependent upon each of these factors as well as its relation to the others. The interrelationship of each must therefore necessarily be predetermined for every model.

This type of pump may be used to handle small or large quantities of water under all pressure conditions where low- and high-duty piston pumps or single- or multi-stage centrifugal machines would be normally required. It has been subjected to severe and long-continued tests under operating conditions and has proved itself a practical success.

Urges Americans to Sell Enrope Raw Rather Than Finished Products

WITH the improved banking system now in force a business panic in this country would be chargeable to gross inefficiency and dereliction of duty on the part of business men and bankers, James S. Alexander, president of the National Bank of Commerce in New York, declared in an address at the eleventh annual convention of the American Manufacturers' Export Association, held in New York City, Oct. 14. Answering the charge that bankers fail to co-operate with business in times of financial stress, he said that the action of the banks in conserving credit was the best co-operation they could extend under recent financial conditions.

The country's credit structure was never better built than it is today, he said, and in view of the elasticity given business conditions by the Federal Reserve system, the country need never see another panic. Principles governing the domestic situation, particularly the duty of banks to readjust the credit situation when necessary, apply with especial force to the export trade, he said. He expressed the belief that American manufacturers should market raw rather than finished products to Europe if a sound basis is to be laid for equalizing the existing adverse trade balances.

Discussion by Readers

Edited by
James T. Beard

Essential Requirements in Longwall Work

Success in longwall work depends primarily on the proper control of the roof pressure, which can only be obtained by the building of good packwalls and maintaining a uniform system of timbering at the working face, so as to throw only sufficient pressure on the coal face to break down the coal and produce a uniform settlement of the roof in the gob.

BELIEVING that the only system of mining that can be successfully applied to the working of the thin seam of coal described by L. E. R., *Coal Age*, Aug. 19, p. 403, I would draw attention to the following requirements to insure success in such work:

As in other methods of mining, there are two systems in longwall mining, known as "longwall advancing" and "longwall retreating," respectively. These differ mainly in the fact that when employing the latter system the headings are driven to the boundary of the property before opening up the longwall face. In the advancing

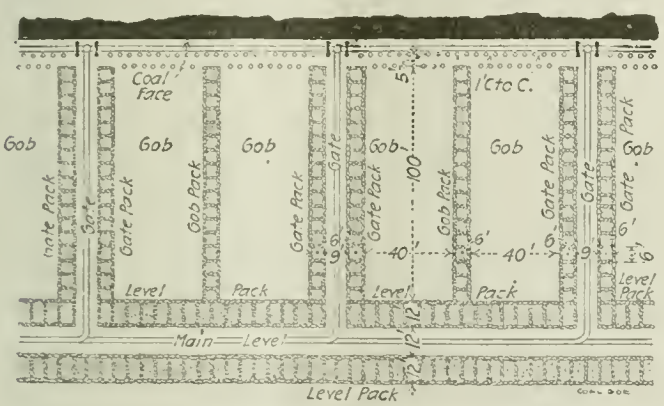


FIG. 1. SHOWING GATEROADS LEADING TO LONGWALL FACE

system of longwall the complete extraction of the coal is started either at the foot of the shaft or, preferably, at the boundary of a sufficient pillar, which is left for the protection of the shaft.

The use of the retreating system requires a larger capital than the advancing system, there being no returns on the investment until the boundary is reached and the extraction of coal begins. A frail roof or soft bottom, however, will often require the retreating system.

In all longwall work an important feature is the direction of the working face. If the conditions will permit better results are obtained and a larger proportion of lump coal is realized by working the coal "face on." In other words, the direction of the face is then parallel or nearly so to the face cleats of the coal.

Under a heavy roof pressure, particularly in working thin seams, it is often necessary to advance the working face at an angle with the face cleats of the coal. At times, again, the best results are obtained when the coal is worked "end on," the face being then parallel to the butt cleats or "joints" of the coal.

When opening out a longwall face at the shaft bottom, or at the boundary of the shaft pillar; or, in the retreating system, at the boundary lines of the property; a considerable area must be worked out with great care and watchfulness, in order to observe the first signs of the weighting of the roof on the coal face. This may not take place, however, before the face has advanced 60 or 80 yd. In the meantime, the greatest care must

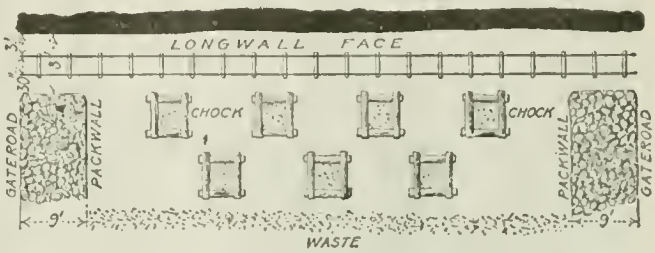


FIG. 2. USE OF CRIBS OR CHOCKS ON A LONGWALL FACE

be observed in the building of the packwalls and timbering the roof at the face.

In Fig. 1 is shown a section of a longwall face where three gateroads or "gates" lead from the main level to the working face. There a track or conveyor is laid along the face to transport the coal to the head of each gate by which it is taken to the main level to be then hauled out of the mine.

As shown in this figure, all the roads including the main level are kept open by building roadpacks on each side of the road. Other gobpacks are shown built in the waste. The distribution of such gobpacks must be determined by conditions in the roof and floor of the seam. The distance apart of the gateroads will likewise depend on conditions in the seam. A conveyor face will often be 100 yd. in length.

All packwalls, particularly roadpacks, must be well built. These will vary from 10 to 15 ft. in width. They may be continuous or built at regular intervals apart, depending on conditions at the face. The stone for building packwalls is generally taken from the roof on the roads when it is necessary to rip the roof, in order to obtain the required headroom for the cars.

Heavy Roof Pressure Requires the Use of Cribs

Where the roof pressure is great or the building material weak, "cribs" formed of old timbers are built at intervals in the packs to strengthen them. It is important to build substantial cribs at each corner of a gateroad to insure the road being kept open at such points.

In Fig. 2 is shown a section of a longwall face where cribs are used to control the roof pressure in place of post timbering. As indicated in this figure, the cribs are built four square, at regular intervals apart. The timbers are laid up in log-cabin fashion, the inner face being filled with refuse. In order to facilitate the re-

moval of the crib as the face is advanced, the lower logs are laid on a mound of dirt that can be mined with a pick when the crib is to be removed.

Whether the roof is supported by posts or cribs, the purpose is to so control the pressure on the coal face that it shall be sufficient to bring down the coal without causing a fracture in the roof. As the face is advanced, it is necessary to draw the rear timbers after setting a new row of posts or cribs at the face.

In Fig. 3 is shown a stepped longwall face, where each section is 300 ft. in length and has a conveyor to transport the coal to the head of the gateroad. In this figure three rows of posts are shown at the face. The

FIG. 3. CONVEYORS ON A STEPPED LONGWALL FACE

best results are obtained where the posts or cribs are staggered in each succeeding row, as shown in Figs. 2 and 3.

As a longwall face is advanced, the overburden settles down firmly on the waste and packwalls. This settlement of theh roof should be uniform and cease, generally speaking, about 60 or 80 yd. back from the face. Outby of this point there is usually little trouble or expense required to keep the roads in good condition. As previously stated, the chief aim in longwall work is to utilize the leverage of the roof pressure to break down the coal, while preventing the fracture of the roof, which would mean disaster and much expense to recover the face.

WILLIAM DICKINSON, SR.

Oak Hill, W. Va.

Example of a Practical Skilled Miner

It does not always happen that the practical skilled miner is a man of long experience in mining, as is clearly show in the instance here cited.

SPEAKING of what constitutes a practical skilled miner, as suggested in the letter of W. M. Chambers, *Coal Age*, Sept. 2, p. 496, I find it is not always true that such a one has been long in the mining game and gained experience by years of toil under varying conditions.

Upon a recent visit to a mine, in company with the foreman, I entered a miner's place that was more orderly kept and better timbered than it has ever been my pleasure to behold. Neither the foreman nor myself could make a single suggestion that would be of value.

Every post was in line, stood plumb and had a well balanced cap between it and the roof. Tools not in use were put out of the way in a breakthrough. The man had drilled six holes about eight inches deep in the rib, inside of the breakthrough; and in each hole was a stick of permissible explosive, while his detonators were in another hole five feet away. All the holes were ten feet from his tool box.

There was no carbide spilled about the box, and coat and watch hung on a post close by within easy reach. The miner himself was busy loading a car. It stood on a slight grade and had a sprag in each rear wheel and the brake set.

Upon our approach, the miner stopped work and, holding one hand against the roof sounded the slate with his pick, to assure us and himself that it was safe A few questions elicited the fact that he had never had a car off the track. My surprise at this was less when I learned he had only been a miner twenty-seven days. The boss explained his success as a miner by saying he was teachable, adding that he would make a better miner in thirty days than many men in as many years.

Pikeville, Ky. G. E. DAUGHERTY.

Longwall System for Low Coal

Conditions permitting, undoubtedly the longwall system of mining is best adapted for the working of low coal; but the success of this method depends wholly on the experience of the men employed.

EVERY practical mining man is aware that, in the majority of instances, the thicker seams of coal are being rapidly worked out, while the thinner seams are being left to be mined at some later day when the larger deposits have been practically exhausted. Having regard to the best interests of any mining concern, in respect to its future welfare, it is more logical to think that the thinner seams should be worked in conjunction with those that are thicker.

In seeking to ascertain the best method to adopt in the further development of a mine already opened in a 32- to 35-in. seam, L. E. R. has presented a question that should interest many. The inquiry appeared in *Coal Age*, Aug. 19, p. 403, and in reply the editor has rightly suggested the adoption of the longwall system of mining and drawn attention to the particular advantages of that system in the working of low coal.

EXACT INFORMATION NEEDED

The information given by the inquirer, however, is so meager that it would be foolish for one to attempt to make a definite statement regarding the best and most profitable system of working in that particular field. The only way to decide that matter is to have an inspection made by a competent man who has had experience in the working of coal by the longwall and room-and-pillar systems, under varying conditions.

As has been stated in the reply to this inquiry, without an accurate knowledge of all the conditions it is only possible to suggest what would seem to be the most suitable method to adopt owing to the thinness of the seam, which makes the complete extraction of the coal of prime importance, and in this regard the longwall system of mining has the advantage.

Before going further let me give, here, a word of warning. It is of the utmost importance, in adopting the longwall method of working, to secure a thoroughly reliable and competent man who has had experience in that system. He must have a good practical knowledge of what is required in opening a longwall face and maintaining the roads.

Very much depends on understanding the movement of the overburden and keeping a proper control of the roof pressure so that it shall be just sufficient to bring down the coal. One must understand exactly how to handle the work and know what means to employ to insure success. Without this knowledge and experience the undertaking is likely to prove an expensive experiment for the company.

When longwall work is properly conducted, the system has the following advantages: 1. Complete extraction of the coal. 2. Concentration of the work in a

continuous coal face. 3. Cheaper and better ventilation of the working face. 4. A minimum length of haul underground. 5. Minimum expenditure for rails, ties and maintenance of roads. 6. Less expense for brattices, repairing stoppings, timbering air-courses and cleaning up roof falls. 7. Little or no damage to the surface in the extraction of the coal.

Finally, let me say that if the longwall system can be employed in this case, the mine will take on a new lease of life, and soon show a balance on the right side of the ledger account. In the present room-and-pillar system, there is roof to be brushed or floor to be lifted and other deadwork that is only offset by a small tonnage. If that system is to be continued, I agree with the suggestion made by the editor that the main headings should be driven three or four abreast. I much prefer four main headings to provide an intake and return airway, haulage road and traveling road, separately. This is in the interest of the safety and future development of the mine.

McKeesport, Pa. ANDREW O. BAIN.

Classifying the Working Places and Grouping the Men

Miners should be distributed according to their individual producing capacities, after a careful study of the varying conditions in the mine.

DISCUSSING the important question of distributing men of different producing qualities in such a manner as to maintain a uniform output of coal, it must be acknowledged that there are good and bad methods of doing this. It requires not only a wide familiarity with the men but a close study of the conditions in the mine in order to insure the best results.

In regard to making a proper distribution of the men, in a mine where the conditions vary widely, many will contend that it cannot be done with justice and fairness to all and, at the same time, maintain a uniform daily tonnage. Others will claim with equal assurance that it is possible.

In my opinion, it is necessary to group the men employed in a mine, with respect to their individual capacities for producing coal. Then, make a careful study of the conditions in the mine and classify the working places with respect to the ease with which the coal can be mined, the distance from the shaft bottom and the haulage requirements, and make the distribution accordingly.

Every foreman knows that there are widely varying qualities among miners. There are the steady workers, some of whom are good producers and others not so good. There are married men, single men, young men, old men and those who are feeble or crippled in the service. There is the miner who works but half the time and the habitual drinker who is sure to be away at the time when he is most needed. I am not inclined to give the kind of man last named much consideration. In fairness to the operator and the man's fellow miners, the habitual drinker should be relegated to the worst place in the mine.

In respect to the conditions prevailing in mines, the practical foreman who is anxious to secure a maximum recovery of coal would not think of placing an unsteady worker or an old, feeble or crippled miner on pillar-work, where it is of the utmost importance to employ the most steady and practical men. Any irregularity in the progress of this class of work can only result in trouble and the loss of much coal.

In roomwork it is often of the same vital importance that the working faces in each room shall be advanced regularly at a uniform pace. This is necessary because when drawing back the pillars in those rooms good results can only be obtained by keeping a uniformly straight line on the faces of the pillars. Also, good ventilation at the face of each room requires a uniform advance, in order to enable the breakthroughs to be made at the proper time and place. These considerations appear to argue against placing miners of good and bad producing qualities on the same line of work.

Foreman Must Use Judgment and Tact in the Distribution of His Men

In my experience, failure has resulted many times and much coal has been lost where an unequal assortment of men have been employed in the same section. It has frequently happened that good workers have been compelled to lay off until the fellow working the next place has caught up; or they must be transferred for a time to another place or be employed on company work.

Of course, it is common for the miner to believe and claim that the foreman is discriminating against him when he is given a place where the coal is low or hard to mine, or there are slips or faults that must be guarded against. He knows there are better places in the mine and thinks he is being treated unfairly, unless the foreman can use rare judgment and tact.

In a mine where all or most all of the places are equally good the question of distributing men gives little trouble. In other mines there will be sections where it is possible to group the good, steady workers so as to maintain a uniform pace throughout the section. In another section of the same mine it may be possible to group workers who are steady but less active and produce less coal. Here, also, the working faces may advance at about the same uniform pace, but the section will produce a less tonnage per man than in that first named. The unsteady or irregular workers must be assigned to places where the work is of less importance and their habits give less trouble.

One of the greatest handicaps to a mine foreman is his friends. Especially is this true where he must consider a maximum recovery of coal and uniform production, and has a natural disposition to treat every one alike. In order to maintain the required tonnage each driver and motorman must find a full trip waiting for him at the inby end of his haul. To accomplish this there must be a sufficient number of working places and a few extra ones, in order to produce the required amount of coal at all times. Only in this way can the coal be kept moving from the working face to the shaft or slope bottom.

Finally, in mines where the conditions vary, my practice is to give the married men who are steady workers and good producers the first consideration. Single men of this class come next and the old, feeble and crippled men next, following these with the unsteady workers and lastly those given to drink. My belief is that we owe it to the industry to give the steady workers and good producers the first choice. Moreover, it is the only way open to a mine foreman to enable him to hold his best men and maintain the daily output of the mine. It is the premium to be placed on steady and good work.

Thomas, W. Va. W. H. NOONE.

Inquiries of General Interest

Answered by

James T. Beard

Weight and Volume of Legal Bushel of Coal in Pennsylvania

The efforts of Congress (1836) to establish a uniform system of weights and measures in this country was only partially successful. The values of the fundamental standards, pound, yard, gallon, and bushel, adopted by the Federal Government, were generally accepted by the several states, with the exception of the last two standards mentioned. But many of the states established arbitrary values for the gallon and bushel, for different commodities.

THERE has always been a feeling of discontent among the miners of the Connellsville region regarding the measurement of their coal in bushels, which forms the basis of computing their earnings. In several instances, miners have measured their coal with a regular bushel basket, as a means of verifying the estimated capacity of the mine cars as stated by the officials of the company. It is unnecesasry to say that these two estimates varied widely.

Webster's Unabridged Dictionary defines the bushel as containing 2,150.42 cu.in. Taking this value as a basis, I measured a mine car supposed to hold forty bushels of coal and found its capacity was over forty-nine bushels. The fireboss told me that a bushel of coal should weigh 75 or 80 lb. The mine foreman claimed the weight of a bushel was 80 lb., but said its volume was about five pecks, which would make it over 2,600 cu.in. This estimate would reduce my 49 bushels to about the 40 bushels claimed by the company as the capacity of the car. Please state the correct volume of a bushel of Connellsville coal and its weight in pounds.

Latrobe Pa. A MINER.

Owing to the confusion in Custom Houses, the Federal Government ordered an investigation of the weights and measures in common use (1830). A few years later (1836) Congress directed the Secretary of the Treasury to deliver a complete set of the Standards of Weights and Measures adopted, to the governor of each state, with the result that the value of the pounds and yards are uniform in all the states. For various reasons, however, many states adopted their own values for the gallon and the bushel, for different commodities; and the true basis of comparison is, therefore, by weight.

For example, the legal weight of a bushel of bituminous coal adopted by the Federal Government is eighty pounds, which is also the legal weight for that commodity in Ohio and West Virginia, while Pennsylvania and Kentucky have made the legal bushel of bituminous coal to be seventy-six pounds in those states.

By act of the Pennsylvania Legislature, on and after January 1, 1850, the standard bushel for the measurement of bituminous coal in that state was made 2,688 cu.in., even measure, which was not, however, to affect previous contracts still in force. The act was made immediately operative in the county of Allegheny.

The select councils of the cities of Pittsburgh and Allegheny and the incorporated boroughs within that county were authorized to establish a mode of ascertaining the weight of coal sold in the districts named. In May, 1852, the standard weight of coal in the borough of Greensburg, Westmoreland County, was made to be seventy-five pounds per bushel, and the town council of that borough was authorized to pass ordinances prohibiting the sale of coal otherwise than by the standard weight.

From the foregoing, it will be seen that there is considerable local variation in the legalized weight of coal, which is likewise true of other commodities. It is well known that, in Pennsylvania, the legal standard ton for anthracite coal is the long ton (2,240 lb.), while in Colorado the legal ton is the short ton (2,000 lb.).

Grate Area of a Mine Furnace

KINDLY give me a little information in regard to the size of grate required to produce a given circulation against a fixed water gage. The proposition that concerns me at the present time is the following:

A few years ago we were operating our mine under furnace ventilation. The furnace shaft was later abandoned and used as an upcast, only, for the circulation produced by a fan that we had installed at that time owing to the need of more air as the mine was developed. This fan has proved but a makeshift, however, and must now be replaced by a larger one to provide for the future development of the mine.

The present circulation is an air volume of 120,000 cu.ft. per min., under a water gage of 2 in. I want to ask what should be the size of grate required in the old furnace shaft, which is 300 ft. deep, in order to produce this same quantity of air. We desire to use the furnace temporarily while renewing the fan installation.

SUPERINTENDENT.

———, Ky.

Assuming a fairly dry shaft, a common rule for determining the grate area of a furnace, for any given circulation and depth of shaft, is the following:

Divide the product of the required volume of air (Q_m), expressed in thousands of cubic feet per minute, and the unit pressure (p), in pounds per square foot, by the square root of the depth of the shaft (D), in feet; and the quotient will be the required grate area (A), in square feet.

Applying this rule, the grate area required to produce a circulation of 120,000 cu.ft. per min., against a 2-in. water gage, which corresponds to a unit pressure of $2 \times 5.2 = 10.4$ lb. per sq.ft., when the furnace shaft is 300 ft. deep, is

$$A = \frac{Q_m p}{\sqrt{D}} = \frac{120 \times 10.4}{300} = 72 \text{ sq.ft.}$$

The size of grate required in this case is, therefore, 8 x 9 ft., which may be assumed to burn 12 lb. of bituminous coal, per square foot of grate surface, per hour, or $12 \times 72 = 864$ lb. per hr.

Examination Questions

Answered by

James T. Beard

Miscellaneous Questions

(Answered by Request)

QUESTION—*The rubbing surface of a square airway is 130,000 sq.ft.; the length of the airway is 5,000 ft.; what is the perimeter of the airway?*

ANSWER—Since the rubbing surface of an airway is always equal to the product of its length and perimeter, the latter is found by dividing the rubbing surface, in square feet, by the length of the airway, in feet, which gives in this case 130,000 ÷ 5,000 = 26 ft. This airway being square, the length of each side is 26 ÷ 4 = 6½ ft., or 6 ft. 3 in.

QUESTION—*If the ventilation of a mine is insufficient how may it be increased without increasing the power?*

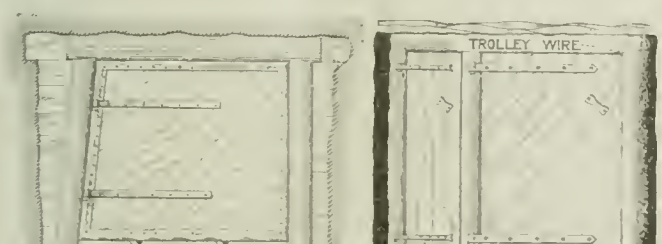
ANSWER—By cleaning up and removing all obstructions in the airways, enlarging all breakthroughs and crosscuts, and shortening the distance the air must travel; also, by splitting the air wherever this is practicable. By these means the mine resistance and pressure are reduced and the volume of air circulated by the same power is increased.

QUESTION—*What is the purpose of stoppings, and what material would you use in their construction in mines in this district?*

ANSWER—The purpose of stoppings is to close the openings in which they are built and thus prevent the passage of air through them. Stoppings are built in the crosscuts between the intake and return of a pair of headings to deflect the air to the face and prevent its short-circuiting at such points. Stoppings are also built in openings to close off an abandoned place or to seal off a fire started in a place or section of the mine.

QUESTION—*State how you would build and erect a trapdoor in a coal mine.*

ANSWER—In the accompanying figure are shown two forms of trapdoors commonly built in mines. The door



TWO KINDS OF MINE TRAPDOORS

shown on the left is hung so as to give it a good fall that will prevent its standing open except when propped back. The door is shown as having a canvas flap nailed around its edge to prevent the leakage of air through the door when it is closed. The door shown on the right is a convenient form to employ where it is necessary to have a door on haulage road in motor haulage. On the side opposite to the trolley wire is shown a small door closing the manhole at the side of the road.

QUESTION—*A volume of 87,450 cu.ft. per m.n. is moving in a mine under a 1-in. water gage. If a fall occurs in the main return airway, reducing the equivalent orifice of the mine to one-half what it was previously, how will that affect the quantity of air passing and the water gage? Show by calculation.*

ANSWER—Assuming that the power on the air or the power producing the circulation remains constant, the quantity of air in circulation will vary inversely as the pressure or water gage. But, the equivalent orifice varies directly as the quantity and inversely as the square root of the water gage. From that it follows that the equivalent orifice of a mine varies as the expression $q\sqrt{q}$ or $\sqrt{q^3}$, or the cube of the quantity of air in circulation varies as the square of the equivalent orifice of the mine or airway. In other words, the cube of the quantity ratio is equal to the square of the orifice ratio which in this case is 1:2 or ½; and we have for the new quantity:

$$\left(\frac{q}{87{,}450}\right)^3 = \left(\frac{1}{2}\right)^2 = \frac{1}{4};$$

$$q = \frac{87{,}450}{\sqrt[3]{4}} = 55{,}090 \text{ cu.ft. per min.}$$

Again, since for a constant power on the air, the quantity varies inversely as the pressure or water gage, the water gage ratio is equal to the inverse quantity ratio. Therefore, calling the resulting water gage x we have:

$$\frac{x}{1} = \frac{87{,}450}{55{,}090}; \quad \text{and } x = 1.58 \text{ in.}$$

To prove these results, find the equivalent orifice (A), in each case; thus:

$$A = (0.0004 \times 87{,}450) \div \sqrt{1} = 35 \text{ sq.ft.}$$

$$A = (0.0004 \times 55{,}090) \div \sqrt{1.58} = 17.5 \text{ sq.ft.}$$

The equivalent orifice in the second case is, therefore, one-half that of its previous value.

QUESTION—*(a) Of what is coal dust composed? (b) Does coal dust give explosive properties to the air when suspended in an air current? (c) When are explosions of coal dust most likely to occur?*

ANSWER—(a) Coal dust is the finely pulverized coal that results from mining and handling the product.

(b) When held in suspension in air and acted on by flame of sufficient volume and intensity the combustion of the dust is so rapid that it assumes explosive proportions, and air thus charged with coal dust in suspension is said to be explosive.

(c) Explosions from coal dust are most likely to occur in the mining of a highly inflammable coal by machines, particularly if the mine is generating some gas and proper precautions are not taken to load out the dust and prevent its suspension in the air of the mine.

Right to Impose Conditions of Employment Stressed in Old Dominion Ry. Case

To Labor or Not to Labor Declared To Be Inherent Privilege of the Individual—Jurist Upholds Road's Right to Discharge Employees for Joining Labor Union—Precedent of Highest Tribunal Cited

IN DENYING the application of Local 418 of the Brotherhood of Trainmen for an injunction to restrain the Washington & Old Dominion Ry. from discharging employees who joined the union, Justice Siddons, of the Supreme Court of the District of Columbia, in his decision rendered Sept. 3, cited a ruling of the U. S. Supreme Court (*Coal Age*, Sept. 23, p. 651). The Court held that while the right to labor or to remain idle was an inherent privilege of the workman, as a corollary the employer had the right to impose conditions upon those entering its employ, under which ruling the road was within its rights in discharging employees if they joined the brotherhood.

The suit was brought by a number of employees and former employees of the railroad company in their own right and as members of the Brotherhood of Railroad Trainmen, R. E. Lee Local 418, of Alexandria, Va., seeking an order to enjoin the defendant company from discharging them from its employ because of their affiliation with the brotherhood, the injunction to continue pending a decision by the Labor Board. The plaintiffs contended that the Labor Board had jurisdiction under the Transportation Act and sought, pending its decision, reinstatement of employees discharged because of membership in the labor union.

In view of the fact that some of the company's employees had stated that in any controversy between the railway and employees belonging to the union or between the road and the union itself the employees would stand by the union, it became the policy of the road to prevent its employees from joining labor unions.

Union Demands Foreshadowed a Strike

It appearing that the employees who became members of the union contemplated a demand for increases in wages beyond—in the opinion of road's general manager—the ability of the company to meet, and in the event of failure to obtain such increases proposed ordering a strike, with consequent interruption of transportation of passengers, freight and mails, Justice Siddons considered the case of importance to the employees and the traveling and shipping public. After carefully weighing the merits of the plaintiffs' claim to consideration Justice Siddons ruled as follows:

. . . The right of employees to organize in what are popularly called unions is definitely recognized by the law, as it has received, from time to time, judicial affirmation and recognition. The right to strike, that is, the right by concerted action to withdraw from a given employment in the absence of contracts for employment for a definite period of time, is also recognized by the law and judicial authority. Strikes that are conducted in an orderly manner and do not involve a violation of property rights, or the production of public disorder, are but the exercise of a right not to work. The right to labor is a personal right which inheres in the individual, and, as a corollary to that, the right not to work must equally be recognized. But with the recognition of these rights, that, is the right to belong to organizations of labor unions, so-called, there is another right which belongs to the employer, and that right is one to impose conditions upon those who seek employment from a given employer, be that employer an individual or a corporation. The right of employees to organize themselves into a union, or to become members of an existing union, has by both the Federal and State Legislatures attempted to be given such a sanction as would prevent employers from interfering with the free exercise of this right on the part of their employees. A conspicuous example of such an attempt by the Federal Legislature is illustrated in the case of Adair vs. United States (208 U. S., page 161). By the Act of Congress approved June 1, 1898 (30 Stat. 424), it is enacted by section 10 of that Act: "That any employer subject to the provisions of this act, and any officer, agent, or receiver of such employer, who shall require any employee, or any person seeking employment, as a condition of such employment, to enter into an agreement, either written or verbal, not to become or remain a member of any labor corporation, association, or organization; or shall threaten any employee with loss of employment, or shall unjustly discriminate against any employee because of his membership in such a labor corporation, association, or organization . . . is hereby declared to be guilty of a misdemeanor, and, upon conviction thereof in any court of the United States of competent jurisdiction in the district in which such offense was committed, shall be punished for each offense by a fine of not less than one hundred dollars and not more than one thousand dollars."

Unconstitutional Act Quoted in Convicting

Adair was the master mechanic of the Louisville & Nashville Railroad Co., which was a common carrier of interstate commerce and an employer within the meaning of the Act of Congress mentioned, and one Coppage, being at the time an employee of said common carrier, was a member of a labor organization then known as the Order of Locomotive Firemen, and, being such, Adair, under authority of said carrier, discharged Coppage from his employment by the road because of his membership in said labor organization. For this act Adair was indicted, convicted and fined, and from that action of the trial court the case reached the Supreme Court. The opinion of the Supreme Court was delivered by Mr. Justice Harlan and held that the part of the 10th section of the Act of Congress which had been quoted was unconstitutional, because, say the Court, it is an invasion of the personal liberty, as well as of the right of property guaranteed by the 5th amendment to the Constitution. Said the Court (page 172): "It was the right of the defendant (Adair) to prescribe the terms upon which the services of Coppage would be accepted, and it was the right of Coppage to become or not, as he chose, an employee of the railroad company upon the terms offered to him. Mr. Cooley, in his treatise on torts, page 278, well says: 'It is a part of every man's civil rights that he be left at liberty to refuse business relations with any person whomsoever, whether the refusal rests upon reason or is the result of whim, caprice, prejudice or malice. With his reasons neither the public nor third persons have any legal concern. It is also his right to have business relations with anyone with whom he can make contracts, and, if he is wrongfully deprived of this right by others, he is entitled to redress.'" Again, at page 174, the Court say: "While, as already suggested, the rights of liberty and property guaranteed by the Constitution against deprivation with-

out due process of law is subject to such reasonable restraints as the common good or the general welfare may require, it is not within the functions of government—at least in the absence of contract between the parties—to compel any person, in the course of his business and against his will, to accept or retain the personal services of another, or to compel any person, against his will, to perform personal services for another." Still further, say the Court, at page 175: "It was the legal right of the defendant, Adair—however unwise such a course might have been—to discharge Coppage because of his being a member of a labor organization, as it was the legal right of Coppage, if he saw fit to do so—however unwise such a course on his part might have been—to quit the service in which he was engaged, because the defendant employed some persons who were not members of a labor organization. In all such particulars the employer and the employee have equality of right, and any legislation that disturbs that equality is an arbitrary intereference with the liberty of contract which no government can legally justify in a free land."

The Court, of course, recognized exceptions to the general principles thus set forth in the case of contracts for employment which fix the period of service and prescribe the conditions upon which such a contract may be determined. Such contracts would control the rights of the parties as between themselves. There was a strong dissenting opinion in this case by Justices McKenna and Holmes, but in the later case of Coppage vs. Kansas, 236 U. S., page 1, the Court adhered to the principle of the doctrine announced in the Adair case, and there held that the statute of the State of Kansas as construed and applied by the highest State Court, which undertook to criminally punish an employer, or his agent, for having prescribed as a condition upon which one may secure employment under, or remain in service of such employer (the employment being terminable at will), that the employee shall enter into an agreement not to become or remain a member of any labor organization, was unconstitutional, as infringing the rights of personal liberty and property without due process of law. In that case there was a dissenting opinion by Justices Holmes, Day and Hughes.

It may be asked what becomes of the right of employees to organize themselves into a union, or to become members of a union already in existence, if, as a consequence of doing so, the employer may exercise his right as recognized by the Supreme Court in the cases cited? The answer may not be easy to formulate, but this Court is not called upon to answer the question. Its duty is to give effect to the authoritative opinions and decisions of the Supreme tribunal. These, it would seem, give to the defendant railway company the right to dismiss its employees, if they join a labor union. . . .

It is not for this Court to discuss the policy which from the evidence submitted is the one adopted by the defedant railway employer with respect to refusing that its employees may become members of a labor union. But it is well to keep in mind the evident policy of the National Legislature, which, impliedly at least, recognizes the right of employees to be members of a labor union.

In conclusion, the Court is of opinion that the defendant railway is such a carrier by railroad as comes within the purview of Title III of the Transportation Act of 1920. Its right to dismiss its employees for becoming members of the labor union is supported by the judgment of the highest judicial tribunal in the country, which judgment, in cases within the jurisdiction of this Court, this Court must recognize and enforce. It follows, therefore, that the application for an injunction as prayed by the plaintiffs must be denied and an order to this effect will be settled on notice.

Shortage Past. Coal Buyers Seek Quality and Reasonable Price. Wholesalers Report

AT a meeting in Washington on Wednesday, Oct. 6, the Executive Committee of the American Wholesale Coal Association made a thorough canvass of the present coal situation. As a result it feels justified in advising the members of the association and the public generally on the following points:

The American people some months ago were of the opinion that there was danger of an impending shortage of bituminous coal. The satisfactory production since July 1 has proved the momentary alarm to have been unfounded.

Abnormally high prices were paid by consumers while they were animated by the fear of possibly impending famine. These prices are now placed wholly out of line by satisfactory production.

For a while many restraints were put upon distribution of bituminous coal, with the result that retail dealers were unable to fill urgent orders. Since the supply promises to be abundant there is no reason for continuing any such restrictions. Due allowance should be made by the public for the fact that this statement relates only to soft coal and for the further fact that retailers cannot do all of their normal winter business in a month or two. They have not and cannot get the equipment necessary for such a feat even if they could get the coal.

It is the opinion of the committee that a great change in the whole market situation is imminent. Therefore it suggests to buyers of bituminous coal who have a month's supply in storage that they confine purchases to immediate needs.

The committee is influenced in reaching this opinion by developments which may be summarized as follows:

(1) C. E. Lesher, until recently statistician of the U. S. Geological Survey, has declared in a public statement that an average production of bituminous coal between Sept. 1 and Dec. 1, 1920, of 11,500,000 tons per week will meet all immediate needs and will supply a surplus of 40,000,000 tons of bituminous coal in the hands of the consumers.

(2) A report just issued by the Geological Survey shows a most satisfactory condition of stocks of bituminous coal now in the hands of users.

(3) Reports received from members of the American Wholesale Coal Association prove that many important users who recently had no storage of bituminous coal at all now have a supply sufficient for from six weeks to three months.

(4) Many well-informed buyers of bituminous coal who until recently were willing to take any quality, grade or size of coal at any price, are now quite particular as to quality, grade and size and are inclined to buy only if the price is satisfactory.

(5) In some few sections wholesalers were until recently able to sell all available bituminous coal practically without any effort on their part. The same concerns now report that sales are made with difficulty.

(6) In the Middle West prices recently have dropped, in some cases as much as $2 a ton.

(7) The impending close of navigation on the Great Lakes will release to the general trade large quantities of coal. This will be offered for sale in a market which already shows signs of approaching saturation.

(8) Finally, the fear of a large increase in exports has been removed by clear proof that the docks on the Atlantic seaboard are incapable of transshipping any more coal than is now being handled by them.

Production of Pennsylvania Anthracite in 1919*

(In Gross Tons)

Region	Shipped	Local Sales	Mine Fuel	Total	Men Employed Underground	Men Employed Surface	Men Employed Total	Days Worked
Lehigh:								
Freshly mined coal	9,667,200	403,574	1,151,389	11,222,163	12,086	7,032	19,118	275
Washery product	627,198	2,701	46,563	676,462	.....	198	198	176
Dredge product	67,207	.....	1,404	68,611	.....	44	44	155
	10,361,605	406,275	1,199,356	11,967,236	12,086	7,274	19,360	274
Schuylkill:								
Freshly mined coal	17,918,035	368,840	3,074,679	21,361,554	30,224	15,340	45,564	266
Washery product	1,081,891	86	200,749	1,282,726	.....	1,556	1,556	117
Dredge product	248,354	279,274	6,280	533,908	.....	415	415	173
	19,248,280	648,200	3,281,708	23,178,188	30,224	17,311	47,535	260
Wyoming:								
Freshly mined coal	36,694,081	1,031,398	3,443,843	41,169,322	65,087	20,980	86,067	268
Washery product	1,132,615	4,372	599,761	1,736,748	.....	868	868	173
Dredge product	8,128	8,742	548	17,418	.....	30	30	154
	37,834,824	1,044,512	4,044,152	42,923,488	65,087	21,878	86,965	267
Sullivan County:								
Freshly mined coal	372,575	8,810	51,634	433,019	564	262	826	263
Total freshly mined coal	64,651,891	1,812,622	7,721,545	74,186,058	107,961	43,614	151,575	268
Total washery product	2,841,704	7,159	847,073	3,695,936	.....	2,622	2,622	142
Total dredge product	323,689	288,016	8,232	619,937	.....	489	489	170
Grand total	67,817,284	2,107,797	8,576,850	78,501,931	107,961	46,725	154,686	266
Increases and decreases in 1919	—8,903,873 —11.6%	—280,095 —11.7%	—551,676 —6.0%	—9,735,644 —11.0%	+6,290 +6.2%	+1,275 +2.8%	+7,565 +5.1%	—27 —9.2%

* Preliminary figures, prepared by F. G. Tryon. Subject to slight revision.

U. S. Army Coal Needs Contracted For; Three Months Reserve Assured

CONTRACTS have been placed by the War Department covering 675,000 tons of bituminous coal and 350,000 tons of anthracite coal for army camps, posts and stations in the Eastern and Central sections of the country, at prices ranging from $4.25 to $8.50 for bituminous and $7.25 to $7.75 for the anthracite. There has been a marked increase in the price paid this year for the bituminous coal but not much change in the anthracite price. Last year the army purchased bituminous at about $3.42 a ton and anthracite for from $7 to $7.50 a ton.

Considerable Variation in Price Noted

Contracts for coal this year were placed on behalf of the War Department by Colonel J. P. Barney, chief of the raw materials and fuel division of the Quartermaster General's office, who made a trip through the East, South and Central West for this purpose. The colonel returned to Washington this week and was quite pleased with his success in procuring coal.

In the Eastern and Northeastern Departments of the army, embracing those portions of the country, the colonel placed orders for 275,000 tons of bituminous coal at $8.50 a ton. For the Central Department he contracted for 200,000 tons at from $7 to $7.25 a ton and for the Southeastern Department 200,000 tons of bituminous at from $4.25 to $6.25 a ton. He also contracted for 350,000 tons of anthracite coal through Dr. E. W. Parker, director of the Anthracite Bureau of Information of Philadelphia, at prices ranging from $7.25 to $7.75 per ton, dependent on the month in which delivered. The prices are f.o.b. mines. All bituminous coal is to be delivered in ten weeks from Sept. 18 and 70 per cent of the anthracite in ten weeks from Sept. 18.

Colonel Barney stated that, as far as he knew, every camp, post and station in the Eastern, Northeastern, Central and Southeastern Departments will thus have been provided with current coal needs for the year in addition to a three months' reserve, as ordered by the President and Secretary of War.

THE DEPARTMENT OF JUSTICE is preparing to enter prosecutions against anthracite coal profiteering. In a statement Attorney General Palmer said: "The Department of Justice has been busily engaged in gathering the facts in reference to the profits of coal producers in the anthracite region and will submit the facts to a grand jury on or about Oct. 18. Indications point very plainly to numerous violations of the Lever Law against profiteering in the anthracite field."

Railroads Make New Records in Loading And Delivery of Coal

IN AUGUST last the Pennsylvania system broke all previous records for the delivery of coal at New York harbor by dumping 527,010 gross tons at South Amboy. New records for the system have been made also in coal car loading. For bituminous coal the average load has been raised to 52.35 tons as compared with the previous high record of 50.9 tons. Anthracite loading per car has been

Anthracite Shipped in 1919, by Regions and Sizes*

(In gross tons) a

Size	Lehigh Region Mines	Lehigh Region Washeries	Lehigh Region Dredges	Schuylkill Region Mines	Schuylkill Region Washeries	Schuylkill Region Dredges	Wyoming Region Mines	Wyoming Region Washeries	Wyoming Region Dredges	Sullivan County Mines	Total	Per Cent of Total	Per Cent of Change in Sizes b
Lump	956	.....	.....	23,732			2,167	...	...	.....	26,855		79 8
Broken	344,407	592	.....	723,264	....	....	1,776,565	35		16,748	2,861,611	4 2	39 8
Egg	1,270,857	9,193	.....	2,360,418	5,809	.....	6,000,496	7,428		36,951	9,691,152	14 3	— 55 7
Stove	1,698,669	12,128	.....	3,310,554	7,408	.....	8,252,979	11,212	....	53,379	13,346,329	19 7	— 0 6
Chestnut	2,407,612	127,458	.....	4,223,141	99,025	14	10,357,708	80,813	...	76,917	17,377,688	25 6	— 0 2
Pea	1,031,703	57,810	1,407	1,995,143	143,182	83	2,812,545	130,723	100	50,830	6,223,526	9 2	— 3 8
Buckwh't No. 1	1,485,358	91,325	7,394	2,999,664	332,222	2,900	4,514,899	350,480	260	.....	9,784,502	14 4	— 9 4
Buckwh't No. 2	670,788	80,670	9,644	1,431,358	248,532	33,788	2,082,348	331,833	4,967	.....	4,893,928	7 2	— 9 3
Buckwh't No. 3	425,283	240,057	48,762	750,999	215,033	127,815	473,662	91,816	2,765	....	2,376,192	3 5	—52 7
Boiler	77,399	5,033	.....	13,669	9,605	56,955	281,018	51,102	...	...	494,781	0 8	—70 4
Other	254,168	2,932	.....	86,093	21,075	26,799	139,694	77,173	36	137,750	745,720	1 1	—45 1
Totals	9,667,200	627,198	67,207	17,918,035	1,081,891	248,345	36,694,081	1,132,615	8,128	372,575	67,817,284	100 0	—11.6

* Prepared by F. G. Tryon. (a) Subject to revision. (b) 1919 as compared with 1918, a minus sign indicates decrease.

raised to 47.15 tons as compared with the previous record of 45.75 tons.

Four months' improvement in coal transportation throughout the system is summarized in the following figures of carloads, issued by the Association of Railway Executives:

	To Tidewater Ports	To Lake Ports	Totals
May, 1920	11,300	3,912	15,212
June, 1920	13,312	6,823	20,185
July, 1920	14,397	11,361	25,758
August, 1920	20,099	21,750	41,849

Coal loaded at mines on the New York Central lines during August totaled 63,011 cars, an increase of 5,134 over the corresponding period of last year, and the heaviest loading of any month of the present year.

Bituminous Coal Production in Central Pennsylvania*

(In Net Tons)†

Period	1917	1918	1919	1920
January	5,103,621	4,637,131	5,114,716	4,390,827
February	4,351,331	4,666,093	3,148,078	3,635,195
March	5,260,725	5,318,134	3,482,408	5,002,992
April	4,497,326	5,084,292	3,404,602	4,254,075
May	4,840,767	5,214,803	3,649,957	4,105,668
June	5,044,325	5,393,048	3,831,680	4,404,480
July	4,851,237	5,590,414	4,386,820	4,705,956
August	5,139,502	5,702,102	4,832,219	4,947,492
September	4,716,933	5,104,013	4,865,074	5,162,333
Total nine months	43,805,767	46,710,030	36,715,554	40,609,018
Average monthly	4,867,307	5,190,003	4,079,506	4,512,113
October	5,311,568	5,265,562	5,580,692	
November	5,174,841	4,137,915	1,205,294	
December	4,366,641	4,401,611	3,044,841	
Total for year	58,658,817	60,515,118	46,546,381	
Average monthly	4,888,235	5,042,927	3,878,865	

* Figures supplied by Central Pennsylvania Coal Producers' Association.
† Includes boiler fuel, coal coked and local sales

Coal Wholesalers Agree to Co-operate in Elimination of Resale Abuses

ACTIVITIES of the U. S. Department of Justice in delving into alleged violations of the Lever Act have precipitated such a situation in the coal industry that the Executive Committee of the American Wholesale Coal Association arranged a meeting in Washington with Attorney General A. Mitchell Palmer on Sept. 29, when the problems of the wholesalers were gone into at great length and Mr. Palmer considerately and frankly stated the Government's position, which, summed up briefly, is:

(1) To prosecute those who violate the Lever Law in selling coal.

(2) The department will look with favor upon efforts by dealers to eliminate the employment of repeated resales as a means of enhancing prices in violation of the Lever Act.

(3) To have the American Wholesale Coal Association exert its influence to eliminate any such practice.

How many times coal may be resold between the mines and the consumer is a moot question upon which the committee expressed no opinion. It is generally recognized, however, that conditions may arise where it will expediate and reduce the cost of distribution if two wholesalers participate in the sale of coal, but in other cases such dual resale may violate the law.

In an effort to conform to the policy of the Department of Justice and to meet the deep-rooted prejudice among governmental agencies generally against attaching repeated wholesale profits or gross margins to a consignment of coal, the Executive Committee of American Wholesale Coal Association promptly held a special meeting at which Abel I. Smith, of Stanchfield & Levy, and C. C. Carlin, attorneys for the association, were present in Washington, and the committee individually and as a whole are in hearty accord that where such objectionable practices exist they should be immediately discontinued.

The committee feels it is unwise for the members of the association to enter into any agreement to bring about the desired result, as it might be construed as a violation of the Sherman Anti-Trust Law, but it is the opinion of the committee that unless the members of the association participating in objectionable resales voluntarily abandon the practice, the Government will use every effort to vigorously prosecute.

Coal and Coke Exported During August

EXPORTS of coal and coke from the United States by countries and by customs districts and bunker coal supplied to vessels in the foreign trade at specified districts during August, 1920, as reported by the U. S. Bureau of Foreign and Domestic Commerce, were as follows (in gross tons):

DOMESTIC FUEL EXPORTS BY COUNTRIES

Countries	Anthracite	Bituminous	Coke
Azores and Madeira Is		2,114	
Belgium	1,001	32,503	2,781
Denmark	9,782	260,703	3,916
Finland		2,325	1,531
France	27,819	207,277	394
Greece	9,500	58,542	
Italy		129,546	
Netherlands	21,349	385,060	
Norway		148,743	110
Poland and Danzig			500
Portugal		16,001	
Russia in Europe		2,910	
Spain		1,613	371
Sweden	12,169	283,296	
Switzerland	87	54,520	1,053
Turkey in Europe	2,800	4,495	220
England		2,735	50
Scotland			336
Bermuda		3,913	
British Honduras		136	1
Canada	465,973	1,867,006	40,859
Guatemala		50	
Honduras		3,629	
Nicaragua		91	
Mexico	604	17,773	13,521
Newfoundland and Labrador	70	5,584	
Barbados	25	8,441	
Jamaica		15,979	
Trinidad and Tobago		2,835	
Other British West Indies	40	218	
Cuba	1,519	123,610	5
Virgin Islands of U. S		7,988	
Dutch West Indies		456	
French West Indies			5
Haiti	2		
Dominican Republic			4
Argentina		182,740	2
Brazil	1,750	111,317	430
Chile	100	18,925	5,265
Colombia	50	1	10
Ecuador		1	
British Guiana		1,458	
Dutch Guiana		1,198	
Uruguay		30,039	
Venezuela			17
Aden		7,357	
Canary Islands	7	4,429	
French Africa		24,560	
Egypt		76,444	
Totals	555,627	4,108,561	71,381

EXPORTS BY CUSTOMS DISTRICTS

Maine and New Hampshire		68	81
Vermont	1,021	12,908	48
Massachusetts	65	4	
St. Lawrence	170,757	283,079	2,294
Rochester	96,347	89,288	
Buffalo	187,654	201,227	25,386
New York	70,930	35,250	6,285
Philadelphia	24,598	250,489	4,719
Maryland		561,694	3,445
Virginia		1,230,452	
South Carolina		50,889	
Georgia		11,792	
Florida		70,295	2,549
Mobile		12,531	
New Orleans		2,787	1
San Antonio	296	214	117
El Paso	83	9,491	5,002
San Diego	2	39	
Arizona	221	3,955	8,084
San Francisco	2	19	318
Oregon		350	
Washington	1	946	2
Dakota	1,339	3,445	454
Duluth and Superior	678	1,610	120
Michigan	61	146,880	9,625
Ohio	1,572	1,128,859	2,851
Totals	555,627	4,108,561	71,381

BUNKER COAL

Districts	Tons
Maryland	97,256
New York	268,446
Philadelphia	59,552
Virginia	223,776

Indiana Commission Fixes Coal Prices

PRICES ranging from $2.80 a ton to $5.85 a ton, according to quality, for coal at the mines were fixed by the Indiana Special Coal and Food Commission created at the last special session of the state Legislature. The prices were set following a conference between Jesse E. Eschbach, chief examiner of the State Board of Accounts; Otto Klauss, auditor of State, and Governor James P. Goodrich, members of the commission.

The mining companies of the state were divided by the commission into four groups, according to the quality of coal mined and different prices were set for each group, as follows:

Group 1. Low cost mines: Mine-run, $3 a ton; screenings, $2.80; prepared sizes, $3.25.

Group 2. Mine-run, $3.20; screenings, $3; prepared sizes, $3.45.

Group 3. Mine-run, $3.85; screenings, $3.65; prepared sizes, $4.10.

Group 4. Brazil Block: Mine-run, $5.60; screenings, $5.40; prepared sizes, $5.85.

Seventy-eight operators and operating companies are in Group 1. They include the largest operations in the state and produce more than one-half of the state's tonnage. Group 2 is made up of ninety-six operators. Sixty are in Group 3 and four in Group 4, which is the block field.

The commission also provides that 15c. per ton may be added to the prices specified to take care of selling cost, which is taken to mean that in most if not in all cases the prices will be 15c. higher than those specified.

In issuing the order Mr. Eschbach made the statement that the prices fixed are for the present temporary emergency only and that they may be changed at any time on the presentation of sufficient cause by coal companies.

The order of the commission follows:

Under and pursuant to authority vested in the Special Coal and Food Commission of Indiana by act of the General Assembly of Indiana, approved July 31, 1920, and after written notice to all licensed coal operators of the State of Indiana of a hearing fixed for Sept. 27, 1920, and after hearing on said date of all licensed coal operators desiring to be heard, and upon thorough investigation of the cost of mining coal by the respective licensees and as to the amount which constitutes a fairly reasonable profit upon the business of mining coal,

It is hereby ordered that the maximum price of coal, f.o.b. mines, for delivery in the State of Indiana for each of said licensees respectively shall be as follows, and that no coal from any of the said mines shall be sold by said licensees or any of them for delivery for use or consumption in the State of Indiana at a greater price per ton than herein fixed for the coal from any of said mines, respectively: [Here follows a list of several hundred coal mining companies divided into their respective groups, together with the price of each group].

It is further ordered that any operator who sells his or its coal to any consumer or to any retailer for delivery, use or consumption within the State of Indiana may add to the price above fixed for said coal not to exceed 15c. per ton to cover the selling cost thereof, and no licensee so selling coal direct to the consumer or retailer shall add to the selling price at the mine as above fixed, more than 15c. per ton to cover the selling cost of coal from said mine, except said licensee shall engage at its mine in local retail selling, in which case he may sell at the prices fixed for retailers.

This order shall be in full force and effect from and after Oct. 5, 1920, and until modified by the commission.

Pennsylvania Coal Cutter Earns at Rate of $9,000 and Miners $7,000 a Year

IN YOUR issue of Sept. 23 I note an item in which it is stated that Joseph Varga, a coal miner employed at the Marion mine of the West Penn By-Product Coal Co. of Mount Pleasant, Pa., earned $245 in two weeks.

At our Hiyasota No. 1 mine, located on the Baltimore & Ohio R. R. at Jerome, Pa., we employ about eighty-five miners. I enclose a statement of the earnings of our twenty leading miners for a two weeks' pay. We have counted the total number of days in which all our miners appeared on our pay sheet, counting the men who only worked a few hours as working a full day.

STATEMENT OF EARNINGS AT HIYASOTA MINE NO. 1
Aug. 16-31, 1920

Miners

Silvino Degosperi	$268.60	Joe Plasky	339.92
Joe Lava	258.35	Frank Barbach	234.96
Guerino Bonassa	237.98	Andy Sustar	235.59
Frank Borath	243.88	Joe Iskar	213.11
Mike Bilog	202.00	Alex Scropel	261.04
Joe Bengo	220.45	Marianna Zambella	228.37
Andy Kish	237.21	Joe Stemuts	275.60
Bill Fiddle	226.29	Zata Urtosky	202.07

Cutters and Scrapers

Chas. Zambotti	$351.33	George Susich	319.49
Adam Paviak	351.33	Jack Martinelli	311.42

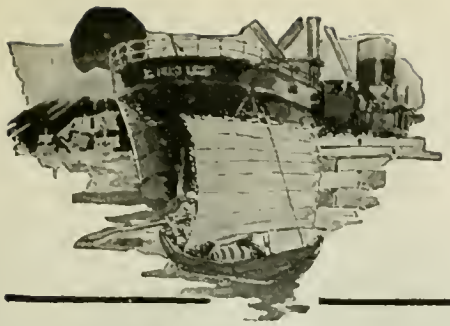
This shows 978 working days, for which the miners were paid $15,442, or an average of $15.79 per day.

JNO. GIBSON, JR.,
Treasurer Penn Smokeless Coal Co.
Union Bank Bldg., Pittsburgh, Pa.

Bituminous Coal Loaded Into Vessels at Lake Ports as Dumped by Docks for Season to End of September

(In Net Tons)

Ports	Railroads	1920 Cargo	1920 Fuel	1920 Total	1919 Cargo	1919 Fuel	1919 Total	1918 Cargo	1918 Fuel	1918 Total
Toledo	Hocking Valley	2,533,666	51,508	2,585,174	3,476,476	97,686	3,574,162	3,600,208	104,175	3,704,383
	Toledo & Ohio Central	1,155,803	44,646	1,200,449	1,030,810	31,539	1,062,349	1,598,691	43,616	1,642,307
	Baltimore & Ohio	933,093	28,423	961,516	1,886,659	44,918	1,931,577	2,137,270	43,525	2,180,795
Sandusky	Pennsylvania	1,066,276	15,015	1,081,291	1,102,597	30,193	1,132,790	1,764,408	44 241	1,808,649
Huron	Wheeling & Lake Erie	1,376,311	73,418	1,449 729	1,183,269	41,148	1,224,917	1,607,726	57,562	1,665,288
Lorain	Baltimore & Ohio	2,163,365	152,418	2,315,783	2,240,013	121,721	2,361,734	2,384,401	67,956	2,452,357
Cleveland	Pennsylvania	752,653	115,458	868,111	1,773,256	198,259	1,971,515	1,905,061	224,242	2,129,303
	Erie	243,997	14,116	258,113	189,235	5,598	194,833	487,351	16,129	503,480
Fairport	Baltimore & Ohio				16,692	12,954	29,646	149,325	34,126	183,451
Ashtabula	New York Central	988,367	196,632	1,185,004	1,384,993	118,556	1,503,549	1,535,289	164,163	1,699,452
	Pennsylvania	1,210,112	70,349	1,280,461	1,525,198	77,201	1,602,399	1,027,956	62,931	1,090,887
Conneaut	Bessemer & Lake Erie	1,797,497	30,624	1,828,121	1,105,605	7,108	1,112,713	1,734,580	25,455	1,760,035
Erie	Pennsylvania—West	149,137	12,926	162,063	613,242	34,255	647,497	512,995	30,650	543,645
	Pennsylvania—East	234,116	59,245	293,361	152,678	11,771	164,449	332,989	10,008	342,997
Totals		14,604,393	864,783	15,469,176	17,681,223	832,907	18,514,130	20,778,250	928,779	21,707,029



Foreign Markets and Export News

Belgian Coal Trade

It appears that Germany actually delivered 180,395 tons of fuel to Belgium, which exceeds the quantum of 180,000 tons laid down by the Spa agreement. Included in this total were 100,471 tons of Ruhr coal and 19,024 tons of brown coal from the Cologne district. During the first seven months of this year, Belgium imported 403,032 tons of coal, 102,504 tons of coke, and 27,289 tons of briquettes; exports in the same period included 833,935 tons of coal, 115,567 tons of coke, and 101,329 tons of briquettes. As compared with 1919, an additional 2,016,700 tons have been placed at the disposal of Belgian consumers. It is considered probable that the official prices of coal in Belgium will remain unchanged until the end of the present year.

French Coal Imports

During the first half of the present year, the imports of coal, coke, and briquettes into France were as follow:—

	1920 Tons	1919 Tons
Coal—		
United Kingdom	6,759,920	6,957,205
Belgium	572,194	314,165
United States of America	496,912	3,467
Germany	1,637,987	3,661
Other countries	47,825	
Totals	9,514,838	7,278,498
Coke—		
Belgium	64,909	13,258
United Kingdom	468,19	241,712
Germany	1,458,057	2,901
Other countries	6,449	
Totals	1,997,606	257,871
Briquettes—		
United Kingdom	449,415	300,198
Belgium	84,078	36,485
Germany	265,830	46
Other countries	4,095	
Totals	803,418	336,729

It will be seen that Germany supplied 3,850,000 tons of coal in the six months—taking the equivalent of coal in the coke supplied—as against 12,000,000 tons required under the Treaty terms.

German Coal Deliveries

The German Commissariat for the distribution of coal has published the following figures showing the deliveries of coal to France, Belgium, and Italy (the figures in parentheses show the quantities required under the Spa Convention): To France, 1,646,186 tons (1,640,000 tons); to Belgium, 180,395 tons (180,000 tons); to Italy, 152,064 tons (180,000 tons)—so that the stipulated quantities were supplied within about 21,000 tons. This shortage was due to the troubles in Upper Silesia, from which district the consignments to Italy totalled 64,401 tons, as compared with 93,000 tons according to the agreement.

Good Demand for Chinese Coals; Japan Inquiry Is Low

According to the report of Wheelock & Co. issued Aug. 26 at Shanghai, the Japanese coal market was very quiet, and beyond some inquiry for lump from native sources little business was transacted. Some European calls for coal are continuing, but there is little chance of much trade developing, because of the high cost of Japan coal as compared with Chinese and also due to the high freight rates to Europe.

Fushun coal is more easily available for export and a fair amount of business is being done abroad.

Negotiations are still proceeding from various quarters for coal from China to Europe. Rumors of large contracts, however, lack confirmation.

Heavy demand for coal all over the East has strengthened the market for Kaiping coal. The price remains firm. Contract deliveries monopolize the tonnage and stocks are very low.

Coal prices are quoted as follows:

JAPAN COAL

		Taels
Miike lump	ex wharf	Contracted for
Miike small	ex wharf	Contracted for
Miike dust	ex wharf	Contracted for
Kishima lump	ex wharf	14 00
Kishima dust	ex wharf—no stock	10 00
Shakano lump	ex wharf	13 00
Arate lump	ex wharf	12 00
Shimoyamada Kirigomi	ex wharf	11 00
Shin Shakano	ex wharf	11 00
Yoshinotani No. 1 lump	ex wharf	12 00
Yoshinotani No. 2 lump	ex wharf	10 00

KAIPING COAL

	Taels per Ton ex Wharf
No. 2 lump	13 50
Washed nuts	13 50
Washed slack	10 50
No. 1 slack	9 00
No. 2 slack	8 50

Jobbers' Margins in England

In a recent issue the London *Gas World* had an editorial on the subject of jobbers' profits as they affect the gas industry. In the article it was pointed out how collieries which formerly sold direct were appointing sales agents—who, of course, took a factoring profit. There is no doubt, according to the *Journal of Commerce*, that far too large a proportion of coal in Great Britain is passing through the hands of middlemen, business that could be done direct between the colliery and the consumer without any difficulty, and the commissions saved to the consumer.

Ever since control came into operation everything has been favorable to the middlemen. In the first place where a tonnage was allocated it had to be sold through the same source. Whereas in pre-war days, when there was competition for business, a jobbers' profit was only 3d. per ton, he is now entitled to charge from 1s. to 1s. 6d, according to the particular class of business. On top of the present high pit prices this is held to be a serious consideration, and it is understood the attention of the Coal Mines Department has been called to the latter margin of profit as being unreasonable.

In the report issued by Mr. Justice Sankey on March 22, 1919, it was suggested that the "Elimination of unnecessary distribution costs" should be the subject of an inquiry.

As Wages Expand Coal Output Shrinks in Great Britain

There has been a reduction in the output of coal per person in Great Britain with every advance in mine workers' wages that has been given since 1914, according to the Liverpool *Journal of Commerce*. The first was in May, 1915, after which they have followed with almost periodic frequency. It will perhaps be interesting to give particulars of outputs since 1914, which are as follows:

	Gross Tons Raised (Millions)	No. of Persons Employed	Output per Person Employed
1914	265 7	1 034,105	252
1915	253 2	939,604	270
1916	256 6	984,796	260
1917	248 5	1,006,299	247
1918	227 7	1,008,867	232
1919	229 7	1,163,000	197¼
First half of 1920	120 2		102 43

The output per person employed for the year 1914 is low on account of the fact that for several months pits were working short time, but since the coal shortage, which, after the commencement of the war first became evidenced in January, 1915, pits have worked practically full time, and the comparisons up to 1918 are on a true basis.

As from July 16, 1919, working hours were reduced from eight to seven per shift, but, calculated on the basis for eight-hour shifts for the whole of the year, the output per person would be approximately 210 tons. So that between 1915 and last year, the annual output per total persons employed had on the published figures been reduced by 60 tons. As a matter of fact, however, during 1919—owing to the six weeks Yorkshire County and various other strikes—there was a considerable loss in output, which obviously affects the output per person employed.

Movement of Coal and Coke by Fourteen Leading Railroads During June and First Six Months of 1920

Compiled by the U. S. Bureau of Foreign and Domestic Commerce

SHIPMENTS DURING JUNE

Classes and Railroads	Originating on Line		Received from Connections		Totals	
For Revenue Only	1919 Net Tons	1920 Net Tons	1919 Net Tons	1920 Net Tons	1919 Net Tons	1920 Net Tons
Bituminous						
Baltimore & Ohio	2,902,763	3,259,320	1,188,859	938,232	4,091,622	4,197,552
Buffalo, Rochester & Pittsburgh	376,632	757,719	18,184	13,741	394,816	771,500
Chesapeake & Ohio	2,301,750	1,801,964	167,087	254,305	2,468,837	2,056,269
Erie	25,693	74,822	493,253	858,320	518,946	933,142
Huntingdon & Broad Top Mountain	64,989	73,462	1,375	41,582	66,364	115,044
New York Central (Buffalo and east)	585,967	761,545			585,967	761,545
Norfolk & Western	1,544,968	1,641,429	158,516	284,607	1,703,484	1,926,036
Pittsburgh & Lake Erie	549,385	379,849	558,847	402,540	1,108,232	782,389
Pittsburg & Shawmut	158,861	211,116			158,861	211,116
Pittsburg, Shawmut & Northern	30,595	66,255	23,539	22,604	54,134	88,859
Virginian	436,013	530,404	69,128	60,331	505,141	590,735
Western Maryland	311,233	364,413	618,972	310,061	930,205	674,474
Totals	9,288,849	9,922,338	3,297,760	3,186,323	12,586,709	13,108,661
For Company Fuel						
Bituminous						
Baltimore & Ohio	360,265	490,512	48,634	28,083	408,899	518,595
Buffalo, Rochester & Pittsburgh	41,834	65,276			41,834	65,276
Chesapeake & Ohio	152,567	215,157			152,567	215,157
Erie	105,871	113,992	141,621	149,794	247,492	263,786
Huntingdon & Broad Top Mountain	221	2,989			221	2,989
New York Central (Buffalo and east)	127,787	97,952			127,787	97,952
Norfolk & Western	128,931	211,179	31,903	37,683	160,834	248,862
Pittsburg & Lake Erie	14,361	31,906	17,137	6,531	31,498	37,437
Pittsburg & Shawmut	2,211	3,135			2,211	3,135
Pittsburgh, Shawmut & Northern	2,580	3,769			2,580	3,769
Virginian	27,642	42,199	105	149	27,747	42,348
Western Maryland	33,193	45,606	4,870	1,141	38,063	46,747
Totals	997,463	1,323,672	244,270	223,381	1,241,733	1,546,053
Coke for Revenue and Fuel						
Baltimore & Ohio	62,934	172,734	71,750	77,178	134,684	249,912
Buffalo, Rochester & Pittsburgh	10,690	17,453	19,764	32,700	30,454	50,153
Chesapeake & Ohio	48,268	45,243	137	12,080	48,405	57,323
Erie	5,021	21,226	13,935	50,309	18,956	71,535
Huntingdon & Broad Top Mountain	7,483	5,595		2,550	7,483	8,145
Norfolk & Western	41,339	89,191	5,742	23,340	47,081	112,531
Pittsburgh & Lake Erie	14,922	33,312	227,963	205,024	242,885	238,336
Western Maryland	3,645	3,422	15,711	5,679	19,356	9,101
Totals	194,302	388,176	355,002	408,860	549,304	797,036

SHIPMENTS FOR SIX MONTHS ENDING JUNE

For Revenue Only						
Bituminous:						
Baltimore & Ohio	14,256,531	18,084,440	4,613,657	5,968,369	18,870,188	24,052,809
Buffalo, Rochester & Pittsburgh	2,646,987	4,206,545	203,579	87,194	2,850,566	4,293,739
Chesapeake & Ohio	10,220,772	11,803,728	1,063,975	1,260,856	11,284,747	13,064,584
Erie	149,675	269,075	3,180,345	5,360,071	3,330,020	5,620,146
Huntingdon & Broad Top Mountain	345,663	433,488	6,047	86,287	351,710	519,775
New York Central (Buffalo and east)	2,969,109	4,367,368			2,969,109	4,367,368
Norfolk & Western	9,134,411	9,488,563	1,178,933	1,494,555	10,313,344	10,983,118
Pittsburgh & Lake Erie	2,726,644	2,220,466	2,998,498	2,669,689	5,725,142	4,890,155
Pittsburg & Shawmut	903,701	1,329,238			903,701	1,329,238
Pittsburg, Shawmut & Northern	192,856	384,802	130,662	158,300	323,518	543,102
Virginian	1,958,346	2,872,790	275,966	311,164	2,234,312	3,183,954
Western Maryland	1,693,384	2,440,207	3,160,068	3,251,661	4,853,452	5,691,868
Totals	47,198,079	57,900,710	16,811,730	20,648,146	64,009,809	78,548,856
For Company Fuel						
Bituminous						
Baltimore & Ohio	2,674,069	2,369,638	213,414	130,672	2,887,483	2,500,310
Buffalo, Rochester & Pittsburgh	294,955	395,881	773	244	295,728	396,125
Chesapeake & Ohio	891,770	1,176,722			891,770	1,176,722
Erie	623,524	655,589	938,562	1,115,203	1,562,086	1,770,792
Huntington & Broad Top Mountain	12,952	10,614	1,014	3,268	14,056	13,882
New York Central (Buffalo and east)	842,469	771,463			842,469	771,463
Norfolk & Western	1,172,825	1,238,917	215,044	286,652	1,387,869	1,525,569
Pittsburg & Lake Erie	125,252	145,874	142,062	118,670	267,314	264,544
Pittsburg & Shawmut	17,386	22,134			17,386	22,134
Pittsburg, Shawmut & Northern	17,444	27,824			17,444	27,824
Virginian	147,748	229,067	1,641	4,432	149,389	233,499
Western Maryland	167,932	296,125	104,763	21,690	272,695	317,815
Total	6,988,326	7,339,848	1,617,363	1,680,831	8,605,689	9,020,679
Coke for Revenue and Fuel						
Baltimore & Ohio	533,112	900,974	311,124	484,043	844,236	1,385,017
Buffalo, Rochester & Pittsburgh	120,900	106,300	135,536	200,218	256,436	306,518
Chesapeake & Ohio	264,597	278,366	21,867	75,815	286,464	354,181
Erie	53,406	103,438	128,565	236,819	181,971	340,257
Huntingdon & Broad Top Mountain	45,200	35,624	3,343	21,836	48,543	57,460
Norfolk & Western	575,563	567,080	59,211	112,550	634,774	679,630
Pittsburgh & Lake Erie	196,289	179,626	2,197,850	1,769,374	2,394,139	1,949,000
Virginian			125		125	
Western Maryland	23,301	26,797	198,274	92,802	221,575	119,599
Total	1,812,368	2,198,205	3,055,895	2,993,457	4,868,263	5,191,662

NOTE—No report was received from the Buffalo & Susquehanna and Pennsylvania Railroads

August Exports Increase at Port of New York

Exports of anthracite through the Port of New York during August of this year amounted to 70,930 tons valued at $1,103,728. There were 35,250 tons of bituminous valued at $454,543 exported during the same period, and 6,285 tons of coke valued at $126,417.

Of the anthracite sent abroad 25,819 tons went to France and 16,689 tons went to the Netherlands. Canada secured 6,003 tons and Denmark got 5,621 tons.

In the list of countries receiving bituminous, Sweden leads with 25,006 tons, while the Netherlands received 7,100 tons. Of the coke sent abroad, Denmark received 3,916 tons.

A comparison of coal and coke exports during the month of August in the past four years shows the following:

	1917	1918	1919	1920
Anthracite:				
Tons	3,942	10,460	4,703	70,930
Value	$29,317	$72,264	$40,871	$1,103,728
Bituminous:				
Tons	967	10,149	1,626	35,250
Value	$7,786	$72,612	$11,900	$454,543
Coke:				
Tons	1,763	333	300	6,285
Value	$26,359	$9,032	$4,664	$126,417

Canadian Fuel Situation Is Improved

Canada received 2,033,101 net tons of bituminous coal from the United States in August. During the last three years this record has been exceeded in only three months, June, 1919, and July and August of 1918. September figures are not available, but it is estimated that receipts were slightly greater than in August. Reports from the Board of Railway Commissioners of Canada, to which the Fuel Administrator's powers were passed, are to the effect that the situation in Canada, due to the increased shipment of American coal, now is much more encouraging. The complaint has been made that there is undue delay to coal cars moving into Canada. The Railway Commission has attacked that problem vigorously and reports considerable increase in car-miles. It is pointed out that Canada is making a better showing in the return of coal cars than the United States roads are making in returning Canadian-owned box cars.

The suspension of the New England priority order already has been reflected by the greater ease with which Canadian agents are able to purchase coal in this country.

The new order issued by Canada requiring a permit for export coal to the United States was not issued, it is pointed out, with any desire to curtail the movement of coal to that section of the United States which is dependent upon Canada for coal. It has been found that some Canadian coal was being taken through the United States and exported from American ports. As a result the permit system was inaugurated so that exact knowledge could be had of the destination of all coal.

News from the Capital

By Paul Wooton

Prosecutor of Coal Cases Resigns in Disagreement with Palmer

THE resignation at Indianapolis of Dan W. Simms, Special Assistant Attorney General in the cases pending in the Indiana courts against coal operators and miners growing out of last winter's coal strike, has caused a flurry in Government as well as coal circles. Mr. Simms is reported to have resented directions of the Attorney General in the matter of evidence to be presented when the cases come to trial next month, but Attorney General Palmer denies the existence of differences.

It is said that Mr. Simms gave as his reasons for resigning that the Attorney General by instructions had "literally cut the heart out of the case."

Attorney General Palmer expressed surprise at Mr. Simms' resignation but said the incident would have no effect on his determination not to allow prosecution of men for an offense which became a closed incident when they obeyed the court's decree, referring to instructions issued that in the new trial old evidence should not be used. He said the facts which were the basis for the contempt proceedings would not be again used against the defendants, and that Mr. Simms must have understood his former statement to this effect.

Passing of Coal Crisis Indicated

THERE is a very general feeling in Washington that the crisis in the coal situation has passed. The mild weather of the last two weeks has aided the situation very materially. The cold wave which is predicted at the time of this writing is expected to renew the clamor for domestic coal, but since state authorities are satisfied that the new service orders and other steps being taken will meet the situation there is nothing to prevent the orderly carrying out of domestic coal distribution.

One of the best-informed coal men in the United States, the head of one of the largest producing companies, states that he senses a very definite slackening in the feverish character of the demand. Buyers rapidly are regaining their equilibrium, he finds. With the railroads furnishing more cars at the mines, heavy production is assured, as is indicated by the output of 12,000,000 tons of soft coal last week. With the closing of navigation, conditions may be expected to return rapidly to normal.

Now that a better opportunity is afforded to survey the effects of the old public utilities order, it is the belief of many that that order was the chief cause of the increasing difficulties which were overtaking general distribution. It is declared that the abuse of that order was not the exception but was all but general. Another bad effect of the order is said to have been the forwarding of much run-of-mine coal to public utilities. This materially reduced the amount of lump coal for domestic fuel.

Representatives of the coal industry in Washington apparently no longer are worried over state price-fixing activities. It is believed that these activities will soon prove to have been misconceived and be found unworkable. The Indiana case is cited as an example. Since the prices fixed are not to apply on coal in interstate commerce, it is expected that the effect will be that all Indiana coal will be sold outside the state. Since coal going into Indiana from other states may be sold at the outside price, plus the dealers' margins, it is expected that the people of Indiana soon will realize that the results of the new law will be to decrease the amount of coal available and to increase prices.

President Requests Anthracite Miners and Operators to Reopen Scale

REPRESENTATIVES of the anthracite operators and mine workers have been requested by President Wilson to meet at Scranton, Pa., Oct. 18, to adjust such inequalities as the mine workers allege are to be found in the wage award recently made by the Anthracite Coal Commission.

The action of the President followed a request made by the mine workers' policy committee that the award be reopened. On Oct. 11 the President in a telegram to the mine workers' representatives said that contracts should be observed but added that if inequalities exist in an agreement he saw no objection to their correction if both sides should agree upon a remedy.

His telegram reopening the award was as follows:

I am in receipt of your telegram advising me that the anthracite miners have returned to work in accordance with the terms of their agreement, and asking that I call the representatives of the anthracite operators and miners into joint conference for the purpose of adjusting inequalities in the present agreement.

I congratulate you and the miners you represent upon the prompt manner in which you have complied with the award of the Anthracite Coal Commission. I am convinced that the future of collective bargaining depends upon the fidelity with which each side adheres to the terms of their contracts. If any inequalities exist in an agreement I can see no objection to their being corrected if both sides can agree upon a remedy.

In compliance with your request, therefore, I will request the representatives of the anthracite operators and miners, and do hereby request them, to meet in joint conference in the city of Scranton, Pa., on Monday, Oct. 18, 1920, at 11 a.m. for the purpose of adjusting any inequalities in their present agreement as they may mutually agree should be adjusted. I am sending a copy of this telegram to the secretary of the joint scale committee of the anthracite coal fields, with a request that it be communicated to both operators and miners.

National Coal Men Call Special Meeting

A SPECIAL meeting of the entire membership of the National Coal Association has been called for Tuesday morning, Oct. 26, at the Hollenden Hotel, Cleveland. The purpose of the meeting is to place before the membership for consideration and action the facts in regard to conditions confronting the coal industry. Proposed state and federal action for the regulation and control of the coal industry, Colonel Wentz states, should have the personal attention of the members without further delay, as the officers and directors cannot assume the responsibility of acting until the course to be pursued has been decided upon. All coal producers in the United States have been invited to attend, whether they are members of the association or not. Attorney General Palmer has requested the National Coal Association to make the question of fair prices for coal a feature of this meeting, having assured Col. Wentz that such action will not be considered by him in violation of the Sherman anti-trust law. Mr. Morrow has telegraphed all coal operators of this request.

British Mine Workers Declare Nation-Wide Strike

Leaders Say Strike Is Not Called to Secure Nationalization of Mines—Mine Workers Seek to Obtain Profits from Sale of Export Coal Which Now Goes to Government for Extinguishment of National War Debt

THE strike called by the mine workers of Great Britain by a vote of 635,098 to 181,428, which commenced last Saturday, Oct. 16, is still "in full blast" and seems likely to continue, but the other members of the Triple Alliance—the railroad and transport men—have not yet joined in and are probably not in entire sympathy with the movement. So far there has been no interference with the ventilation or pumping facilities. The strike is in every other way complete. No coal is being dug or raised from the pits.

Number of mine workers involved, 1,206,000. Probable output in 1920, 240,500,000 long tons. Increase demanded, 2s. (49c.) per shift for mine workers 18 years of age and upward and 1s. (24c.) per shift for persons 16 to 18 years old, with 9d. (18c.) per shift for those under 16 years of age. Men also demanded a decrease in selling price of coal of 14s. 2d. per ton. Profit on exported coal expected to be $330,000,000 in 1920. No surplus profits on domestic coal under present conditions. Mine workers refuse to make any promises that they will increase production should the Government accede to their demands.

The mine workers' claim is that the domestic coal supply should be subsidized by the profits made in the sale of export coal. As it now is, only one-tenth of the surplus profits go to the mine operator. Even this is split by the excess profits tax. The other nine-tenths go to the Government Exchequer, which uses it to assist in the payment of the national debt. The mine workers urge, furthermore, that the wage advances should not be limited to living bonuses. On the other hand, the operators declare that while the cost of living has increased 152 per cent, miners' wages have risen 157 per cent, and the skilled engineers' wages have been increased 132 per cent. The Ministry of Labor declares in its official figures that the cost of living has gone up 155 per cent, but the miner is still getting free or cheap coal and by that fact is assured of a saving of $40,000,000 a year.

Hours Decrease Though Daily Wages Rise

The average earnings per shift of all classes of colliery workers have risen from 6s. 6d. ($1.58) per shift in June, 1914, to 16s. 6d. ($4.01) in June, 1920. Adult male colliery workers were paid an average of 7s. 1d. ($1.72) in 1914 and when the strike started were receiving 18s. ($4.98) a shift. This figure does not include district or local increases. Back in 1913 the annual earnings of all classes of mine workers—boys and women included—averaged $400, whereas today their earnings are $1,071.

This does not express the whole change, for the mine worker's day has been shortened an hour without reduction of pay. He promised production should not suffer, but it has. In 1913 workers to the number of 1,110,000 produced 287,500,000 long tons and this year—if past performances were figured and had the strike not occurred—1,206,000 employees, the present number, would produce 240,500,000 long tons. Piece rates were raised 13.2 per cent, or one-seventh, to make up for the shorter hours. Why the miner needed an increase in wage if his shorter service would give an equal result deserves explanation, but the mine worker does not intend to make good his assertion that lopping off one of his hours will not lessen the output, so he safeguards himself by asking more pay per ton. The miner now works only 4.9 days a week. If he would have more pay, he could easily get it by returning to the eight-hour shift.

With roughly 100,000 more men in the industry, production has been cut down 47,000,000 tons, about twice the amount demanded of Germany at the Spa convention. Yet we have been told that this was such a huge amount that Germany could not furnish it. An increase in the number of employees of 8 per cent has resulted in a decrease in tonnage of 16 per cent. Taking the output per unit of labor as 100 per cent in March, 1915, when regulation by conciliation boards was practically discontinued, the product was as follows:

September, 1917, first war wage	93.7
June, 1918, second war wage	87.1
March, 1919, Sankey wage	84.0
May, 1920, 20-per cent increase	77.4

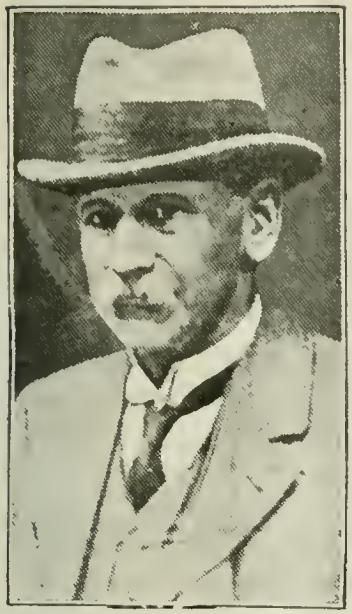
From July, 1919, the day has been of seven hours' duration. If the shift rate is raised, it is probable that the present figure of 77.4 per cent will be reduced still further.

The Government has not been slow to prepare for the possibility of a strike. Illuminated advertising signs and lights in store windows have been prohibited. The sugar ration has been halved, and military leave has been stopped in at least some sections. While some of the big factories near Sheffield have coal enough to last for three weeks, the average supply of coal will last only a week. By next Saturday, when the strike is a week old, there will be at least another million men idle.

Miners Have No Money for Long Strike

Only in South Wales are the funds of the mine workers adequate for a long strike and then only with strike benefits set at a pound ($4.87) a week, which in these days is wholly inadequate, and this consideration is troubling the mine workers' wives. It has been said that boys between 14 and 18 were unanimous for a strike, feeling that a few days of idleness would be a welcome relaxation. In Scotland seven out of ten voters for a strike were between these ages.

The other members of the "triple alliance" greatly question whether they should come out in sympathy or



Robert Smillie

PRESIDENT, MINERS' FEDERATION OF GREAT BRITAIN

He is a great advocate of nationalization of mines and his outspoken declaration that the strike was to secure this advantage to the mine workers has made the union men of other industries unsympathetic to the strike.

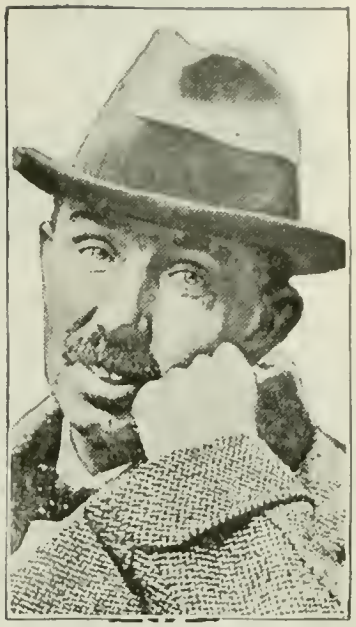
Courtesy of N. Y. World

J. H. Thomas

GENERAL SECRETARY, NATIONAL UNION OF RAILWAYMEN

One of the big figures in the Triple Alliance of miners, railroaders and transport men. The hope is that the railroad men will come out on strike in sympathy with the miners and Thomas' actions are consequently watched with suspense.

Courtesy of N. Y. World



not. The railroad men and transport workers realize that a defeat would be a blow to unionism in general, but they cannot help seeing that prices seem to have reached a point at which they will begin to decline, and they cannot shut their eyes to the fact that many men are idle and the time not auspicious for a showdown. The miners in France, Germany and Belgium have promised to go on strike in sympathy, if any coal is shipped from the mines of those countries to Great Britain.

Indictment of Coal Men Not To Be Pushed If Prices Are Reduced

ANTI-PROFITEERING activities of the Department of Justice during the past week have included the securing of indictments against forty coal companies in southern West Virginia, active prosecution of coal grafters in New York City and further promotion of the idea of fair-price committees of coal men as typified in the northern West Virginia fields. A feature of the move in West Virginia is the practical placing of a limit on the scope of the fair prices to purely local sales. It is understood that the Department of Justice does not consider that this is sufficient, although it is evident that in each judicial district the U. S. Attorney is interested in and has power to investigate only the prices that are being charged on sales within that territory.

Operators from northern West Virginia held a meeting in Washington on Oct. 12, at which chairmen of local committees were appointed. The main committee met again in New York on the following day, at which a telegram from Attorney General Palmer was considered. The telegram follows:

> Referring to your report as chairman of a committee of bituminous coal operators from the northern district of West Virginia that prices of bituminous coal delivered in that district have been recently substantially reduced through the efforts of your committee. This is gratifying but does not afford relief to the rest of the country. It is of the highest importance that the reduction in prices thus begun should be extended so as to include operations in other districts and coal for delivery throughout the country. I am extremely desirous that such action shall be taken by yourself and other operators throughout the country as will be to the best interests of the country and will lighten the work of the Department of Justice by reducing the number of prosecutions to be instituted for violation of the Lever Act in charging unreasonable prices.

There is a general feeling that if coal prices can be held within reason by the moral suasion of the leading producers and distributors or by the pressure of the Department of Justice, actual prosecution of the indictments that have been returned will be eventually staved off and further action forestalled.

Indictments returned a week earlier by the Federal Grand Jury sitting at Huntington, against forty coal companies and individuals engaged in the coal business in southern West Virginia, were made public Friday, Oct. 15, following an announcement by Judge J. C. Pritchard of the U. S. Circuit Court of Appeals at Huntington that he could not grant the petition for an injunction restraining the prosecution of the various companies.

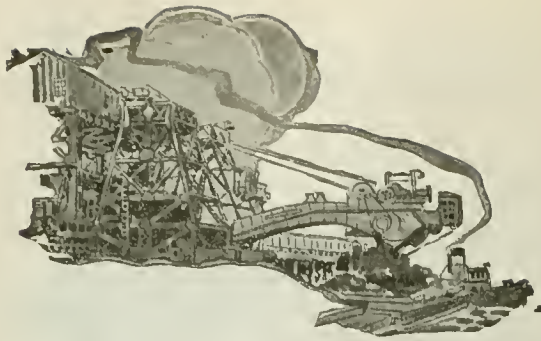
From what Judge Pritchard said and from an announcement made by the U. S. Attorney, supplementary in a way thereto, it is not believed that the companies and individuals will be brought to trial under the indictments so long as court officials are satisfied that a bona fide effort is made by the various companies now under indictment to adhere more closely to the Lever Act provisions. Though no injunction was issued Judge Pritchard said there would be no attempt to proceed to trial until after the Supreme Court passed upon the constitutionality of the Lever Act, the cases being set for trial at another term at Charleston.

New York Has Anti-Profiteering Committee: Mayor Offers Help to U. S. Attorney

SCARCITY of coal and fear that there would be much resultant suffering during the coming winter caused several important developments in New York City last week. During the same period the directors of the National Coal Association held a meeting at the Waldorf-Astoria at which it was predicted there would be no coal shortage if the railroads furnished sufficient cars to the mines.

Following a hearing held on Oct. 11 by Public Service Commissioner Lewis Nixon to ascertain the needs of the public utility corporations and to ascertain what steps had been taken by them to obtain adequate supplies of coal for the coming winter the Commissioner appointed a committee to see that the corporations get sufficient coal and to stop profiteering in priority coal. This committee consists of Frank Hedley, president of the Interborough Rapid Transit Co.; M. S. Sloan, president of the Brooklyn Edison Co., and J. W. Lieb, vice-president of the New York Edison Co.

In opening the hearing Commissioner Nixon said he hoped to put a stop to "some of the pernicious practices of certain public utilities in regard to the disposition of coal obtained under Federal permits on representations by these companies that they needed the fuel for their own use."



Production and the Market

Weekly Review

OVERSHADOWING every other feature of the week is the British coal strike. One million men lay down their tools and the production of 5,000,000 net tons per week is lost to the world at a time when it is sorely needed. Speculation as to the effect of this strike centers about export prices on this side which have largely influenced domestic prices along the Atlantic seaboard this year. It appears that with dumping at the rate of nearly 65,000,000 tons a year the limit in exports has about been reached with nearly 2,800,000 net tons a month for foreign account. Although more coal may not be shipped abroad, no matter what the need of Europe in the present emergency, the bidding for what is shipped may reach new high levels. One grain of comfort for France at this time is found in the report that Germany is now shipping coal at the rate called for by the Spa agreement, having delivered to France about 1,500,000 metric tons in September.

France Assists Importation of American Coal

France wishes to encourage the importation of American coal and the drawback granted importers has been raised from 100 francs per ton to 150. This drawback will remain in force until January, 1921. According to reports, French gas companies and railroads have coal stocks about equal to their pre-war supplies, which in the case of the railroads ran approximately 850,000 tons. In 1919 the average coal supply of the railroads was only 240,000 tons.

While Great Britian is settling down to fight out the coal strike, production here has been pushed up to the mark of 12,000,000 tons set last summer by the railroads and coal men. There is a general feeling that if this is kept up until the end of the Lake season, the situation will be saved as far as danger of a shortage is concerned and that prices will of themselves take a tumble before long.

Car supply improves as the effect of the more stringent priority order is kept and as open tops are released from other uses. Labor is working better except in the openly hostile camps, such as Alabama and the Williamson field. The settlement of the stone strike in Ohio helped increase output last week.

BITUMINOUS

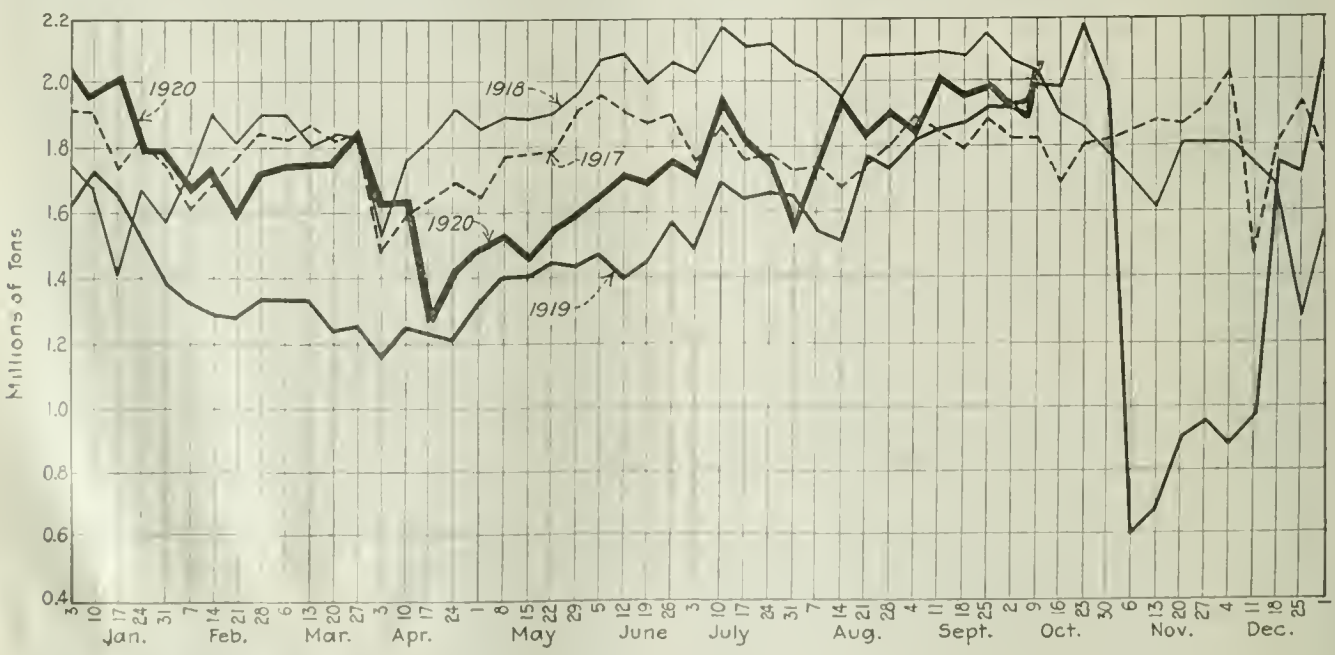
Production during the week ended Oct. 9 recovered from the temporary depression due to labor disturbances in Ohio and passed the 12,000,000-ton mark for the first time since last winter. (See page 877.) The total output is estimated at 12,075,000 net tons, according to figures of the Geological Survey, an increase of 6.2 per cent over the preceding week's output.

Car supply is greatly improved. The recent Interstate Commerce Commission orders concerning coal-car distribution have resulted in better movement and the machinery of production now seems to be in high gear. A majority of the reports indicate satisfactory increases in placements, although Pocahontas, Tug River, Kanawha and western Kentucky sections experienced a decline in car supply.

As Wages Increase Miners Work Less

With better movement of cars, labor is again responsible for a heavy loss of production. Although no serious new disturbances are noted, recent wage increases have had the

Average Daily Production of Bituminous Coal*



*From weekly report of Geological Survey.

Lake Coal Dumped Season to Oct. 16

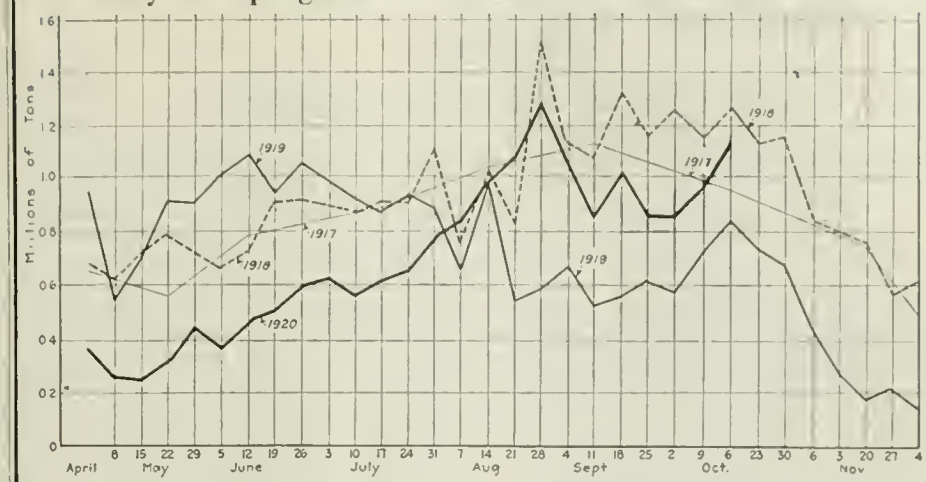
(NET TONS)

	1919	1920
Cargo	19,749,510	17,049,727
Fuel	928,508	982,560
Total	20,678,018	18,032,287

Week of Oct. 16, 1920

Cargo	1,060,374
Fuel	44,010
Total	1,104,384

Weekly Dumpings, Bituminous Coal at Lake Erie Ports*



*From weekly report of Geological Survey.

effect of making the men content with even less working time than before. Some dissatisfaction is still to be noted in the eastern Ohio field, where the radical element is attempting to stir up trouble over the result of the recent strike.

Pittsburgh district coal is firm—steam, $8.50@$9; gas, $10.50@$11—with demand a little weaker. Eastern Ohio coal for Lakes is quoted $7; spot market, $7.75@$8.50. Uniontown section reports a sharp decline to $7.50@$8.50, caused by a partial export embargo. Eastern Kentucky grades are much lower, due to price investigations in that section, while western Kentucky is strong — $5.50@$6.50. The Middle Western market is softer; steam at $5@$6.50, Chicago quotations; domestic, $6.50@$7.75. St. Louis market is strong—$5@$8—with little free coal available, due to new railroad contracts. New York market fluctuated, Tidewater quotations being $13@$14.50. Philadelphia steam coals declined, while fuel for special purposes was quoted at $11@$12. The export trade again led the spot market and additional strength is seen because of the British strike.

Shipments to All Tidewater Ports Increase

Movement to Tide increased during the week ended Oct. 9, when cars dumped over the piers numbered 27,697 as against 26,361 the preceding week. There was an increase at all five of the coal ports. Destination of coal dumped at Tide is given in the following table. Shipments to New England were 202,000 tons, almost exactly the same as during the preceding week. Exports declined slightly and there was an increase in the tonnage for bunker, etc.

Destination	New York	Phila-delphia	Balti-more	Hampton Roads	Charles-ton	Total Dumped
Coastwise to New England	71,000	12,000	27,000	92,000		202,000
Exports		105,000	142,000	337,000	31,000	615,000
Bunker	83,000	12,000	17,000	75,000	5,000	192,000
Inside capes		39,000	29,000	4,000	3,000	75,000
Other tonnage	187,000			12,000		199,000
Totals	341,000	168,000	215,000	520,000	39,000	1,283,000

September set a new record for bituminous coal handled over Tidewater piers. The total, as reported by the Geological Survey, was 5,447,000 net tons, an increase of 95,000 tons over August, 1920, hitherto the record month. Exports rose to a new record of 2,332,000 tons.

SEPTEMBER TIDEWATER DUMPINGS

Destination	New York	Philadel-phia	Balti-more	Hampton Roads	Charles-ton	Total Dumped
Coastwise to New England	389,000	63,000	141,000	515,000		1,108,000
Exports		436,000	522,000	1,300,000	74,000	2,332,000
Bunker	436,000	68,000	66,000	273,000	7,000	850,000
Inside capes		156,000	121,000	24,000	4,000	305,000
Other tonnage	783,000	3,000	3,000	63,000		852,000
Totals	1,608,000	726,000	853,000	2,175,000	85,000	5,447,000

All-rail movement to New England recovered again during the week ended Oct. 9. Carloads forwarded through the five Hudson gateways are reported at 6,004 an increase of 1,078 over the preceding week and the largest since Aug. 14.

Lake dumpings for the week ended Oct. 16 reflect the additional equipment made possible by the recent I. C. C. orders combined with better transportation facilities, when dumpings of cargo and fuel coal amounted to 1,104,384 tons. Lake offerings are in advance of takers, as the trade fears to stock high-priced coal now being offered. Better rail facilities have afforded the railroads a good supply from the southern Illinois fields, which if drawn on throughout the season will cut down the dock storage requirements by 40 per cent. Destination of the limited tonnage of cargo coal actually handled at Lake ports in 1920 has not varied greatly from normal as indicated by preceding seasons. As shown by the following table, of the 14,604,000 tons dumped up to Sept. 30, 4,083,000 tons were for Canadian destinations —28 per cent of the total, as against 24.3 per cent in 1918 and 20.9 in 1919. The outstanding feature of the distribution of 10,521,000 tons shipped to American ports was a decrease in the proportion moving to Lake Superior and Lake Michigan and an increase not only in the proportion but the total going to Port Huron and Detroit River points.

Destination	1918 Net Tons	1918 Per Cent	1919 Net Tons	1919 Per Cent	1920 Net Tons	1920 Per Cent
American:						
Lake Superior ports	8,782,911	42 3	7,761,286	43.9	5,683,560	38 9
Sault Ste. Marie Pt. and River points	466,059	2 2	276,289	1.6	423,847	2 9
Lake Huron-Georgian Bay ports	385,891	1 9	238,174	1.3	155,066	1.0
Lake Michigan ports	5,718,100	27 5	5,419,006	30 6	3,602,451	24 7
Port Huron and Detroit River	314,808	1 5	240,146	1 4	628,370	4 3
Lake Erie ports	65,879	0 3	59,156	0 3	27,815	0.2
Total American	15,733,648	75 7	13,994,057	79 1	10,521,109	72 0
Canadian:						
Lake Superior ports	1,742,523	8.4	1,283,495	7 3	1,195,980	8 2
Sault Ste. Marie Pt. and River points	925,653	4 5	648,996	3.7	869,282	5.9
Lake Huron-Georgian Bay ports	864,251	4 1	576,735	3 3	613,551	4 2
Port Huron and Detroit River	375,864	1 8	286,987	1 6	304,673	2 1
Lake Erie ports	16,962	0 1	37,988	0.2	9,678	0 1
Lake Ontario and St. Lawrence River	1,119,350	5 4	852,965	4 8	1,090,120	7 5
Total Canadian	5,044,602	24 3	3,687,166	20 9	4,083,284	28 0
Grand total	20,778,250	100 0	17,681,223	100 0	14,604,393	100 0

ANTHRACITE

Anthracite production continued to increase during the week ended Oct. 9. Shipments were the largest of any week since July. The total production was estimated at 1,847,000 net tons as compared with 1,804,000 tons for the preceding week. Prices for Independent product continue high, in some instances $14@$15 f.o.b. mines.

Reports From the Market Centers

New England

BOSTON

Dull Market Continues, but with No Marked Decline — British Strike May Stiffen Off-Shore Demand — Railroads Buying All-Rail—Demand for Anthracite Continues Acute.

Bituminous—There is demand for high grade gas coal on the part of manufacturers of certain metal specialties, due chiefly to the priority given Western shipment, but in time these requirements will be met and then high volatiles will be in the same position now held by steam grades. Some of the textiles have so far curtailed production that they have ample fuel reserve for the whole winter, a condition thought almost impossible 90 days ago. Business in most lines is so far on the slump that only a most unlooked-for turn of events can bring back anything like an active buoyant market.

Quotations show the moderate trend of spot prices. The better grades, Pools 1, 4, 9, 10, and 71, are offering only in light volume and what spot demand there is all-rail is therefore narrowed down to the less favorably known coals. Medium high volatiles can be bought at $8.25@$8.75 at first hands, making it clear that after all the current market shows a certain stability. There has not been the decline this week that was anticipated, but none of the near-firmness can be attributed to any inquiry from New England.

Tidings of labor troubles in Great Britain may quicken the demand for the grades available for export. There are certain areas still being served from British ports and any serious breakdown there will inevitably throw an emergency demand upon our Atlantic ports.

The only other bull point in the present spot market is the continued call for railroad fuel. This is also due to the effect of priorities upon shippers in the Pittsburg region who have contracts, with the railroads now in the open market to a limited extent. In most cases the full market price is being paid for prompt shipment, but should the market advance a dollar a ton it is more than likely this type of buying would cease, and recourse would be had to the West Virginian districts where more moderate price and labor conditions prevail.

Recent figures show clearly that this territory is getting its full quota of current production. Receipts both all-rail and by water are only slightly less than the totals for export at all the Atlantic ports. This should make effective disposition of the claim that the export market is robbing New England of actual necessities. Except at Hampton Roads the dumpings for New England are very light. This is not due to any dereliction on the part of shippers; it is purely because now that consumers here are in comfortable position they are quite content to leave their individual cases in the hands of smokeless shippers. Whatever demand there may be for water coal in New England it will easily be met, in all probability by shipments from Hampton Roads.

Current prices on bituminous at wholesale range about as follows:

	Clearfields	Cambrias and Somersets
F.o.b. mines, per net ton	$8 00@ 9 50	$8 50@10 10
F.o.b. Philadelphia, per gross ton	11.60@13.29	12.07@13 85
F.o.b. New York, per gross ton	12 00@13 75	12.50@14 25

Prices on cars at Boston, Providence, and Portland range from $13.50@$15 per gross ton for Inland distribution. At retail the range is from $13.50@$16 per net ton, delivered.

Anthracite—In all quarters there is insistent demand for domestic sizes. The Massachusetts Fuel Administrator, Mr. E. C. Hultman, is devoting himself to the situation with much energy and with corresponding good sense. The old-line companies are supervising distribution with great care and every endeavor is made to bring all the communities in distress up to 50 per cent of the total tonnage they received during the previous coal year. The City of Providence had on hand a few days ago only slightly over 3,000 tons of domestic coal, something less than a week's supply.

Tidewater

PHILADELPHIA

Mild Weather Aids Anthracite Situation — Steam Sizes Well Sold — British Troubles Cause Heavy Export Calls for Bituminous—Prices Are Stronger—Rail Movement Has Improved.

Anthracite—Unusually mild weather is about all that prevents a crisis in the anthracite trade. The retail yards, with the exception of a small quantity of pea, are empty and the demand from consumers is strong.

Shippers still insist that they have supplied this market well up to the average of former years and tell the dealers if any of their trade is without coal they have themselves to blame in not properly distributing it. That, however, seems to be about the only excuse the shippers are willing to offer now, as they have talked so much about Lake and New England shipments that dealers accept this explanation as a forgone conclusion to their interviews.

The unseasonable weather has a tendency to hold the consumer to his preference for sizes; with the strongest call being for stove. Nut is badly wanted and while the number of demands for pea are less than the other sizes this does not mean that pea is heavy with the retailers. Always at this time of year dealers have held heavy stocks of it for the winter demand from that portion of their trade who by force of circumstances only buy coal as they need it.

The retail trade have recently made more frequent inquiries than ever as to the situation in regard to bituminous coal, believing in the present shortage they might be able to use a small quantity of soft coal for domestic purposes. Even the dealer is surprised upon investigating the bituminous market to find that to market this coal to householders it would have to be done at a price usually in advance of the larger anthracite sizes.

With the exception of barley the steam sizes are almost impossible of attainment by new trade. There is a certain tonnage of buckwheat to be had from the independents at prices of $6 @$6.25, with rice around $4.35. There is a fairly good demand for barley, although individual shippers are not getting much if any premium on this size, the price usually being close to $2.25.

Bituminous—Local demand continues in moderate measure. The big industrial users are not at all active in coming on the spot market, as they appear to be getting sufficient contract coal to meet their current needs and then a little to spare for stock. This is particularly true in the big textile industry of this territory, where very few plants are making more than 50 per cent working time. On the other hand the mild weather has also been conducive to activity in other lines, such as brick-making and cement, the latter needing slack coal particularly.

The coming of the big coal strike in England is making its effect felt here on prices even at this time, and it has really been anticipated for the past several weeks in the slow recession of prices. In the spot market Pool 10 is holding close to $10@$10.25, with Pool 11 from $9@$9.50. Gas coals also continue high, Pennsylvania low-sulphur being mostly moved $10.75@$12, and Fairmont $10.75.

Rail movement has shown a decided improvement, especially via the B. & O., and producers in that region report a car distribution the past week of close to 40 per cent and better, with fairly prompt movement of cars after loading. On the Pennsylvania R.R. the car supply has averaged 30@35 per cent, with little complaint at all as to delivery

Railroads are still in need of heavy tonnage and are stocking quite generally. This removes a considerable tonnage from the market and, of course, assists in holding prices.

Due to the British strike, foreign inquiries will rapidly increase and in fact have already done so. A big proportion of the production is now moving for export and it is hard to see, with the present facilities, how this business can be increased. Tide prices on free coal average about $15 on the wharf.

In addition to the big export trade the bunkering business, which all along has been heavy, will also greatly increase, as vessels must bunker for round trips.

While the number of perferential orders covering domestic trade has been greatly reduced, those for the utilities are still in effect, and there are also faint indications that others may be made shortly. Reports are reaching here from distant parts of the country claiming to be short of fuel and asking preferred treatment. Should this become necessary it is believed that the first step taken to meet it will be in restricting the number of permits which are issued for export coal.

NEW YORK

Anthracite Trade Is Unsettled—Domestic Calls Are Urgent—Heavier Receipts Are Only a Matter of Time—Independent Quotations Are High—Bituminous Prices Fluctuate — Lower Prices Are Anticipated—Export Demand Is Good.

Anthracite—There is much dissatisfaction expressed on all sides because of trade conditions. The public has been led to believe that there is likely to be serious times this winter because of the lack of coal and, whether the consumer has his bin partly or completely filled, the dealer has to listen to more demands for deliveries.

Shipments are not as large as the trade hoped for when the mines resumed operations but dealers take some satisfaction out of the situation by knowing that when movement to the Lakes and Northwest are stopped at the end of the next few weeks considerable of that tonnage will be diverted in this direction.

Producers and shippers are endeavoring to distribute their supplies evenly. In addition to the demand of local dealers they have many inquiries from New England and Long Island points. New England dealers are in better shape than most retailers in Greater New York, as they receive their shipments by rail whereas most local dealers get coal by water from the railroad docks.

Dealers have undertaken to distribute supplies in small lots so that everyone can get some coal. Those without fuel are not so numerous as in former years, the dealers having delivered more coal than usual at this time of the season.

There is a heavy demand for independent prepared sizes with quotations all the way up to $14.50. Pea was quoted $10@$12. Steam coals are in good demand. Quotations for buckwheat range $6@$6.50; rice $3.75@$4.25 and barley around $3. Quotations for company coals, at the mine and f.o.b. New York Tidewater, upper and lower ports, are unchanged.

Bituminous—Prices fluctuated and quotations frequently changed last week. Indications point to a slump. There was no active buying even in the face of reports that mine-workers were restless. Car supply is very irregular.

Demand for domestic purposes was slow. There was a good call for export but the issuance of permits was slower. Coals for bunkering were in heavy call. Railroads were easing up in their buying and this was pointed out by some dealers as a good sign of a further drop in prices as soon as some of the coal usually taken by the roads can find its way into the open market.

Because of the slump in many lines of industry, manufacturers are not replenishing their stocks as quickly as anticipated. They hesitate to pay present quotations in the hope of seeing cheaper coal with the close of Lake navigation. There is not much free coal available here. Producers are not sending heavy tonnages to Tidewater except on order. The better grades are scarce.

Early in the week Pool 11 was quoted $8.50 at the mines, but at the end of the week the quotations ranged as high as $9.50. Pool 10 was $9.25 @$10.25. A small amount of Pool 34 was quoted at $9.24 on one day, while the existing market price was about $10.75. For export purposes Pool 34 was quoted at $10.50 late in the week. Most sales at this Tidewater ranged $13@$14.50.

BALTIMORE

Tightening of Export Permits Releases More Coal on Local Market — Demand Is Excellent — Prices Remain Fairly Firm—Car Supply Is Unchanged—Ship Congestion Lessened—Hard Coal Dealers Apportioning Supply.

Bituminous—Soft coal market conditions here are undoubtedly a little easier. This has to do particularly with Pennsylvania coals, which for the first time in weeks are offering a little below the prices for B. & O. line fuels. This result is largely due to the tightening up of permits for Tide shipments. Considerable fuel that might have gone that way has thus been forced on local and Eastern seaboard generally for sales.

Best B. & O. line coals are at this time holding firm, $10@$10.25 f.o.b. mines, while Pennsylvania fuels of best grade are offered $9.75@$10.

Demand here is excellent, however, and the fact that car supply still remains comparatively low is having the effect of preventing any sharp break. The run of cars for the past week has been for the most part around 65 per cent, although on some days as low as 51 per cent.

At the piers great efforts have been made to end congestion of ships, as some 50 odd had gathered in the harbor for coal cargoes. On one day the B. & O. piers at Curtis Bay alone dumped 656 cars, which was probably a record. The number of waiting ships, kept down by permit restrictions as to newcomers, has been greatly reduced. Export movement for the first half of October will probably stand in the neighborhood of 230,000 tons.

Anthracite—Dealers are welcoming the continued warm weather as it cut off the spurt of early consumption that came about 10 days ago with a brief cool snap. Receipts here continue slow and the coal coming in is being apportioned. There is little hope, of course, that the thousands of cellars still without any coal can be filled even in part before cold weather, but retailers are trying to do the best for all concerned, and are hotly urging shipment on their long-standing mine orders.

A census of cellars made by the lighting company here showed 29,000 homes without coal late in September. During the peak of the war there were 10,000 homes on Dec. 1 without coal, and fuel men here say that unless there is a sudden rush of coal to the city, the trade will be lucky if conditions are not worse this year.

Lake

BUFFALO

Bituminous Consumers Hold Off—Cars Fairly Sufficient — Miners' Difficulties Numerous—Much Complaint of Anthracite Shortage—Lake Shipments All Improved.

Bituminous—The contest is still on between the consumer and miner. An effort is on foot to get the several coal interests together and agree on a mine price, but jobbers say that with the present poor demand continuing for two or three weeks longer the prices will have to come down anyhow. The consumers are well stocked up and are indifferent to coal that costs $8 or more.

One Buffalo jobber with a mine connection figures that actual mining cost is about $5.50 and he therefore maintains that the asking prices at present are too high. At present operators are able to obtain from $8@$8.50 for their steam coal at the mines and $10@$10.50 for gas and smithing.

It is hard to say what the miners' agitations will amount to. There are local difficulties everywhere with more or less striking. Some of the shippers see in this a mere effort to put a bold face on the situation and keep the consumers from forcing down prices till wages must follow. Others are afraid that the miners' organizations are strong enough to win out anyhow.

To increase the complications still further there is quite an amount of coal selling on contract as low as $3.50, the jobber as a rule having re-sold it at 25@50c. more. This coal is coming out slowly and is usually less than the contracted amount. Still the mine owner, who is trying to deal honestly, is keeping along by selling his free

coal at considerably more, sometimes making good money on the average.

Anthracite—The situation is decidedly puzzling. How to assure the people who have no winter supply that they will get it in good time is hard to say. Had it been cold the clamor for coal would have amounted to a frenzy. It has now been arranged to fill emergency orders by application to the health department, but the demand will go on in spite of the assurance of shippers that there is coal enough and as much distributed in the city as usual. What is wanted is a full winter's supply now, which is of course impossible.

Certain independent operators are taking advantage of the situation and asking as high as $16 at the mines, and they get it, though the regular price here, delivered at the curb, is $13 for large sizes and $13.25 for stove and chestnut.

Lake—Shipments are good again. Clearances for the week are 130,000 net tons, of which 900 tons cleared for Bay City, 1,200 tons for Kenosha, 2,600 tons for Racine, 7,000 tons for Port Arthur, 28,700 tons for Chicago, 37,300 tons for Milwaukee and 52,300 tons for Duluth and Superior. Freight rates are strong at 60c. to Duluth and Port Arthur, 75c. to Milwaukee, 85c. to Chicago and $1.25 to Racine and Kenosha.

Coke—The market is quiet, though consumers want orders filled at once when given, as they are mostly a matter of emergency when jobbers are resorted to. Quotations are: Standard Connellsville 72-hour foundry, $17.75@$18.50; 48-hour furnace, $17@$17.75; low grades, $13@$14; domestic sizes, mostly neighborhood by-product, $8@$8.50 at the ovens for chestnut and $5@$5.75 for pea. Chestnut retails at $13 at the curb, to compete with anthracite. This demand is good.

CLEVELAND

Pronounced Softening of Steam Coal—Downward Revision of Retail Prices Is Planned — Better Receipts and Slower Demand — Lake Dumpings Increase — Labor Efficiency Is Still Low.

Bituminous—This district market has been featured by a decided slump in the price of spot No. 8 mine run coal within the last few days. Quotations are now well under $7 a ton, with more coal daily becoming available as railroad movement improves and industrial slackening spreads. Some consumers report that they are getting better shipments against contracts carrying price ranges $3.50@$5. Others report continued difficulty in getting deliveries on contracts, although much better service is expected once the priorities on the shipments to the Northwest are ended.

As yet the impulse of the Interstate Commerce Commission's order, diverting coal cars from all other trades with the purpose of vastly increasing the shipments of coal to Middle Western states, has not been felt.

There is no local shortage of coal now for industrial uses. In order not to create another serious situation large consumers are being urged not to attempt to get deliveries on more than thirty days' supply. Operations in the No. 8 district are somewhat improved due to the termination of the unauthorized strike, but labor efficiency is at low ebb. A further sharp break in the prices of coal is predicted in the trade.

Pocahontas and Anthracite — While no reductions of any account have taken place in the retail prices yet, some leading retailers have announced that prices would be revised downward later in the month. With cheaper coal prevailing at the mine, the saving is to be passed on to the consumer. Reductions will be based on the average price paid to operators for the two weeks preceding the new price.

Warm weather has caused a slight easing in the urgent demand for fuel, but receipts are still far below needs. A sharp cold snap would take up all the slack that has appeared in the market. The anthracite market remains firm and no indications of weakening have appeared.

Lake—The new order respecting coal cars is expected by the Ore and Coal Exchange to stimulate receipts for the Northwest trade. Of recent weeks Lake shipments have fallen perceptibly, and the 4,000-car daily movement aimed at has not been attained at any time during October. However, coal is now moving more freely to Lake ports and stocks are heavier than they have been in weeks.

Retail prices of coal f.o.b. Cleveland are:

Anthracite—Egg, $16; chestnut and stove, $16.25
Pocahontas—Shoveled lump, $16; mine-run, $12.50.
Domestic Bituminous—West Virginia Splint, $13.25; No. 8 Pittsburgh, $12; Millfield, $14.50; Cannel, $14.50.
Steam Coal—No. 6 and No. 8 slack, $11; mine-run, $12; No 6 ½-in. lump, $12.

MILWAUKEE

Bituminous Market Is Quiet—Lake Receipts Increase, but Trade Hesitates To Stock at High Prices—Heavy Rail Receipts Lower at Prices — Anthracite Situation Is Unsatisfactory.

Notwithstanding the approach of cold weather and the belief that there will be a serious shortage, the market is quiet. People are buying sparingly, and while some have hoarded anthracite, on the whole there is an absence of the nervous feeling which characterized the earlier period. Mild weather may account for this.

There is a noticeable improvement in Lake receipts of soft coal. Dealers are in a quandary, or this movement would be heavier. The fact is, there is plenty of Eastern coal to be had, but dealers are not stocking up at present mine prices, because of a fear that coal values are due for a slump. This feeling is strengthened by reports from the Illinois fields that coal which has been selling f.o.b. mines at $7@$8 per ton is now quoted $5@$5.50.

Milwaukee is being liberally supplied with Western coal of the poorer grades. Because dealers refuse to make contracts for future delivery, the city is purchasing on the open market, mainly screenings, at $9.50@$11. The anthracite situation is unsatisfactory and it looks as if this grade will command unprecedented prices before spring.

Heavy influx of Western coal improves the car situation and facilitates shipments by rail to the interior.

Receipts of coal by Lake to date aggregate 648,572 tons of anthracite and 1,650,000 tons of soft coal, against 697,710 tons of the former and 2,688,975 tons of the latter during the same period last year.

MINNEAPOLIS, ST. PAUL

Lakes Tonnage Increases Rapidly, Due to Better Transportation Conditions—Jobbers Hesitate To Pay Spot Prices—Roads Draw on All-Rail Fuel.

After a strenuous season, during the entire period of which there was little hope for getting adequate fuel, things seem to be clearing. It is by no means certain that there is to be sufficient coal for the winter, but late deliveries, and a prolonged mild fall give some hope.

During the past few days, the delivery of coal cars at lower ports has been in excess of all previous records. So heavy have they been that the coal is accumulating and threatens congestion.

This establishes two things clearly —that it has never been the fault of the mining concerns that more coal was not forwarded and that the solution lay solely with better car service. Complaint is now being raised that a portion of the accumulation is due to the unwillingness of Northwestern jobbers to buy coal on the figure ruling in the open market, around $12@$13. As long as others are willing to pay this price, it is argued that they cannot hope for a special dispensation at lower figures.

This is countered with the suggestion that it seems to be difficult to get coal on lower figures delivered under last spring contracts. The deliveries of soft coal at the four Lake Superior ports for commercial use are 1,700,000 tons less than last season, to Oct. 1. And last season had about 2,000,000 tons carried over the winter from the previous season.

Some of the railroads are drawing heavily on southern Illinois coal, and are cutting down their dock requirements proportionately. This may mean a material reduction of the tonnage needed on the docks. With the distinct change for the better in the handling of trains and the more efficient handling of switching in terminals, the southern Illinois fields are much more available.

It is to be remembered that the railroads had prepared for the fall rush of grain and merchandise. The grain market is demoralized, and farmers are holding their product for better prices. In merchandise, the sentiment that a general slump of values is started re-

sults in confining buying to narrow limits. This means that the roads have the advantage of a limited freight movement in which to straighten out their traffic tangles. When the rush does come they should be able to meet it with clear yards.

South

LOUISVILLE

Little Free Coal Is Available — Steam Demand Declines — Car Supply Is Entirely Inadequate, Due to New Operations.

Since Eastern Kentucky operators agreed to a maximum price of $6, it has been a hard matter to secure any quotations on coals from that district. Some of the jobbers claim that they cannot buy at $6 and are paying more.

Car supply is about 33 per cent in Eastern Kentucky, and shows no signs of improvement. Much of the trouble is due to the fact that new companies have come in, and demand for cars has increased greatly as the fields developed, while railroad facilities have not kept pace.

Retailers have sent out letters to operators in the Jellico, Hazard, Elkhorn, Harlan and Straight Creek fields asking for quotations, but many of the companies are tied up and have very little free coal to offer.

There is some Southern demand in the cotton ginning and textile districts, some call for bunkerage, and a little export business, with a continual demand north of the river. However, railroad fuel is weakening and the aggregate demand is not as keen as it was. Many buyers have been withdrawn from the fields.

Retail demand is fair, consumers waiting for better grades of coal, which are not in good supply. Quotations of Eastern Kentucky coal at retail show: Lump, $11.50, mine run, $10.50@$11, screenings, $9.50@$10.

BIRMINGHAM

Inquiry for Steam Is Slightly Slackened—Domestic Sizes Continue Strong —Good Car Supply and Improved Labor Conditions Reflect Steady Gains— Export Calls Are Large.

Steam demand has slackened somewhat. Spot prices range $5 50 for Big Seam to $7.50@$8 for Black Creek and Cahaba mine run. Spot buying is still of more than sufficient volume to absorb all free coal thrown on the market.

There has been some increase in the production but not enough to affect market conditions as yet. Contract coal is moving in larger volume and with more ease than for some time past, though the railroads are still confiscating heavily. Inquiry is good for bunker and export coal and a considerable tonnage is reported as moving from Mobile and Pensacola, some of which supply comes from Alabama bought up from small operations. Kentucky, Tennessee and Indiana coal has been offered in the local market, with some grades reported as low as $6.25. A contract for 10,000 tons of domestic coal for export was proffered a local operator the past week, the price to be named by the shipper.

There is a great scarcity of domestic throughout Alabama. Dealers in many places say that receipts are not sufficient to enable them to fill current orders. State Fuel Administrator Davis is now making a survey of the stocks of domestic coal and the probable requirements for the rest of the season with a view to making proper distribution of the supply which will be turned over to the state.

Working forces are much larger than a week ago, and a number of old men are returning to work in the centers where the strike has been most keenly felt. Output for the week of Oct. 2, from mines reporting, totaled 258,905 tons, which is a satisfactory gain. Car supply is sufficient to meet the needs of the coal fields.

Inland West

DETROIT

Demand for Steam Is Easier — Cooler Weather Increases Domestic Calls — Prices Are Slightly Lower—Anthracite Shortage Grows.

Bituminous—Wholesalers report a slight increase in supply of steam coal within the last few days, due in part to a less active inquiry among consumers. This is attributed in some degree to the buyers' expectation that prices may be lowered after the close of Lake navigation.

A more active demand has appeared among retailers and domestic consumers with the approach of cold weather. Jobbers say the supply of domestic coal is not equal to the requirements. There appears some doubt among the dealers as to whether the recent order of the Interstate Commerce Commission giving priority to shipment of about 2,100 cars daily to Michigan, Ohio, and Indiana, will afford very much relief.

There is a feeling that benefit may result from the order in terminating abuses that have developed under the system of permitting railroads and public utilities to assign cars at the mines for loading. Considerable blame for inequitable distribution has been ascribed to this practice.

Hocking mine run is quoted $8 at the mines, lump is held at $8.50. West Virginia mine run ranges around $8.50, lump $8.75@$9. There is a small amount of smokeless lump available at about $10.50.

Anthracite—Conditions are very unsatisfactory for dealers and consumers. The shipments are small and irregular. With no stock on hand the retailers are unable to make much headway in providing for the needs of their customers, whose inquiries are becoming more urgent with the approach of winter weather.

Lake Trade—Despite all efforts, shipments to the Northwest are still considerably below the daily minimum of 4,000 cars. The season's movement to Oct. 10 was approximately 6,000,000 tons below that for the similar part of 1918.

COLUMBUS

Lowered Steam Demand Softens Prices — Domestic Market Is Strong — Production Increases — Lake Movement Is Improved.

Operators in the Hocking Valley field are experiencing a falling off in demand for steam grades. With large steam users shutting down either entirely or partially, the consumption of steam sizes is correspondingly decreased. There has been a decline of about 75c. for various Ohio grades. West Virginia coals are still holding up fairly well.

Retail trade is still strong and no appreciable weakness is reported in any section. Dealers are clamoring for coal. Stocks are light and are moved out as quickly as they arrive. The policy is to apportion the available amount to many customers. Retail prices are ranging firm at former figures. Hocking lump retails $8.75 @$10.50, and possibly higher, while mine run can be purchased $8.50 @$10. Pomeroy Bend lump is firm $9.50@$11 and Pocahontas is selling $12.50@$15. Kentucky lump retails $11@$13.

Lake tonnage is quoted $6.50@$7.25. The car service for Lake shipments has been unusually good and the same is true of the vessel movement.

Loadings at the H. V. docks at Toledo during the week ended Oct. 9 amounted to 186,649 tons as compared with 164,373 tons the previous week. The T. & O. C. dock dumpings were 62,280 tons as compared with 82,123 tons the previous week.

Production in various Ohio fields has shown an increase, because of an improvement in the car supply. This is especially noticeable on the H. V. Ry. side of the Hocking Valley field. The T. & O. C. R.R. had had a rather indifferent car supply, and this had the effect of holding production in the entire field to about 55 per cent. Pomeroy Bend and Cambridge districts report an output of 65 per cent.

The Southern Ohio Coal Exchange reports an output in that field for the week ended Oct. 2 at 298,000 tons out of a capacity of 606,000 tons. Of the loss 175,000 tons was due to car shortage; 86,000 to labor; 3,000 to strikes; 10,000 to mine disability and 34,000 to other causes.

Price at the mines for various grades used in Central Ohio are:

Hocking lump	$7 75@$9 00
Hocking mine run	6 75@ 7 50
Hocking screenings	6 25@ 7 50
Pomeroy lump	7 75@ 9 00
Pomeroy mine run	7 00@ 7 75
Pomeroy screenings	6 50@ 7 50
West Virginia Splints, lump	7 75@ 9 00
West Virginia Splints, mine run	7 00@ 7 75
West Virginia Splints, screenings	6 50@ 7 25
Pocahontas lump	8 00@ 9 00

ST. LOUIS

Railroad Contracting Is Heavy—Prices Are Higher — Local Steam Market Is in Good Shape—Mining Conditions Are Better.

Steam sizes, especially screenings are easier in St. Louis. This has been offset some by heavy shipments of mine run to railroads and has made the lump and egg market stronger. The country is still in a critical condition for both steam and domestic, although the former demand has eased up considerably.

In the Standard field the car supply is about the same. Many mines are selling their outputs to railroads in order to get full working time with cars furnished. The only labor trouble at present is the indifference of the miners to work full time. Prices show screenings for St. Louis as low as $4 and country shipments $5@$5.50. Domestic sizes in St. Louis are $4.25@$5, with outside up to $7 and Illinois Central shipments South as high as $8.

Mt. Olive field averages four days per week car supply on commercial and the railroad tonnage there is growing heavier. No labor troubles. Prices in St. Louis range $4@$4.50 and outside shipments $5.50. Steam sizes are practically all contracted.

In the Carterville field fairly good car supply prevails on all roads exeepting Missouri Pacific and Illinois Central, which are both in a bad way for equipment. These coals bring from $5, a price maintained by the operators' organization, up to $8 on the part of independents.

In St. Louis proper there is no anthracite moving in, but a few cars of smokeless are coming through, with nothing from the Arkansas fields available. The local coke production has increased some, but the demand for coke by gas companies throughout the Middle West has taken the bulk of this off of the domestic market.

Retail prices in St. Louis are:

Anthracite	$18@$18.50
West Virginia smokeless	$16@$16.50
Carterville	$9.50
Mt. Olive	$8@$8.50
Standard	$7.50@$8

CHICAGO

Car Supply Is Greatly Improved—Steam and Retail Situation Is Better —Market Is Unsettled, Due to Price Investigations.

Mines suplying Chicago are enjoying a better car supply than at any time since the first of the year. Franklin County is receiving a 60 per eent supply, while mines in the Springfield district are perhaps even a little better off.

Both steam plants and the retail yards in the city are now beginning to report a little coal on hand, and the fear of an immediate coal famine has now been banished. With the exception of anthracite, Eastern coals like Pocahontas, Splint, etc., have been coming into the local market in much larger quantities, in fact, than at any time previous during the season.

Prices are so varied that it is impossible to give satisfactory quotations. Domestic coals are bringing $6.50@$7.75; steam $5@$6.50.

On account of the investigation of the Grand Jury, now sitting in Chicago, the market is very unsettled and varies considerably from day to day. With the exception of a few more or less obscure jobbers, no one connected with the coal industry in Chicago has run afoul of the Grand Jury.

MIDWEST REVIEW

Unsettled Market Follows Price Investigations — Price Regulations Curtail Indiana Receipts — Spot Prices Have Eased Considerably.

During the past few days market conditions have been very unsettled. Grand Jury investigations have been made in an endeavor to place responsibility for the abnormally high prices, and several indictments have been returned. It is worthy of note, however, that but few operators have overreached themselves. Those who have aroused ire appear to have been wholesalers and jobbers who have taken advantage of the situation.

A very interesting, but somewhat unfortunate condition has arisen in Indiana. In a great many cases, the prices set by the State Coal Commission are so low that it will drive a number of smaller and more inefficient mines out of business, unless a car supply of 100 per cent is forthcoming.

The first result of the establishment of the coal commission prices has been that practically all coal produced in Indiana has been shipped out of that state and out of the jurisdiction of the commission. If this continues to such an extent that Indiana localities suffer the commission has power to distribute coal in Indiana to suit itself, irrespective of the wishes of the producer. No operator is going to sell his coal, in times like these, for $3.45 per ton, when he can ship it out of the state and realize a much better price. The attention of the industry is focused on Indiana, and some interesting developments are expected during the course of the next few weeks.

Taken all in all, the situation in Illinois is much more satisfactory. No definite prices have been set, but several recommendations were made which have been followed; it was recommended that no producer sell coal to a wholesaler or jobber, unless he receives a guarantee that the jobber will not pass the shipment on to another jobber. This development alone will prove of great assistance in bringing coal prices to a more reasonable level and prevent some of the unscrupulous wholesalers from "swapping" coal. Operators are doing all they can to bring prices down to reasonable levels and the market has lately shown some signs of this action.

Prices on steam coals are now at more normal figures. The best screenings to be had are bringing not more than $5.50 per ton, while the poorer grades are selling at $5@$5.25. Mine run is being sold $5.50@$6.50, while prepared sizes are bringing $6.50@$7.

INDIANAPOLIS

Fixed Prices Send Free Tonnage Out of State — Contracts Being Made — Operators Will Fight Ruinous Order.

Claiming that ruinous effects will follow adherence to prices fixed by the state fuel and food commission, operators are preparing to carry a test case before the Supreme Court, if necessary. The immediate result of the order fixing prices has been that shipments of free tonnage outside the state have been greatly increased. Heavy movements to Wisconsin and Northern points are reported, also to Southern ports for bunkerage and export, all at prices considerably better than the restricted figures allowed by Indiana's commission.

Another logical tendency on the part of operators to seek protection against this injustice is seen in the number of new contracts being made outside the state.

There are some mines in Indiana that can run on this price schedule, due to low production cost and good running time. Others also have prior contracts, made at figures above those listed by the commission which they are filling to advantage. However, with an average car supply of 75 per cent at best, it will be impossible from an economical standpoint for the majority of the mines to apply other than a minimum tonnage for Indiana delivery.

Western

DENVER

Car Shortage Cuts Bituminous Production — Demand Is Excellent — Lignite Prices Are Increased.

Bituminous—About one-fifth of the lost time for the week ended Oct. 2 was due to car shortage, as reported by the Colorado and New Mexico Coal Operators' Association.

Colder weather has stimulated sales, but operators are sacrificing some of their standing orders for out-of-state shipment to supply local dealers.

Labor conditions are generally good, although the demands of miners in lignite fields for 20 per cent advance for dead work, and a working agreement, have caused uneasiness among some of the bituminous producers.

Retail prices are continuing $11.50@$12.50 for lump. There is no indication at this time that prices will be increased the first of the month.

Lignite—Most of the companies raised the mine price 20c., Oct. 11, and this jump was immediately reflected by retail price of $10.05. The new mine selling price is $6. No change in the price of slack was reported.

It is believed that impending labor disturbances, together with a general increase for labor granted recently and retroactive to Sept. 1, had something to do with the latest advance.

Distribution of cars was better than in the bituminous fields, little or no shortage being encountered.

News From the Coal Fields

Northern Appalachian

PITTSBURGH

Consumers Predicting Break in Market — Operators Deny Existence of Such Prospect—Spot Market Strong as Ever —Good Export Expectations.

Spot prices are at least as strong as a week ago, if not a trifle stronger. The market is not as heavy, but this seems to express nothing but an expectation as to the future. There is a growing feeling on the part of buyers that conditions as to supplies and requirements do not warrant as high prices as have prevailed, and there is the expectation of a price break.

Operators insist that there is no ground for expecting lower prices in anything like the near future. They combat the view expressed by some consumers that the ending of the Lake season will throw enough coal on the market to break the price, and represent that there is an almost unlimited export demand, to absorb any coal released.

While movement to Tide has been restricted of late by railroad conditions, it being difficult to secure any permits over the Pennsylvania, for instance, it is suggested that the ending of Lake shipments will release equipment, enabling railroads to increase their movement to Tidewater.

Consumption of coal by the iron and steel industry has decreased somewhat, and further and greater decreases are promised, while the same is probably true of some other industries.

Quotations are on the same basis as a week ago, $8.50@$9 for steam and $10.50@$11 for gas and byproduct, per net ton at mine, Pittsburgh district.

CONNELLSVILLE

Spot Market Is a Shade Stiffer — Coke Not Affected by Softness in Pig-Iron Market — No Contract Negotiations — Prices Are Unchanged.

The spot furnace coke market has stiffened a trifle since last report, since $17 is the minimum done in the past few days, while foundry coke is plainly firmer. The car situation is not altogether as poor as it was but production has increased only slightly. While there does not seem to be any heavy demand for coke it appears that all offerings are promptly absorbed at prices demanded by operators.

It seems curious that the coke market has not responded to the much poorer outlook which the iron and steel industry now faces. The producers now admit that a period of much lighter operation confronts them, and that there has been some curtailment already in steel manufacture if not in pig iron production. The latter market has grown very weak, and it is possible to buy pig iron at more than $5 a ton below recent, well established figures. Furnacemen are a unit in declaring that they cannot think of buying first-half coke at anything like prices now asked, but operators simply continue quoting their high prices for spot shipment and refrain from making any effort to induce furnacemen to sign up for the new half year.

The spot market is quotable $17@$17.50 for furnace and $18@$18.50 for foundry, per net ton at ovens.

The *Courier* reports production in the Connellsville and Lower Connellsville region in the week ending Oct. 9 at 212,160 tons, an increase of 21,980 tons.

UNIONTOWN

Prices Decline Sharply Following Permit Withdrawals — Slump Believed To Be Only Temporary — Car Supply Is Very Strong.

Fuel prices slumped this week, the break coming when withdrawal of permits by the Pennsylvania operated as a stop on pier shipments and confined Eastern tonnage to the lines. Good car supply maintained production at a high relative figure and for the time offered the market more than it would absorb at prevailing prices.

Coke prices were not so sharply affected. Comparison of quotations of Tuesday and Friday of this week shows a drop of $2 in by-product coal, from $10@$10.50 to $8@$8.50. P. R.R. Pool 34 also tumbled sharply, from $9.75 to $8.25, with B. & O. Pool 34 off from $10.75 to $10.25. Pool 44 slumped from $9 to $8.25, while P. R.R. steam went from $8.25 to $7.75 and B. & O. steam from $8.25 to $7.50. Coke sold off 50c. under the influence of the movement, centering around $17.

These price changes are not expected to be lasting. Some expect an upward trend with the re-opening of the Pennsylvania piers, provided other conditions remain constant. The British strike should have a strong bullish effect on the export situation.

Car supply continues very strong, averaging 100 per cent for coke and almost 90 per cent coal for the entire local region. Lake Erie placements on the Monongahela continue to furnish the bulk of the supply. Motive troubles are apparently being cured, as yard congestion has been largely relieved during the past two weeks. Less than 1,000 loads are reported daily at Youngwood and less than 60 at Rainey.

NORTHERN PAN HANDLE

Car Shortage Is Main Factor in Production—Lake Demand Is Heavy with Good Prices—Domestic Prices Conform to New Regulations.

With miners back at work in Northern Pan Handle and Eastern Ohio mines only the lack of cars retarded production during the weekly period ended Oct. 9. Mines were able to secure only about 75 per cent placement. In view of the large quota required for Lakes as well as public utilities, that supply was far from being sufficient.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

BITUMINOUS COAL

	1920 Week	1920 Calendar Year to Date	1919 *a* Week	1919 *a* Calendar Year to Date
Sept. 25*b*	11,851,000	392,763,000	11,613,000	341,276,000
Daily average	1,975,000	1,723,000	1,936,000	1,497,000
Oct. 2*b*	11,369,000	404,131,000	11,518,000	352,794,000
Daily average	1,895,000	1,728,000	1,920,000	1,508,000
Oct. 9*c*	12,075,000	416,206,000	11,888,000	364,687,000
Daily average	2,012,000	1,735,000	1,981,000	1,520,000

ANTHRACITE

Week Ended	1920	1919 *a*
Sept. 25	1,655,000	1,760,000
Oct. 2	1,804,000	1,845,000
Oct. 9	1,847,000	2,123,000

BEEHIVE COKE

United States Total

Week Ended Oct. 9 1920*c*	Week Ended Oct. 2 1920*b*	Week Ended Oct. 11 1919	1920 to Date	1919 to Date *a*
412,000	376,000	305,000	16,482,000	15,102,000

(*a*) Less one day's production during New Year's week to equalize number of days covered for the two years. (*b*) Revised from last report. (*c*) Subject to revision. All figures in net tons.

Demand at the Lakes was such as to keep Lake prices up despite the fact that inland prices had receded to some extent. Lower prices were even more noticable on sales for local domestic consumption but that was because of action taken by the Fair Practice Committee which is under obligation to see that local consumers secure a sufficient supply of fuel. Coal for such local consumption was far below the present market quotations.

Public utilities were getting on the priority list and were in that way securing quite a large tonnage, so that there was not much more commercial coal available for general distribution.

EASTERN OHIO

Radical Labor Prevents Full-Time Operation — Cars Are Adequate for Available Tonnage — Prices Are Firm, but Decline Is Seen.

Although mines have been working during the past week following the recent outlaw strike, most of them are experiencing difficulty in persuading the usual percentage of men to work.

Explanation is made that the rank and file were so disappointed at the loss of the recent strike that they are taking the attitude of hampering operators in every way possible, as a matter of revenge.

The feeling prevails that although officers of the union were able to end the strike the radical element is still powerful, and through control of its own clique and influence on the conservative and loyal men presents a serious problem for the consideration of the operators, if they are to maintain production at a profitable level.

Output for the week ended Oct. 9, was approximately 250,000 tons, of which about 30 per cent was railroad fuel. Car supply seems to be about equal to the ability of the mines to load —further reflecting the labor situation.

Prices are still firm. Lake coal is quoted at $7 and such commercial tonnage as is available, after filling priorities, is $7.75@$8.50. There is, however, a feeling in certain quarters that prices will soften following the close of Lake navigation.

FAIRMONT

Production Improves with Better Car Supply — Increased Lake Quotas — Heavy Tonnage—Prices Are Firm, but Drop Is Expected.

Production was on a larger scale than had been the case for several weeks during the period ended Oct. 9 because of a larger distribution of equipment. The increase apparently was not limited to any one road, mines on nearly all the lines in the northern part of the state sharing in the increased supply of empties.

Placement on the Monongalia on Monday did not indicate an adequate run, yet improvement in the supply was seen after that date. The same was true of the Baltimore & Ohio. On the Western Maryland, the supply was such as to make large loadings possible both on its main line and in the Wyatt-Bingamon territory. Loadings during the first half of the week were sufficiently large to make up for some of the loss sustained later because of a dwindling supply.

So large a tonnage had been apportioned to the Lakes, that the cars released from assignment were used in taking care of Lake shipments. Still another factor, however, in making it impossible to increase the general distribution of production was an apparent increase in priority requirements.

Prices remained firm, in general. However, the general opinion was expressed that in view of the efforts of the Fair Practice Committee and general market conditions, there would be further price recessions.

Middle Appalachian

NORTHEAST KENTUCKY

Steam Demand Declines, but Domestic Calls Increase—Prices Are Receding—Car Placements Improve — Contract Shipments Are Heavier.

Mines were able to operate slightly more than on a half time basis, during week ended Oct. 9, production reaching 124,000 tons or 52 per cent of potential capacity. There was a production loss of 48 per cent, of which 39 per cent was due to a shortage of cars. Nine per cent of the loss was due largely to labor. A good many miners owning small farms are just now engaged in putting away their fall crops.

There is a slight slump in the demand for steam coal in Northeast Kentucky, though on the other hand there is a strong call for domestic fuel. Prices are from one to two dollars under these prices prevailing a month ago.

Some relief has been secured by Eastern Kentucky operators from the onerous public utility priorities and this is making coal somewhat more available to be applied on contracts.

KANAWHA

Car Supply Is Greatly Decreased—Prices Slightly Lowered—Lake Quota Leaves Little Free Coal.

In sharp contrast with an improvement noticable in the car supply of the Chesapeake & Ohio R.R. was the miserable quota for mines served by the Kanawha & Michigan R.R. During the period ended Oct. 9 the supply reached so low an ebb—around 30 per cent—that it became necessary for operators to make a personal appeal to officials of the New York Central, by whom relief was promised.

It is also expected that the new order relating to the assignment of cars may afford some relief. Owing to the meager car supply the large quota taken for the Lakes worked a great hardship on the mines which were being pressed for contract delivery.

While it is doubtful if prices were quite as high as they had been there was no marked recession and the general demand for coal—in excess of the tonnage available—was not such as to cause any sharp break.

Lake shipments were unusually heavy, the quota allocated to Kanawha mines having been increased, approximately 33 per cent of the production moving to Lakes.

POCAHONTAS AND TUG RIVER

Car Supply Again Declines — Production Is Lowered in Both Fields — Lake Shipments Are Heavy—Good Tidewater Demand—Labor Is Indolent.

During the period ended Oct. 9 cars were more scarce than at any time since the first of September. Losses from a labor shortage were also quite heavy in the smokeless territory along the Norfolk & Western R.R.

Production was slightly on the downgrade in the Pocahontas region chiefly because of a growing car shortage. Prior to this time car shortage had been almost insignificant and while the losses sustained because of a scarcity of cars had not reached the proportion of the labor shortage losses, yet the total production loss was swelled considerably.

There was much talk in the Pocahontas region of attempting to enforce the vagrancy law, owing to the large number of men who will not work more than a fraction of the week. This is the result of wage increases which make it no longer necessary for the miner to work more than half-time to earn what he formerly did by working steadily.

Lake shipments were on a somewhat larger scale, owing to shift in Lake quotas from Tug River to the Pocahontas region. Tidewater movement was also large. There is a steady demand at the piers for Pocahontas coal.

The peak of production in the Pocahontas field between July 10 and Oct. 2 was reached during the week ending July 31, with an output of 353,000 tons. The total tonnage for the three-month period was 4,285,404 tons or slightly more than 83 per cent of potential capacity. Car shortage loss was only 3.5 per cent, while the labor shortage loss was 11 per cent.

Production was slightly in excess of the figure for the same period of 1919. Car shortage losses a year ago were running much heavier, amounting to 23 per cent. On the other hand, labor shortage losses were 10 per cent less.

Between the idleness of a good many miners who will only work a part of the week and a dwindling car supply, Tug River production was still under the figure established late in September. It was the absentees from the mines, however, who were causing the greater part of the loss.

While Tug River mines were not required to ship so large a percentage of mine rating to the Lakes, yet the fact that few operations were producing to capacity tended to increase the percentage of coal shipped. The demand at Tide continued heavy but it was impossible to ship much fuel there owing to the large tonnage required to meet Lake requirements.

LOGAN AND THACKER

Production Increases—Many Strikers Return—Western Demand Slumps, but Tide and Lakes Movements Are Heavy —Prices Holding Firm.

Loadings were unusually large in the Logan region during first part of the week ended Oct. 9, the output reaching 60,000 tons on the first day, when more than 1,200 cars were furnished. Sufficient impetus was given production during the early part of the week to make it larger than during the previous week, and a general estimate of production places the figure at 250,000 tons.

While Lake requirements had been increased that was not the only factor leading to large deliveries. Following a diminution of the Inland West demand, due to a slowing down of industrial activity, Lake buying was more active. There was a steady Tidewater movement at prices showing no decrease as compared with previous weeks.

In that portion of the Thacker field affected by the strike it is estimated that there was a production of 25,000 tons, verifying so far the prediction made early in the month that such mines would have a production for October of about 100,000 tons.

Strike losses in the Williamson field have been reduced from 90,000 tons a week to 65,000 tons. Many miners, who were on strike, have returned to work, moving back to company houses formerly occupied by them.

NEW RIVER AND THE GULF

C. & O. R.R. Car Placements Are Still Inadequate—Production Is Greatly Curtailed by Labors' Indifferenee—Heavy Tide Movement at Firm Priees.

The Virginian Ry. was able to keep production up to the level of the previous week with a 70 per cent supply, but on the Chesapeake & Ohio R.R. cars were more scarce, mines not running more than half time.

There was growing labor shortage. It is the experience of Winding Gulf operators that since the last wage increase the tonnage has decreased a third, due to the irregular working of the men. It is being urged upon Gulf operators that they secure men from Southern Italy now coming to this side in such large numbers.

While some of the Virginian Railway's new cars are in service the bulk of this equipment will be delivered in November. By the first of the year the Virginian should be in shape to furnish a car supply of about 100 per cent. General trade conditions are practically unchanged.

There was a slump in production in the New River field. From the very first of the week empties were fewer than usual. The supply was estimated at 50 per cent.

Little or no New River was shipped to Lakes and Western deliveries were not large. There was a favorable demand at Tidewater, and the bulk of the output was consequently shipped to seaboard, moving at prices considered very satisfactory. Owing to the limited car supply, however, tonnage produced was hardly more than sufficient to take care of contract requirements.

VIRGINIA

Cars Are Plentiful, but Labor Losses Are Heavy—Price Is Steady—Good Demand from All Sources.

Labor shortage was the most potent factor in restricting production during the period ended Oct. 9 insofar as it was possible to determine. There was a production report of only about 130,000 tons, representing about 75 per cent of potential capacity.

Cars furnished were sufficient to load such coal as was produced, the labor shortage entailing a loss of about 22 per cent as against a car shortage loss of only one per cent. In fact, there was a full car supply on all five roads supplying the field except the Norfolk & Western R.R. The usual amount of about 30,000 tons was utilized in the manufacture of coke.

Prices are showing less fluctuation than has heretofore been the case, although there appears to be a steady demand both at Tidewater and Inland East markets, particularly in the South where the domestic demand is beginning to show signs of activity, as reflected in inquiries from dealers. More free coal is available since the Commerce Commission put out its new orders.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Improved Car Supply Increases Production—U. S. District Attorney Slattery Reads "Riot" Act to Operators.

Cancellation of Service Order 16 and the continued demands from operators of this field for a more equitable distribution of cars has materially increased the production of this field in the past 10 days. Many of the mines received a full three days' car supply last week, with good prospects for an equal supply this week.

All operators of this field were invited to meet with the U. S. District Attorney General in Cincinnati on the 4th, and some attempt was made to get the operators to agree to sell their coal for $6. A form letter was sent out for the operators to sign, but many of them have not done so. Mr. Slattery stated that he certainly intended to indict every operator who sold coal for more than $6. It is not known where Mr. Slattery gets his authority for fixing this price.

Many of the larger mines are screening their coal now and shipping in large quantities to the domestic trade of Kentucky and adjoining states, in an attempt to supply the great demand for domestic sizes. The market price just now is $6, but it is not believed that this will be the price for any length of time.

Middle Western

WESTERN KENTUCKY

Excellent Demand for All Grades—Car Supply Slumps—Better Freight Rates Open New Territories.

In spite of the fact that prices in Indiana and Eastern Kentucky are controlled by Federal authorities and are comparatively low, Western Kentucky operators are having no difficulty in getting excellent prices for all the coal they can produce.

Under the ruling of Federal Judge Evans, at Louisville, for the Western District of Kentucky, operators cannot be prosecuted under the Lever Act.

Operators report an average of 33⅓ per cent car supply on L. & N. and 40 per cent on the I. C. Ry. This is much lower than for the past few weeks.

Production is moving north of the Ohio, principally through Evansville, to Detroit and south to Memphis and Nashville, with some coal also coming to Louisville. A little coal is being sent to Gulf ports for bunkerage or export.

Operators today face the best period of their history. Better freight rates granted enable them to reach many sections of the North and West from which they were formerly barred, also sections of the South and Gulf ports. Formerly Western Kentucky had a good sale for lump, but not much demand for steam, whereas all steam today is moving freely.

Mines are averaging $5.50 for screenings, $6.50 for mine run and $7.50 for lump.

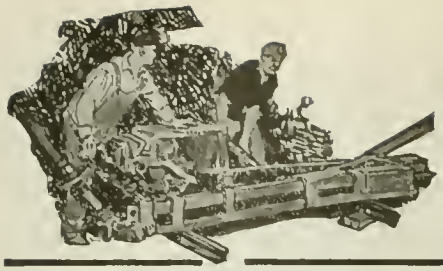
DU QUOIN

Cars Are Plentiful — Production Is Heavy — Same Dissatisfaction Among Leaders — Market Declines Slightly.

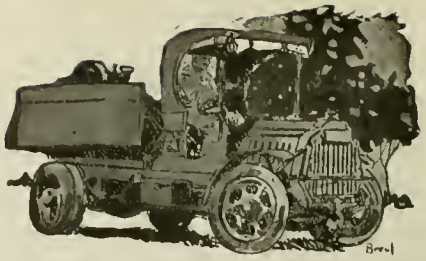
Steady work time has held out encouragingly at most of the mines during the past week, many of them have had instances when almost a half-day supply of cars were on hand, left over from the previous day. Many of the mines are still operating on priority orders from 40 to 70 per cent running time. The Illinois Central has shown a marked improvement in its ability to move cars.

There are some rumors of a strike among the loaders at the various mines; however, no open talk is heard. Many of the loaders and diggers hold that the shift men have now an advantage over them since the Aug. 16 raise. In some districts the machine runners have the same feeling. The shift men are making in some places as high as $10 to $40 more than the loaders in a two-week period.

Due to warm weather the market took a slight slump. The largest portion of the shipments seem to be moving North toward Chicago and other industrial centers, with some few orders going South and practically none toward St. Louis. Mine run prices did not vary, remaining at $6@$7.25; screenings, $5.50@$6.75.



Mine and Company News



COLORADO

Walsenburg — Articles of incorporation have been filed for the San Juan Coal Mining Co., with a capital stock of $50,000, as coal operator and dealer in the wholesale and retail branches of the bituminous trade. The directors are Henry Carlson, George E. Pleasants, James E. Tressler, A. E. Neelley and A. M. Guerrero. Present operations will be confined to Huerfano County.

Steamboat Springs—Recently incorporated, the Oak Creek Coal Co., with a capital stock of $36,000, is preparing to mine and market bituminous coal from Routt County. Incorporators are Joseph C. Maguire, B. A. Ford and L. E. Minard.

ILLINOIS

Springfield — The Lenton Coal and Coke Corporation has a force of men at work on the Lenton mine just north of Auburn, formerly the property of the Pittsburgh Coal Co. The mine will be placed in operation as soon as the construction work is completed. Clinton Richardson, formerly mine manager at the Virden mine of this company, will be in charge as superintendent.

INDIANA

Linton—The Olive Branch Coal Co., organized by Neil Murphy, Chas. Page, Arthur Spangle, Thos. Coakley, John Rogers and Jack Coakley, are sinking a shaft near here on the Page farm. They will mine fifth vein coal and will be located on the South Eastern R.R.

Indianapolis—A complaint on a contract sent to Shelby County on change of venue from the Marion superior court has been received, in which The Atlas Mining Co. and Alfred M. Ogle are suing the Indianapolis Light & Heat Co. The plaintiff, as owner of a coal mine in Greene County, entered into a contract with the defendant and asks that judgment be given making the defendant comply to the terms of the contract.

KENTUCKY

Louisville — That movement of coal from west Kentucky by water to the Gulf for export is promising is shown in recent announcement to the effect that the West Kentucky Coal Co., Sturgis, has ordered a 250-ft. tow-boat, the largest built in 20 years on the Ohio, to be used for heavy towing down the Mississippi. It is being built in Pittsburgh, will be 50 feet wide, equipped with six boilers and 9-ft. stroke wheel.

Henry Ford, operating mines in eastern Kentucky, by paying higher than the union scale, has defeated the mine unions. That organization called a strike to force recognition of the union, but met with no response, as the men preferred the higher wages to staying with the union.

OHIO

Corning—The Roberts Coal & Supply Co., of Columbus, has sold a small mine at Corning, to the Tharp-Repack Coal Co., of which C. S. Tharp is president and general manager. The mine is located on the Toledo and Ohio Central and has a capacity of 150 tons daily.

The Sunday Creek Coal Co. is pushing the development of Mine 8 at Corning, which is expected to be in production by Jan. 1. The mine will have an initial capacity of 1,000 tons daily which will be increased to about 1,500 tons. There is a large acreage to be worked from the new entry. A modern tipple is being erected. The mine is located on the Toledo and Ohio Central R.R.

PENNSYLVANIA

Philadelphia—The Raven Run Colliery Co., of this city, has received a Pennsylvania charter, the capital stock being set at $1,500,000. The Wentz Corporation is the principal stockholder, and is one of the incorporators, the others being Messrs. Daniel B. Wentz and William C. Kent, both of Wyncote, and William H. Harding, of Overbrook. H. B. Price, of Philadelphia, is treasurer.

Pittsburgh—The Gilmore Coal Mining Co. has been organized with a capital stock of $100,000. S. A. Gilmore, C. Ebershuger and E. L. Morris are the incorporators.

TENNESSEE

Dunlap—The Palmetto Coal Co., composed of South Carolina capitalists, operating mines at Cartwright, is reported to have acquired 5,000 acres of coal lands in that section from the Tennessee Coal, Iron & R.R. Co. and is negotiating for the balance of the latter's holdings in Tennessee, valued at between one and two million dollars.

WASHINGTON

Seattle—A lease of 2,040 acres in the principal coal-bearing region of Alaska to the Alaska Coal & Coke Co. of Seattle has been approved by Secretary of the Interior Payne, according to a report from Washington, D. C. The big tract of land, which is the richest in the Alaskan field, is located in the center of the Bering coal field.

The Chu Chua mine, situated near Kamloops, has been placed on a shipping basis, according to Glenville A. Collins, consulting engineer. This property covers about 5,000 acres, is situated in the new coal area and it is said is capable of producing a large amount of coal of an excellent value.

A new coal mine is being opened up at Coalspur, on the Mountain Park branch of the Grand Trunk Pacific Ry.

WEST VIRGINIA

Buckhannon—The Iris Coal Co., recently organized with a capital of $50,000 is planning for the development of 300 acres of coal lands and the initial plant will have a capacity of about 400 tons a day. Frank E. Williams is president-manager.

Huntington—Dealing in coal lands will be the principal business of the Lick Fork Collieries Co. which has just been organized by Huntington people with a total capitalization of half a million dollars. Those identified with the new concern are also interested in the Lake & Export Corporation. Organizers of the Lick Fork Collieries Co. were: F. J. Payne, S. J. Hyman, A. B. Hyman, N. J. Pugh and John S. Marcum, all of Huntington.

Huntington is to be the headquarters of the Big Eagle Mining Co., a $400,000 corporation which will operate in Logan County, Triadelphia district. Leading figures in the organization of the new company were: Paul Hiner, B. J. Hiner, Herbert Fitzpatrick, D. W. Brown and C. M. Pickerell.

The Ranger Coal Co. has been incorporated with an authorized capital stock of $50,000 to develop 740 acres of coal land at Ranger in the Lincoln County field. Active as effecting a preliminary organization were: W. J. Harvie, Charles S. Porter, T. J. Bartrug, G. H. Richard and J. C. Miller, all of Huntington, W. Va.

The Mountain State Coal Corporation, recently organized, has begun development work on a tract of 2,750 acres, purchased in fee including all mineral rights, on the Dry Fork branch of the Norfolk & Western Ry. By spring the company hopes to be producing red ash and Pocahontas coals at the rate of 1,500 tons a day. General offices of the company are to be at Huntington, W. Va.

Beckley—An increase of production on the part of companies operating on the Virginian Ry. was observed during July, the total tonnage produced by all the mines reaching 737,116 tons. Companies contributing to that total and having an output of over 10,000 tons during the month, 26 in all, were as

follows: New River Collieries Co., Eccles, 26,869 tons; Slab Fork Coal Co., Slab Fork, 25,840 tons; Winding Gulf Colliery Co., Winding Gulf, 23,175 tons; Raleigh Coal & Coke Co., Raleigh, 20,148 tons; Long Branch Coal Co., Long Branch, 19,549 tons; E. E. White Coal Co., Glen White, 19,450 tons; Loup Creek Colliery Co., Beards Fork, 19,437 tons; Gulf Smokeless Coal Co., Tams, 18,539 tons; E. E. White Coal Co., Stotesbury, 18,513 tons; Pocahontas Fuel Co., Itmann, 18,070 tons; Kanawha, Glen Jean & Eastern R.R., Pax, 18,060 tons; Wyoming Coal Co., Wyco, 17,182 tons; East Gulf Coal Co., Helen, 16,373 tons; McAlpin Coal Co., McAlpin, 16,327 tons; Mead-Tolliver Coal Co., Kilarney, 14,785 tons; Loup Creek Colliery Co., Page, 14,573 tons; Lillybrook Coal Co., Lillybrook No. 1, 14,108 tons; Cranberry Fuel Co., Cranberry, 13,277 tons; Gulf Coal Co., Hot Coal, 12,611 tons; Wood-Sullivan Coal Co., Vanwood, 12,493 tons; New River Collieries Co., Sun, 11,925 tons; Leckie Fire Creek Coal Co., Fireco, 11,660 tons;Ingram Branch Coal Co., Ingram Branch, 11,065 tons; Bailey Wood Coal Co., Woodbay, 10,676 tons; Sabine Collieries Corporation, Ostego, 10,038 tons; White Oak Fuel Co., Oakwood, 10,010 tons.

WYOMING

Torrington — Receipts from nearby mines are being rapidly disposed of in shipments out of the state, and coal bins filled with wheat, grain shippers being unable to get sufficient cars. The bins of the Burlington yards are at present improvised grain containers.

Casper—Completion of the spur to the mines of the Indian Coal Co. at Arminto by the Burlington R.R. means greater coal supply for Casper and an increased output, before long, of the company's tonnage. Distribution here will be through H. O. Bubb of the Casper Ice and Fuel Co.

BRITISH COLUMBIA

Victoria—New workings are to be opened up on Vancouver Island by the Granby Mining & Smelting Co. This company's operations on the island have been somewhat interfered with by a recent rule of the Supreme Court which decided that rights in two leases of coal lands being exploited by the company really were owned by the E. & N. Railway Co. Pending an appeal, however, the Granby company is permitted to mine up to 100,000 tons of coal. While this latitude is permitted the operating company no doubt feels its restrictions, and proposes to proceed with the development of other of its coal lands over which there is no dispute.

An alarming coal shortage is reported in Australia and New Zealand, the condition being attributed to the "go slow" policy of the miners of those countries. It is suggested as a probability that the collieries of British Columbia will be called on to fill orders from the consumers of the Antipodes.

An amendment passed at the last session of the Provincial Legislature to the Semi-Monthly Payment of Wages Act, providing for 26 pay days per annum in connection with the coal mining industry and that these pay days shall fall on a Saturday, became effective on Oct. 1. The original wages act of British Columbia applied to lumbering, fishery and mining industries. It established the principle of a payment twice every month to the workers in connection with these industries. The amendment is effective only in respect to coal mines and while it has met with opposition in some quarters the sentiment in its favor among those benefited is so unanimous that it will be generally accepted as a satisfactory step toward the improvement of working conditions.

NOVA SCOTIA

Sydney—Directors of the Dominion Coal Co. have decided to spend $6,000,000 on the plants and new equipment. About $2,500,000 will be devoted to the purchase of modern machinery, $600,000 to repairs of old machinery, and $50,000 to the installation of electric lighting in the pits. A new mine is being opened up at O'Neils Point to tap the Phalen seam at a depth of 760 ft. When completed, it is expected to have an output of 2,500 tons daily.

Traffic News

Interstate Commerce Commission—The Old Ben Coal Corporation, of Chicago, Wallace and Grotevant of Forrest, Ill; L. M. Bayne Lumber Co., of Strawn, Ill; Sibley Grain Co. and F. N. Smith of Pontiac, Ill., who buy and sell coal, in a complaint to the I. C. C. against the Director General of Railroads seek reparation of $411 because of alleged excessive charges on coal. It is charged that a rate of $2.83 per ton was assessed on bituminous coal shipped from West Frankfort and Christopher, Ill., via the Illinois Central to Decatur and thence via the Wabash to Pontiac, Strawn, Forrest and Sibley, whereas the rate should have been $1.60.

In a complaint the Franklin County Mining Co., of Benton, Ill., against the C. B. and Q. and the Illinois Central railroads, alleges that the railroads in serving mines of competitors at Logan and Orient, Ill., and other mines by joint arrangements and refusing to serve the complainant gives their competitors an undue preference, which the Commission is asked to correct.

The La Salle County Carbon Coal Co., of Illinois, operating mines at La Salle and Peru, attacks switching charges of the Illinois Central in a complaint to the Commission.

The I. C. C. has scheduled the hearing of oral arguments before it in Washington in coal cases as follows:

Northern West Virginia Coal Operators Association vs. the Pennsylvania R.R. Nov. 20.

Dickinson Fuel Co. vs. the C. & O. R.R., Nov. 18.

Spring Valley Coal Co. vs. the A. T. and S. F. R.R., Nov. 16.

Little Fork Coal Co. vs. Eastern Kentucky Ry., Nov. 20.

The hearing in the case of the Lehigh Valley Coal Co. vs. the Director General, scheduled Oct. 21 at Washington has been postponed to Nov. 12.

The I. C. C. has suspended increased rates on coal from eastern Kentucky, Virginia and Tennessee, on the L. & N. railroad, to northern points, the general increase having been 40 per cent, but this being cut down to 33⅓ per cent to C. F. A. territory, until heard on Nov. 1. It will aid eastern Kentucky operators in reaching northern and central districts in competitive business.

The I. C. C. has decided that proposed increases in rates on coal from points on the Norton and Northern Ry. to destinations in Carolina and Southeastern territories are not justified and the suspended schedules are ordered canceled.

An examiner of the I. C. C. recommends that the St. Louis & O'Fallon Ry. is not a party to joint rates on coal from Prairie and St. Ellen mines in Illinois to St. Louis and not entitled to a division thereof.

Hearings have been scheduled by the Commission in the following coal cases:

Citizens' Coal Mining Co. vs. Director-General, at Chicago, Oct. 21.

Consolidated Coal Co. of St. Louis, vs. Director-General, at Chicago, Oct. 25.

Cameron Coal Co. vs. Marion & Eastern R.R., at Chicago, Nov. 2.

Chicago, Springfield Coal Co. vs. Director-General, and St. Louis Coke and Chemical Co. vs. A. & S. R.R. at Chicago, Oct. 26.

Hillsboro Coal Co. vs. C. C. C. & St. L. R.R., at Chicago, Oct. 29.

Lehigh & Wilkes-Barre Coal Co. vs. Director-General, at New York, Nov. 2.

Lehigh Coal and Navigation Co. vs. Director-General, at Philadelphia, Oct. 21.

Consideration is now being given by the Interstate Commerce Commission to the consolidation of railroads into systems, under the Transportation Act, which authorizes as many as 35 systems. It is said the Commission is giving serious consideration to a plan to consolidate railroads according to the character of business they perform, as for example, the consolidation into one system of all roads whose principal business is that of transporting coal.

In the case of the Central Illinois Coal Traffic Bureau an examiner of the Commission recommends that the rates on coal from mines in the Springfield district of Illinois to points in Wisconsin, Iowa, Minnesota and the Dakotas be found unduly prejudicial to the extent that they are less than 30c. per ton lower than the rates on like grades of coal from mines in the Southern Illinois district to the same destinations. In the case of the 5th and 9th Districts Coal Bureau an examiner of the Commission recommends that the Commission decide that the rates attacked be declared not to be unreasonable per se. The complainant attacked the rates on bituminous coal from mines in the Belleville and inner groups in Illinois to St. Louis and points West in Missouri and other states to points in Iowa, Minnesota, the Dakotas, and Wisconsin and to Chicago and points beyond. The examiner further recommends that the rates from mines in the inner group to St. Louis and points West to which traffic moves through St. Louis be found prejudicial to the extent that they are less than 22c. per ton lower than rates from mines in the Southern Illinois group to the same destinations. Recommendation is also made that the rates from the Belleville group to destinations in the Northwest and to Chicago be found not to be unduly prejudicial or otherwise unlawful; and that joint rates should be established on fine coal from mines in the Belleville group to all points to which such rates are maintained from the Southern Illinois group.

Difference of opinion having developed over the I. C. C. orders concerning assigned cars for railroad fuel, the Commission in a letter to Daniel Willard of the Railway Executives seeks to clarify the situation. It says that its rule under Special Order 18 forbidding roads to assign cars for company fuel and failing to count such cars against the distributive share of the mines unless the entire output of the mine is taken by the carrier for not less than 6 months was not intended to put contracts existing at the time the order was issued in any different class than contracts made between the date of Order 18 and Nov. 1. These contracts, the Commission says, are regarded as in compliance with the rule. The order was not intended to interfere with the practice of assigning cars to one mine on some days and to another mine on other days, providing the mines are both owned by the same producing company and the practice is carried out in good faith. The Commission suggests that contracts calling for coal in turns and not for any particular period be revised prior to Nov. 1 so as to cover the entire output of a mine for a definite period.

Canadian Freights.—In the increase in freight rates permitted the railways of Canada by the Board of Railway Commissioners, coal is one of the articles of uni-

versal consumption on which the full rate advance is not permitted. The Board of Trade of Nelson, B. C. has asked that coke be placed in the same class, arguing that coke is a much used domestic fuel and that in the British Columbia interior the coke product of the ovens of the Crow's Nest Pass Coal Co. is essential in the maintenance of the important smelting industry of the Consolidated Mining & Smelting Co. at Trail.

Association Activities

Wagon Mine Coal Operators' Association of Indiana

C. E. Gillespie, of Staunton, was elected president, and Thomas Gregory, of Terre Haute, secretary of the association which was organized at a meeting of 100 representative owners and operators in Terre Haute recently. The members will attempt to bring about uniform operation by uniting in an effort to obtain cars.

Discussion in the meeting brought out the fact that although the Interstate Commerce Commission had ruled that the wagon mines were entitled to receive open-top cars, some railroads have not made deliveries of such equipment.

Mines in the following counties were represented: Parke, Vermillion, Vigo, Clay, Knox, Sullivan, Greene, Owen.

Frank S. Rawley, who has been representing the wagon mine owners in the effort to obtain car supply, was instructed to take up with the Interstate Commerce Commission the failure of the Pennsylvania, Chicago & Eastern Illinois and Evansville & Indianapolis railroads to deliver open top cars to the wagon mines. It was announced in the meeting that all roads had admitted receiving orders not to discriminate against wagon mines in placing cars, but it was said that so far neither of the three roads had delivered open-top cars to wagon mines.

Judge Rawley represented the association in the hearing before the state fuel committee regarding fixing of coal prices.

Hazard Coal Operators' Exchange

E. L. Douglass, president of the exchange, presided at a meeting at the Gibson Hotel, Cincinnati, Ohio, early in the month. Representatives of several Southern associations and many Kentucky operators attended. Mr. Douglass had been acting on a committee of operators to handle the situation arising out of the prosecutions of coal men in the Federal Court for the Eastern District of Kentucky.

Fair prices agreed upon by the September Grand Jury were as follows: For District 2, mine run, $4.50 a ton; slack $4.40 a ton, prepared sized $5 a ton; District 3, mine run, $4.40; slack $4.30; prepared sized $4.90; District 4 mine run, $4.50 a ton; slack $4.40; prepared sized $5.

Mr. Douglass recently had conferred with Attorney Slattery and the latter had agreed that a price of $6 might be justified because of wage advances and decreasing car supply subsequent to thte investigation of the last Grand Jury but he did not believe that any prices for any grade of coal higher than $6 could be justified and stated this was a maximum and many operators might be subject to prosecution if they charged as much as $6.

While no vote was taken most operators present expressed themselves as in favor of abiding by the $6 price limit and it was generally predicted that little coal would be sold at any higher figure for the present.

It was decided that a committee should co-operate with Governor Morrow to protect domestic consumers in Kentucky. It recommended that operators should get in touch with established retail dealer trade and give preference to such requirements. If dealers are unable to thus obtain coal they are to apply to Governor Morrow who is to turn over their applications to the committee and this committee is expected to pro rate such orders among operators in each group. It is sought to avoid as much as possible anything resembling the methods of the United States Fuel Administration.

The following committee was appointed to supervise the distribution of coal to domestic consumers: R. A. Hord, Secretary Hazard Coal Operators' Exchange, Lexington, Ky., chairman; E. B. Clayton, Secretary, Southern Appalachian Coal Operators' Association Knoxville, Tenn., and F. E. Durham Secretary Northeastern Kentucky Coal Operators' Association, Ashland, Ky.

Michigan-Ohio-Indiana Coal Association

Secretary Nigh led the long fight on behalf of thte retailers and domestic users of the three states which resulted in the late ruling of the Interstate Commerce Commission in an allotment of 1,800 cars daily for Michigan, Ohio and Indiana. His early effort to secure a modification of the Lake priority orders for the purpose of furnishing relief to the retailers was unsuccessful.

The order as promulgated is to the effect that starting Oct. 10, Indiana will receive 500 cars daily on lump coal, Ohio 800 cars, and Michigan 500. In order to bring about this result and still continue Lake and public utilities priorities arrangements have been made to bring 2110 additional open-top cars in the territory covered these to be secured from other lines of industry handled on permits by the termination of those permits.

It was also ruled that utilities be provided with slack and screenings only thus leaving more lump for domestic use and at the same time stimulating production of this grade. The apportionment of cars of coal from the various producing sections is to be as follows: Northern Ohio 301 cars, Southern Ohio 424, Fairmont 12, Pocahontas and Tug River 87, New River 81, Pittsburgh and Pan Handle district of West Virginia 131, Kanawha, Kenova and Thacker districts 275, northeastern Kentucky 121, southeastern Kentucky 173, Hazard 137, Tennessee 60 and Indiana 300 cars.

In his campaign Secretary Nigh showed the great need for this movement as statistics indicated that 24 per cent of the winter's fuel supply had been stored by Indiana consumers, 32 per cent in Michigan and 16 per cent in Ohio. These varying percentages taken in connection with the larger population of Ohio makes necessary the apportionment of a larger tonnage to that state.

Team Track Operators' Association of West Virginia

At a meeting of the Team Track Operators' Association of Northern West Virginia held at Shinnston, the new office of "executive" was created and John T. Michael, of Clarksburg, was elected to fill that office. The duties which will devolve upon Mr. Michael are largely supplementary to those usually performed by the president and secretary of the Association. The following members of the board of directors were present: John B. Wyatt, of Shinnston, president; G. C. Michael, of Dola; T. L. Cordray and M. D. Wilson, of Fairmont; H. S. Huber, of Weston; H. V. Stout, of Mt. Clare; Howard Martin of Monongah; J. G. Kidwell, of Clarksburg, and Charles Atha of Worthington.

It is the purpose of the association to overcome the fact that there is no equitable distribution of cars to team track mines and that team track operators had been confined to the use of box cars. The team track operators claim that they are entitled to more consideration than they are receiving in view of the large amount of coal produced at a critical time during the war and also because if it had not been for them, cement plants throughout the country would have found it necessary to close down.

Industrial News

Clarksdale, Ariz.—The use of pulverzed coal in metallurgy is brought prominently to the front by the erection of a plant to crush and distribute in powdered form to the various furnaces 750 tons of coal daily, at the United Verde mine. The cost of the plant was $725,000. It includes re-inforced concrete storage bins, capable of being flooded in the event of spontaneous combustion of the coal.

St. Louis, Mo.—Fred B. Williams, of St. Louis, an expert electrical and armature man, formerly with the Security Coal & Mining Co., and the Wm. Wurdack Electrical Supply Co. of St. Louis, has gone into busines for himself, with headquarters in St. Louis, under the name of the F. B. Williams Electric and Armature Repair Co., in which his brother is also interested.

Cincinnati, Ohio—The American Engineering Co., Philadelphia, has opened a local office at 207 Neave Building with M. M. Masson in charge for the purpose of extending Taylor Stoker representation and service.

Pittsburgh, Pa.—Richard Koch, General Manager of the newly formed Concordia Electric Co. has opened offices at 389 Union Arcade Bldg. Other officers are, Emil Winter, Pres., W. F. McCook, Vice-Pres., J. M. Anderson, Treas., P. B. Mossman, Secy. The company will manufacture miners' safety electric lamps and similar appliances.

Trade Catalogs

Barometric Condensers. United States Cast Iron Pipe and Foundry Co., Burlington, N. J. Edition Aug. 1920. Pp. 28, 6 x 9 in.; illustrated. Description of condensers, auxiliaries and power piping. Advertiser.

Charging Equipment for Miners' Lamp Batteries. The Cutler-Hammer Manufacturing Co., Milwaukee, Wis. Publication 834. Pp. 8, 8½ x 11 in.; illustrated. Describes and illustrates the C-H Charging Rack. Advertiser.

Walworth Export Catalog No. 35. Walworth Manufacturing Co., Boston, Mass. Pp. 400, illustrated. Complete catalog covering valves, tools, pipe fittings, etc. Printed in English, Spanish, Portuguese and French.

The Kaustine System of Sanitation. Kaustine Co., Inc., Buffalo, N. Y. Catalog "H." Pp. 47, illustrated, 8 x 11 in. Describing the manufacture of sewage disposal, septic and other sanitation systems. Advertiser.

Electric Hoists. Link-Belt Co., Chicago, Ill. Catalog 380. Pp. 96, illustrated. Description of monorail electric hoists and traveling cranes. Advertiser.

Series C R 4031-3. Contractor Type Automatic Starters. General Electric Co., Schenectady, N. Y. Two bulletins, 8 x 10½ in.; illustrated. For Series-, Shunt-, or Compound-wound Direct-current Motors.—Advertiser.

Publications Received

Mineral Resources of the Philippine Islands for the Years 1917-18. Issued by the Division of Mines, Department of Agriculture and Natural Resources, Bureau of Science, Manila, P. I. Pp. 80, 7½ x 10½ in.; illustrated.

Bituminous Coal Storage Practice. University of Illinois, Engineering Experiment Station. Bulletin 116, by H. H. Stock, C. W. Hippard and W. D. Langtry. Pp. 157, 6 x 9 in.; illustrated.

Pulverized Fuel. The Commission of Conservation, Ottawa, Canada, has published a pamphlet from a report on "Pulverized Fuel, Its Uses and Possibilities." W. J. Dick, the author, is a recognized authority on Canada's fuel and power problems, and his research work has gone far toward indicating the methods by which these may be solved. Copies of the pamphlet are freely obtainable on request to the Commission.

Coming Meetings

Illinois Mining Inst. will hold its next meeting on Nov. 20 at Springfield, Ill. Secretary, Martin Bolt, Springfield, Ill.

Coal Mining Institute of America will hold its annual meeting Dec. 8, 9 and 10, 1920, in the Chamber of Commerce Auditorium, Pittsburgh, Pa. Secretary, H. D. Mason, Jr., Chamber of Commerce Bldg., Pittsburgh, Pa.

American Mining Congress will hold its annual meeting at Denver, Col., Nov. 15 to 19. Secretary, J. F. Callbreath, Munsey Building, Washington, D. C.

The Canadian Institute of Mining and Metallurgy will hold its second annual western meeting at Winnipeg on Oct. 25, 26 and 27. Headquarters will be at the Hotel Fort Garry. Local secretary, W. W. Berridge, 905 Union Trust Building, Winnipeg, Can.

COAL AGE

The Weekly Journal of the Coal and Coke Industries

Volume 18 NEW YORK, THURSDAY, OCT. 28, 1920 Number 18

Getting Your Feet Braced

FOR months the cartoonists have been picturing Mr. Consumer in headlong flight down the cliff of declining prices after a comfortable climb to the peak of high prices. The country is now experiencing that drop and while the thrills are not up to anticipations the end is not yet. As each commodity feels the effects of lowering prices there begins at once a halting, hesitating market. Prices are going down; ultimate consumers are off the market, waiting to see whether the bottom has been reached, and each link in the chain of distribution is affected by the slowness of the consumer.

All signs plainly point to a declining soft-coal market —not because of the activities of the Attorney General but because production is catching up with demand. But, whatever the cause, when prices begin to slip the consumer is going to hold off as long as he can, watching and waiting for the bottom. The problem for the producer and distributer of bituminous coal will then be to decide what for him is the base price, below which he cannot afford to go.

It is a little late now to trim sail if the selling policy has been wrong this year, but if customers have been treated fairly, contracts measurably well filled and prices reasonable he can face a failing market without sleepless nights.

Save the Export Business

DANGERS beset the export trade in American coal; dangers that are both inherent in the business and that have been born of the suddenness of its growth. It must be, as it has largely already been, accepted by the men in the industry that the right to export coal is subordinate to the inherent rights of our nationals to a proper measure of protection. To recognize this is but to acknowledge the basic and fundamental nature of the industry.

The danger then that confronts the growth and development of the export trade in coal is that growing out of its effect on domestic prices. A test of strength in this question has already been had and the laurels rest with coal. The right to export was accepted by the Government this year after the concession of prior right of New England to our coal had been accepted by the shippers. We see the same question rising in the future, when conditions have become more normal. It seems inherent in the business that an active foreign demand at our Atlantic ports must raise the level of prices for the domestic buyer. The only possible way to avoid such a dangerous contingency is to so increase the supply available that only the extreme of demand shall have this unpopular effect. This result can only be effected by first vastly augmenting the means by which coal is carried from mines to boats—the railroads and dumping piers.

No avenue has been found so far by which, under existing laws, sellers of coal can agree on a limitation of price for their product when it is for home consumption and can combine selling efforts in the foreign markets. It is on this point—the opposing ideas fundamental in the Sherman and Webb laws—that all projects for a combination to further the export trade so far contemplated have failed, and it is only by some such method that the danger of elevating local prices through foreign demand can be eliminated.

Of course, if it were possible to separate into one class those who sold only to local and coastwise markets, and into another class those trading abroad, the price levels might be separately maintained. Such a scheme, however, would destroy the usefulness to the industry of the foreign business, and is of course impossible as our industry is now constituted.

In commenting on the future of the export business of the United States James A. Farrell, president of the United States Steel Corporation, has urged the necessity for developing foreign markets if the present productive capacity of this country is to be maintained.

Speaking before the seventh annual meeting of the National Foreign Trade Council he said: "In every business there is a part of the production, roughly estimated at the last 20 per cent, which cannot remain unsold if the first 80 per cent of the sales are to prove profitable. Remove this last 20 per cent and the whole operation will cease to show a profit. So it is with the present productive capacity of the United States; a certain volume of foreign sales must be maintained or the industry of the country will suffer throughout."

More potent and more immediately present is the danger to the export trade resulting from the greed and avarice of our unscrupulous exporter. To a large element of unprincipled money-grabbing speculators, who early this year dived into the game, the name of the American coal industry owes the opprobrium it has received abroad. The honest dealing of the right-thinking forward-looking exporter has been overshadowed by the dishonest dealings of the crooked speculator, with the result that today we are in bad repute abroad. We have the name of not living up to our bargains, and in trade and particular in international trade, there is no more serious charge.

The cream is off the export market today. It is time the real coal men of the United States took steps to remove this stain on our national name and began to build a real export business. Our guess is that we have three years as a minimum and five years as a maximum in which to learn how and in which to establish our coals abroad as they should be established. We suggest the formation of a national association not to sell coal but to so guard the traditions of honest business that membership would be a guarantee of integrity and an international badge of respectability.

Operators Should Not Overlook Their Own Union

SPEAKING before a group of business men in Washington recently A. J. Hobson, president of the Association of British Chambers of Commerce, said that it is the view of British governmental officials in England that every man ought to be in a union and every employer in an association.

"The man in Great Britain who is not in an association or a union is a nuisance to his Government," he said. "The Government likes to see us arranged in regular regiments because it is so much more convenient for a Government department to deal with us as one party than with each employer as an individual. The result is we are ceasing to be a free country, because the man who is not in the union is regarded even by the Government of his country as a man who is making an unreasonable use of his liberty in not joining the army he is supposed to be in and not being at the battle he is supposed to be at. I think it is most deplorable that there is this insistence that every man must join the union."

Every coal operator who signs a contract with the United Mine Workers agrees with the British Government official, for he makes covenant with the union to force the mine laborer to belong by withholding from his pay the union dues of the man. In general the operators who are in the older union fields favor the system, with all its faults. At the same time all too large a portion of these operators do not recognize the value of *their* union—the operators' association.

Perhaps it is unfortunate for the strength of the operators' association and the unity of policy that they have no check-off.

Buying a Sure Supply of Coal

SINCE 1916 there has been a well-defined movement on the part of some classes of coal consumers to obtain protection in their coal requirements by buying and operating bituminous-coal mines. The assumption of these consumers has evidently been that lack of coal in the past and higher prices have been due to shortage of coal. The obvious error in this judgment is a striking example of some of the incorrect thinking so common on the subject of coal. Those who guessed that the purchase of a coal mine was all that was necessary to insure a low priced supply have learned more about the real story of coal in the last year than have those who have not been in position to experiment.

Transportation—not coal mines—has been short, and buying a source of supply at a distance has netted the consumer little but trouble. The utility, for instance, that acquired a mine entered a new and, to it, foreign field of endeavor without compensating advantage.

Prior to the war large consumers were also producers of coal. The steel industry is a general example, and the United States Steel Corporation a notable instance. With some of the best-equipped mines in the world the United States Coal & Coke Corporation, a subsidiary, was furnishing West Virginia coal for the byproduct ovens in the Chicago district, and from mines in Illinois was shipping lower grade coal to the same plants. The H. C. Frick Coke Co., also a subsidiary, mined and coked coal for the major requirements of the Steel Corporation in the Pittsburgh district. The Tennessee Coal, Iron & Railroad Co. in Alabama, affiliated with the Steel Corporation, also produces the coal it consumes. Other steel producers—the Woodward Iron Co., Republic Iron & Steel Co., Colorado Fuel & Iron Co.—have long been independent of the coal market.

Public utilities have not been backward in this respect. The Milwaukee Coke & Gas Co., Indiana Coke & Gas Co., the Solvay Company, New England Fuel & Transportation Co. and many others now own or control coal mines. The International Harvester Co. and Henry Ford are typical examples of industries producing the fuel they consume. The Bertha Coal Co. is a type of co-operative effort in coal production, the financial backing for this latest venture of Mr. Jones being coal consumers who have adopted this method of acquiring a supply of coal.

This year, as during the war, soft coal has been difficult to obtain because of lack of transportation. The consumer who owned a mine but did not own the transportation for the product of that mine to his plant, or who was not given a priority in transportation, has been no better off than he who did not own a mine. He was not even benefited in cost of coal. For example, a consumer who owns a mine but depends upon the normal regular car supply offered coal mines by the railroads has obtained an output of from 20 to 60 per cent of his expectations, because that has been the amount of car supply furnished by the railroads in various fields. He may have bought a mine capable of producing 5,000 tons a week, because that is his plant requirement. The Government has issued various priority orders and given the right of assigned cars to individuals and railroads to such an extent that the coal from his mine has been actually taken away from him and forcibly diverted to the railroads for fuel, to public utilities, to New England or to the Lake trade for the Northwest, or perchance ordered to retail dealers in Ohio or Michigan. The net result is that in many instances such a producer-consumer has received only 10 per cent of the coal produced from his mine. He may have been getting that at a price satisfactory to him, but for the other 90 per cent of his requirements he has had to bid in the open market when prices have been very high. It is one of the peculiar circumstances of the coal situation this year that this is true.

What is the answer for the consumer who would have an absolute surety of supply? Own the transportation, or at least the cars. It is one of the axioms of Governmental policy in handling coal that privately-owned coal cars are inviolate. The coal operator owning coal cars can furnish a guarantee of service because to the extent of his own cars he is sure of operating his mines and delivering his product. The only method of Governmental control possible today is through the Interstate Commerce Commission, which operates through car service orders, effective on cars owned by the railroads. The Interstate Commerce Commission to all intents and purposes took from the public supply of cars a portion, at times large, and put that portion in the class of privately-owned cars when it authorized the use of assigned cars for public utilities.

Don't depend on owning a mine to get your coal when coal is scarce and you need it—rather store enough in time of plenty to tide you over periods of shortage, or own your coal cars. Henry Ford has gone a step further and bought a railroad.

Like others of his experiments, this latest venture will be watched with interest. Others less opulent should consider the importance to them of more transportation.

New York Utilities Pool Coal

M. S. Sloan, president of the Brooklyn Edison Co., has issued a statement for the New York Fuel Distribution Committee, saying the public utilities of New York City were standing together and would pool their coal supplies, if necessary, to prevent any utility from being closed for lack of coal. He said the New York & Richmond Gas Co. had been in straits for lack of fuel during the last week and had been supplied by the Brooklyn Edison Co.

British Coal Strike Makes 100,000 Others Idle

Although complete figures for the whole country are not yet available, it is estimated that to date at least 100,000 people in other industries in Great Britain have been discharged as a direct result of the miners' strike.

Railroad Lays Off 1,000 Men

The Philadelphia and Reading Ry. reduced its working force approximately one thousand men and, effective Oct. 18, placed all employees of the system on an eight-hour basis.

Reports Increase in Loading of Freight Cars

According to figures made public by the Bureau of Railway Economics the average number of tons of freight loaded per car during August was 29.6, the greatest for any month since December, 1918, when the average was 29.8 tons. For July, 1919, the average was 27.8 and for June, 1920, it was 29. During August the average daily movement of freight cars was more than 27 miles, compared with 26.1 miles during July, 25 miles in June, and 24.2 in May. In April, the month of the yardmen and switchmen's strike, the movement averaged 19.4 miles per car per day.

Buying Lull Cuts Off 100,000 Factory Employees

As a result of retrenchment by the public in the purchase of apparel and other goods, according to the monthly report of the State Industrial Commission of New York, another decline of 2 per cent in the number of factory employees was recorded for September. The gradual reduction in operating forces in the factories has been going on since March and the report stated that since that time fully 100,000 workers have been dropped from employment rolls.

Coal Strike Endangers Mexican Industries

A strike of 12,000 coal miners in the state of Coahulia, Mexico, has assumed such grave aspects that Provisional President de la Huerta is making determined efforts to effect a speedy compromise of the difficulty. Unless an agreement is reached soon it is reported many smelters and other industries will close down because of lack of fuel. This would throw more than 100,000 men out of work. Despite the strike, the pumps in the mines are being operated to prevent the pits being flooded. The strikers demand a large wage increase and better working conditions.

Pittsburgh Judge Declares Lever Act Illegal

Judge W. H. S. Thompson, in the U. S. District Court at Pittsburgh, read an opinion from the bench Oct. 21 declaring the fourth section of the Lever Act unconstitutional and dismissing the Government's petition for an order of removal so that George W. Yount, George A. Howe and William O. Taylor, railroad men, could be taken to Chicago, where they have been indicted for conspiracy to violate the section the court declared unconstitutional.

NEWS BRIEFS

Terse Items Chronicling Events of Interest to the Industry

Reading Segregation Plan Near

Election of a new Board of Directors for the Reading Coal & Iron Co., following the resignation of former directors who were affiliated with the Reading Company, is taken as an indication of the proximity of the announcement of the Reading segregation plan. It has been expected for some time that the plan would be announced at any time.

Rules on Settlement for Fuel Contracts

According to a ruling by the Comptroller of the Treasury, where a contractor in his signed proposal agrees to furnish sufficient fuel to heat a Government building during a fiscal year at a stipulated price, in accordance with the requirements and subject to all the conditions of the invitation for bids and excess cost of fuel required during that fiscal year in addition to the amount at first estimated, which the contractor was unable to furnish, necessitating purchase in the open market at a price in excess of the contract price, should be deducted in making settlement with the contractor.

President Appoints Five to New Shipping Board

President Wilson on Oct. 21 appointed five of the seven members of the new Shipping Board created by the Merchant Marine Act. Admiral William S. Benson, chief of naval operations during the war, was reappointed chairman. The other four members named were: Frederick I. Thompson, a newspaper publisher of Mobile, Ala.; Gavin McNab, an attorney of San Francisco; Martin J. Gillen, an attorney of Wisconsin, and Theodore Marburg, a publicist of Baltimore.

Commercial Failures Increase

An increase in failures during September is reported by Bradstreets, the move along this line having been in evidence since July of last year, when failures touched their low point. The September failures show a heavy increase in liabilities as compared with August, being two and one-half times greater, and twice those of June.

Would Make Dealers Responsible For Equitable Distribution

O. P. B. Jacobson, of the Minnesota Railroad and Warehouse Commission, advocates the passing of state laws making coal dealers accountable for equitable distribution of coal to all communities. He regards it as impossible to make any orders that will secure all the coal that is needed for the Northwest before lake navigation closes. Montana coal, which costs $7.10 freight and 21c. war tax, is being shipped to the Twin Cities for the first time in a number of years.

Steel Production Exceeds Pre-war Figures

Production of steel ingots and castings during 1919, according to the Statistical Bulletin of the American Iron and Steel Institute, amounted to 34,671,232 gross tons, compared with 43,051,022 gross tons in 1918 and 31,284,212 in 1915. Finished rolled iron and steel production in 1919 totaled 25,101,544 gross tons compared with 31,155,754 in 1918 and 24,392,924 in 1915. While the decrease as compared with 1918 is marked, the output in both classes was in excess of that of any year preceding 1916.

New York Central Curtails Shop Force

A reduction of 10 per cent in the force of the main shops of the New York Central R.R. at Elkhart, Ind., was made effective recently.

E. J. McVann

Legal Authority on Interstate Commerce and Coal Affairs

SOON after the creation of the Fuel Administration, 1917, questions began to arise in Washington affecting the interests of the members of the Smokeless Coal Operators' Association, and a War Service Committee was created to take care of these questions. The committee had not been long in existence when its members determined they must have a Washington office and representative, and E. J. McVann was selected as that representative. At that Mr. McVann maintained offices in Washington and Chicago. He had had long experience in railroad traffic and transportation matters and in the practice of law before the Interstate Commerce Commission and similar administrative bodies.

Mr. McVann began his new duties Jan. 1, 1918 and soon found that they would absorb all his time, so he closed the Chicago office, dropped Interstate Commerce practice and devoted himself exclusively to smokeless affairs. When the Fuel Administration finally went out of business and the Central Coal Committee ceased to function Mr. McVann resumed the practice of law. In the meantime he had been made secretary of the smokeless association and still holds that office.

Mr. McVann was born in Medina, N. Y., in 1869. His parents removed to Cedar Rapids, Iowa, in 1870. He attended the schools there and had two years of "fresh-water" college at Creighton, Omaha. In 1885, as a means of getting a job in his old home town, he learned shorthand and typewriting and entered the general freight office of a local railroad. After two years of this he secured the position of traveling freight solicitor of the Pennsylvania lines at Lincoln, Neb., and represented that organization in similar capacities at Omaha, Sioux City and Dubuque, Iowa, until 1902.

During 1901 he supplemented his salary with the Pennsylvania by acting as secretary of the Dubuque Business Men's League. He liked the work and resigned his Pennsylvania connection in 1902 to become commissioner of the Sioux City Commercial Club. He was subsequently commissioner of the Commercial Club at Omaha, secretary of the Omaha Grain Exchange and manager of the Traffic Bureau at Omaha.

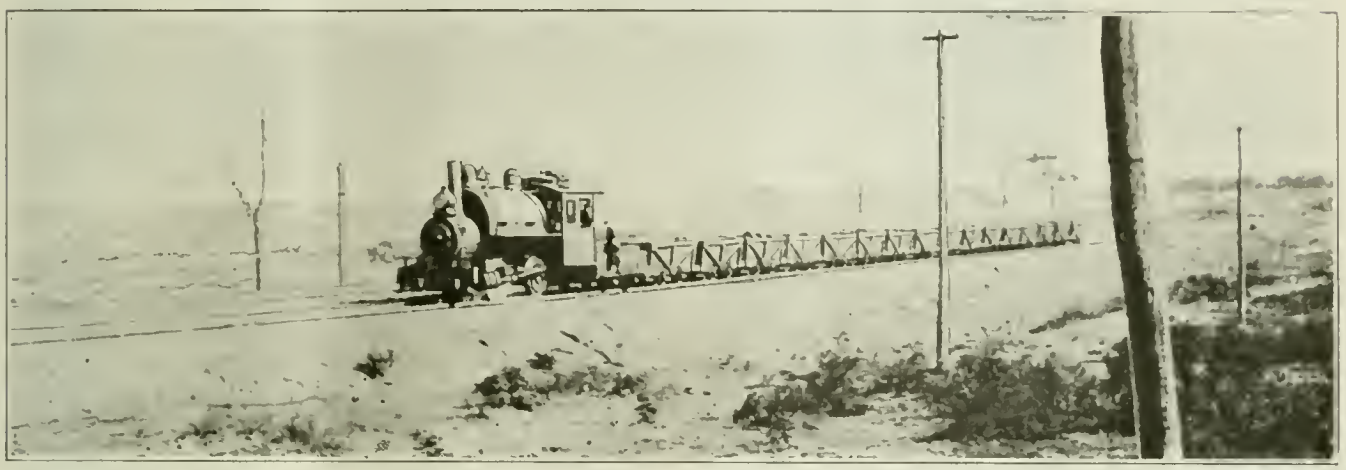
In all of these latter positions Mr. McVann's duties took him before the Interstate Commerce Commission and local commissions frequently, and he found it would be convenient to be a lawyer, so he entered the law school of Creighton University, at Omaha, in 1911 and was graduated from it in 1914 with the degree of LL.B. and was admitted to the Bar of the Nebraska Supreme Court.

He now is a member of the Bar of the Supreme Court of the District of Columbia and of the Bar of the U. S. Supreme Court and is entitled to practice in the Federal courts and before the various Washington tribunals. In addition to his thorough knowledge of coal production and transportation Mr. McVann is looked upon as an authority on commerce and administrative law generally. His briefs upon the powers of Congress under the commerce clause of the Constitution and upon various phases of the Lever Act and other war measures have been widely circulated among lawyers and others interested in those subjects.

How the Hazards of the Anthracite Strip Pit May Be Reduced*

Accidents Occur From Swinging of Bucket, Upsetting of Shovel, Bursting of Steam Pipes, Blowing of Joints, Dressing Down of Banks, Handling of Rocks, Locomotive Derailments, Runaways, Coupling Cars and Dumping Ill-Loaded Car Bodies—Accidents Not as Numerous as in Underground Mines

By F. S. Gallus†
Lansford, Pa.



TRAIN OF COAL CARS FROM AN ANTHRACITE STRIPPING

Small mine cars are made up into trains and sent from the strip pit to the breaker, where the coal is prepared for market with the same care as is bestowed on the coal from underground mines. The anthracite region is truly mountainous but the illustration is of an area which greatly belies the general condition.

IN THE anthracite region open-cut or strip-pit mining is coming into greater and greater use each year. The method adopted, wherever that system of mining is applicable, is to uncover the coal beds and load the coal either by shovel or by drawing the coal through openings passing into the mine below. While this system does not present the same hazards and risks encountered in underground mining, still there is a certain element of danger ever present against which precautions must be taken. Most of the accidents which occur at a strip pit, excluding those arising from blasting, can be placed under the following three heads: Steam shoveling, transportation of material and dumping of refuse.

Owing to the somewhat congested condition of the machinery too much care cannot be exercised when entering the housing of a steam shovel during the operation of such a machine. For this reason and in order to reduce accidents to a minimum, no one but the operator is allowed on the shovel while the machinery is in motion. Yet, despite precautions of this sort, accidents occur, as can be illustrated by the following instance: While the shovel was loading, and unobserved by the operator, one of the jackmen entered the housing and was at the work bench when in some unaccountable manner his foot became caught between the swinging sheave and cable, tearing off the sole and heel of his shoe and so straining his foot that he was laid up in the hospital for a period of five months and left with a stiff foot for life. As will be noted, this accident was entirely unnecessary and would never have occurred had the man observed the rules.

Men Should Avoid Back Swing of Bucket

Jackmen have often been struck by the bucket on its back swing to the pit, but in each case it has been due to the fact that the men have entered the pit from the side opposite to the shovel runner, for the purpose of rolling up a stone from the front of the shovel. They had not previously notified the runner of their intentions and, being out of his line of vision, were caught in the manner described. Accidents of this sort can be charged to nothing but pure thoughtlessness on the part of the individual. Of course there are other ways in which men are hit by the bucket. Most of these accidents occur while the men are adjusting chains, in handling bowlders or when using the shovel to retrack cars that have become derailed while being loaded.

Another kind of danger, although happily an infrequent one, it that of the shovel upsetting. This arises mainly from the slippage of the blocking, the breaking of an arm or brace while the shovel is in operation, or from the shovel getting beyond control of the runner when the jacks are loosened so as to permit of moving up. Accidents of this sort are hard to guard against and endanger the lives of the entire crew.

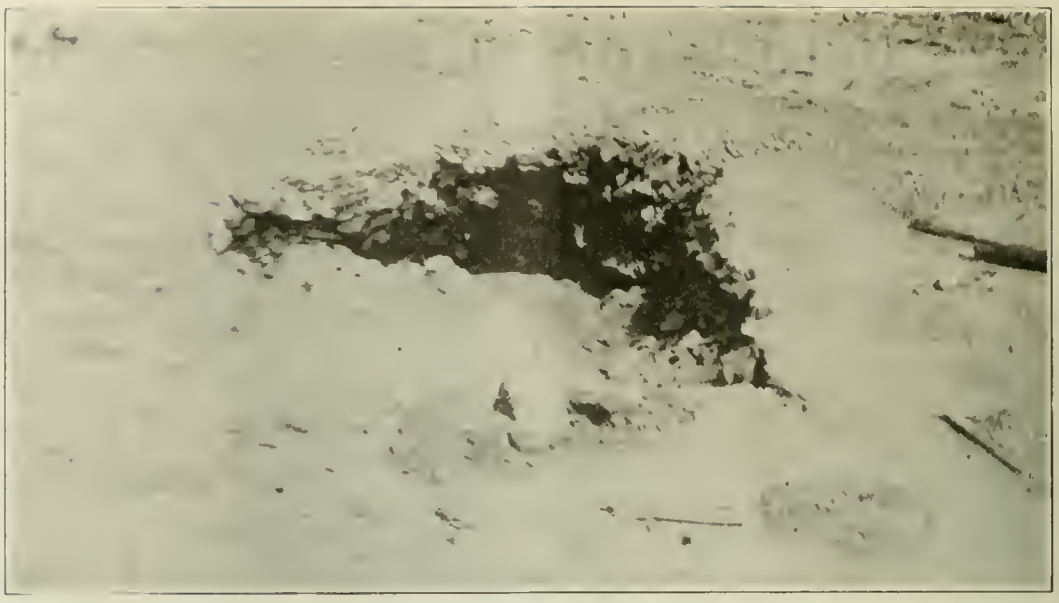
Probably one of the greatest dangers met with in stripping is encountered where work is being done to reclaim an area of coal that was partly worked years

*Abstract of paper read before the mining section of the National Safety Council, Milwaukee, Wis., Oct. 1, 1920, and entitled "Hazards Encountered in Anthracite Stripping." Comment appears in this issue under the title "Mine-Safety Experts Discuss at Milwaukee Accidents, Health and Welfare—IV."

†District superintendent of strippings, Lehigh Coal & Navigation Co.

Cave to Old Workings

In many strip pits the shovels are working coal beds that have already been partly mined by underground methods and that have caused breaks to extend through all overlying strata to the surface. The shovel-men have to watch carefully for such places to avoid engulfing or at least upsetting the shovel.



before. Quite often, in a case like this, the exact position of the old chambers or breasts is not on record and their condition—that is, whether they are standing open or have been filled up by a subsidence of the top rock and surface—is absolutely unknown.

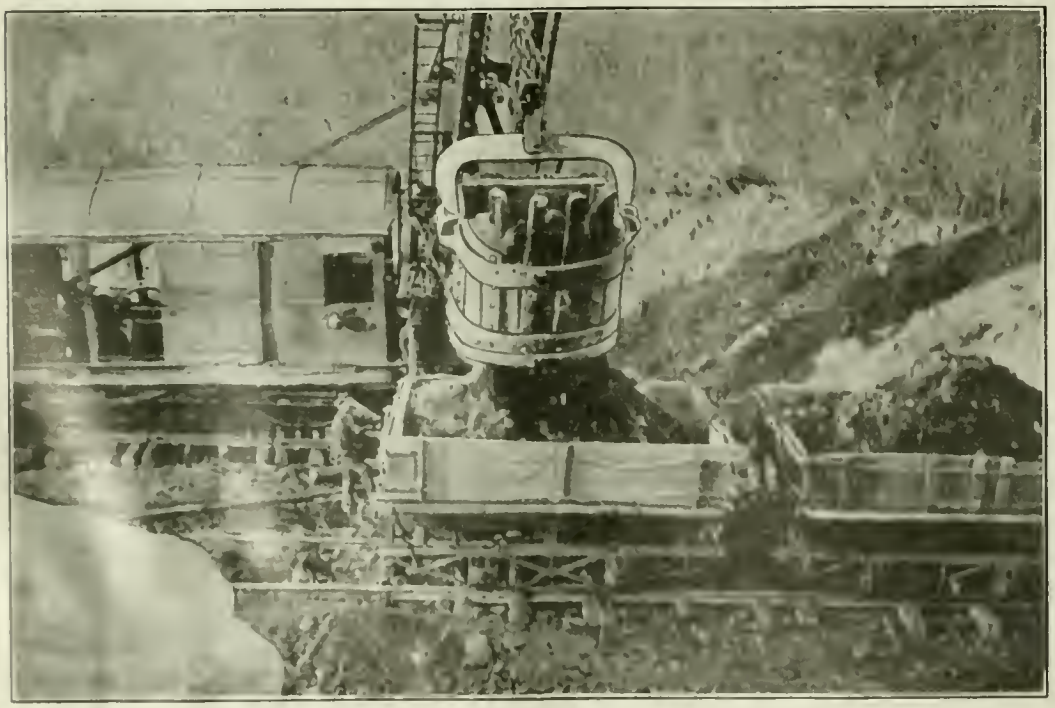
In cases of this kind it readily may be seen that there is the ever-present danger of the ground giving way under the weight of the shovel, either drawing it down or upsetting it and thus causing a serious accident. Mishaps of this sort have been quite numerous throughout the anthracite region.

High-Set Engines and Cabs on Locomotives

Bursting of steam pipes and the blowing out of joints also are frequent causes of accidents around steam shovels. Coincident with an operation of this kind there are also innumerable minor accidents, such as cut and bruised fingers, hands and feet. Some are caused by blows from hammers and pinching by bars and others result from handling rocks in the pit or occur in the dressing down of high banks that the shovel has been unable to reach.

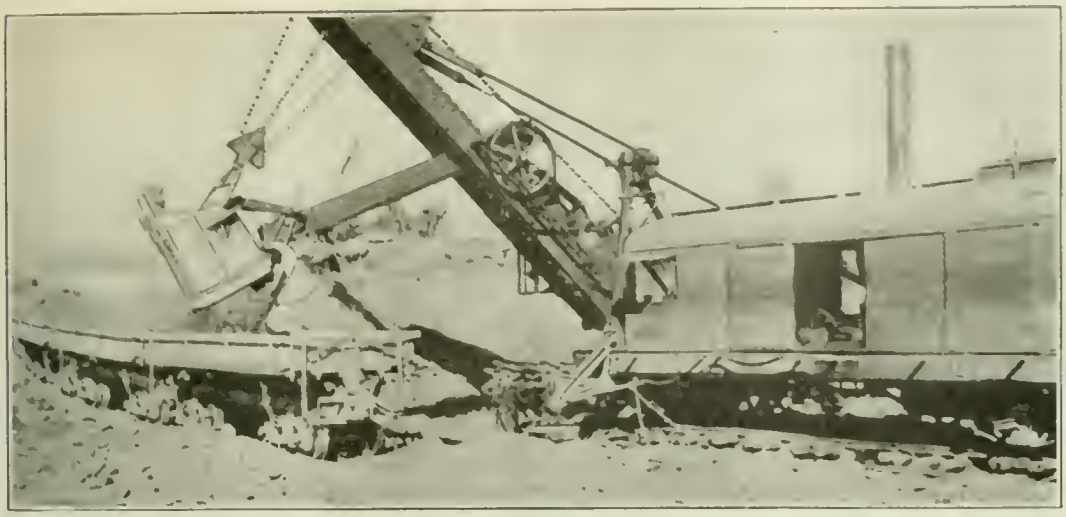
In order to prevent accidents in transportation it is essential that the tracks be kept in the best possible condition, a matter which is difficult because the roads in the pit and on the dump are being constantly shifted. To assure safety on a rock stripping only high-set engines with the cab mounted on the top of the frame should be used. This lessens the chance of the cab braces being torn loose from the boiler when the locomotive is derailed or when it grazes rocks that may accidentally have fallen along the side of the track. When the cab thus collides with the track or with rocks the braces are torn loose from the boiler, thus allowing the steam to escape. This accident is not infrequent, and when it occurs the engineer inevitably is severely scalded.

Then again trips are apt to run away by reason of broken couplings or from the failure of the brakes to hold back the cars when the rail is slippery. As a pre-



Loading Cars

It is not always possible to load strip-pit cars so that they will dump as soon as the bodies are released. In case the load is not satisfactorily placed in the car the men on the dump are apt to roll stones over till the balance is adjusted and if they have already released the car body and not refastened the chains the car is apt to dump its man and all, over the bank.



Another Loading Scene

As the shovel takes but few mouthfuls for a strip carload, it is not able to place it to a nicety. However, the accidents in strip pits are in general less than in underground operations.

ventive measure the engineer should be ordered to inspect the couplings on his cars at least once a day and should be cautioned to use care and judgment at all times in handling his train.

Probably the most frequent cause of injury in the transportation department arises from men getting their hands or fingers caught while coupling and uncoupling cars, nearly all stripping cars in the anthracite region being of the drawhead type with a single link-and-pin coupling. There also have been instances where men have been squeezed about the body while coupling cars, but such accidents have been rare.

Bumping a pole with a locomotive as a means of retracking cars is dangerous and should be discountenanced for men when trying to adjust the pole are frequently caught. It is better and safer by far to have every locomotive equipped with a pair of good retrackers for this kind of work.

How Men Dump Themselves Over Spoil Banks

Accidents on the spoil dump have been less frequent than in any other section of the operation, and the most serious ones have arisen directly from thoughtlessness on the part of the individuals themselves. In filling stripping cars the shovelman always endeavors to place a greater load on the dumping side, so that when the dump is reached and the dumping chains are released the car can be readily tipped. Sometimes, however, cars reach the dump loaded too heavily on the inner side, and when the chains are freed the men find that the cars will not discharge themselves. In several instances they have been known to clamber on the car to throw off some of the material on the heavy side, without remembering, however, that the side chains should be hooked before so doing. As a consequence the weight of their bodies overtipped the car and precipitated them to the bottom of the dump, some quite serious accidents resulting.

The most effective preventive for accidents of this character is to employ a short pointed dumping pole. This when placed on an angle between the floor of the car and the ground will permit the car to be tipped by merely moving the trip a few feet.

There also are numerous cases of men losing their balance and rolling down the dump while attempting to bar large rocks that have become lodged on being discharged from the car. Some of these accidents have produced permanent injuries and disfigurements. How many needless accidents occur yearly in open-cut mining it is hard to say, but if every one connected with this work would adopt the "Safety First" slogan as his own it is certain that the number would be speedily reduced to a minimum.

Unions in British Columbia Give Battle: U. M. W. of A. Demands Wage Increase

A TIE-UP of the coal-mining industry of eastern British Columbia and of the Province of Alberta has been threatening for some time, but from last reports, the crisis appears to have passed. There are two union organizations in these fields, viz., the One Big Union and the United Mine Workers of America. The O. B. U. called a strike to compel the operators to eliminate the check-off, whereby the dues of the U. M. W. of A. are taken from the mine workers' envelopes.

At the same time the U. M. W. of A. demanded that the operators reopen the recent contract and grant the daymen an advance of $1.50 per day, thus placing the latter, so it is argued, on an equal footing with the mine workers of the Central Competitive Field in the United States. Senator Robinson, Canadian Minister of Labor, who happened to be in Alberta with the Canadian Tariff Commission; W. H. Armstrong, director of coal operations for the Canadian West, and other Government officials undertook to arrange a settlement. Although the O. B. U. strike was ordered and a percentage of the miners left work, the mediation endeavors of the Government representatives appear to have been, on the whole, successful.

None of the mines was at any time completely closed down and the latest reports are to the effect that the industry will soon be in a normal condition. At Coal Creek and in other sections of British Columbia the mines are working as usual. The claims made of a defeat for the leaders of the O. B. U. movement seem to be justified, but what adjustment has been made, if any, between the operators and the U. M. W. of A. in respect to the latter's demands on behalf of the day wage men cannot be said at present.

Lackawanna Has Two Segregation Plans

PLANS of the Delaware, Lackawanna & Western R.R. for segregation of its coal properties have been presented to the Interstate Commerce Commission by W. J. Janney, vice president of the road, in a hearing on the road's application for authority to increase its capital stock up to the amount of its surplus, which is $90,000,000. Two plans were presented, one to deed the coal deposits to a coal company, stock in which would be taken in exchange and distributed to the railroad stockholders, and another plan to sell the coal lands to a syndicate organized by the railroad stockholders, the syndicate to organize an operating company which would give the railroad bonds for the coal properties, the minimum value of the coal lands being placed at $60,000,000.

Utilizing Exhaust Steam for Mine Pumping

When Existing Reciprocating Pumps Proved Inadequate to Handle the Water from Two Interconnected Operations the Exhaust from These Units Was Utilized to Drive an Additional Pump—No More Steam Is Now Consumed Than Before, Though Much More Water Is Now Lifted

By Donald J. Baker
Wilkinsburg, Pa.

As IS well known, the H. C. Frick Coke Co. owns and operates large coal areas in the Connellsville basin of Westmoreland County, Pennsylvania. Here the Pittsburgh bed has an average thickness of 8 ft. The Frick company having been for many years the leading operator of that seam in the Connellsville region, many of the mines which it operates are old and spread over thousands of acres.

Three Large Operations Are Connected

One of the largest of the tracts owned lies in the vicinity of the town of Latrobe, which is on the Pennsylvania main line. The Dorothy mine, which obtains access to the coal by a shaft 250 ft. deep, is located in this tract and has been worked for twenty-two years. Five miles from this operation is the Baggley mine and to the east of it is another development known as the Monastery. All three of the operations are connected with one another and their combined workings cover, as may be surmised, no small area.

As the Baggley and Monastery mines are to the rise of the Dorothy operation, the latter has become the recipient of all the water which drains into the underground workings from the whole area thus undermined. When the connection was made an unusually large dewatering problem was, therefore, presented.

Use Exhaust-Steam Turbine Below Ground

The problem of removing the water at these mines has been met by the installation of a type of pumping equipment which probably has not been duplicated in any other mine in this country and one which might furnish a suggestion to not a few operators confronted with a difficult pumping proposition for which their present plant is inadequate.

The main water-handling units in the Dorothy mine are reciprocating pumps of the non-condensing type, using, of course, live steam for their operation. The auxiliary pump, which is the one with the largest capacity, is operated on the exhaust steam from the smaller reciprocating unit. This unit is equipped with a condenser, so that no exhaust line to the surface is necessary. The steam thus doubly exhausted is condensed underground. But before anything further is said, let us follow the installation through from the boiler house on the surface, where the live steam is generated.

The Dorothy mine, being an old operation, does not buy its power as do most of the operators in this district. The mine was laid out and developed before the present network of high-tension lines was constructed. It was necessary for each operation to have its own power plant, unless by chance it lay adjacent to some other mine of the same concern where a power plant had been already installed.

Steam Favored Owing to Gas in Workings

Early in the life of the Dorothy mine it was decided to use steam as far as possible underground, for the mine is considered gaseous and by avoiding the use of electrical machinery the possibility of an explosion would be made more remote. Steam was provided for the operation of a steam-driven hoist which raised the loaded trips from the bottom of the basin. For the same reason steam was used for the operation of the pumps.

A 6-in. steam line extends from the boiler house on the surface to a borehole located some 500 ft. distant. The lower terminus of the borehole enters the main pumproom, which is 260 ft. beneath the surface. There two 12 x 36-in. horizontal duplex plunger pumps were installed. One of these is of Jeansville make, while the other was manufactured by the Scranton Pump Co. Each has a capacity of 1,200 gallons per min. Only one of the pumps is kept in continuous operation, the other, when the water is low, being operated at night and then only for a few hours. Each pump has a 14-in. intake and a 12-in. discharge. These two units are sufficient

Shaft at Dorothy Mine

For twenty-two years this plant has been producing coal. The area that has been excavated is large and the drainage territory is made still larger by the fact that Baggley and Monastery mines are connected with the Dorothy workings. The shaft is 250 feet deep.

during the dry months to void all the water from the Dorothy and Baggley mines.

During the winter and spring, however, when there is greater seepage through the overlying strata, more water collects at the sump than the pumps can handle, even though both are kept in continuous service. As already has been mentioned, these two pumping units are not equipped with condensers, and it was necessary to run a line to the surface for the exhaust steam. This was accomplished by utilizing the same borehole that accommodated the live steam line.

Takes Less Room Than Reciprocating Unit

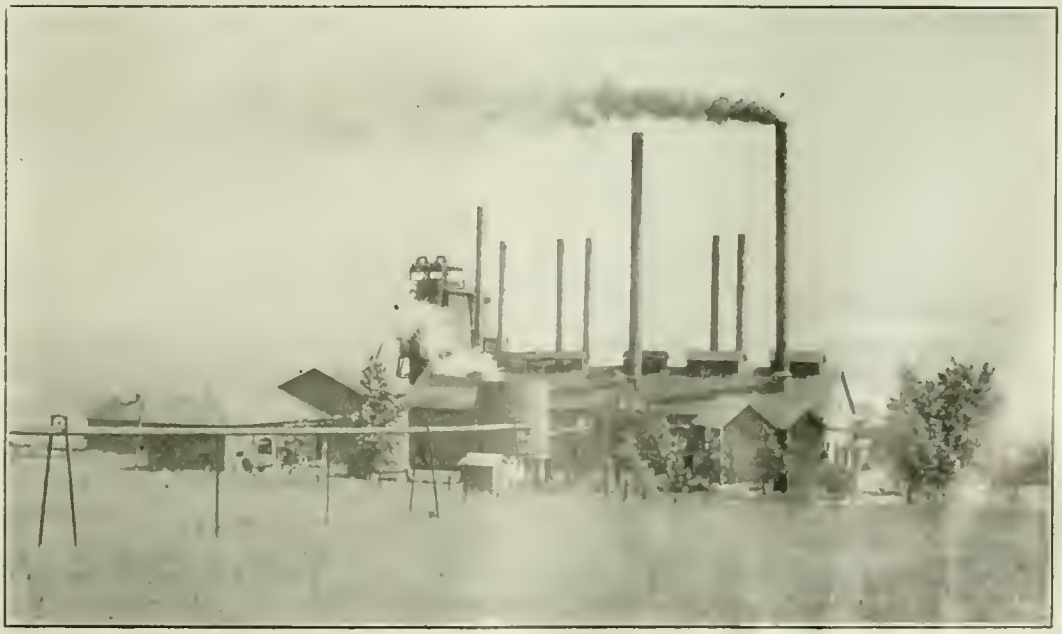
When it was seen that other pumps would be required to assist in dewatering the mines it was decided to use a centrifugal pump driven by an exhaust-steam turbine, thus utilizing the exhaust from the reciprocating units already described. An installation of this nature has certain important advantages. Less space is required for the housing of the necessary machinery than with a horizontal pump operating on live high-pressure steam. No additional expense is necessary for the construction of a separate supply line, because equipment of this sort uses steam that is ordinarily thrown into the air.

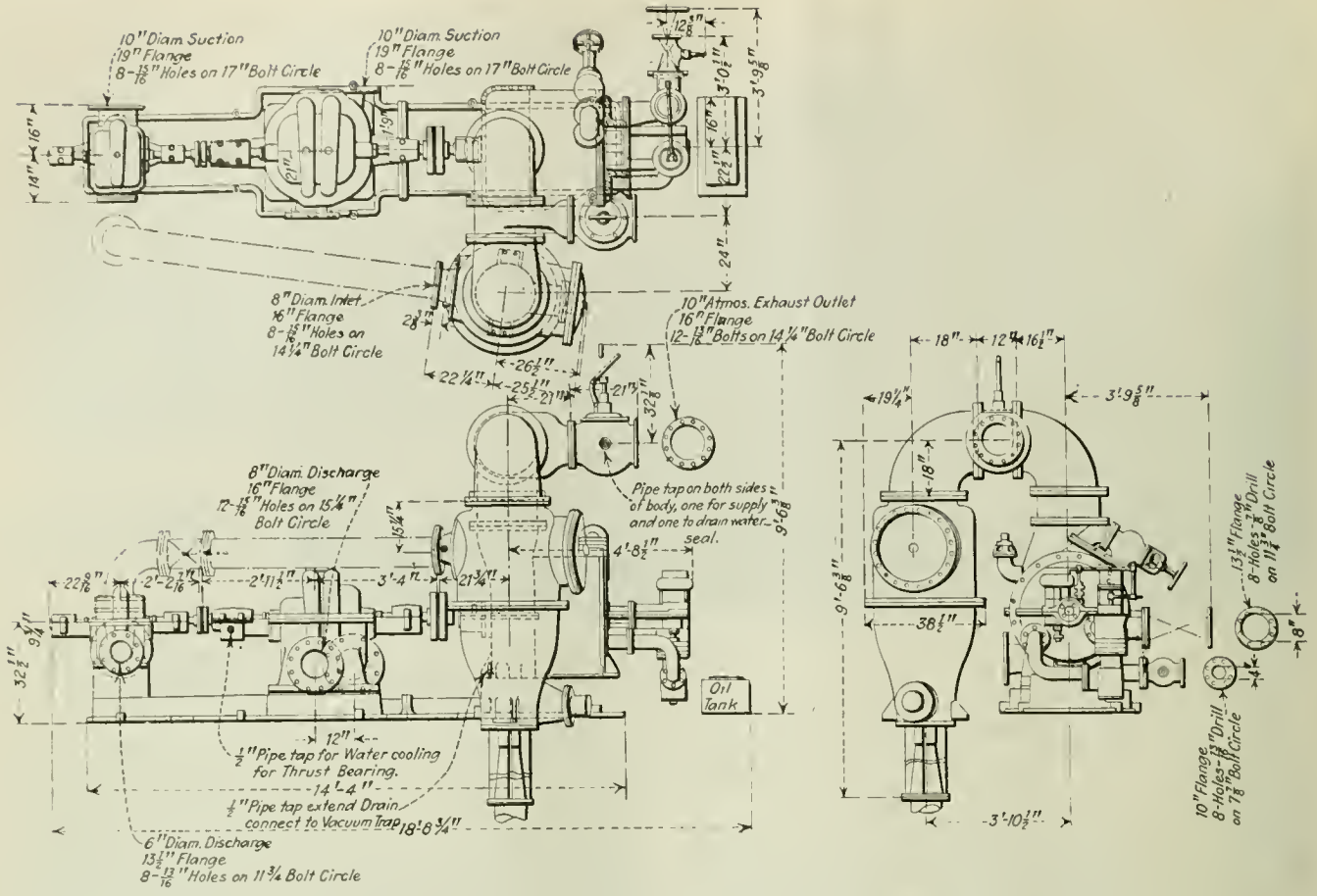
A chamber was excavated for the new installation adjacent to the mine pumproom. This was provided with stone sides and I-beam roof support. Here a turbine manufactured by the Kerr Turbine Co. was installed, a common cast-iron baseplate accommodating turbine pumps and condensing apparatus. By placing all these units on the same bedplate it was possible to economize in the amount of space required, which is a desirable feature in any underground installation.

The turbine is direct-connected to a multi-stage centrifugal pump made by the Worthington Pump & Machinery Corporation. This pump has a capacity of 1,800 gallons per minute. It discharges through a 14-in. discharge line which passes direct by a borehole to the surface. A flexible coupling is used for the connection between pump and turbine. The multi-stage pump is in turn connected to a single-stage pump which furnishes circulating water to the condenser.

Power Plant at Dorothy

The boilers in this plant were inadequate because avail was not made of the full power of the steam used in pumping. By utilizing the exhaust steam to drive a low-pressure turbine the additional power needed was obtained without increasing the boiler plant.





PLAN, SIDE AND END OF ELEVATIONS OF TURBINE PUMP AND CONDENSER

Exhaust steam, driving a turbine, operates a centrifugal pump, which lifts 1,800 gal. per min. an elevation of about 260 ft., the water being discharged through a 14-in. line, which passes direct to the surface. By the use of this equipment coal, labor and the installation of additional boilers is saved and all the added pumping needs are met.

The condenser is of the Schutte and Koerting multi-jet type and receives its circulating water at 9-lb. gage pressure. The overflow from the hot well runs back into the sump from which both pumps draw. A noteworthy detail in the construction of the turbine is the placing of its exhaust outlet so that it points vertically upward. Connection between the exhaust outlet of the turbine and the inlet of the condenser is made by suitable pipe and fittings. This arrangement of the necessary parts permits of the utilization of minimum space.

Can Start Turbine Under High Pressure

The turbine is constructed with a hand-operated by-pass valve to enable it to carry a portion of the load when operating high-pressure non-condensing—that is, when starting operation. This arrangement allows for the running of the pump, while a vacuum is established in the condenser by means of the pump which provides the circulating water. In the exhaust line between the turbine and the condenser an atmospheric relief valve has been installed. This serves as a protection against high pressures should the vacuum fail.

No air pump is required with this particular type of condenser, as the design is such that the water jets entrain the air and thus carry it out. All parts of the pump and condenser that come into direct contact with the mine water are made of acid-resisting metal. Both suction and discharge lines of the pumps are constructed of iron pipe with wood-lined ends.

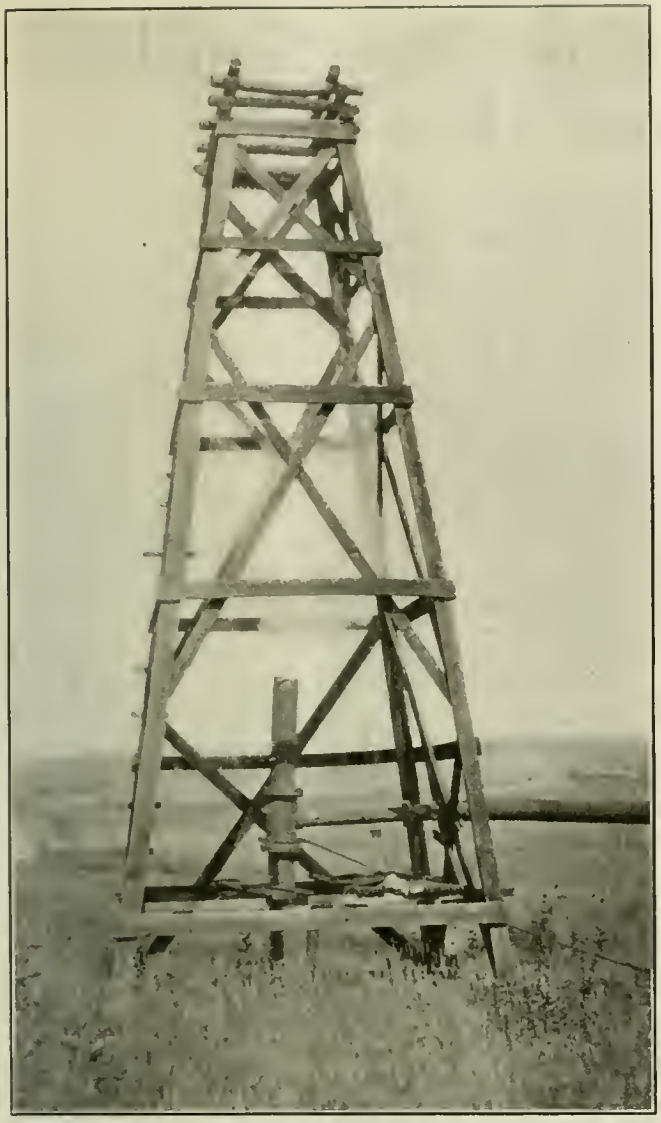
Water from the Monastery mine is directed to a separate sump in the Dorothy operation, from which point it is pumped to the surface by separate units. This sump- and pumproom is located about 1,000 ft. from the one already described. Any overflow from this point will run by gravity to the main sump, where it may be handled by the steam-turbine unit.

During a wet spell last winter the emergency unit was continuously in operation for a period of nineteen days without showing any signs of distress. This is a remarkable performance for a pump operating on exhaust steam, and well illustrates the ability of such a unit to perform a prodigious amount of work under exacting conditions.

Uses the Steam That It Used to Waste

As regards the economies of the installation much might be said, but possibly the greatest saving of all is that attending the generation of more power without the purchase of any additional equipment. No more steam is required now than under former conditions, and no more coal need be consumed in the boiler house. Mines utilizing steam to any appreciable extent will find this type of equipment highly advantageous and capable of giving maximum effort with minimum expense.

The use of condensing apparatus around the mines is not general practice although by no means as rare as the use of superheat. The coal industry is extremely wasteful, believing in many boilers large consumption of coal and prodigal waste, as against fewer boilers with maximum utilization of the steam generated. The simplicity of the exhaust-steam turbine points the way to a fuller use of all the available or recoverable heat in steam without the scrapping of the non-condensing machinery with which the plant is already equipped.



LARGE EXHAUST LINE TO SURFACE WITH SMALLER 6-INCH INTAKE STEAM PIPE

When all the exhaust steam from the main units is being utilized, none is exhausted through the larger pipe. The derrick enables repairs to be made when necessary.

Many are the opportunities of using exhaust-steam turbines in place of standby boilers. It is better, of course, to use the exhaust steam all the time than to reserve its use for the small portion of the year when the duty demanded of the pumps is high.

Converting a Storage-Battery Locomotive To One of Trolley Type

THE company with which I am connected, in the fall of 1918 purchased a 7-ton Whitcomb single motor lead-cell storage-battery locomotive. The mine at which this machine was to be used was at that time being re-opened, after having been abandoned for several years. Delivery of electrical machinery being extremely uncertain at that time and the company being anxious to begin running coal immediately, this locomotive was purchased for temporary main-line haulage use until electrical equipment and trolley locomotives could be delivered and installed.

The locomotive was used on the main-line haul for eight months and then transferred to another section of the mine and employed as a haulage motor between gathering partings and termini of the main-line haul. It was kept in regular use until June, 1920, with quite satisfactory results, being often loaded far above its rated capacity.

To get full efficiency from all sections of the mine we were forced to equip each parting with trolley wire so that either of the three locomotives used could run to any point in case of breakdown, wreck or delay. For this reason we no longer required a storage-battery locomotive and as the battery was by this time totally exhausted we were faced with the necessity of purchasing another trolley machine or a new set of cells. As usual, the best and cheapest way out of the difficulty was sought and I decided to change the storage-battery locomotive to one of trolley type by rewinding the motor for 250 volts, removing the cells and adding sufficient old iron to bring the total weight up to that required.

As a storage-battery machine the motor was wound for 100 volts and the fields connected in parallel on the running point. The commutator was especially large and had sufficient bars to allow rewinding for 250 volts without putting excessive voltage between consecutive bars. Therefore we had a set of armature coils made at a local repair shop with a sufficient additional number of turns per coil to take care of the increased voltage, connected the fields in series and rearranged the controller to give a five-point control.

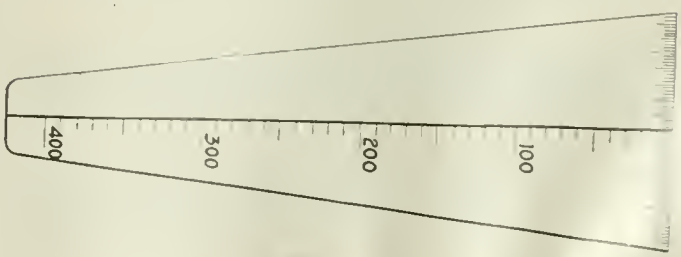
The expense of the above change was: one rheostat, $20; one set of armature coils, $55; one trolley pole, $13, and a labor cost of $61.54. This totaled $149.54 and made a saving $1,850 over a new set of cells and about $4,000 over the purchase of a new trolley locomotive. In addition to this we saved the cost of charging and caring for a battery.

Handy Scale for Plotting Offsets

By R. H. Albright
Sharples, W. Va.

THE accompanying illustration shows a plotting scale, 100 ft. = 1 in., for plotting side notes in mine work. The need for such an instrument has been felt for some time, and since I have used this device the time consumed in plotting has been reduced about one-third. The scale is made of transparent celluloid in order that it may not obstruct a view of the map. Its edge is finely graduated and is beveled so that errors in plotting arising from the use of a tapering pencil point are reduced.

In making a plot, the longitudinal line should coincide with the survey line of the room or entry that is being



HANDY SCALE

mapped, and the scale should be moved forward thereon until a plus from a spad is reached. The rights and lefts can then be plotted from the scale and will be in every case perpendicular to the direction of the longitudinal line which represents the surveyed course.

How Men on Moving Cages May Signal to Surface and Control Mine Hoist*

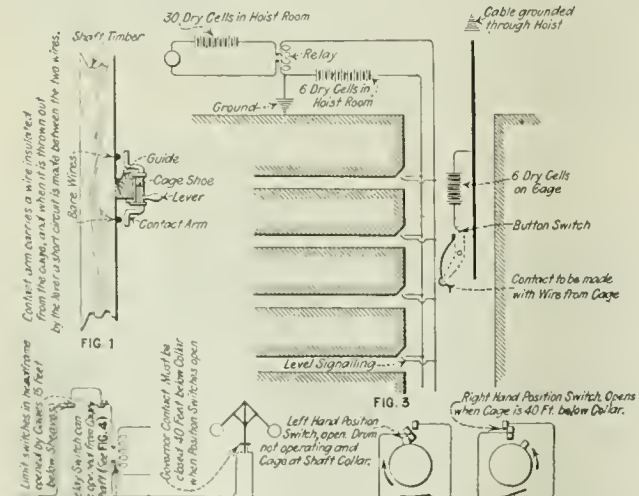
In Case of Mine Fires, the Displacement of Cages from Guides and Accidents of All Kinds, It Is Well To Be Able to Signal to the Surface and Stop or Start the Hoist

By C. A. Allen†
Salt Lake City, Utah

THE methods about to be described not only provide for signaling from a moving cage but also for such an arrangement of the apparatus that the hoist can be stopped by the cage rider. At the same time the installation is such that the voltage is sufficiently low to eliminate any possibility of danger from electric shock.

The first installation of this kind in Utah was at Eureka, in the shaft of the Centennial-Eureka mine. It was placed in operation, under the management of C. E. Allen, in the early summer of 1899 and has been in continuous and satisfactory use for the twenty-one years that have since elapsed.

The arrangement consists of two bare wires extending down the shaft, carrying a current at 60 volts, with a device on the cage for making a connection between them, as shown in Fig. 1. A similar arrangement was made in the Grand Central shaft at Mammoth, Utah, but it was abandoned because the shaft was too wet. At a later date the same plan was adopted in the shaft of the Eagle and Blue Bell mine, at Eureka, with battery current substituted for power-line current and the potential reduced to about 10 volts. This is operating satisfactorily even where the shaft is wet. The Eagle and Blue Bell mine is under the management of Imer Pett, of Salt Lake City. Several improvements have been made in the signaling device by the mine electrician, James Strong, in consultation with Leonard Wilson, consulting electrical engineer, of Salt Lake City.



FIGS. 1 TO 3. SIGNALING SYSTEMS OPERABLE FROM THE CAGE

Fig. 1 shows the original device for completing the circuit between two bare wires extending down the shaft. Fig. 2 shows an elaboration of the system with the introduction of various safety devices on the surface, while in Fig. 3 is depicted the present system for signaling either from the cage or from various levels.

To give a better idea of the possibilities and application of this system, in Fig. 2 is given a sketch of the electric wiring for the safety devices on the Eagle and Blue Bell hoist—a modern double-reel electric winder with oil-operated clutches and brakes, and with the clutch and brake on each drum controlled by different movements of the same lever.

Brake Set When Signal Circuit Is Broken

Whenever the power is cut off, the brakes are automatically applied. The switchboard is equipped with a no-voltage release and current must be maintained in the control wires of the safety devices or this release will operate, thereby shutting off the power and applying the brakes. As is shown in Fig. 2, the control wires pass through limit switches on the headframe, through a contact (*B* in Fig. 2 and in Fig. 4) held closed by a Western Union relay, through the governor contact, through clutch switches, and through position switches for each drum or reel.

By referring to Fig. 2, it will be noticed that if either the limit switch in the headframe or the gap at the relay switch (*B*) is opened the circuit is broken in the control wires and the no-voltage release operated; also if these connections remain closed but the switches and governor contacts are open the same thing occurs. The governor contact, however, is wired in parallel with the position switches, so that if the governor contact is closed the position switches may be open. The position switches are actuated by the same shaft which operates the indicator, and in order to allow one drum to operate independent of the other, two clutch switches are provided which close when the clutches are thrown out, thus short-circuiting the current by the position switches.

Provision for Signaling from Moving Cage

The wiring of these safety devices is not materially different from that used on other electric hoists and is given here only in order to show how the hoist can be controlled from the moving cage with the same wiring that is used for signaling.

In Fig. 3 is shown the diagram of the present equipment for signaling from the moving cage, and, in order to avoid confusion, the method of controlling the

*Article entitled "Signaling and Controlling Mine Hoists from Moving Cages," read before the Mining Section of the National Safety Council at the annual congress of the latter body. This paper was presented on Sept. 29, and the discussion of it may be found in *Coal Age*, issue of Oct. 7.

†Mining engineer, U. S. Bureau of Mines, and chief mine inspector, Industrial Commission of Utah.

hoist by the same wires is omitted in this sketch but is shown in Fig. 4.

Discussing only the signaling system, which is all that is shown in Fig. 3, it will be noted that the same wires are used for signaling from the levels as from the moving cage, but two sets of dry cells are employed. The conductors extending down the shaft are No. 4 bare copper wires, supported on insulators every 40 ft. To operate the signal system at the levels six dry cells have been placed in the hoist room. Whenever the knife switch for signaling is closed on any level, the circuit is made through the two wires and through an ordinary Western Union relay. The relay closes a contact in the bell circuit, and the bell is rung by a separate battery of thirty dry cells, also located in the hoist room. Instead of using these thirty dry cells to ring the bell connection could have been made to a direct-current power or lighting circuit. The six dry cells could still be used for the shaft circuit, which is maintained at a potential of about 10 volts. This is a potential that even in a wet shaft will not give trouble from grounding and it is one, furthermore, that will not dangerously shock any one who may come in contact with it.

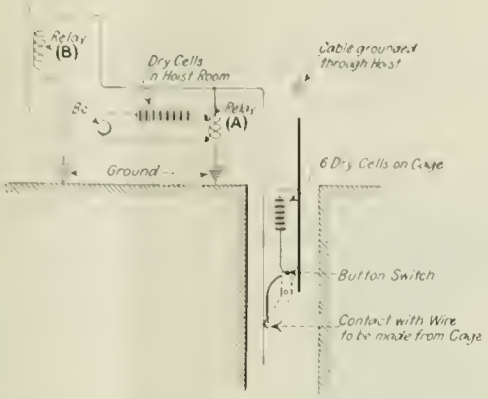


FIG. 4. WIRING DIAGRAM FOR BOTH SIGNALING AND CAGE CONTROL

Means for signaling from the levels are omitted from this sketch. It will be noted that the cable and the hoist itself form part of the signaling and control circuit.

In order to ring the bell from the moving cage there is a contact, as shown, which, by means of the lever arm indicated by the dotted lines, can be pressed out against one of the wires (the right-hand wire shown in the sketch). This contact is simply a curved piece of brass about five inches wide, properly insulated from the cage and from the lever arm that operates it.

Signal Accidentally Given by Sliding Post

At one time this contact was accidentally pushed out by timbers on the cage, thus giving a signal unintentionally. In order to obviate the possibility of this happening again a push button is placed in the circuit on the cage, so that it is necessary to push this button at the same time that the contact is pressed out against the bare shaft wire. The current for this circuit is furnished by six dry cells placed in a pipe on the cage. These are connected from one terminal with the cable and from the other terminal through the push button to the contact. The bare shaft wire also is grounded, as shown in Fig. 3, so that when the contact is made from the cage the relay closes the bell circuit and the bell is rung in precisely the same way as when a signal is given from a level.

Mr. Strang, the mine electrician, informs me that, in his opinion, it would be better to have the system of wiring for the signals at the level separate from those on the moving cage and to have a separate bell for signals from the levels from that used in signaling from the cage. In order to show the separate wiring for the moving-cage signals and also to exhibit how this same arrangement can be used to stop the hoist automatically, Fig. 4 is presented.

The dry cells and contact (with the push button) on the cage are arranged in exactly the same manner, but there is only one bare wire running down the shaft. It will be noted that when the contact is made from the cage with this bare wire the current will ground through the cable and will also flow through the bare wire to the ground through the relay *A* and also through the relay *B*. The relay *A* is arranged so that the current passing through it will close the bell circuit, and the bell will be rung by the dry cells in the hoist room.

The relay *B* (see also *B* in Fig. 2) is so arranged that the current will open the control circuit on the hoist, which means that the no-voltage release will operate, power will be cut off from the hoist and the brakes automatically applied. In other words, by the arrangement shown in Fig. 4, whenever a person on a moving cage completes the circuit with the bare wire, a bell is rung in the hoist room and at the same time the hoist is automatically stopped.

Whether it is advisable to arrange matters so as to make it possible for a person riding on the cage to stop the hoist is a question on which opinions differ. If this is not desired, relay switch *B* can be removed. Even after this change is made it is still possible to ring the bell from the cage.

Most of the Signaling Done from Cage

O. N. Friendly, general superintendent of the Judge Mining & Smelting Co., is now installing a modification of the Eagle and Blue Bell system for use in the Daly-West shaft at Park City. By this system it is planned to do all the signaling from the cage and to have no signal device on the levels except the flash or buzzer system provided for the calling of the cage. A sketch of the arrangement is shown in Fig. 5. Double-deck cages are used, and, to make it possible for a cage tender to give signals from the cage while standing on the station at either side of the shaft, four push buttons will be installed. Also, in order to avoid using four levers to make contact with the bare wire, one contact will be maintained at all times—a sliding contact, held in place by a spring, or a contact of the pantograph type, such as is used on certain electric railway lines.

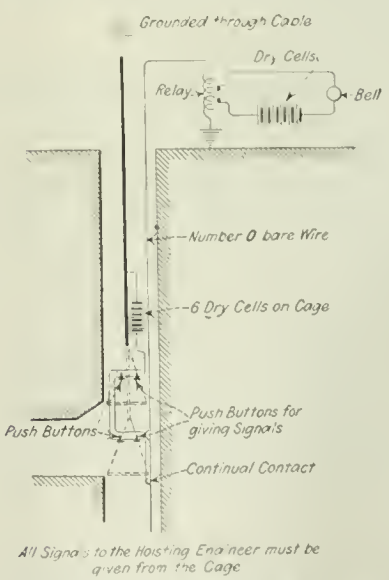


FIG. 5. ALL SIGNALS MUST IN THIS CASE BE GIVEN FROM THE CAGE

Four push buttons are installed upon the double-decked cage. These may be operated by a person on the cage or may be pushed by the cager on the level landing.

In looking over the mining papers I have found two articles describing similar signaling equipment. One appeared in the *Engineering and Mining Journal* for June 1, 1912, and described a patented device in which a flat strip was used instead of a bare wire. The other article, appearing in the *Bulletin* of the American Institute of Mining Engineers, February, 1914, describes an arrangement similar to those here illustrated, which was being used by the Penn Iron Mining Co. in Michigan.

As before stated, there are two highly important safety considerations involved in the use of these signaling systems. The first is the ability to signal from a moving cage, and the second the low-voltage current employed. By using such low voltage no danger is incurred from electric shocks, and, if the bare wires are continuously charged, the danger of a "short" to wet timbers is slight. The Eagle and Blue Bell shaft is 2,000 ft. deep and wet in places, yet no trouble has been experienced.

In the system being installed at the Daly-West shaft another danger also is avoided. This is the possibility of a careless or ignorant employee giving a signal from the station when the cage is at some other point in the shaft. Accidents not infrequently occur from the premature starting of the cage, despite the fact that signs are placed warning all employees (except the cage tender) to keep their hands off the signaling system of the hoist.

The experience in signaling which has been gained in Utah causes me to believe that not only are the methods for signaling from the cage which have been described highly valuable from a safety standpoint but to feel also that it is absolutely necessary to have low voltage on any signal wires with which employees may come in contact.

In coal mines bare signal wires in many instances extend along the entire length of a slope or incline, the potential of which is sometimes as high as 500 volts. Two men have been killed by 230-volt signal wires. To avoid further accidents of this kind, provision has been made in Utah that no signal wires may be used in metal mines carrying more than 25 volts, or in coal mines carrying more than 50 volts.

The higher voltage is permitted in coal mines because on long slopes—say two miles long—a voltage such as this might be necessary to supply enough current to give clear signals.

I have learned from experience, however, that by using a relay at the hoist this voltage would be sufficient for any distance over which haulage is practicable. It is also required that all shafts over 500 ft. deep and through which fifty or more men are hoisted or lowered daily by means of cages, placed in operation hereafter, must have the signaling system so arranged that the hoisting engineer can be signaled from the cage while it is in motion at any point in the shaft between levels.

Supplies Acetylene for Welding Purposes

TO AVOID being dependent on compressed acetylene for use in welding and cutting operations, acetylene generators have been manufactured in various sizes, having a capacity of from 15 to 100 lb. and furnishing 15 to 100 cu.ft. of gas per hour respectively.

It is asserted by the manufacturers of this apparatus that it possesses two marked advantages, namely: A simple and positive carbide feed and an even and constantly-maintained pressure. The carbide of size ¼ x ½ in., is fed into the water by a simple vibrator actuated by the flow of gas through the apparatus. Thus whenever the torch is shut off the feed of carbide ceases, but when the torch is turned on again the carbide feed is again started.

Pressure within the generator is controlled by a spring and diaphragm. This combination together with the automatic feeding maintains an even pressure under all service conditions. Pressure control is so uniform that a torch will burn for hours at a time without adjustment of the torch valves. No regulator is required except in cases where several torches are operated from the same generator.

This generator is said to be foolproof and so constructed as to compel the user to follow the proper sequence of operations in filling, starting and shutting off. A reliable safety valve makes it impossible to obtain more than 15 lb. pressure, which is the maximum allowable for acetylene gas.

The gas-purifying portion of this apparatus, through which all the gas passes on its way to the torch, is provided with a water seal. This serves a double purpose—it cools the gas and absolutely prevents any backflash reaching the generator proper.

As stated above, this device is made in various sizes. The smaller of these may be provided with hand trucks to insure portability, while the largest size is not infrequently permanently installed, usually in a small building just outside the shop in which the acetylene is to be used. The employment of an acetylene generator renders the owner independent of a compressed supply. Carbide can in most cases be secured locally and the cost of making acetylene in this way is much less than the expense involved in purchasing the gas in the compressed form, while the money "tied up" in equipment is not much greater than would be involved in keeping a sufficient stock of compressed-acetylene cylinders on hand.

The automatic acetylene generator just described is known as the Imperial and has been placed on the market by the Imperial Brass Manufacturing Co., of 1200 W. Harrison St., Chicago, Ill.

Texas Miners Get Raise in Tonnage Rate

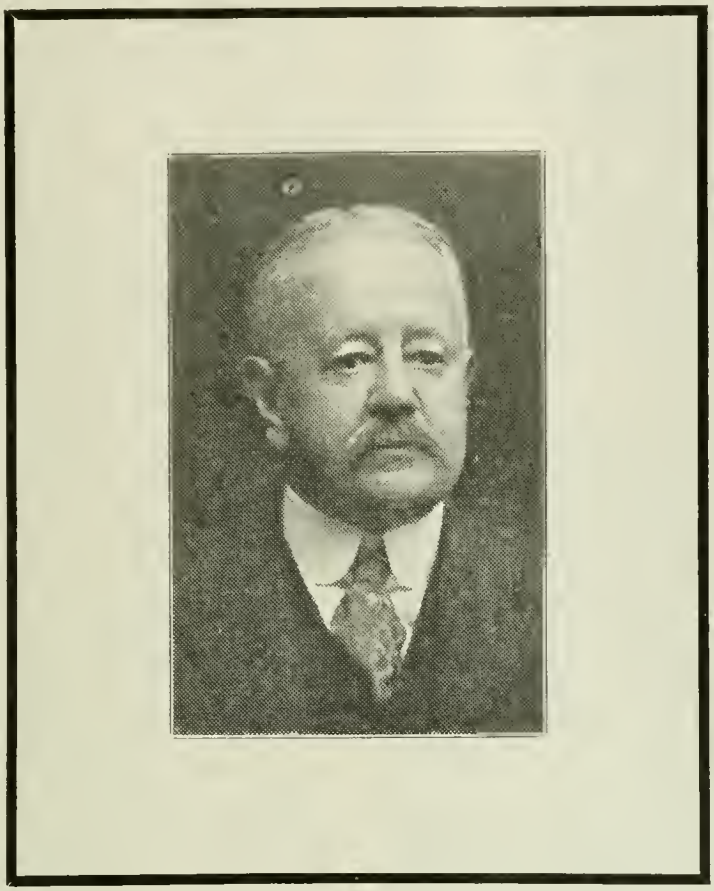
A STRIKE of mine workers in Texas, which involved more than 1,000 men and affected the fields about Strawn, Thurber and Bridgeport, has recently been settled. The operators gave the miners a wage advance of 25c. a ton. The workmen at first demanded a 60c. advance over the scale of $2.40 which they were receiving. This would have made the scale $3 a ton. It also was agreed that if the mine workers in Oklahoma, who are now seeking an increase wage from the Oklahoma coal operators, are granted a larger increase than 25c. a ton, the Texas operators are to make the scale in this state the same.

The agreement to end the strike was reached at a conference held in Fort Worth, Texas, which was attended by representatives of both the Texas coal operators and mine workers. Judge E. B. Ritchie, of Strawn, attorney for the operators, was their chief spokesman, and W. K. Gordon, of Thurber, presented the brief for the mine workers. When the agreement was reached it was taken at once to the mines for ratification. The mine workers at Bridgeport immediately ratified it, while those at Strawn and Thurber took similar action shortly afterward.

Major Irving Ariel Stearns Dies

Introduced in Anthracite Region High-Pressure Boilers, Underground Electric Haulage and High-Pressure Compressed-Air Haulage—Was Manager of P.R.R. Coal Interests for Twelve Years, Then President of Large Coal Corporations

MAJOR Irving Ariel Stearns died at his home 60 South River Street, Wilkes-Barre, Pa., Tuesday, Oct. 5, 1920, of pneumonia, after an illness of about a month. In his death the Wyoming Valley loses one of its most eminent and best-loved citizens, and the loss of so strong a participant in the activities of the valley will leave a gap difficult to fill, as, despite his more than three score and fifteen years, Mr. Stearns at the time of his death was president of the Wilkes-Barre City Hospital, the Wyoming National Bank and the Wyoming Historical and Geological Society; chairman of the board of the Vulcan Iron Works, and a director of the Spring Brook Water Supply Co. and of the Wilkes-Barre Lace Manufacturing Co.



Irving Ariel Stearns came of New England stock, being a descendant in the eighth generation of Charles Stearns, who was admitted freeman in Watertown in 1646. He was born Sept. 12, 1845, in Rushville, N. Y., a son of George W. and Miranda (Tufts) Stearns, and was graduated from the Rensselaer Polytechnic Institute of Troy, N. Y., in the class of 1868, which included among its members a number of men who later achieved distinction in the fields of engineering and scientific research.

Had Varied Engineering Experience

After graduation he was assistant professor of chemistry in charge of the analytical laboratory for a year, and went to Wilkes-Barre in 1869 as engineer in the office of R. P. Rothwell, then the leading mining engineer of the region. From 1871 to 1872 he was superintendent of the McNeal Coal & Iron Co., of Schuylkill County, Pennsylvania, and in 1872 succeeded to Mr. Rothwell's business when he left the region to take charge, as editor, of the *Engineering and Mining Journal* of New York.

From 1872 to 1885 Mr. Stearns was in private practice as a mining engineer, handling a great amount of business in the anthracite region, including the building of the bridges at Shickshinny and Pittston and the surveying and mapping of many of the individually operated mines. His practice soon extended throughout the country, with numerous examinations and reports upon mining properties in Pennsylvania, Virginia, West Virginia, Arkansas, Colorado, California, Wyoming, Idaho, and Utah, and he was responsible for the design and execution of the Lehigh Valley Railroad Co's. great Tifft Farm Improvements at Buffalo, N. Y., including canals, docks, coal stocking plant, etc.

He was commissioned quartermaster of the Ninth Regiment, N. G. P., March 29, 1880; was promoted to major May 15, 1884, and resigned April 1, 1885. He always retained an interest in the National Guard and for a time he was president of the Ninth Regiment Armory Association.

At the age of forty Mr. Stearns was one of the best known mining engineers in the United States, and his eminence in his profession led to his appointment in the autumn of 1885 as manager of the various coal interests owned and controlled by the Pennsylvania Railroad Co., which position he held until July, 1897. During that time he brought the properties of which he was in control to a high state of efficiency. He was, in fact, personally responsible for the introduction in the anthracite region of high-pressure boilers, the first of which were put in at Shamokin; of underground electric haulage, the first in the United States and the second in the world having been put in the Lykens Valley Colliery in 1886, and of high-pressure compressed air haulage in 1895. He also introduced radical improvements in mining and in the preparation of anthracite coal.

In July, 1897, Mr. Stearns was chosen president of the Cross Creek Coal Co., Coxe Brothers & Co., Inc., the Delaware, Susquehanna & Schuylkill Railroad Co., and the Coxe Iron Manufacturing Co. and held these positions until the sale of the properties to the Lehigh Valley Coal Co. in the autumn of 1905. During his tenure of office his genius for organization brought the mines of these companies to a high degree of operating efficiency.

The sale of the Coxe properties found Mr. Stearns

sixty years of age and tired from thirty-seven years of continuous and most active service, so he decided to retire from business and devote the remaining years of his life to broader channels of usefulness. As soon as he was free from direct business engagements his abilities were heavily drawn on by his home community. On Nov. 30, 1906, he was elected the first president of the Wilkes-Barre Park Commission, which office he held for ten years. At that time the only park lands owned by the City of Wilkes-Barre were two tracts patented in 1804. One was known as the River Common, extending from South to Union Street along the Susquehanna River, and the other the Public Square.

During his two terms as Park Commissioner the River Common was converted from an eyesore to its present condition, while the Public Square was remodeled and Hollenback Park, Riverside Park, Frances Slocum Playground, and numerous small parks and playgrounds throught the city were acquired and improved, giving to the city its present park system, acquired almost entirely by gift as the result of Mr. Stearns' personal efforts.

His clear-headed judgment and sound common sense were in great demand by the business interests not only of the Wyoming Valley but of other sections of the country, for besides holding the positions above noted he was at different times director of the Lehigh Valley R.R., Lehigh Valley Coal Co., Chatham & Phenix National Bank of New York, Standard Trust Co. of New York, the Hibbard-Rodman-Ely Safe Co. of New York, Spring Brook Water Supply Co., Spring Brook Water Co., Wilkes-Barre Water Co., Wyoming National Bank, Vulcan Iron Works, the Gas Company of Luzerne County, Wilkes-Barre Electric Light Co., People's Telephone Co. and the Penn Mining Co. of Wyoming, of which latter he was president.

Mr. Stearns was a member of many societies and clubs. He was one of the organizers of the American Institute of Mining Engineers, founded in Wilkes-Barre in 1871, was vice-president in 1905-6, and at the time of his death was one of the three living original members of the institute. He was the first president of the Westmoreland Club and an active member throughout its entire history; a past president of the Wyoming Valley Country Club, and at different times was a member of the American Society of Civil Engineers, the Union League Clubs of New York and Philadelphia, the Engineers and the University clubs of New York, the Franklin Institute of Philadelphia, and of the Blooming Grove Club of Pike County, Pa.

He took great interest in the Wyoming Historical and Geological Society, of which he was president for many years, and in the Wilkes-Barre City Hospital, of the board of which he was a member for more than a generation, and of which he was president at the time of his death.

Mr. Stearns married Nov. 20, 1872, Clorinda W. Shoemaker, eldest daughter of L. D. and Esther (Wadhams) Shoemaker, of Wilkes-Barre, who died May 6, 1904. Of their three children, Captain Lazarus Denison Stearns, born Dec. 27, 1875, gave his life to his country as captain in the Ninth Regiment, N. G. P., during the Spanish-American War, Sept. 6, 1898; Irving Ariel Stearns, Jr., born July 5, 1877, died April 9, 1884; Esther Shoemaker Stearns was married April 14, 1910, to Harold Mercer Shoemaker. She with their two children, Irving Stearns Shoemaker and William Mercer Shoemaker, are the only surviving descendants. Mr. Stearns' only sister, Mrs. A. J. Aldrich, lives at Coldwater, Mich.

Anthracite Miners Live Long and Heartily

IN CONNECTION with your article in *Coal Age* of Sept. 9, 1920, which recorded the services of Michael Hanahue, of Pittston, Pa., I wish to call your attention to the following:

Joseph Henry Sobey, of Jermyn, Pa., was born on Aug. 3, 1860, and is therefore 60 years of age. Mr. Sobey started to work at the Jermyn Colliery, in Jermyn, in 1873. This colliery was then owned and operated by the late John Jermyn, pioneer coal operator. During the month of September, 1876 (at the time of the Centennial celebration in Philadelphia), Mr. Sobey began to mine coal and he continued to engage in that work in the same colliery until Jan. 5, 1920, when he received an unlimited leave of absence in order to enable him to accept a position in the assessment department of the County Commissioners' office at Scranton, Pa. In 1896 Mr. Sobey was elected Borough Assessor in Jermyn and has since served continuously in that capacity, and has developed into an authority on assessments.

During this entire period of almost forty-seven years' continuous service as a mine worker, Mr. Sobey has never received a serious injury in connection with his work, and at present has the appearance of a man of forty-five years of age.

The John Jermyn interests operated the Jermyn Colliery for about nine years after Mr. Sobey began to work there, and it was then purchased by the Delaware & Hudson Co. (now the Hudson Coal Co.), which company has operated the colliery since that time. During his period of service Mr. Sobey has worked under eight different mine foremen, viz.: Alfred Green, Robert Carter, John Kearner, Joseph Tennis, Thomas Evans, Thomas R. Thomas, Andrew Patton and Joseph Shearer.

Mr. Sobey was a charter member of the keg fund at the Jermyn Colliery, and still retains his membership, and expects to be able to mine coal for many years after his work is completed in the Commissioners' office.

Temple Coal Co., Scranton, Pa. — F. H. HEMELRIGHT, Vice-Pres. and Gen. Mgr.

Oklahoma Refuses to Give New Wage Scale

COAL-MINE workers of Oklahoma have presented demands for increased wages amounting to approximately 25 per cent. These have been denied, at least tentatively, by the operators. Some talk of a strike can be heard, but at present only a few men are out. The operators assert that they cannot meet the demand for higher wages; that the mine workers are now under contract, made in good faith, and that they see no reason why the mine workers should not live up to their engagements. Operators assert that the increased wage would enhance the cost of mining coal in Oklahoma to such an extent that coal could be mined in other states and shipped into Oklahoma and sold at a profit at prices below the cost of mining in Oklahoma.

The operators have appointed a committee consisting of Dorset Carter, president of the Oklahoma Coal Operators' Association; J. B. Wilson, State Commissioner of Labor, and J. B. Puterbaugh, coal operator of McAlester, to meet representatives of the mine workers in an effort to adjust the differences existing between them. This conference is to be held in McAlester.

Mine-Safety Experts Discuss at Milwaukee Accidents, Health and Welfare—IV

How Accidents in Stripping May Be Avoided—How to Upset Badly Loaded Strip-Pit Car Bodies—Use of Fusees at Night to Mark Location of Impending Blasts—Proposition to Co-operate with Bureau of Mines Approved—Directing Heads for Fiscal Year Elected

By R. Dawson Hall
Editor *Coal Age*

TWO papers were read at the last session of the mining section in reference to the dangers of open-pit mining, a subject that hitherto has not been treated but one which gathers increased importance year by year as strip pits become larger and deeper and the number of men employed is augmented. The depth of stripping constantly increases. Every year unfolds new possibilities. The biggest development in coal strip pits yet to be attempted is probably the use of larger dump cars with dump gates operated by compressed air. With a spreader operated by the locomotive the berm will be maintained without the present excessive cost for labor. The iron regions have gone far ahead of the coal region in this direction, and consequently D. E. A. Charlton's admirable paper on the "Hazards Met in Open-Cut Mining," which had special reference to iron-ore strip-pits, is the more significant and valuable. Mr. Charlton has had much experience in that class of work. He is managing editor of the *Engineering and Mining Journal*, New York City.

Mining section discusses the dangers of strip-pit operation and the means for reducing them. It gives favorable consideration to a method whereby, without great expense, the services of a secretary could be obtained who would give his whole time to the work of the section. No important change is made in the official personnel for the present year.

The paper of F. S. Gallus, district superintendent of strippings of the Lehigh Coal & Navigation Co., on "The Hazards Met in Anthracite Stripping" was read by Mr. Tillson. Attention was drawn by Mr. Charlton to the statement: "No one but the operator is allowed to enter the shovel while the machinery is in motion." Yet, despite precautions of this sort, accidents will happen, as is shown by the following instance: "While the shovel was loading, and unobserved by the operator, one of the jackmen had entered the shovel and was at the work bench when in some unaccountable manner his shoe got caught between the swinging sheave and the cable, tearing off the sole and heel, with the result that the man was laid up in the hospital for a period of five months and will have a stiff foot for life. As will be noted, the accident was entirely unnecessary and would never have occurred had the man observed the rules." Mr. Charlton asked Mr. Martinson if a housing had not been devised to make this accident impossible. Mr. Martinson said that this had been done and that all the shovels of the Pickands Mather Co. were so equipped.

Mr. Reed called attention to the statement: "The men on the dirt dump have been known to clamber on the car to throw off some of the material on the heavy side without previously hooking the side chains. As a consequence the weight of their bodies overtipped the car and precipitated them to the bottom of the dump, causing serious injuries. The best preventive for such accidents is to provide for the tipping of the wagon body by the use of a short pointed dumping pole which when placed on an angle between the floor of the car and the sills will permit the cars to be tipped by merely moving the trip several feet."

Mr. Reed questioned whether this proposed plan was not somewhat dangerous. If he understood the plan aright, it was one that was at one time quite a common practice at the mines of the Consolidation Coal Co. for the replacement of derailed cars, but is now strictly forbidden, as the man's fingers might be badly pinched by the movement of the pole. Mr. Charlton said that hand holds were provided on the pole and that he believed the practice safe.

Mr. Reed said that the addition of hand holds had been suggested in safety conferences of the Consolidation Coal Co., but the plan was rejected, as there was a possibility that the whole hand would be drawn in and the hand lost in place of the fingers. Mr. Charlton said that in the iron region all these risks had been removed by the introduction of the 30-ton dump car actuated by compressed air.

Mr. Martinson said that the introduction of flood lighting at open-pit night work had done much to make such work safe. He added that whistle signals had been done away with as a warning of blasts. They put the men on their guard, but did not show them where the danger existed, and so they might run into it rather than away from it. Now, whenever blasting was to be done, a red-light railroad fusee was ignited, and the exact spot where the blasting was to be done was indicated.

Co-operation with Bureau Discussed

Mr. Tillson stated that he had been much possessed of the idea that the National Safety Council and the Bureau of Mines might gain greatly by a closer co-operation. The National Safety Council could not afford as yet a paid secretary for the mining section. In fact, none of the industrial sections had a paid secretary. That arrangement was limited so far to the local sections of the council.

This Twin Shaking Screen Has a Novel Delivery Gate

Changes in Shaker Eliminate the Knocking Screen, and Attached Chutes Carry the Coal to a Conveyor

THE accompanying drawing shows a simple arrangement of chutes and gates devised to permit of separating egg and slack coal from run of mine. It also will deliver them into belt conveyors or put either or both back into the run of mine, as may be desired.

The original arrangement included a knocking screen under the shaking screen. This knocker delivered the slack to the left-hand belt and the egg to the right-hand belt. By putting plates over the screening surface of the knocking screen both the slack and egg coal could be returned to the run of mine, but it had to be both or neither.

Knocking Screen and Chutes Removed

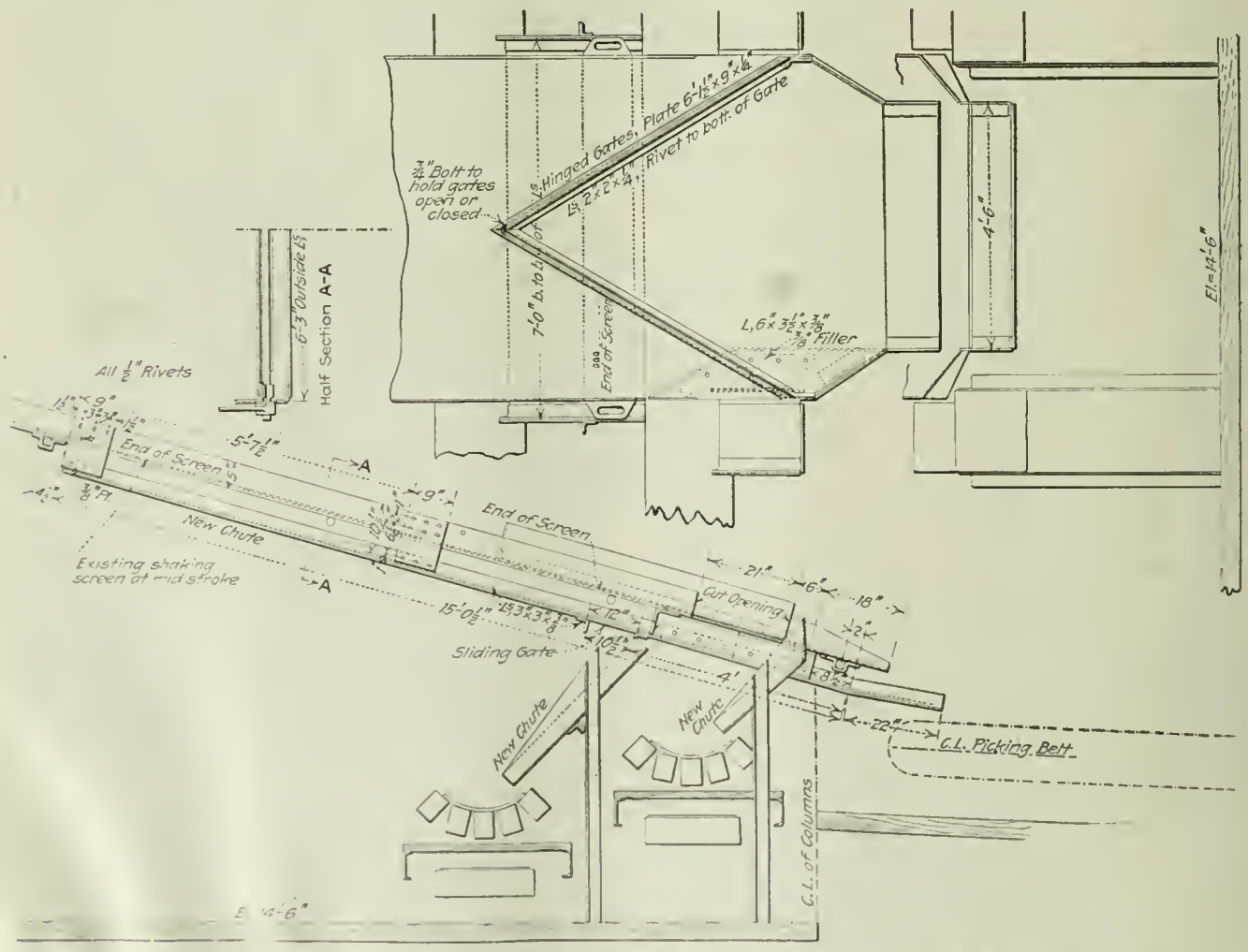
The changes made were: Removal of the knocking screen with its chutes, shafting, etc.; the cutting of openings in the sides of the shaking screen, and the fitting of a pair of hinged gates so arranged as to guide the coal to these openings. These gates close the openings when such closure is desired.

A new chute was made and riveted to the underside of the shaking screen, as shown. This chute was fitted with a sliding gate in the lower end just beyond the screening surface. A new chute was put in place to convey the slack coal from the sliding gate to the left-hand belt conveyor, also two small chutes to carry the egg coal from the openings in the sides of the shaking screen to the right-hand conveyor.

Two Conveyors Serve Three Sets of Screens

Three sets of these screens and picking belts are installed in the bankhead as now altered. Since all three are duplicates, however, the drawing shows only one set. The two belt conveyors shown serve all three sets of screens.

In operation when the hinged gates are closed as shown the egg coal will be delivered to the belt conveyor. When the gates are opened, however, the egg coal travels onto the picking band, where it mingles with the run of mine, which is delivered to the picking table by another chute above the shaking screen, not shown in the drawing. Similarly, the slack coal that passes through the upper screen onto the new chute below can be delivered onto the belt conveyor by opening the sliding gates. If, however, these gates are closed, the slack coal is returned to the run of mine on the picking belt. The sliding gate is located be-



SHAKING SCREEN WHICH WILL DELIVER EGG AND SLACK OR RUN-OF-MINE

By cutting openings in the side of the shaking screen and adding hinged gates so as to direct the coal to these openings, the egg can be diverted to the right-hand belt conveyor, while a sliding gate in the lower chute directs the slack to the left-hand belt conveyor. When hinged gates in the screen and the slide gate in the chute are opened, the egg and slack pass onto the picking belt, combined to form run-of-mine.

yond the end of the screening surface on the shaker, so that all the slack screened out will pass through the gate when it is opened.

As will be seen, the operation of the gates in each chute is independent of the other chute. This permits the separation of either or both grades of coal, as may be required, with a minimum of trouble. The cost of making the change was small, and a saving of power and upkeep is effected by reason of the elimination of the knocking screen with its driving shafts.

Hoisting Engine Has Given Service For a Half Century

Still Uses Steam at Forty-Pounds Pressure and an Ordinary Stephenson-Link Reversing Motion with D Slide Valve

By Frank H. Kneeland*

IT SEEMS to be a characteristic trait of certain English machine builders that they so construct their products that they last almost indefinitely. Permanency seems to be the primary aim of the designer. In this country, on the other hand, improvements in many lines, particularly power-generating units, are so rapid and follow each other in such close succession that machines become obsolete within an extremely short time after installation. Occasionally, however, one sees an engine, boiler or generator that has given many years of honest service and is still in such condition and gives such results as to retain its place in the present equipment by reason of its economy and all-around efficiency.

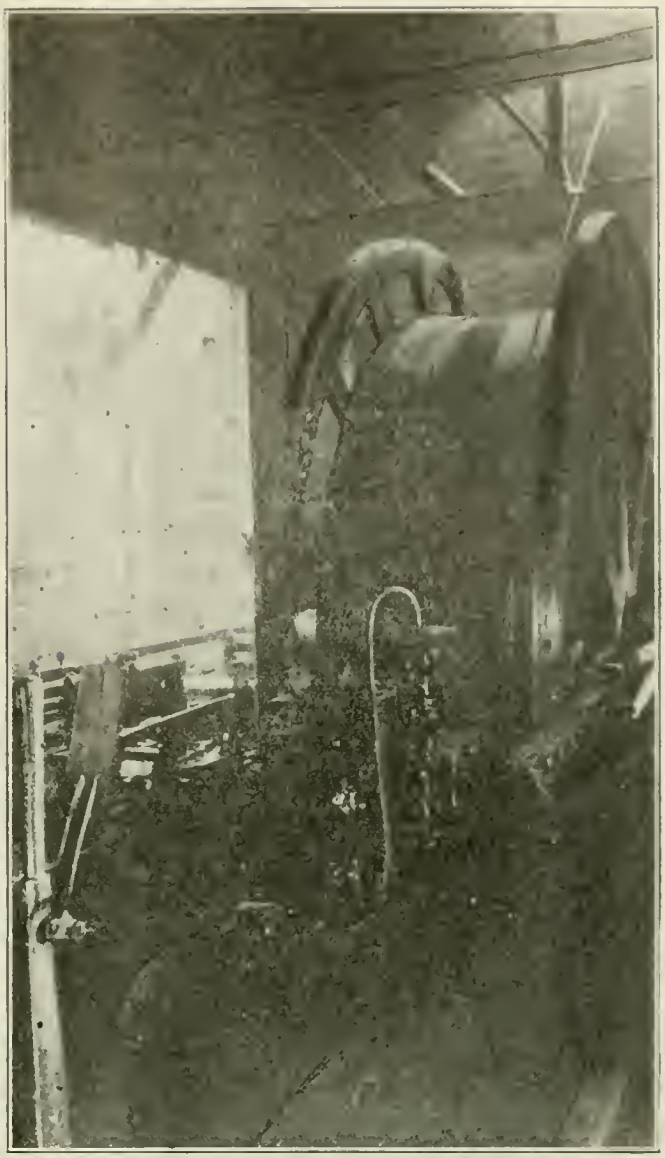
The Nova Scotia Steel & Coal Co. at its No. 1 shaft on Cranberry Head, Sydney Mines, N. S., has in operation a hoisting engine that is now almost a patriarch among such machines employed west of the Atlantic. This engine was built in 1868 by E. & J. Joicey, of Newcastle-on-Tyne, and installed in its present position in 1872. The shop number of this machine is 29. The cylinders are 36 x 60 in. and the pistons are fitted with rear or tail guides. The hoisting drum is 18 ft. in diameter and 4 ft. 5 in. long. It is built up of two skeleton ends or spiders each 22 ft. in over-all diameter, the rims being faced with wooden segments for braking. Between these spiders extends 7-in. oak lagging.

Engine Operates at 40 lb. Pressure

This engine uses an ordinary Stephenson-link reversing motion and a D slide valve for steam distribution. Steam is supplied from the present boiler plant through a reducing valve that lowers its pressure to 40 lb., at which pressure the engine operates. For many years this machine was supplied with steam from conical-headed or "egg-end" flueless cylindrical boilers. These were discarded about 1880 in favor of more modern equipment. The present boilers are water-tube stoker-fired units.

Repairs on this engine since its installation have been practically negligible. A spare cylinder was procured when the machine was purchased, or shortly afterward. This was put in place and one of the old cylinders was rebored fourteen years ago. At the same time all small moving parts, such as links, pins, eccentrics, eccentric straps and the like were renewed. These parts were made locally, and within five years they showed more wear than the parts they had replaced. The drum was relagged fourteen years ago and the material then put in place shows little wear at present and looks as if it would last for at least fourteen years more.

*Editorial staff, *Coal Age*.



ANCIENT HOISTING ENGINE STILL AT WORK NEAR CRANBERRY HEAD, SYDNEY MINES, N. S.
Built when Grant first became President and erected in the year when he began his second term, this engine has had a long span of service. Art is indeed long and life is truly brief. E. & J. Joicey, the constructors, perhaps little thought in 1868 that their engine still would be hoisting coal in 1920.

Has Hoisted Cage in Twenty-One Seconds

This engine hoists two cars of coal at a trip through a vertical distance of 711 ft. Twelve revolutions land the cage. Steam is given for eight revolutions while the balance of the way the machine drifts or is "plugged." A hoist is normally made in thirty-five seconds, but cages have been landed in twenty-one seconds, and to make a hoist in twenty-eight seconds is not uncommon. This machine not only raises coal but lowers material, and morning and evening it hoists and lowers men.

Although this machine "handles" easily, the only thing that it appears to wear out is the men that drive it. Harry Frazer, who took charge of this hoist soon after it was installed, operated it without missing a day for over thirty years before he finally went the way of all

flesh and blood. Joe Betts, the present hoistman, has been at the throttle for somewhat over fifteen years. When I talked with him last fall, although still looking decidedly fit, he expressed the belief that he would not be able to make this old engine obey his touch for more than about fifteen or twenty years longer.

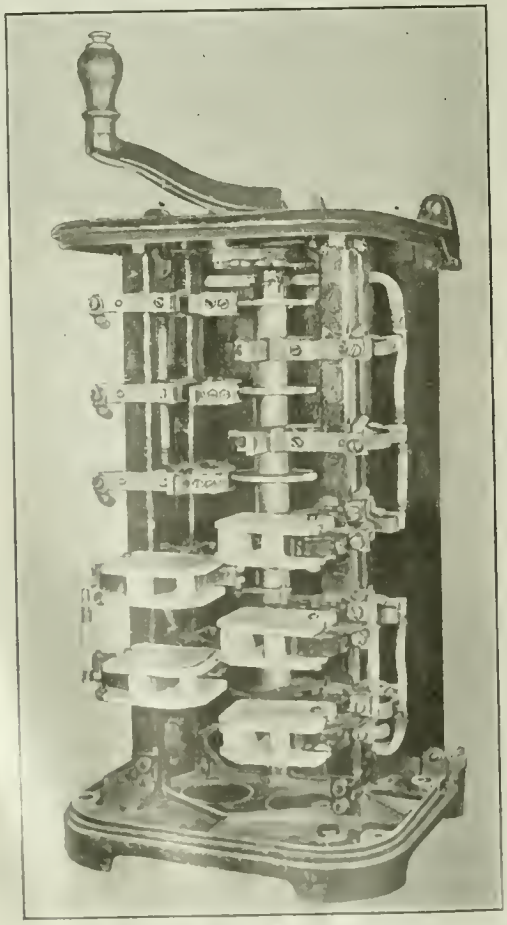
Drum-Contactor Controller That Reduces Frequency of Repair

Rolling Motion of Contacts Lessens Deterioration of Tips—Slight Wiping Motion of Final Contact Insures Minimum Resistance to Passage of Current

THE Westinghouse Electric & Manufacturing Co. has designed a new type of manually-operated controller, known as the type "S" drum contactor. This employs practically the same principle of operation as do magnetic contactor controllers.

During the last year exhaustive tests have been made on these devices and in practically every industry numbers were placed in severe service. These service tests have indicated that the construction of this type of controller is far superior to that of the drum-and-face-plate controllers formerly used. It combines many of the advantages of magnetic contactor controllers with small size, simple construction and low cost.

These controllers will be ready for the market soon and will be used for starting and regulating the speed of shunt, series and compound-wound direct-current motors through the adjustment of the resistance in series and parallel with the motor armature. They are suited to practically all machines employing this system of control.



DRUM-CONTACTOR CONTROLLER
Final contact is made with a slight wiping motion which insures clean surfaces and maximum current-carrying capacity.

In operation they employ the same principles as do magnetic-contactor controllers, except that the contactors are operated by cams mounted on the main shaft. Normal movement of the controller handle causes the contactors to open or close with a quick, positive action that reduces arcing. Arcing is further reduced by the rolling motion of the contacts, which lessens deterioration of their tips. Consequently there is no pitting, roughing or burning of that part of the contacts where the load current is carried. Final contact is made with a slight wiping motion, which insures clean surfaces and maximum current-carrying capacity. The line contactors, which open and close the main-line circuit, are protected by magnetic blow-outs, which aid in extinguishing any arcing that may occur.

Each contact element is complete in itself and can be removed as a unit. Stationary and moving contacts are indentical and interchangeable with those of Westinghouse auto-starters and magnetic-contactor controllers.

All controllers are drilled and tapped for both a horizontal and vertical handle and can be supplied with either. Horizontal handles in service can be readily replaced with vertical ones or vice versa. The vertical type is fastened to the top of the controller by four bolts spaced equidistant from the controller shaft and from each other. This permits it to be mounted in any one of four positions, 90 deg. apart, so as to allow the placing of the controller in the most convenient position and still to provide easy operation from front, back or either side. In addition, this enables the movement of the handle in many installations to be in the same direction as and to be used to indicate the movement of the hoist, crane or other device controlled.

Contactors Are Actuated by Springs

These controllers will operate satisfactorily when mounted in any position, as the contactors are spring-actuated and their operation is not affected by gravity. Each controller embodies all such desirable features as conduit wiring, inclosed current-carrying parts, protection against the controller being locked in running position, and prevention of accidental starting or reversal.

This type of controller is supplied both with and without dynamic braking. Controllers for use with crane hoists regulate the speed of the motor while lowering by dynamic or regenerative effect. They are so designed that if there is not sufficient weight on the hook or cage to revolve the drums, the motor will assist in the lowering. The speed of the motor is always under the accurate control of the operator, both when hoisting and lowering, regardless of the load.

As a motor at rest has no counter electromotive force, only the resistance of the motor remains to limit the current that will flow when the motor is connected to the line. In order that the starting current may not reach a value that would damage the machine, on starting resistance is placed in series with the motor. As the machine comes up to speed and a counter electromotive force is generated the series resistance is cut out. Small motors and "self-starting" motors do not require a starting resistance, as they come up to speed quickly and their windings are of sufficiently high resistance to limit to a safe value the starting current, which flows for a short time only.

Discussion by Readers

Edited by
James T. Beard

Was the Mining Law Violated?

Was the use of open lights, in five rooms turned off the return side of a pair of headings generating gas at the face, a violation of Sec. 3, Art. 10 of the Bituminous Mine Law of Pennsylvania?

MUCH interest has been aroused in the discussion of this question, which was asked by a Pennsylvania fireboss, *Coal Age*, July 15, p. 136, who is anxious to learn the correct interpretation of a section of the bituminous law that prohibits the use of open lights "in the return air current of any portion of a mine that is ventilated by the same continuous air current that ventilates any other portion of said mine in which locked safety lamps are used," and then adds, "The provisions of this section shall not apply to any mine wherein explosive gas is generated only at the face of active entries." (Art. 10, Sec. 3.)

In discussing this question, some have assumed that the gas generated at the faces of the two headings shown in his sketch (p. 136) diffused rapidly, so that the use of open lights in any places on the return not generating gas themselves was not dangerous. The question does not state or involve the amount of gas generated, but only specifies that there was enough to necessitate the use of locked safety lamps at the face of each heading.

Of course, it is possible that the amount of gas generated at the faces of the two headings required the use of locked safety lamps at those points, but its rapid diffusion in the air current made it impossible to detect a flame cap on the return air passing the faces of the five rooms where open lights were in use.

However, it seems to me that it was in the minds of the legislators who enacted this law, that the use of open lights was dangerous on the air returning from any section where the use of locked safety lamps was required. It is my belief that any miners working on the return of such an air current would be compelled by the law to use locked safety lamps regardless of whether or not the lamp showed a cap in their places.

Open Lights Not Allowable Under Any Conditions

In his letter, *Coal Age*, Aug. 19, p. 401, William Dickinson, Sr., states "Under no condition would I permit open lights to be used on the return air coming from such places. The fact that locked safety lamps are required to be used where the gas is generating shows that those places are making considerable gas."

I quite agree with Mr. Dickinson in this regard. If in charge of that mine I would ask that the owner or operator install electric cap lamps for use in such places. Indeed, my opinion is that our laws should be revised so as to require the universal use of approved electric miners' lamps and wholly do away with the use of open lights in mines, except where the return air contains less than one per cent of gas.

An instance comes to my mind where 90 miners were working with open lights in a mine that was ventilated by a single continuous air current. In one section of that mine, the state deputy mine inspector had ordered the use of locked safety lamps. Ten miners were working in the section where the inspector had ordered the men to use only locked safety lamps, while 60 more miners were using open lights on the return air coming from that section.

Rapid Diffusion of Gas No Security

It is true the gas diffused rapidly and showed no cap where the 60 men were working, and the same can probably be said of the five rooms mentioned in this case. As the men continued to work in those rooms with open lights it might be assumed that the diffusion of the gas generated in the headings was such as to make the return current safe for open lights. But, who could tell at what moment there might be an increased flow of gas that would make the return current explosive.

In answer to the question, "Did the foreman violate the mining law?" I am compelled to admit, in justice to him, that he could not be held for any violation of the law as it reads. From a practical standpoint, however, I want to say he took long chances. Away then with such uncertain laws and let us have a safe amendment that will be specific in its requirements, regardless of whether a mine is gaseous or non-gaseous.

Farr, Col. ROBERT A. MARSHALL.

When in Doubt, Play Safe

Common sense guided by experience are often needed to make the work of the miner safe, under the many varying conditions with which he is surrounded.

FOLLOWING up the discussion on the question as to whether it is safe to open lights on the return air coming from a place generating gas in quantities sufficient to compel the use of safety lamps has reminded me of an old saying which runs something like this, "When in doubt take the safe road," and I would say: *When in doubt, play safe.*

Attention has been drawn to that section of the Bituminous Mine Law of Pennsylvania relating to the use of open lights, on reading which one is forced to conclude that the law is very indefinite in respect to what is required when the gas is generated "only at the face of active entries." There seems to be much variance of opinions in that regard, judging from what has been said in this discussion.

It is my opinion that experience and common sense should tell us that safety lamps must be used exclusively, on the return side of any place or section of a mine generating gas in quantities compelling the use of safety lamps where the gas is coming. No doubt the miners would prefer to work with open lights, and

many would take chances if permitted to do so; but the only safe way is to use the same precaution, on the return of a current, that the men are required to use where the gas is being generated.

Every mine official from the president down should preach safety and practice safety if accidents are to be avoided. I believe that the contract system of mining coal offers many inducements to men to take chances, most miners being desirous to continue loading in order to increase their earnings. We mine officials have a great trust and the fact that we are watching over somebody's husband, father, son or brother, should urge us to do our utmost to keep them safe. W. J. LYKE.

Midway, Pa.

Heroic Courage or Foolhardy Daring in Rescue Work. Which?

A spectacular display of courage, in mine-rescue work, generally fails to reveal cool-headed practical judgment on the part of the would be rescuer. Instead, it characterizes him as foolhardy and reckless.

THERE is just a suggestion of sarcasm in the account given in *Coal Age*, Sept. 9, p. 552, of the attempt at rescue made by men of a Bureau of Mines Rescue Crew, at the recent explosion that occurred in the Union Collieries Co.'s mine, at Renton, Pa., a short time since. Reading the account reminds me very much of the old saying, "Don't do as I do, but do as I tell you."

The account states that when the rescue team arrived at the mines, they found that a so-called bucket had been rigged on a ⅝-in. wire rope, for the purpose of lowering three men to the bottom of the shaft, which was 509 ft. deep. The newly arrived rescue men decided that the affair was entirely unsafe to lower three men, and two of their own number were selected.

Then, with what would seem to be heroic courage, one of the two men selected, on further examination said, "This bucket will not hold two. I will go down first alone." From the account given I am led to conclude that had one of the ordinary miners attempted the same thing, he would doubtless have been pronounced "a fool."

THE PRICE-PANCOAST DISASTER RECALLED

Only a short time ago a valued member of the Bureau of Mines lost his life when exploring the Price Pancoast mine, at Scranton, Pa., on the occasion when a fire at the shaft bottom had trapped and smothered some seventy or more men. The rescuer assayed to do what his own cool judgment should have prompted him was a doubtful venture.

My attention was attracted to a statement in the article to which I have referred, and which I will say here is made by a man who has had a long experience in mines. He said, "While I am usually willing to go anywhere anyone else will go in a mine, after I looked at the bucket and the condition of the air shaft, I did not insist on being one of those to go down. I hoped I would not be selected for the first sacrifice."

No doubt the man who offered himself for the first trip was aware of the risk he was taking, as his examination of the bucket led him to conclude it was not safe for even two men to attempt to descend. One might think that he was either looking for notoriety or that he valued his life less than most men.

My own experience in rescue work tells me that the dangers incident to the undertaking are many, and no one need to take any unnecessary risk in order to display his courage and heroism. Whether in sarcasm or in truth, we may not say, but another observer of the same scene is quoted as saying, "I have never witnessed a finer example of courage or a more stirring sight."

There are two kinds of courage—one that is bold and reckless in its disregard of danger, and another that is characterized by a cool, judicious self-control. The courage that is not dominated by self-control and good judgment will generally fail to accomplish what is desired. If we want to succeed in a dangerous undertaking ambition must give place to sound practical judgment.

No one will question for a moment the sincerity of the efforts put forth by members of Bureau of Mines Rescue Teams but it cannot be denied that they are often handicapped by their unfamiliarity with the mines they enter, and by their overwhelming ambition and desire to accomplish, when a cooler judgment would prescribe caution.

It is said that the man landed safely at the bottom of the shaft, after a harrowing experience in the twirling bucket. But the work of restoring ventilation that he is said to have accomplished successfully must have been light indeed, perhaps merely the closing of a door or hanging of a canvas.

Let me say in closing, that it is my opinion the rescue work in a mine should be in charge of the mine foreman or superintendent, who is familiar with the mine and the conditions that exist underground, rather than to be turned over to a team of rescuers from the outside, who lack the same acquaintance with the mine.

Plains, Pa. RICHARD BOWEN.

Taking Pleasure in One's Work Insures Success in Its Performance

Skill and practical experience are not the sole characteristics of the successful miner. The man who takes pleasure and has an ambition to work is certain to succeed if he is fortunate enough to possess practical skill needed by every worker.

HAVING read the article entitled "What Constitutes a Skilled Practical Miner?" *Coal Age*, Sept. 2, p. 496, I want to give my idea of what seems to me to be the chief essential characteristic of the more successful class of miners.

Close observation leads me to classify all labor as of three kinds; namely, unskilled labor, practical labor, and practical skilled labor. There are plenty of workers belonging to the first of these three classes, a somewhat lesser number in the second class and, I reget to say, very few in the third class.

A practical skilled miner will earn a good day's wage in any place that the mine foreman may give him. Because of his skill and practical experience he is often required to perform the most dangerous work in the mine and, at the same time, he is able to earn more money. But he has another characteristic—he never complains, but goes to his task with pleasure.

Contrast this skilled worker with the practical man who has not the same skill to perform. Almost without exception he is a fault-finder and grumbler. He fails to see why he is not given the same kind of work as the skilled miner, believing that he has the same practical experience as the other fellow. It is well for him that the foreman recognizes his lack of skill and refuses to give him the same difficult work.

In order to realize the difference between men of these two classes, one should observe closely the work performed by different miners on the same gangway in a mine. He will find that the unskilled miner, however practical he may be, is prone to chase the foreman or his assistant about the mine, keeping always on their heels with a complaint of something that is wrong in his place.

Much wrong is being done to a large class of foreigners employed in the mine. Too often, these people are largely controlled by trouble makers who have gained their confidence. They are men who belong to the second class of workers just described. They are too lazy to work themselves and are a hindrance to the poor foreigner who has the ambition and knowledge gained by practical experience but little skill. Training will make these foreigners good workers.

Type of Men in Demand Everywhere

No one will deny that industries throughout the country are looking for men that take pleasure in working and have the practical experience and skill necessary for its successful performance. Without exception, such men have a high ambition, which gives them strength and energy. They are seldom tired and do not come late to work and quit before the time.

In the mine, the skilled, practical miner is not troubled because his train of cars is not on hand the moment he is ready to load. Instead of grumbling, he goes to work with a will and loosens enough coal to fill all the cars that may be given him a little later. On the other hand, the grumbler sits idly around waiting for cars and when they come it may be he will not be able to fill the cars set in for him.

I will close by saying that men who are willing, energetic and ambitious and who take pleasure in their work have a far better opportunity to earn money than the man who lacks these qualities, in spite of the practical experience that these latter may possess. I am speaking now from my own experience as a worker, which has been gained through the daily performance of my several tasks.

Jacob Skoff.

Fern Glen, Pa.

Unsafe Practices Among Miners

No one knows better than the mine foreman the many unsafe practices common among miners. How best to persuade his men from following such practices is one of the hardest problems a good foreman has to solve.

SPEAKING, not long ago, of the necessity of tamping a dynamite charge, I remarked that the drillings of the holes made up in small cartridges served well for that purpose. A little later, I was surprised to see that a writer, from McKeesport, took exception to this statement supposing that it had reference to drilling coal.

It would seem hardly necessary to state that the tamping of a charge of dynamite implies rock blasting. Certainly, no practical miner would use a charge of dynamite for blasting coal. The drillings, in this case, were rock drillings, and no one could object to the use of such material for tamping.

If I remember rightly, the same correspondent said that it seems strange to him that the mine officials in charge would permit of frozen dynamite being taken into the mine. In this regard, I want to say that I formerly worked in a place that required the use of a large amount of dynamite, which would be frozen after it was taken into the mine. In that instance, we were furnished with a car of manure from the mule barn. This was kept at a safe distance from the working face and used to protect the dynamite and thaw out any cartridges that might be frozen.

Another statement made by the same writer was to the effect that mine foremen and superintendents often shut their eyes to practices they know to be dangerous. In all my experience, I have never found anyone who feels worse than the mine foreman when a man is injured in the mine; and it is hard to believe that many of them will close their eyes to practices they know to be unsafe. A conscientious foreman will study hard to find the best way to induce a man to quit a bad practice.

One instance that I recall in my own experience will serve to illustrate how a miner can often be won over by reason, when he will not respond to harsh dictation. A fireboss making his rounds discovered a bad piece of roof in a man's place. He marked the stone in the usual manner and notified the miner to set a post and make it safe before proceeding to do other work.

After making out his report, the fireboss went directly to the place and found the miner at work loading a car, not having set the post as he had been instructed. Calling the man out the fireboss talked with him in a kindly way, telling him of the danger to which he was exposed. The man then returned and, in fifteen minutes by the fireboss's watch, had the post set and his place made safe. Since that time, there is not to be found a more careful man in the mine.

The Road to Safety Paved With "Don'ts"

In closing, allow me to add a few "Don'ts," by way of caution to miners who are heedless of little things pertaining to their own safety. The disregard of trifles has cost many a miner his life and injured others. Giving heed to the following may avert many an unforeseen accident:

Don't attempt to drill a hole with bits that are worn too small to allow the cartridge to be pushed easily into the hole.
Don't fail to keep detonators, at all times, separate from other explosives until ready for use.
Don't fail to keep powder or other explosives in a wooden or metallic box, at a safe distance from the shaft and working face.
Don't fail to comply with the requirements of the mining law regarding lights when making up a charge.
Don't use a nail or spike when inserting a cap in a stick of dynamite.
Don't attempt to crimp a cap on the end of a fuse by biting the cap with your teeth.
Don't use two kinds of powder in the same hole, as for example, black powder and dynamite.
Don't attempt to tamp a charge with an iron or steel bar, but use a wooden tamping bar.
Don't fail to tamp the hole clean to its mouth with some fine incombustible dust or clay.
Don't shorten a fuse or squib, or do anything to hasten the blast. It is prohibited by law.
Don't connect the lead wires of your battery to those used by another person. Use your own battery and never connect it with the wires until the last thing before firing.
Don't attempt to ascertain the cause of a misfire at the time, but leave that for another day.
Don't fire a shot until you have given sufficient warning and received response from the men working in that vicinity.
Don't fire two holes at the same time, under any condition, except when using an electric-firing battery.
Don't return to the face after firing a shot, in order to see its results, but go home. In case of a misfire be sure to notify the person in charge of the district.
Don't attempt to drill or pick out a misfire, but drill a new hole at a safe distance from the dead charge.

Speaking of "Safety-First" meetings, Richard Bowen has suggested the use of moving pictures to impress our miners with the dangers to which they are exposed and the precautions they should take to avoid them. I agree with him that this would be a fine thing.

Pittston, Pa. Benjamin Deeble.

Inquiries of General Interest

Answered by

James T. Beard

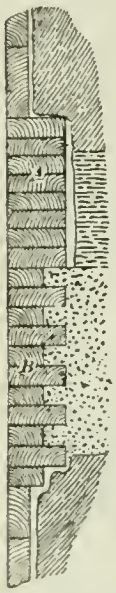
Sinking Shaft Through Quicksand

A system of alternating widths of planking used for curbing a shaft when sinking through quicksand is an effective means of checking and, to a considerable extent controlling the inflow of water and sand.

PLEASE inform me of the most feasible way of sinking a shaft to a depth of 275 ft., passing through 65 ft. of quicksand at some depth below the surface?

Brazil, Ind. OPERATOR.

Much will depend on the quantity of water present, the mobility of the sand and its depth below the surface. When these factors are such as not to cause an extraordinary pressure and a serious inrush of water and sand that would render the work of sinking both uncertain and dangerous, the expedient has often proved successful of using alternate widths of planking laid flatways as illustrated at *B* in the accompanying figure, which shows a section of shaft curbing passing through a bed of quicksand.



SECTION THROUGH SHAFT CURBING

As appears in the figure, the use of alternate layers of plank, say 8 and 10 in., or 10 and 12 in. wide, leaves a corrugated surface at the back of the curbing, which tends to choke the downward flow of water and sand. If this flow is not blocked in this manner the water draining into the shaft will gradually eat away the ground back of the timbers and cause a cave and inrush of water and sand that may fill the shaft to a considerable depth, flooding the pump and greatly impeding the work.

Where the depth and thickness of the sand bed is considerable, as may be assumed in this case, it will often be necessary to insert temporary cross-buntons extending under the curbing and tie these to heavy beams laid across the top of the shaft. These cross-buntons must be put in, in sections, say each 8 or 10 ft. in depth. It will be readily understood that the purpose of this construction is to hang the curbing from the surface, section by section, until the hardpan is reached below the sandbed and a good foundation can be had to support the curbing, which sustains the pressure and weight of the shifting sand and is in danger of being torn apart.

Experience is required to sink a shaft through a thick bed of quicksand containing much water and lying at some depth below the surface. We have known of instances where five and six attempts, by good sinkers, have met with failure and success came finally only by the use of expensive equipment, which included the employment of a heavy wrought-iron shoe at the bottom of the excavation.

Another method frequently used is that known as the "Freezing process," in which the watery strata are first frozen, more or less completely, to render the sand less fluid, forming a protecting wall 2 or 3 ft. thick all around the proposed excavation. The freezing is accomplished by drilling holes, a foot or so apart, all around the shaft, and circulating a freezing mixture through pipes dropped into the holes. This is done just in advance of the work of excavation.

By another method, the quicksand when reached is solidified by forcing into it a grouting of good hydraulic cement, through flank holes bored a few feet into the side- and end-walls of the shaft. The setting of the cement forms an effective protection while sinking. In all cases it will be economy to employ competent sinkers who have had experience in such work.

Railroads Delivering Coal at Tidewater

ALLOW me to ask for some information regarding the delivery of coal at tidewater. Can you give the names of the railroads that have coal piers on the eastern seaboard north of Hampton Roads?

Philadelphia, Pa. DEALER.

Assuming that this inquiry refers to the delivery of bituminous coal, the following railroads can be said to originate and deliver coal at tidewater terminals in the region named:

Pennsylvania R.R.; Baltimore and Ohio R.R.; Philadelphia and Reading R.R.; Western Maryland R.R.; and the Central Railroad of New Jersey.

In addition to the coal originating on the roads just named, the following roads originate coal that reaches the ports of New York, Philadelphia and Baltimore:

New York Central; Buffalo, Rochester and Pittsburgh; Pittsburgh and Lake Erie; and Monongahela Railroads, besides a number of short-line connections of these roads.

Distinction Between Squeeze and Creep

KINDLY explain the difference between a squeeze and a creep as applied to coal mining.

Morgantown, W. Va. STUDENT.

Briefly explained the weighting of the roof when a squeeze takes place crushes the pillars and makes the coal more difficult and dangerous to mine. Timbers are broken and roof falls are frequent.

A creep is quite generally understood as referring to a destructive heaving of the bottom or floor of the mine, resulting from insufficient pillar support under a moderately strong roof and coal and a soft bottom. A squeeze results from the same cause acting to crush the coal by reason of a hard unyielding bottom. The roof, in a squeeze, may be either hard or frail.

The distinguishing characteristic of a creep is the destructive heaving of the bottom; while the squeeze is characterized by the crushing of the coal and breaking of the roof. In both instances timbers are liable to be broken.

Examination Questions

Answered by

James T. Beard

Miscellaneous Questions

QUESTION—*(a) What three conditions are the prime factors in determining the size of slopes? (b) Where the roof of a slope is tender, how would you timber it? (c) Should the timber be round or square and why?*

ANSWER—(a) The size of a slope opening will depend on the following: 1. Size of the mine cars. 2. Number of tracks or kind of haulage employed. 3. Requirements in regard to drainage and ventilation.

(b) Where the roof is tender lagging should be used to support it and prevent the fall of loose pieces of slate or rock between the timber sets. The timbers in a slope should be slightly underset; that is to say the posts should be inclined at a slight angle up the pitch, from the normal.

(c) The choice of round or square timber for slopes is largely a matter of preference. Some will prefer square timbers as providing a better means of supporting the pipe lines and wire conductors; while others will prefer round timbers as being less expensive to prepare and handle than sawed timber.

QUESTION—*How should a mine be laid out and developed to insure the recovery of the largest percentage of coal?*

ANSWER—First, the main haulage roads and crossheadings should be laid out with respect to economic haulage and drainage, and in a manner that will afford an equal distribution of miners, so as to give every driver a full trip, at regular intervals, in each section of the mine. Second, the rooms should be driven so as to work the coal "face on", or "end on", or at an angle with the cleats and joints of the coal. Due regard must also be had to any slips or fault lines in the roof. Third, the method of working employed must be adapted to the nature of the roof, floor and coal, with a view to avoiding any undue pressure on the pillars.

QUESTION—*What is the most economical way to increase the quantity of air in a coal mine? State fully.*

ANSWER—The cheapest way to increase the volume of air circulating in a mine is to keep the airways free from all obstructions and to see that all breakthroughs and crosscuts are of sufficient size. It is important to conduct the air by the shortest possible course throughout the mine; also to divide the air into two or more splits wherever this can be done to advantage. Observing these points will enable a larger circulation of air under a lower water gage and reduce the power required to produce ventilation in the mine.

QUESTION—*A current of 3,000 cu.ft. per min., air and gas at the highest explosive point of the mixture, is passing in a mine; how much air must be added to dilute this mixture so as to give only a faint cap in a safety lamp?*

ANSWER—Assuming this is a firedamp mixture containing only pure methane (marsh gas) and air, the percentage of gas present, at the maximum explosive point, is 9.46 per cent; and the volume of gas in a current of 3,000 cu.ft. per min. is $3{,}000 \times 0.0946 = 283.8$ cu.ft. per min. When using a common unbonneted Davy lamp, burning sperm, lard or cottonseed oil, a good fireboss will be able to detect a faint cap in his lamp if but 2 per cent of gas is present in the air.

Therefore, on this basis, if 283.8 cu.ft. is 2 per cent of the current after the required amount of air has been added, the total volume of air and gas then passing is $283.8 \div 0.02 = 14{,}190$ cu.ft. per min.; and the volume of air that must be added to have produced this conditions is $14{,}190 - 3{,}000 = 11{,}190$ cu.ft. per min.

QUESTION—*With ordinary good roof and floor can pillars be extracted successfully with mining machines; and, if so, what system would you adopt?*

ANSWER—Assuming a fairly level seam and uniform conditions that favor the use of machines, pillars can be taken out as well or even better by the use of machines than by pick mining. Unless the roof pressure is excessive a good plan to adopt is to drive double rooms that will afford a 60-ft. breast of coal for the machines in driving up the rooms; and leave 60-ft. pillars to be drawn back when the rooms have reached their limit. A track should be carried up along each rib and timbered by setting posts 3 or 4 ft. apart on the gob side, with good cap-pieces over them. When drawing back the pillars, one or two rows of posts should be kept between the face of each pillar and the waste.

Under a heavy roof pressure or where the roof has a tendency to fall, a better plan is to leave two-thirds of the coal to be taken out as pillar coal in the second working. In that case single rooms should be driven, say 20 ft. wide, on 60-ft. centers, leaving 40-ft. pillars. In this plan, the rooms should be started and driven abreast of each other, say six or eight rooms at a time; and the pillars should likewise be drawn back in a uniform breast line, in order to give the best results.

QUESTION—*What percentage of the total volume of air entering a mine at the inlet would you expect to find as measured in the last crosscut of the various splits?*

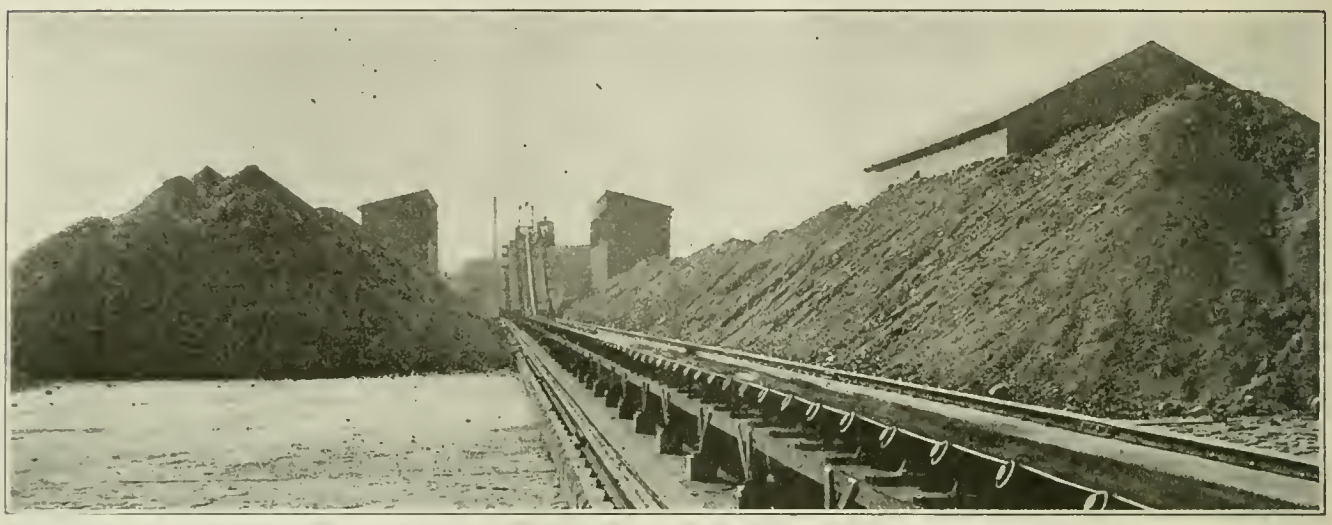
ANSWER—This question cannot be answered intelligently without a familiar knowledge of the mine in question. In a large mine ventilated under a considerable gage pressure, especially if the stoppings, doors and air bridges are not well built, the loss in air volume by leakage may reach 50 per cent or more. On the other hand, in a moderately developed mine having well built stoppings, doors, etc., one may find, say 80 or 90 per cent of the intake air at the last crosscut.

QUESTION—How would you direct a miner to remov a pillar of coal 8 ft. high, 3 ft. wide and 6 ft. long when the roof is extremely dangerous?

ANSWER—No attempt should be made to take out such a pillar; it cannot be done with safety and the miner should be given another place to work.

Government Fuel Yard Delivers Coal to 725 Points, Using 275,000 Tons Annually*

Statement for Fiscal Year Shows Total Cost of Fuel Was $1,904,071, Operating Margin Amounting to $229,924 — Delivery Was Largely by Truck, at Average Handling Cost of $1.138 Per Ton



STORAGE PLANT OF GOVERNMENT FUEL YARD, WASHINGTON, D. C.
This view shows the storage floors on both sides of conveyor belt No. 3, which carries the coal to the stacker shown in the center of the picture. The stacker delivers the coal into bins either on the right or left, from which it is drawn directly into motor trucks for delivery to the various government buildings in Washington. A locomotive crane picks the coal up from storage and delivers it on the belt. Nearly 200,000 gross tons of coal were handled in this belt last year

IN PROVIDING for the establishment, maintenance and operation of a Government Fuel Yard the Sundry Civil Bill for the fiscal year 1918 act imposed on the Fuel Yard the responsibility of buying fuel and distributing it to all of the Federal and municipal plants within and contiguous to the District of Columbia with the single exception of the Navy Yard. The distributing points number approximately 725 and the fuel consumption is about 275,000 tons annually.

During the year ended June 30, 1920, 266,942 gross tons of coal, 689 cords of wood, 1,122.2 bushels of charcoal, and 22.9 tons of coke were handled. All but 73,463 tons was delivered by truck at an average handling cost of $1.138 per ton. In this cost is embraced the expense of rehandling incident to the reclaiming from storage of 17,562 tons. The total cost of this fuel to the departments was $1,904,071. The prime or

*Abstract from the report to the Director of the Bureau of Mines on the maintenance and operation of the Government Fuel Yard for the fiscal year 1920, by George S. Pope.

ANALYSIS OF COST OF TRUCK OPERATIONS OCT. 1 TO JUNE 30

SEVEN AND ONE-HALF TON EQUIPMENT

	Gas Gals.	Oil Qts.	Grease Lbs.	Operating Expenses: Gas	Oil	Grease	Material	Labor	Tires	Driver Wages	Overhead	Total
Total	37,993	7,446	269	$9,001 01	$966 11	$33 33	$9,619 92	$3,835 28	$5,495 83	$7,293 47	$16,333 72	$52,578 67
Average per mile	0 498	0 097	0 003	0 118	0 012	0 0004	0 126	0 05	0 072	0 095	0 214	0 689
Average per ton	0 418	0 081	0 002	0 099	0 01	0 0003	0 105	0 042	0 06	0 08	0 179	0 578
Average per ton-mile				0 0342	0 0036	0 0001	0 0306	0 0145	0 0208	0 0276	0 0619	0 1995

FIVE AND ONE-HALF TON EQUIPMENT

Total	39,346	8,452	318	$9,379 43	$977 42	$37 55	$8,812 95	$4,669 51	$2,645 76	$7,239 46	$15,630 65	$49,392 73
Average per mile	0 503	0 108	0 004	0 12	0 012	0 0004	0 112	0 059	0 033	0 092	0 200	0 633
Average per ton	0 582	0 125	0 004	0 138	0 014	0 0005	0 13	0 069	0 039	0 107	0 231	0 730
Average per ton-mile				0 0476	0 0049	0 0001	0 0446	0 0236	0 0134	0 0366	0 0792	0 250

TWO TON EQUIPMENT

Total	6,079	602	24	$1,427 26	$70 28	$2 50	$1,173 90	$613 19	$405 72	$1,841 09	$3,032 40	$8,566 34
Average per mile	0 328	0 032	0 001	0 077	0 003	0 0001	0 063	0 033	0 021	0 099	0 163	0 462
Average per ton	0 799	0 079	0 003	0 187	0 009	0 0003	0 154	0 08	0 053	0 242	0 398	1 126
Average per ton-mile				0 268	0 0132	0 0004	0 2205	0 115	0 076	0 3459	0 5697	1 6096

ONE TON EQUIPMENT

Total	465	108	1	$127 82	$14 68	$0 09	$87 00	$83 09	$15 06	$149 66	$714 25	$1,290 65
Average per mile	0 393	0 091	0 0008	0 108	0 012	0 00007	0 073	0 07	0 012	0 126	0 688	1 091
Average per ton	1 473	0 342	0 003	0 405	0 046	0 0002	0 275	0 263	0 047	0 474	2 577	4 09
Average per ton-mile				0 158	0 0182	0 0001	0 108	0 103	0 0187	0 1859	1 0106	1 6039

	Trucks	Miles	Trips	Tons	Ton-Miles	Avail. Not Used	Days Operated	Laid Up for Repairs
7½-ton equipment	13	76,221	13,140	90,562 62	263,476,223	425	1,801½	717½
5½-ton equipment	15	77,999	13,321	67,574.16	197,316,5472	646	1,858	854
2-ton equipment	4	18,508	3,415	7,602 86	5,322,002	245	518	165
1-ton equipment	2	1,182	231	315 555	804,665	141½	73½	40

basic cost to the fuel yard was $1,674,147, leaving an operating margin of $229,924.

In the accompanying statement of costs, the heading "Direct from Car to Truck" indicates the coal that was unloaded from the car onto the conveyor belts, conveyed direct to bins, and from there loaded into the trucks. Coal "Reclaimed from Storage," on the other hand, was coal that had previously been conveyed from the unloading hopper to some point into the yard and placed in storage, from which point it was reclaimed and distributed by trucks. "Direct Delivery" represents the coal or fuel that is consigned directly to consumers having railroad sidings or wharves. Under the head "Selling Price" is recorded the money value of the coal delivered to the Federal and municipal establishments. The average selling price per ton was, of course, averaged over the year. "Prime Cost" is the fuel cost plus transportation charges, f.o.b. Washington. The operating margin represents the difference between the selling price and the f.o.b. Washington price; it is, in fact, the handling charge.

The fluctuations in the per ton averages of the gross profits are due to two things: (1) Variation in the prime cost of coal, especially diverted coal, which was taken up at the time of delivery at an estimated price. But the actual cost was not and could not be determined until several weeks and sometimes months later. (2) A given type of coal may have been delivered within the period of one price only; for example, the overhead charge of buckwheat coal is 8c., which means that none of this coal was delivered in any month when more than 8c. was charged.

Under the law the Government Fuel Yard is required to charge the departments for the cost of its maintenance. The prices, therefore, are varied from time to time to meet fluctuations in the cost of the service rendered and in prime cost of the fuel.

The operating expenses are likewise summarized and distributed over the respective branches of the work. The average cost per ton for the yard was 23.6c.; for the garage 65c.; for overhead 9.4c.; and for leasehold improvements and depreciation of equipment other than motor equipment 15.8c. In making allowance for depreciation of equipment no cost is taken up for motor and other equipment at the yard which was purchased from an appropriation providing specifically for the

OPERATION STATEMENT, FISCAL YEAR 1920

YARD DELIVERIES

Direct from Car to Truck

	Gross Tons	Selling Price — Total	Selling Price — Per Ton	Prime Cost — Total	Prime Cost — Per Ton	Operating Margin — Total	Operating Margin — Per Ton
Bituminous Coal:							
Pennsylvania	90,148 49	$621,065.90	$6.89	$525,336 25	$5 83	$95,729 65	$1 06
New River	60,841 85	418,861.61	6 88	346,871 48	5 70	71,990 13	1 18
Jerome	1,053 97	6,248.54	5 93	5,091 39	4 83	1,157 15	1 10
Splint	16 97	117.24	6 91	97 30	5 73	19 94	1 18
Anthracite:							
Furnace	7,700 61	75,022.94	9 74	66,758 85	8 67	8,264 09	1 07
Egg	6,785 81	68,321.24	10 06	60,914 84	8 97	7,406 40	1 09
W. A. Stove	6,639.67	68,531.02	10 32	61,276 66	9 23	7,254 36	1 09
R. A. Stove	240 33	2,531.50	10 53	2,278 01	9 48	253 49	1 05
Chestnut	361 60	3,824 28	10 57	3,363 47	9 30	460.81	1 27
Pea	2,129.34	18,709.71	8.78	16,390 81	7 69	2,318 90	1 09
Totals	175,916 64	$1,283,233.98		$1,088,379 06		$194,854 92	$1.11

Reclaimed from Storage

Bituminous Coal:							
Pennsylvania	7,470.60	$51,877 84	$6.94	$42,432 53	$5 68	$9,445 31	$1 26
River	6,720 09	46,983.65	6.99	37,916 28	5 64	9,067 37	1 35
Jerome	93 47	636.32	6 80	461 41	4 93	174 91	1 87
Splint	69.56	490.79	7 05	441 65	6.34	49 14	71
Anthracite:							
Furnace	401.05	3,994 71	9 96	3,453 54	8 61	541.17	1 35
Egg	650 37	6,690 73	10 28	5,825 48	8 95	865 25	1 33
W. A. Stove	400 33	4,256.32	10 63	3,701.40	9 24	554 92	1 39
R. A. Stove	160.60	1,733.65	10 79	1,526.49	9 50	207 16	1 29
Chestnut	265.02	2,827 59	10 67	2,464 68	9 30	362 91	1 37
Pea	937 16	8,502 71	9 07	7,316 04	7 80	1,186 67	1 27
Buckwheat	387 33	2,639 07	6 81	2,134 19	5 51	504 88	1 03
Coke	6.59	79 70	12 09	63 92	9 70	15 78	2 39
Totals	17,562 17	$130,713.08		$107,737 61		$22,975 47	$1 31

DIRECT DELIVERIES

Bituminous Coal:							
Pennsylvania	61,743 03	$364,604.80	$5 90	$358,087 83	$5 80	$6,516 97	$0 10
New River	3,123 19	18,478 63	5 91	18,153 61	5 81	325.02	10
Jerome	1,018 70	5,044.62	4 95	4,922.38	4 83	122 24	12
Star	1,966.65	10,855.91	5 52	10,619 92	5 40	235.99	12
Gas	1,432 19	7,852.04	5 48	7,679 43	5 36	172 61	12
Anthracite:							
Egg	1,587 83	14,388 56	9 06	14,197 95	8 94	190.61	12
W. A. Stove	3,462 73	32,678.12	9 44	32,205 89	9 30	472 23	14
Nut	250 78	2,380 52	9 49	2,351 65	9 37	28 87	12
Pea	135 25	1,112.88	8 23	1,102 17	8 15	10 71	08
Buckwheat	210 60	1,322 42	6 28	1,305 76	6 20	16 66	08
Rice	532 63	2,646.29	4 96	2,582 54	4 84	63 75	12
Totals	73,463 58	$461,364 79		$453,209 13		$8,155 66	$0 11

SUMMARY

Yard sales	175,916 64	$1,283,233 98	$1,088,379 06	$194,854 92
Storage sales	17,562 17	130,713.08	107,737 61	22,975 47
Direct sales	73,463 58	461,364 79	453,209 13	8,155 66
Wood	2,067 60	9,545 81	7,456 63	2,089 18
Charcoal (Bu.)	1,122.20	627 01	596 60	30 41
Stowage	45,350 50	18,341 95	16,571 17	1,770 78
Coke	22 90	244 89	196 94	47 95
Totals	269,032 89 (Coal)	$1,904,071.51	$1,674,147 14	$229,924 37

OPERATING EXPENSES

Yard—195,569 31 tons	$46,255 09 (0 236 per ton)
Garage—195,569 31 tons	127,239 01 (0 65 per ton)
Overhead—269,032 89 tons	25,440 69 (0 094 per ton)
Leasehold improvements and depreciation of equipment	30,988 78 (0.158 per ton)
	$229,924 37 (1 138 per ton)

establishment of the Fuel Yard, but equipment purchased from the appropriation entitled "Maintenance and Operation of the Fuel Yard" is depreciated. Depreciating equipment purchased from the original appropriation would have the effect of increasing the second named appropriation, which is in its operation a revolving fund, and would be unlawful. However, equipment purchased from the maintenance and operation fund is properly and legally subject to depreciation in order to avoid depleting the amount originally appropriated. It may be said further that such items as interest on investment, taxes and insurance are not taken up as an expense, as they cannot be legally charged. The leasehold improvements are repairs and improvements to buildings and grounds.

It may be of interest to further analyze the expense of the yard and garage operations. A detailed analysis can be given for only a nine-months' period (Oct. 1-June 30) since a change in the accounting system to provide such detailed information was not put into effect until Oct. 1. The yard operating cost may be analyzed as follows:

Stacker and conveyor	$4,061 75
Unloading cars (3009)	6,309.05
Reclaiming coal	3,306.75
Loading and weighing trucks	2,096.13
Overhead	19,720 29

The "Overhead" embraces such charges as rental ($9,250 per annum), power and light current ($3,245), head, and salaries of supervising employees and witchman.

The garage cost is likewise summarized for the period of nine months in the accompanying table.

Washington Men Don't Want to Strike

ANNOUNCEMENT that the coal miners of western Washington had voted against a strike to enforce a retroactive wage increase for daymen and boys was made at headquarters of District No. 10 of the United Mine Workers in Seattle Oct. 1. The referendum ballot was ordered ten days previous when the strike call was temporarily suspended. District President Robert D. Harlin has stated that this referendum resulted in a majority of 741 against a walkout.

Twenty-eight local unions voted, casting a total of 2,587 ballots, 923 of which were for and 1,664 against a strike. The vote was commented upon as remarkably heavy, the district officers estimating that not more than 3,0000 workers were involved in the controversy. The referendum vote automatically cancels the strike order previously issued and the district officers have sent out notices to all local unions informing them of the verdict of the referendum vote.

The controversy as to back pay arose some time ago when a coal operators' committee met the district officials of the mine workers and agreed to grant an increase of $1.50 a day to daymen and 82 cents to boys, equalizing the Washington wage scale with the scale in other state districts. It refused, however, to make the increase retroactive to Aug. 16, as the miners' committee had demanded. A strike was called for Sept. 23, but a call for a referendum vote suspended the strike call. The strike order went only to the mine workers employed in the mines producing coal for the market, the railroad mines of eastern Washington having agreed to make the wage increase retroactive to Aug. 16.

Relocation of Cars Proceeds Satisfactorily

UNDER orders issued by the Car Service Division of the American Railway Association and by the Interstate Commerce Commission, 106,247 empty box cars have been forwarded from Eastern and Southern to Western railroads from May 25 to Sept. 15, and during the last three weeks additional orders have been placed by the car service division for the movement of empty box cars to Western roads at the rate of 1,185 a day for thirty days.

In addition to the cars sent to Western roads from roads in the East and South, a considerable number of cars has been relocated between roads in Western districts. The grand total of box cars forwarded empty under relocation orders from one road to another, in the interest of equitable car distribution, from May 25 to Sept. 15, has been 185,288, of which 165,925 have been reported as received by the destination roads, and the orders now in effect provide for the total movement of 60,600 additional box cars, of which 35,550 are for Western roads. Similarly, about 150,000 open-top cars for coal loading have been relocated in the interests of increased coal production.

Relocation, important in the program of providing more service to the public by promoting a better condition of repairs generally, has been particularly difficult because of the great demand for cars in all sections. The relocation orders, however, represent a method of dealing with unusual conditions, and now that an approach has been made to giving each district a number of cars equal approximately to its ownership, instructions have been issued for the establishment of a plan of equilization in interchange between railroads so that each road in general will receive from its connections as many cars as it delivers to them, loaded or empty. This plan should operate to enable each district to maintain a supply of cars approximating its ownership. To meet the necessities of local situations, however, some relocation orders will still be necessary, and to accommodate the demand for cars for the grain movement, orders now in effect require Eastern roads to deliver to Western lines at Chicago, Peoria and St. Louis a designated number of cars per day in excess of the number required for equalization. These cars are being distributed between the roads in the West in such manner as to give quick relief to the roads whose supply is below the average and particularly to lines that have been losing cars in the last month by reason of heavy eastbound shipments.

Coal Loadings Decrease

REPORTS of revenue freight car loading compiled by the car service division of the American Railway Association indicate that the volume of freight traffic originated by the railroads during the week ended Oct. 2 was greater than that for the corresponding weeks of 1919 and 1918 but less than for the two preceding weeks of this year. During the week 975,946 cars of commercial freight were loaded on the class 1 railroads, as compared with 957,596 in 1919 and 971,895 in 1918. Increases as compared with 1919 are shown in the Allegheny, Northwestern, Central Western and Southwestern districts, but decreases were reported for the Eastern, Southern and Pocahontas districts. There were increases in the loading of coke, forest products and ore, but decreases in grain and grain products, livestock, coal, merchandise and miscellaneous.

The deferred car requisitions (car shortage) for the week ended Oct. 1 show a further reduction to 82,360, as compared with 89,947 for the previous week.

Smokeless Operators Arrange to End Shortage in Canal Zone

TO MEET an emergency in the Canal Zone, the Smokeless Coal Operators' Association has agreed to arrange to send 55,000 tons of coal monthly to the Panama Canal. Stocks on the Isthmus were recently reduced to ten days' supply. There is some objection to filling the entire requirements of the Panama Canal with smokeless coal because of the proclivity of foreign ships to delay coaling at other points so as to obtain high-grade fuel on the Isthmus.

The Smokeless Association also has agreed to see that coal is furnished at all Federal buildings in Ohio, Indiana and Illinois. Since July 29 smokeless operators have furnished 600 cars of emergency coal in Virginia. This movement has been handled in co-operation with the committee appointed by the Governor of Virginia.

Bituminous Coal Exported Overseas in 1920

IN DISCUSSING coal exports it is important to distinguish between the land export trade to Canada and Mexico, which is permanent and proceeding normally this year, and those exports which move by sea. This sea-borne trade is practically confined to bituminous coal. Before the European War it amounted to 4,000,000 or 4,500,000 net tons a year, the bulk of which went to the West Indies and Central America.

The active foreign demand which developed late last year has so stimulated exports that during the first eight months of 1920 sea-borne shipments amounted to 12,892,000 tons. This was at the rate of more than 19,000,000 tons a year, or more than twice the 1919 exports and more than four times those of 1914. The outstanding feature of the 1920 export demand has been the remarkable increase in shipments to France, the Scandinavian countries, the Netherlands, Switzerland and Egypt. Shipments to Italy, although larger than those to any other country, have not increased to as marked a degree as have those to the other countries named.

SEA-BORNE EXPORTS OF BITUMINOUS COAL FROM THE UNITED STATES *a*

(Calendar Years—Net Tons.)

Country	1914*b*	1915	1916	1917	1918	1919	1920 To Aug. 31
Belgium						224	198,000
Denmark		2,999		11		99,571	718,000
France	53,012	215,811	100,249	51,172	8,098	586,032	1,551,000
Greece		82,025	65,495	3,741	3,241	53,894	193,000
Italy	869,593	3,283,371	1,943,271	627,903	11,193	1,828,954	1,921,000
Netherlands	226	42,800			18,493	808,854	1,497,000
Norway		58,830	86,750	24,497		179,024	535,000
Portugal	56	22,118	19,425	49,428	5,421	50,599	91,000
Sweden		263,345	79,504			283,238	992,000
Spain	48,020	223,586	151,988	176,406		20,858	67,000
Switzerland				4,546		592,004	584,000
Cuba	1,265,548	1,305,976	1,438,263	1,579,865	1,613,312	1,087,967	1,015,000
Argentina	156,138	881,403	1,032,605	355,671	200,367	541,396	1,060,000
Brazil	267,772	726,089	875,945	767,359	626,191	710,202	631,000
Chile	93,941	80,117	259,017	354,340	336,069	104,852	239,000
Uruguay	69,946	177,185	171,060	67,411	256,434	218,397	165,000
Egypt	82,639	178,436	101,608			42,048	36,000
French Africa	159,201	123,306	114,205	95,258	2,405	58,241	177,000
Other countries	1,342,426	1,439,876	1,298,919	1,348,144	953,032	783,471	822,000
Totals	4,408,518	9,107,273	7,774,314	5,505,752	4,034,256	8,049,826	12,892,000

(*a*) Compiled from records of Bureau of Foreign and Domestic Commerce. (*b*) Fiscal year ended June 30, 1914. Other years are calendar years.

N. Y. Board of Estimate Protests Against Exportation of American Coal

PROTEST against the priority orders "issued by the Federal Government, which are depriving New York City of coal" was voiced by the New York Board of Estimate in resolutions adopted by that body on Oct. 22. The board in its resolution sympathized "with the needs of any other section of the country, but maintained that the health and comfort of the residents of New York City should not be destroyed by arbitrary action of governmental authorities."

"We also protest against the continued export of coal to foreign countries and request that the Federal authorities take action that our people here may be supplied with the supreme necessity before coal is shipped to foreign countries" reads the resolution, and the Mayor was requested to take whatever means he deems wise and necessary to see that the residents of New York City are supplied with coal.

Landlords Not as Hard Up as Alleged

The investigation of Health Commissioner Copeland into the complaint from those apartment house owners who have been unable to obtain coal has not been as successful as was expected. Many complaints were received, but upon investigation it was found that most landlords were not without coal, as they alleged. Those who were entirely without coal were partly supplied and daily tonnages are being delivered.

The New York Fuel Distribution Committee appointed by Public Service Commissioner Lewis Nixon to take care of the coal situation for the public utility corporations will have a conference soon with George Elliot, secretary of the National Committee on Gas and Electric Service, to determine what can be done to provide a more adequate reserve supply for the local companies for the winter months.

The companies in Greater New York had on hand on Oct. 19, 441,545 tons of bituminous coal as compared with 447,872 tons on Oct. 13, a decrease of 6,327 tons.

Thirty members of the wholesale anthracite trade met at the Whitehall Club, Friday, Oct. 22, at the invitation of Charles S. Allen, secretary of the Wholesale Coal Trade Association of New York, to discuss the present hard-coal situation in the East. W. H. Lewis, of M. A. Hanna & Co., was appointed chairman of a committee to report in one week upon the advisability of the anthracite wholesalers following the precedent set several months ago by the Wholesale Coal Trade Association in adopting resolutions limiting the resale of coal to two wholesalers and the profit to 10 per cent maximum gross.

Mr. Allen told the anthracite wholesalers of the co-operation the association had given the Department of Justice through Assistant Attorney General William McMurtrie Speer. Mr. Allen is of the opinion that as a result of the adopted resolutions and the co-operation profiteering in soft coal is now limited to less than 10 per cent of the wholesalers and is fast being eliminated.

Middle West Able To Use Mixtures

A complaint was registered against the diversion of so much anthracite to the Great Lakes region, and the subsequent delay of shipment to New York, and it was pointed out by one wholesaler that the big cities of the Middle West can better burn bituminous or a mixture of bituminous and anthracite coal for domestic use than can New York.

William McMurtie Speer, Assistant Attorney General, met with a special committee of coal operators at the Vanderbilt Hotel on Friday to inform them of the difficulty the Department of Justice is having in getting sufficient evidence on which to go before a grand jury seeking indictments of grafters in coal. It is understood that prices were not the subject under consideration at this meeting, which was called by Colonel Wentz and attended by him and Mr. Morrow. It is reported that the program for the Cleveland meeting was under discussion and that it does not include the subject of prices.

Steps were taken at a meeting of the Central Federated Union, Friday evening, Oct. 22, in New York City, to retard the export of coal to England. A resolution was passed calling upon President Wilson to place an embargo on all coal exports. Copies were ordered sent to the President and to the American Federation of Labor.

The resolution declares the Government should take over and control all coal mines in the country, and that the Chief Executive should use his war power immediately to see that the people are properly supplied with this necessity of life.

The unions ask that an order be issued which would discontinue the supplying of foreign ships with more coal than is sufficient to carry them to their home ports.

News from the Capital

By Paul Wooton

Assigned Cars for Public Utilities Are in the Balance

IT WILL be remembered that the blanket use of assigned cars for utilities was canceled a few weeks ago and now can be had only if a select committee representing all interests recommends to the Interstate Commerce Commission that an emergency exists. To date not a single application has been certified for assigned cars, it is reported. This shows in unmistakable fashion that the practice was being abused under the former open-handed policy of the Government.

During the first week of the new arrangement the committees passing upon franchised and non-franchised public utilities were able to meet such emergency cases as arose without resort to assigned cars. It was necessary, however, in one case to authorize the Interstate Commerce Commission's agent at Cleveland to release sufficient coal from Lake pools to provide for the daily operation of a Cleveland utility should he be satisfied that coal could not be obtained from other sources sufficient to allow continuance of operation.

Great pressure is being brought to bear to secure the resumption of the use of assigned cars. This does not come alone from public utilities. Some operators, as well, are clamoring for a return to that practice, since it insures better operating conditions at their mines.

The applications for relief from the franchised public utilities are being received by the National Committee on Gas and Electric Service. During the first week that the new public utility order was in effect 7,000 applications for emergency coal were received. In all but a comparatively few cases the proof was lacking that an emergency exists, so that the number of cases were few in which operators were called upon to rush coal to utilities in distress. The active work on this committee is being done by A. G. Gutheim, John Callahan and George W. Elliot. The committee handling the non-franchised public utilities consists of Mr. Gutheim, Mr. Callahan and E. H. DeGroot. Mr. DeGroot succeeds R. E. Quirk in the direction of car service for the Interstate Commerce Commission.

At the National Coal Association the firm belief is expressed that the situation will be met without the use of assigned cars. It is admitted that adverse weather conditions, extremely bad car supply or some other unforseen situation might interfere with distribution to such an extent that the present direct method of supply might prove inadequate, but under anything like favorable conditions it is believed that the situation will be smoothed out promptly.

In connection with Service Order No. 21 the National Committee on Gas and Electric Service sent out a questionnaire to 10,000 public utilities asking for the following information: Present stock of coal in net tons; daily requirements (period ending March 15, 1921); annual requirements in net tons; tonnage contracted for; number of days required to move coal from mines; percentage of daily requirements shipped during last two weeks; tonnage of coal now in transit; kind of coal (gas or steam); give description of any other fuels used; can you adjust your requirements to use (a) mine run, (b) lump, (c) slack; received by rail or water; name of contractor in each individual contract; period of contract; location of mines; original shipping point; originating railroad; routing to destination.

Relief from the Lake obligation has been granted on the Louisville & Nashville R.R.; in the gas coal field of Pennsylvania; in certain districts in Ohio and at all wagon and stripping operations. This alone has had a most stimulating effect on the situation.

Contend That Application of Lever Act Ended with the War

ARGUMENTS were heard in the U. S. Supreme Court in several test cases as to the constitutionality of the Lever Food and Fuel-Control Act. Solicitor General Frierson, for the Government, argued to sustain the act on the ground that price regulation of necessaries of life was a proper government function for the prosecution of war and that the armistice had not revoked the Government's right to exercise these powers. While admitting that it was debatable whether the act included producers, he argued that it did cover everything that is done in the way of handling or dealing in commodities.

Mr. Frierson referred to coal, saying that a company engaged in mining does not produce coal, but employs capital and labor to remove it from the ground. It thus handles coal as it is found in its natural state. Those who buy and sell it after it is mined deal in it.

Those opposing the law declared it unconstitutional because it was vague in its declaration as to rules of conduct, and further that the act of October, 1919, was an invasion of state rights because the armistice had ended the war.

The Lake and Export Coal Association of West Virginia, in a brief filed as "friend of the court," attacked the law on the ground that it violated the fifth and sixth amendments to the constitution and declared the act of 1919 to be void because there exists no emergency which could sustain the act.

Attorneys opposing the law argued that the Government could not regulate prices of articles in whose sale the Government has no interest from the standpoint of interstate commerce or internal revenue and by which the United States could not be affected to any degree. It was argued that the resumption of powers by the President under the Lever law for resisting the coal strike last year was no evidence of the continuance of the war. No treaty was necessary to terminate the war as it was ended with the armistice. They argued that the law related not only to the greatest coal company in Pennsylvania but also to the corner grocery which deals in fuel by the bushel, and unless it could be sustained as a proper exercise of government power in respect to the smallest of these businesses it could not be sustained at all.

HEARING HAS BEEN had before the U. S. Supreme Court in the case of the United Mine Workers vs. the Coronado Coal Co., which is an appeal from a decision of a lower court which awarded the coal company treble damages for destruction of coal properties during a strike. Henry S. Drinker, Jr., of Philadelphia, appeared for the coal company, arguing that the mine workers' organization was amenable to prosecution under the Anti-Trust Act, while Charles E. Hughes argued in defense of the mine workers, declaring that it was not subject to prosecution thereunder.

Water-Power and Fuel-Power Costs Compared

Conclusion That Water-Power Development Has Nullified Coal as a Power Factor Declared To Be Erroneous

WITH the cost of coal high and the active discussion of water power development there has been a great deal of loose talk regarding the way in which water power would replace fuel power in this country. It seems worth while, therefore, to consider in a simple way a few of the factors that affect this situation.

Fuel-power costs are made up in general of three items: (1) for fuel, (2) for labor and miscellaneous materials, and (3) for capital charges, including interest, depreciation, etc. The fuel costs are about half the total, labor and miscellaneous expense perhaps 15 per cent and capital charges 35 per cent. On the other hand, water-power costs do not include any appreciable item for fuel, and the labor and miscellaneous operating expenses are small, constituting roughly about 10 per cent of the total. The major item is the capital charge, which is perhaps 90 per cent of the total power cost on the average.

If we go back to 1913 or 1915 conditions and take, for example, a situation where fuel power and water power were about on a par, we may summarize these facts as follows:

DISTRIBUTION OF POWER COSTS

	Fuel-Power Costs Per Cent	Water-Power Costs Per Cent
Fuel	50	
Labor and Miscellaneous Items	15	10
Capital Charges	35	90
Totals	100	100

These figures may be brought up to 1920 basis on either of two assumptions: (1) that the old plant is to be operated under the present market conditions, or (2) that a new plant is to be built and operated under present conditions. In the case of the old plant still in operation, the fuel and labor items would, of course, be increased but the capital charges would be the same as before, as no new investment would be in question. (The greater cost of reproducing such a plant today can be ignored for the present consideration.) If we assume that fuel now costs two and one-half times as much as then, and that labor, miscellaneous materials and capital are twice as expensive as formerly, we will have the following conditions for the old plant still operated and for a new plant:

OLD PLANT OPERATED ON 1920 CONDITIONS

	Fuel-Power Costs Per Cent	Water-Power Costs Per Cent
Fuel	125	
Labor and Miscellaneous Items	30	20
Capital Charges	35	90
Totals	190	110

NEW PLANT BUILT AND OPERATED 1920 CONDITIONS

	Fuel-Power Costs Per Cent	Water-Power Costs Per Cent
Fuel	125	
Labor and Miscellaneous Items	30	20
Capital Charges	70	180
Totals	225	200

It is evident that under the assumed conditions there would be a very large advantage in water-power developments built under the old construction costs as compared with an old fuel-power plant. The reason for this is obvious when one considers the great element of capital charge in water power, which capital charge is assumed not to have changed with the passage of time.

On the other hand, if we have to build both plants new today we find that there is only a very slight advantage in favor of water power under the assumed conditions, for all of the elements of cost have advanced more or less uniformly.

Just to illustrate the same conditions with a different assumption as to the increase in the various items of cost, let us take, for example, a double cost of coal, a double cost for labor and miscellaneous materials, and an increase of two and a half times for capital charges on new installations. The results for old and new plants on 1920 conditions would then be as follows:

OLD PLANT 1920 CONDITIONS
(Different increase factors)

	Fuel-Power Costs Per Cent	Water-Power Costs Per Cent
Fuel	100	
Labor and Miscellaneous Items	30	20
Capital Charges	35	90
Totals	165	110

NEW PLANT INSTALLATIONS FOR 1920
(Different increase factors)

	Fuel-Power Costs Per Cent	Water-Power Costs Per Cent
Fuel	100	
Labor and Miscellaneous Items	30	20
Capital Charges	88	235
Totals	218	255

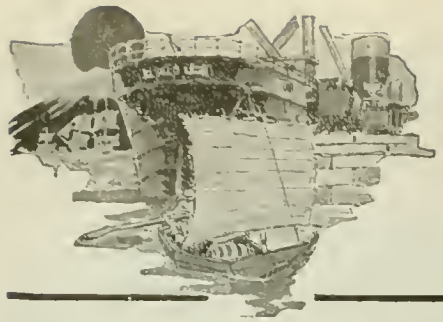
There is here evident the same large advantage of old water-power installations over old steam-power installations as is noted in the previous assumption.

It is evident here that there would be a small advantage in favor of fuel power under this set of assumed conditions. In other words, whether we find under the new conditions of 1920 an advantage for coal power or water power depends altogether upon the relative increase in fuel and in construction costs for the particular case in question.

The above data are, of course, simply assumed generalizations. They cannot by any means be considered applicable to particular circumstances. But the principles involved must be borne in mind in comparing carbo-electric and hydro-electric developments.

It is the man who has compared only *old* water-power and fuel-power developments under *present* operating conditions, and found considerable advantage for water power, who has doubtless strayed into the belief that water power is to be a cure-all for our national needs and that coal as a source of power development is a thing of the past.

Careful consideration of all the factors will show the fallacy of any such conclusion. The coal industry certainly need not assume that its period of usefulness is past simply because water-power development promises much for the future. The fact of the matter is that water power and fuel power are naturally supplementary to each other; and we must use both to the limit of our resources so that our industrial life may be advanced as rapidly as possible during the coming decade.



Foreign Markets and Export News

Freight Rates Are Lower; Market Is Firmer

Freight rates to European and South American ports, according to W. W. Battie & Co.'s Coal Trade Freight Report, are somewhat lower but the freight market is firmer than for several weeks, owing to the influence of the colliery strike. Freight rates by steamer follow:

	Oct. 11	Oct. 18	Tons Discharged Daily
Malmo	abt. $13.50	abt. $13.50	1,000
Copenhagen	abt. 13 50	abt. 13 50	1,000
Stockholm	abt. 14 00	abt. 14 00	800
Gothenburg	abt. 13 50	abt. 13 50	1,000
Antwerp Rotterdam	10 50–11 00	9 50–10.00	1,000
Hamburg	abt. 12 50	abt. 12 00	1,000
French At'antic (ex Rouen)	11 50–12 50	10 50–11.00	700
Algiers	abt. 14 00	abt. 13 50	800
West Italy	abt. 14 00	abt. 13 50	1,000
Marseilles	abt. 14 00	abt. 13 50	1,000
Piraeus	abt. 14 00	abt. 14 00	1,000
Triste Venice	abt. 15 50	abt. 15.50	1,000
Port Said	abt. 15 50	14 00–15 00	1,000
Constantinople	abt. 16 00	abt. 15 50	500
Gibraltar	abt. 13 50	abt. 13 00	1,000
Pernambuco	14 00–14 50	abt. 13 50	500
Bahia	14 00–14 50	abt. 13 50	500
Rio	14 00–14 50	abt. 13 25	1,000
Santos	abt. 14 50	13 75–14 00	600
Buenos Aires or Montevideo or La Plata	abt. 14 00	13 00–13.50	750
Para	abt. 14 00	abt. 13 50	500
Rosario	abt. 15 00	abt. 13.75	750
To Nitrate Ran	10 12 00	10.00–12 00	750
Havana	abt. 6 00	abt. 6 00	500
Sagua or Cardenas	7 50– 8 00	abt. 7 50	300
Cienfuegos	7 50– 8 00	abt. 7 50	500
Caibarien	7 50– 8 00	abt. 7 50	300
Guantanamo	7 50– 8 00	abt. 7 50	500
Manzanillo	abt. 8 00	nbt. 8 00	300
Bermuda	abt. 7 00	abt. 7 00	300
Bermuda p.c. and dis	free		
Kingston	abt. 8 50	abt. 8.50	400
Barbados	9 50 10 00	8.00– 9.00	500
St. Lucia	9 50–10 00	8 00– 9.00	500
Santiago	7 00– 7 50	7.00– 7.50	500
Port of Spain, Trinidad	9 50–10 00	8 00– 9 00	500
Curacao, free p. c. Curacao	abt. 10 00	8.00– 9 00	500
Demarara	abt 13 00		
St. Thomas	8 50– 9 00	abt. 8 00	500

All above rates gross form charter.

Coal Mining in Prussia Is Recovering

According to figures just published by the German Official Gazette, the production of bituminous coal in Prussia during the second quarter of this year amounted to 30,687,970 metric tons (compared with 23,380,934 metric tons during the same period of the previous year), the number of mines being 286 against 292 in the previous year. Sales reached 31,134,788 tons, against 23,641,454 during the same period in 1919. The number of employees and miners was 698,583, against 633,990 in the same period of 1919.

During the first six months of the present year the output of bituminous coal amounted to 59,748,127 metric tons as against 51,323,319 during the same period of the previous year. The total sales during the first half year amounted to 70,027,431 metric tons, compared with 51,204,921 tons in the first half year of 1919. These figures show that the output during the second quarter of 1920 increased over that of the previous year by 7,307,036 metric tons, or 31.25 per cent; the sales by 7,493,243 metric tons, or 31.7 per cent, while the number of employees and miners rose by 64,593. During the first half year of 1920 the output over that during the same period of 1919 increased by 8,424,808 metric tons, or 16.42 per cent; the sales by 8,822,510 metric tons, or 17.23 per cent, and the employees by 46,921.

In the brown coal mining industry the number of mines at work during the second quarter of 1920 was 349 (308 previous year), the output 22,253,382 metric tons (18,297,453 in 1919), the sales 22,262,152 metric tons (18,300,876 last year), and the number of employees and miners 131,910 (102,251 a year ago). The increase over the same period of the previous year thus amounted to 41 mines with 9,955,949 metric tons. For the first half year of 1920 the number of mines in operation was 341 (307 a year ago), the output 42,679,498 metric tons (35,451,946 during the same period of 1919) and the number of employees and miners 187,825 (95,574 a year previous).

German Manufacturers Clamor for American Coal Despite High Price

(Special to Coal Age)

BERLIN, Oct. 15.—The seriousness of the German coal situation is accentuated by the fact that as soon as a quantity of American coal has been freed for export a great number of German manufacturing concerns have come forward with large inquiries, in spite of the difference in price. The price of German coal is at present about 210-240 marks per gross ton, while American coal is quoted at $30 c.i.f. German ports, which means at the present rate of exchange nearly 1,400 marks per ton.

The first firm that placed an order for American coal was the Zellstoff-Fabrik Waldhof, one of the largest German makers of wood pulp. They contracted for nearly 10,000 tons. Smaller orders had been given by some chemical and glass works. To this number has lately been added the August Thyssen mills in the Rhineland, which belong to one of the richest coal-mining combines. A public declaration has been made by them that they have to import coal to keep their works going.

As the importation of coal, as of all other products, is controlled by the state, an import license has to be obtained. The Commissioner for Import has established the principle that an import license for coal can be granted for the carrying out of export orders. In this way the burden of higher cost is shifted to foreign buyers of German goods. Mainly steam coal and gas coal of the richer grades, similar to the Ruhr qualities, are sought.

Italy Seeks American Coal

Being one of England's best coal customers, Italy is keenly interested in the progress of the British coal strike. Signor Sitta, Under Secretary for Transport and Coal Supplies, expressed the hope that increased supplies would be forthcoming from the United States. In September, America supplied Italy with 108,000 tons of coal, but only 24,000 tons went to private firms, owing to the uncertainty and want of confidence induced by the late disorders. Another considerable supply is expected from Germany, which should have sent 200,000 tons monthly.

An Italian commission has been sent to Silesia to investigate the reasons for the delay in order to eliminate them. Italian coal transports have been ordered from England to America and to Rotterdam, where they can be loaded with Westphalian coal. Signor Sitta also has urged the British Government to modify, with regard to Italian ships, its decision not to supply bunker coal.

It is not likely that Italy will feel serious effects from the British strike before the end of November, as the Government, in view of the possibility of the strike, accumulated reserves which now approximate 1,100,000 tons. The Fuel Board has announced that it is prepared to supply American and British coal to ocean-going steamers; German coal suitable for steamers, manufacturers and gas makers; Belgian anthracite and coke from Westphalia and Upper Silesia for metallurgic plants.

Independence of the Coal Industry Threatened

One Thousand Operators at Cleveland Discuss Plans to Meet Impending Hostile Legislation—National Coal Association Cannot Discuss Prices—Members Praise Work of Officers in Handling Situation This Summer

MEETING as individuals, approximately one thousand soft-coal operators, representing practically every bituminous producing district in the United States, assembled in Cleveland, Oct. 26, at the call of Colonel D. B. Wentz, president of the National Coal Association, to consider Attorney General Palmer's telegraphed request that steps be taken to eliminate exorbitant prices. As a result of the meeting definite action was taken toward lowering unreasonably high prices and discontinuing unwise practices in marketing bituminous coal.

W. K. Field, of Pittsburgh, moved that the whole question of the Attorney General's telegram be referred to the different districts. James B. Cooper, of Indiana, with the consent of Mr. Field, offered a substitute motion that it be the sense of the meeting that the coal operators of the United States co-operate fully and heartily with the Attorney General in this effort, but it seems that it can best be accomplished along the lines of Mr. Palmer's suggestions, but for the detailed consideration of this it should be taken up by the respective districts.

Operators Unanimously Adopt Resolutions

T. L. Lewis, of Charleston, moved that the resolutions pending before the convention be referred to a committee of nine members to be selected by the chair. T. K. Maher, chairman of the meeting, appointed the following to serve on the committee: D. B. Wentz, Philadelphia, Pa.; W. K. Field, Pittsburgh, Pa.; Philip Penna, Terra Haute, Ind.; Everett Drennen, Elkins, W. Va.; A. J. Maloney, Chicago, Ill.; J. H. Allport, Barnesboro, Pa.; W. L. A. Johnson, Kansas City, Mo.; W. C. Mahan, Knoxville, Tenn., and S. H. Robbins, Cleveland, Ohio.

This committee reported the following resolution unanimously adopted and telegraphed to Mr. Palmer:

"Whereas, an abnormal condition for some time past has existed in the bituminous-coal industry of this country, due to inadequate transportation facilities, labor difficulties and shortage and other causes beyond the control of the bituminous coal operators of the country, and

"Whereas the Attorney General has requested the bituminous-coal operators of the country to co-operate with the Department of Justice in bringing about the elimination of unreasonably high prices for coal where such exist, and

"Whereas it is the sense of the bituminous-coal operators of the country that unreasonably high prices and unwise practices, where such exist in the industry be eliminated,

"Therefore be it resolved that the bituminous-coal operators of the country refuse to ask or receive unreasonably high prices for bituminous coal, and further that all unwise practices in the industry, where any such exist, be condemned and eliminated, and

"Be it further resolved that it be recommended to each bituminous-coal district in the United States that it immediately establish a committee in its district, and that such committee so established use every effort to co-operate fully with the Department of Justice and the U. S. Attorney in such districts to bring about an elimination of unreasonably high prices and unwise practices, where such exist, in order that the purpose and the object sought by the Attorney General throughout of the whole country may be accomplished."

Colonel Wentz advised Attorney General Palmer as follows:

"At a largely attended meeting of bituminous coal operators representing practically every producing field in the United States held in Cleveland today I read your telegram of this date addressed to me here. After careful consideration and full discussion a committee of nine operators, of which I was chairman, was appointed and met immediately and drafted the resolution which I am advised has already been forwarded to you by T. K. Maher, an Ohio operator, chairman of the meeting. The resolution was presented to the meeting and unanimously adopted.

Co-operative Work Has Been Started

"Operators from some of the districts are already holding meetings in Cleveland preparatory to arranging co-operation with your representatives in their respective districts, and other meetings between your representatives and operators will be held promptly throughout the several producing districts of the country."

The meeting, which was by far the largest in point of attendance and interest of any since the early part of the war, voted unanimously support of and confidence in the program and work of Colonel Wentz and the other officers and members who have been through the trying days of the past summer. It was believed that the meeting was for the purpose of considering the program of Attorney General Palmer for lowering prices, but it was soon made evident that any such action must be independent of the National Coal Association, for that body maintained its traditional policy of non-participation in any discussion of prices or profits.

The meeting of the association, which consumed all morning, was given over to the report of the president, who began by reciting the situation in April, beginning with the outlaw strike on the railroad and telling how production of bituminous coal in the Eastern fields was reduced from twenty-eight million tons a month to twenty-two million tons, which precipated a shortage of coal throughout the East, New England and the Northwest. In the beginning the association protested to the Interstate Commerce Commission, asking for more cars. When politicians from New England and the Northwest made their appearance in Washington, seeking to make capital from the situation, it was time to act to protect the interest of the industry. How this was done was recited by Colonel Wentz in a manner that brought home to the operators the value and importance of their national organization.

Colonel Wentz praised Daniel Willard and other railroad men who had untiringly worked to prevent the coal

industry from being saddled with the form of Governmental control the railroads are now under. Washington officials were skeptical of the ability of the National Coal Association to work out a means of giving coal where it was needed most and the White House was fearful that the Interstate Commerce Commission had not the power to do what was necessary. How the promises of the coal industry have been fulfilled; how New England cried enough after two months of coal at the rate they demanded it and how the Northwest is fast being cared for and the domestic needs in Ohio and the Middle West cared for was told in justification of the apparent high-handed methods the men charged with caring for the interests of the industry and the railroads found necessary to impose.

By daily conferences with Secretary Tumulty and his office, the White House was kept informed of progress made and the insiduous propaganda of those seeking Governmental control was offset. Assigned cars, the bane of the coal man's life, have largely been eliminated through the efforts of the National to take care of public utilities by more direct means. From twenty thousand a week in July assigned cars for utilities increased to forty thousand on Sept. 15, but they have now been reduced to nothing. Twenty-four thousand open-top cars were saved to the coal industry through the prompt action of John Callahan, traffic manager of the association, in showing what would result were the limit raised from thirty-six to forty-two inches in defining open-top cars in the last priority order.

Speculation in Export Coal Stopped

Rabid and wild speculation in export coal was successfully opposed and largely eliminated through the hearty co-operation of operators, jobbers, railroads and tidewater exchanges by so framing rules that none but bona fide dealers could participate.

Although Senator Calder is not hostile to the coal industry it was pointed out that the record he has accumulated of high prices and abuses in the trade will go before Congress and may have a serious effect on the legislative program the coming winter unless complaints cease. Colonel Wentz expects hostile legislation to be introduced, in fact believes it will be an open season for the coal man. With all the force at his command he urged coal men to submit figures and statistics that will be called for by the National showing their costs, selling price and profits. Only with such vitally important data can officers meet charges that will be made by those really thinking something is wrong with industry as well as by those with political axes to grind. The coal industry must answer the charge that it as a whole has profited extortionately as well as some charges that have been and will be made. Discussing the recent Indiana law as showing the way the wind blows Colonel Wentz said the National would engage the best legal talent in the country to fight the law before the Supreme Court as it threatens the independence of industry and gives no real promise to the public.

Unity in the coal industry as a whole was urged and the meeting told of the action of the board of directors in appointing a committee of three—James Walsh, of Pittsburgh; Mr. Buchanan, of Chicago, and Colonel Wentz—to represent the producers with similar committees from jobbers, retailers and anthracite producers. The public press and the Government must find industry united on essentials, which it is not now.

In taking up the request of Attorney General Palmer to have prices considered, Colonel Wentz said the following:

"Early in October a committee of northern West Virginia operators put into effect some measures to reduce the prices of coal. On Oct. 13 I received the following telegram from the Attorney General:

Mr. Drennan, chairman of a committee of bituminous coal operators from northern West Virginia, has informed the department that prices of bituminous coal delivered in that district have been recently substantially reduced through the efforts of his committee. I consider it of the highest importance that the reduction of prices thus begun should be extended so as to include the operators in other districts and coal for delivery throughout the country, thus affording general relief from the prevailing high prices. Permit me to suggest to you that it is desirable for all persons engaged in the industry to take action in reducing prices, as this will be to the best interests of the industry and will lighten the work of the Department of Justice by reducing the number of prosecutions to be instituted for violations of the Lever Act in charging unreasonable prices.

Attorney General Palmer Explains Plans

"I met the Attorney General at the Department of Justice on Monday, Oct. 18. He explained to me his desire that the National Coal Association take action as suggested by his telegram. I explained to him the limitations imposed upon the National Coal Association with respect to such matters by the specific terms of its charter and by-laws.

The Attorney General stated that he would ask nothing of the coal producers which involved any violation of the law. The Attorney General then said that he would send me a communication to be placed before you at this meeting.

Mr. Palmer's telegram follows:

I am informed that you have called a meeting of operators of bituminous coal mines throughout the country at Cleveland for the purpose of complying with my recent suggestion that the operators should reduce prevailing unreasonable high prices for bituminous coal and thus lessen the number of prosecutions to be instituted by the Department of Justice for violations of the Lever Act in charging unreasonably high prices. If the operators limit themselves at that meeting to discussing prices with the sole purpose of preventing unreasonably high prices and without any attempt directly or indirectly to fix prices I would consider such action as an effort to comply with the Lever law. It would be particularly helpful to this department if in pursuance of the general purpose to reduce prices the operators could arrange for reports to me voluntarily made to our district attorneys in cases where any operators continue to charge unjust and unreasonable prices. You will understand, of course, that I assume there will be no effort directly or indirectly to hold prices up or to make them uniform for any of the producing or consuming regions, either by the operators at the Cleveland meeting or by any of their committees or representatives.

Erskine Ramsey, vice president, of Alabama, then moved adjournment of the association meeting, having expressed his conviction that most operators oppose excessive prices as not in the interest of the industry. It has been the policy of most producers, he said to apply that belief conscientiously in the scale of their coal. Because it is the fixed policy of the National not to discuss prices the meeting adjourned. Following this Thomas K. Maher, of Ohio, was elected temporary chairman; S. L. Yerkes, of Alabama, secretary of a meeting of the coal operators who considered Palmer's telegram and request, after which the above-mentioned committee of nine was appointed.

Lloyd George Agrees to Discuss Settlement

LAST Saturday the big British coal strike entered on its second week, the prospects of a speedy determination having increased by reason of Lloyd George's offer to discuss a settlement. It appears that his action was brought about by the threat of the railway men to strike if action of this sort or a satisfactory settlement was not made.

General Secretary James Henry Thomas, of the railway men's union, tried for a long time to keep the railroad men neutral. When they met on Oct. 19 they took no action; the next day they voted by a majority of one not to strike, and then later, by a majority of only ten or eleven, there being about sixty delegates present, they reversed their vote and sent notice to the railroad men throughout the United Kingdom that they were to strike on Sunday at midnight unless the notice was countermanded. It is thought that Thomas will resign, as he is strongly opposed to this sympathy strike.

Following this notice an ultimatum was served on Lloyd George on Oct. 21 that he must either grant the mine workers' demands or reopen negotiations or a strike would take place at the hour set. This appears to have been the reason why the Premier on Saturday, Oct. 23, wrote to Frank Hodges, advising him that he (Lloyd George) would meet the principal officials of the union, try to arrive at a settlement and then call in the executive council of the union and with their aid finally dispose of the matter. Robert Smillie, Herbert Smith Robson and Frank Hodges are the negotiators.

The government wants assurance that increased wages will not mean decreased production. It would set a "datum line" for output and take away any increase given the miners, should the datum line not be reached. Many of the mine workers believe that some such compromise should be made. Otherwise the strike would seem to be called merely to provide means for further loafing. It is likely that the 48c. advance per day will be granted if the mine workers promise that the output will be increased to the "datum line."

On Oct. 22 the government, through Edward Shortt, the Home Secretary, brought in a bill reviving war-time emergency regulations which give the government the right to use military forces for any purpose and also authority to ration and control all resources. Action on the bill, however, was deferred till Monday, Oct. 25. Much to the displeasure of the unions the government is enrolling volunteers. Robert Williams, general secretary of the transport workers, has announced that the workmen he serves "look upon the danger of the enrollment of volunteers, especially from the middle class and white guards of the community, as of more provocation than the use of troops.

At Coedly, in Wales, the mine workers have voted in favor of seizing the mines and locking out the owners. They advocated running the mines themselves as the Italian workmen for a while ran Italian factories. This same example some Scots on the Firth of Fourth are anxious to emulate. The Rhondda mine workers want to call out the pumpers and those in Durham have already withdrawn them. In Yorkshire the mine workers are conciliatory. Some mine workers are leaving for Canada.

Suspension of Lake Priority Forecast

SUSPENSION of the priority on coal moving to the Northwest appears imminent at this writing. Apparently the Interstate Commerce Commission is not satisfied as to whether the saturation point has been reached or whether price considerations temporarily have halted the demand. It was quite evident at the Interstate Commerce Commission that there would be no temporizing with the situation. Contracts will have to be forthcoming quickly if the order is not suspended. It seems that the Northwest is not prepared to absorb coal at the rate of 4,000 cars daily at the lower Lake ports.

A big factor in the situation was the transfer by Northwestern railroads of 3,000,000 tons of their business to Illinois producers. Apparently the Interstate Commerce Commission already is satisfied that the Northwest's needs for the remainder of the season can be handled without regulations, but, as was the case with New England, the commission doubtless will wait until the Northwest is absolutely on record as being unable to absorb coal in the volume in which it is being moved for its account. The prediction in Washington on Monday, Oct. 25, was that the suspension of the Lake order would come not later than Wednesday.

On Oct. 22 the Interstate Commerce Commission authorized H. M. Griggs, manager of the Lake pools, to omit allotments under Service Order No. 10 against mines in the following districts, until further advice from the commission:

(1) Mines upon the Louisville & Nashville R.R.

(2) Mines in the Irwin gas coal district or basin.

(3) Mines in the northern Ohio districts, the middle districts of Ohio lying between No. 8 group and the Great Lakes, including Coshocton, Berkholtz and Massillon, and Goshen, Salineville and Tuscarauras; and also the Butler-Mercer districts in Pennsylvania.

In addition, allotments may be omitted against wagon mines and mines producing stripper coal until further advice from the commission. This is the first sign of a falling off in demand for Lake coal.

The week of Oct. 18-23 opened with an excess of cars standing at the ports awaiting dumping. On Tuesday morning, Oct. 19, there were 11,004 cars of soft coal on hand, a figure greater than normal, as shown by the statement of cars on hand at recent dates, as reported by the American Railroad Association:

Aug. 25	10,404	Oct. 5	9,066
Sept. 3	7,757	Oct. 12	9,432
Sept. 9	8,554	Oct. 19	11,004
Sept. 16	7,318	Oct. 20	10,211

In an announcement made Oct. 20 in Cleveland, Judge McGee said it was probable that the estimated requirements of the Northwest would be considerably reduced on account of the refusal of many of the railroads in that territory to contract or buy dock coal at prevailing prices, but rather to turn to Illinois for their supplies for the coming winter.

Retail Association Executives Meet to Consider Trade Problems

AT A MEETING of the secretaries and executives of the various retail coal associations held under the auspices of the National Retail Coal Merchants' Association on Oct. 25 and 26 at the Hotel Astor, New York City, many items of interest to the retail coal trade were discussed. Among the subjects considered were:

Reasonableness of liability clauses of sidetrack agreements and rental charges made by carriers for use of sidetrack or property.

Adoption of uniform claim rules by carriers and enforcement of principles involved.

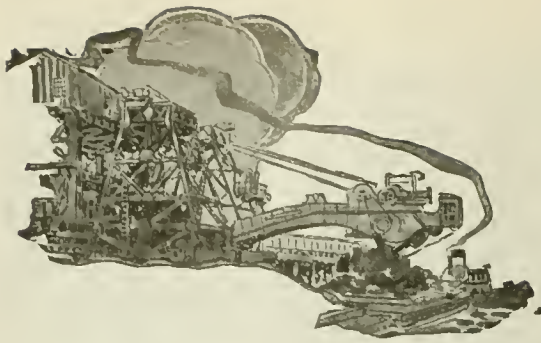
Institution of test cases to determine disputed points in settlement of claims.

Modification of present reconsignment rules.

Correction of unreasonable or discriminatory rates growing out of recent rate advances.

Uniformity in claim collections by all associations.

Method of obtaining funds to combat prospective Government regulation of the retail coal industry.



Production and the Market

Weekly Review

RECORD production of bituminous coal the past few weeks has had a remarkable effect on the market. One of the strongest evidences of this is found in the latest developments in the Lake situation, where shipments according to the program laid down by the operators and the railroads of 4,000 cars per day has flooded the lower Lake ports with coal and has broken the price. Whereas shippers were demanding $8 per ton a few weeks ago, prices have now dropped to $6@$6.50 because of the large offerings resulting from the record production and the excellent performance of the railroads.

There is a general feeling in the trade that the Illinois operators and shippers have "put one over" on the West Virginia producers this year in that they have been putting the coal into the Northwest while the Easterners were arguing over the price. It will be interesting to see to what extent they can hold this market next season.

Record-Breaking Output Attained

Record production for the week ended Oct. 16 is reported by the Geological Survey, with 12,135,000 tons of bituminous and 1,855,000 tons of anthracite.

Labor is working better than at any time this fall and cars are more plentiful. Despite the greater offerings of cars the reports of car shortage still show average losses on operating time in excess of 20 per cent. This will continue until the market is saturated, when losses because of no market will take the place of those reported for lack of cars. Two or three weeks of production at the present rate will accomplish this, for, as was forecast in *Coal Age* of Aug. 26, an average output of 11,500,000 tons a week of soft coal until the first of November would be sufficient to raise stocks to the point where consumers would lose their fear of shortage and would withdraw from the market.

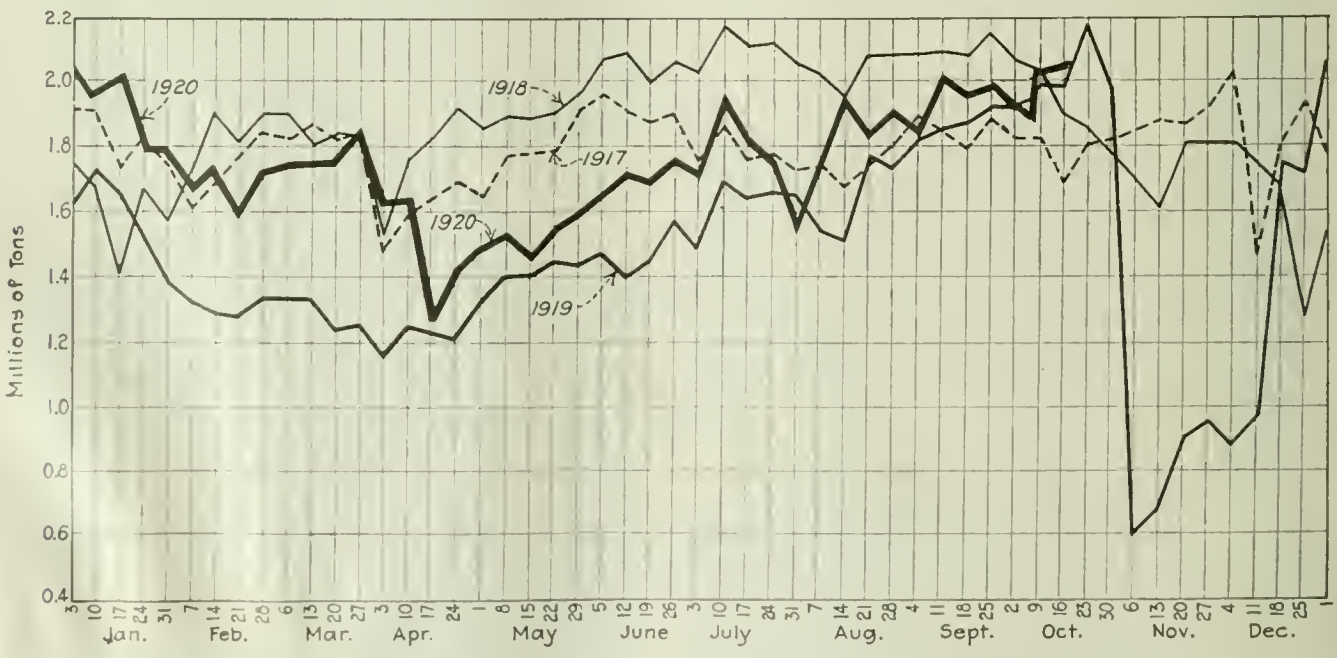
Anthracite will continue to be short for some time. Production of this essential domestic fuel is lagging and has only begun to make up the losses occasioned by the strike of last month. Investigations of prices being charged by the retail trade for anthracite are developing over the country but it is believed that in the main the retailers can justify their selling prices because of the Independent high-priced coal they have purchased.

BITUMINOUS

Production during the week ended Oct. 16 was with one exception the greatest in any week since the Armistice. It is estimated that the output reached 12,135,000 net tons, an increase of 44,000 tons over the preceding week, according to figures of the Geological Survey. A production of 13,140,000 tons was reached in the last full week before the coal strike of 1919, but with this exception the week of Oct. 16, 1920 stands as the maximum since the Armistice. The average production per working day was 2,022,000 tons. Preliminary reports for the succeeding week indicate a slight decrease in production.

Car supply has greatly improved, due to the extension of rulings made by the Interstate Commerce Commission relative to the assignment of open-top equipment for coal loading, and also to quicker dispatch. However, the middle

Average Daily Production of Bituminous Coal*



*From weekly report of Geological Survey.

Lake Coal Dumped Season to Oct. 23

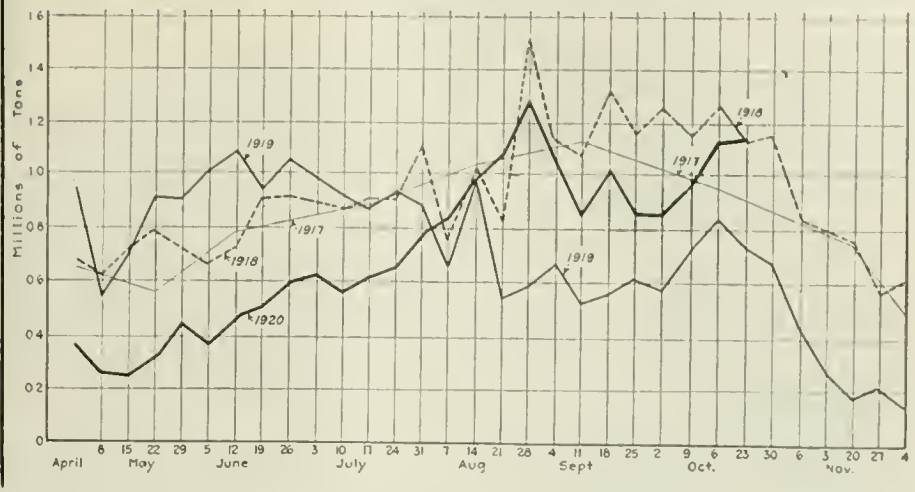
(NET TONS)

	1919	1920
Cargo	20,409,873	18,137,768
Fuel	963,213	1,032,736
Total	21,373,086	19,170,504

Week of Oct. 23, 1920

Cargo	1,088,041
Fuel	50,176
Total	1,138,217

Weekly Dumpings, Bituminous Coal at Lake Erie Ports



Appalachian region reports a slump in car placements which is also enabling not more than a two days' run in the southern Appalachian district. Car supply in the Midwest section is the best for many weeks.

A radical labor element in the eastern Ohio field is responsible for a considerable loss in output as the men in that section are not giving more than 50 per cent working efficiency. This same element is causing many petty strikes in the Belleville district. The Alabama strike situation is somewhat improved; men are returning to work rapidly, which is also the case in the Thacker field. A very marked improvement in labor's attitude is apparent in nearly all other sections.

Export Prices Lead the Market

Prices appear to be taking a very marked downward trend. With a lessened demand for steam coal throughout the country, the only feature in the week's market was the call for export, influenced by the overseas shortage due to the British strike. Pittsburgh district coal is off, steam now being quoted at $8, gas $8.50@$9, a reduction in the latter case of $1@$2. Fairmont quotations are $6@$6.50 to conform to recommendations of the Fair Practice Committee. Pittsburgh No. 8 is weaker, ranging $6@$7. Philadelphia reports firm prices due to heavy export demand, with Pool 10, $10; Pool 11, $9@$9.50, and Pool 18 slow at $8. The Baltimore market is a trifle firmer on these pools. New England reports a sharp slump in industrial demand with gas coal off to $9.50 and steam generally quoted $8.25@$9.50. Chicago and Midwest prices approach normal with better production and less active demand; southern Illinois, $5.50@$6.25; northern Illinois, $5.25@$6, and Springfield district, $5@$5.50. St. Louis experienced a slump in steam coal with quotations of $4@$5.50 for Mt. Olive, $4@$5 for Standard, and $4.25@$5.50 for Carterville. Indiana and Kentucky districts report lower prices, due to price regulations, although many Indiana operators are sending the bulk of their production to points outside the state limits at $5@$6.50 for Fourth Vein and $5@$5.25 for Fifth Vein. The Western market is good, Colorado steam being quoted $3.50@$3.90 f.o.b. mines. Domestic demand continues unabated and only the unseasonable warm weather has kept prices at their present levels.

Cars of bituminous coal dumped over Tidewater piers during the week ended Oct. 16 numbered 26,357, as shown in the following table:

Week Ended	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Total
Oct. 2	9,121	3,673	4,197	8,872	498	26,361
Oct. 9	9,304	4,188	4,242	9,587	376	27,697
Oct. 16	8,565	4,061	5,176	8,328	227	26,357

Measured in tons the Tidewater movement during the week ended Sunday, Oct. 17, increased slightly. According to the Geological Survey, a total of 1,301,000 net tons was handled at Tide, destined as shown in the following table

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Total Dumped
Coastwise to New England	71,000	19,000	23,000	97,000		210,000
Exports		139,000	207,000	333,000	4,000	683,000
Bunker	68,000	11,000	19,000	78,000	1,000	117,000
Inside Capes		43,000	27,000	4,000		74,000
Other tonnage	140,000	.....	9,000	7,000	1,000	157,000
Total	279,000	212,000	285,000	519,000	6,000	1,301,000

While Tidewater shipments to New England showed a slight increase the all-rail movement was much slower. Some buyers have intimated to their shippers that it is doubtful if November program of shipments, previously requested, can now be accepted due to the slackening in manufacturing activity.

Exports to Canada of bituminous coal for the month of September are reported by the Dominion Bureau of Statistics at 1,787,455 net tons, a total for the first nine months of the year of 10,144,000 tons, or an increase of 802,000 as compared with the same period in 1919.

Lakes Priority Order To Be Canceled

Lake dumpings for the week ended Oct. 24 totaled 1,138,217 tons, an increase of some 30,000 tons over the preceding period. The cumulative movement from the beginning of the season now stands at 19,170,504 tons. The week opened with an excess of cars standing at the ports awaiting dumping. On the morning of Oct. 19 there were 11,004 cars of soft coal on hand, a figure greater than normal as shown by the statement of cars on hand at recent dates. Lake demand is sluggish and it is apparent that the saturation point has been reached. With a growing accumulation of cars at the lower ports it is only a question of hours before a suspension of Service Order 10 is ordered. At this writing embargoes have been placed in several districts against shipments to the Lakes. The Northwest railroads now plan to draw on the Illinois fields for approximately 3,000,000 tons of fuel, cutting down dock requirements by that amount.

ANTHRACITE

Steady improvement in the production of hard coal is indicated by the loadings for the week ended Oct. 16, when 36,114 cars, an increase of 153 cars, were shipped. The total production was estimated by the Geological Survey at 1,855,000 net tons, the largest in any week since last July. Current production is still short of last year's schedule, when a weekly rate of 1,925,000 tons was attained.

Prices for the Company product are unchanged, while Independent operators continue to secure premium figures up to $17 f.o.b. mines. Domestic consumers are clamoring for coal and only the continued mild weather has kept the price from higher levels. The Baltimore market is stirred by the announcement of one of the largest retailers, who has advanced domestic sizes $1.50 above the Coal Exchange schedule.

Reports From the Market Centers

New England

BOSTON

Receipts Are Falling — Demand Is Easier — Prices Decline — Tide Piers Busy with Export Tonnage—Anthracite Receipts Are Low—Situation Is Favored by Mild Weather.

Bituminous—The market continues with almost no buying interest. Steam users throughout New England have ample reserves for a winter of slack production and only very occasionally are there sales of any considerable tonnage. Railroads are buying moderate quantities but usually these are to replace high volatiles due on contract which for the present are moving to the Lakes. Prices now paid are little in excess of $8 and although of medium grade, the coal to be furnished must be favorably known. Demand as a whole is extremely light and were the situation dependent upon buying current quotations would weaken materially.

All-rail movement has dropped to a weekly average of little more than 5,000 cars and this is perhaps the best index of the current situation. There are no longer any traffic problems so far as coal is concerned and not in three years have cars come through in so short a time. By water there is also a marked falling off in receipts.

Buyers who 90 days ago were bidding high for indifferent grades from central Pennsylvania are now serving notice on their Pocahontas and New River contractors that they are in doubt about taking November quotas. Meanwhile, the only recession in price of Tidewater coal is because of less demurrage at the loading port. Should the all-rail market yield coal at $1@$1.50 less than current quotations a considerable tonnage of Southern coals would be a drug on the market. However prices have not softened to the extent anticipated. Grades from Pool 1, 4, 9 and 10 command $9.25@$9.50 at the mines, but Pools 11 to 14 are an easy purchase at a full dollar less, being affected only remotely by export and bunker demand.

It is much easier to secure fancy high volatiles. A few days ago screened lump was almost out of the question for spot shipment but today there are enough offerings to meet requirements of the relatively few foundries, etc., that are running full time. Gas producers are also in easier situation. In consequence, prices have dropped from $11 to about $9.50.

Practically all of the Tidewater piers show export clearances well up to the July and August average. Hampton Roads shipments this week have been somewhat reduced by short car supply. Movement to the Lakes has again been speeded up from the smokeless districts and for several days there has been a decrease in the number of large cars which ordinarily serve the piers.

Current quotations on bituminous at wholesale range about as follows:

	Clearfields	Cambrias and Somersets
F.o.b. mines, net tons	$7 50@ 8.50	$8.00@ 9.50
F.o.b. Philadelphia, gross tons	11.00@12 15	11.60@13.25
F.o.b. New York, gross tons	11.40@12.75	12.00@13.75

Anthracite—Shipments both all-rail and water are discouragingly low on domestic sizes. Effort is being made to rush coal to communities where the tonnage thus far has been less than 50 per cent. It follows that the larger cities are receiving materially less than the usual fall monthly average. Current output is being spread over so wide a territory that shipments in any one direction seem meager. Undeniably there is a larger tonnage in consumers' cellars than is generally acknowledged. Already there are retail dealers who say they have enough pea and chestnut to meet ordinary requirements and it is expected that from now on there will be less disposition to accept whatever sizes the companies see fit to furnish. In all this the weather is the uncertain factor. The warm spell has been the salvation of a great many retailers who have had very light stocks.

Tidewater

PHILADELPHIA

Anthracite Receipts Are at Low Ebb—Warm Weather Delays Fuel Needs—Bituminous Line Trade Is Quiet—Export Call Keeps Prices Up—Operating Conditions Are Improved.

Anthracite—So far as local conditions are concerned there is not the least improvement. Shipments to dealers come close to being the lightest on record. The extraordinary summer weather has served to lessen their troubles. There is not the least doubt that with the arrival of more seasonable weather, the companies will begin shipping heavily into this territory.

Considering the state of the weather, the domestic demand holds up remarkably well, although the consumer still calls for the larger sizes. Yards are without coal of any size, except a small quantity of pea. It is reported that the independents are getting premiums on this size for shipment to the West.

Dealers in some of the larger cities in the eastern end of this state have sent delegations to the shippers to present their needs. The most that has been accomplished by these committees is that this market will have attention as soon as possible, which means within the next five or six weeks.

A good many of the local dealers have been favored recently with some buckwheat, a fairly strong demand having sprung up for this size, and the companies have probably allowed them to have this coal in view of the less urgent industrial demand and with the idea of desiring to foster this newly created market for a size which is likely to become troublesome with the return of normal conditions in the coal trade.

The demand for steam coals of all sizes except barley is still strong. On spot sales, buckwheat has been $6 and rice $5.

Bituminous—There is a noticeable quietness in the local demand. Without exception the brokerage houses which were rushed with business hardly less than a month ago, are now waiting for something to turn up. Despite this apparent lethargy, prices continue to hold up and have shown no real recessions during the past week. This is due entirely to the growth of the export trade which has been greatly accentuated by the British strike. The demand for coal for export has become so strong that buyers are competing against each other.

Line delivery prices are based upon the market figure for Pool 10, which has been clinging to $10. In Pool 11, the average is $9@$9.50. Pool 18 is in little demand at $8. On wagon-mine coal, prices are often shaded $1 less and shippers are finding it difficult to make a market, particularly since they have been denied the use of open-top cars.

Industry in this district is still quiet, particularly the textile lines, but recently there has also been some curtailment in the iron trade. Even though very few industries were able to contract full requirements in the spring, they have, under present conditions, accumulated much stock. The big utility plants have now been able to lay by their customary reserves, and despite the removal of the preferential order, are getting sufficient coal for their current requirements.

Production is approaching close to the war-time tonnage. Of course, this is brought about by greater car supply, which lately has gone as high as 50 per cent and better. The general trend is upward and with a continuance of good weather, it would not be surprising that this would cease to be a factor in the trade until real winter weather arrives.

Rail movement has improved quite noticeably. The railroads are doing considerable weeding-out among their employees and the result has been better service from those remaining.

Tide business at this time is the real backbone of the bituminous industry. Consumers in this section could not begin to absorb the present production

without the assistance of foreign business.

As it now stands, the amount of overseas trade offering is greater than the ability of the industry to handle. Piers are working to capacity and there is little chance of increase of movement. Most export coal is being sold on a basis close to $15 a ton at Tide.

Coke—Demand continues moderate, although prices are well up. On Connellsville foundry coke quotations recently have been $17@$17.50, with furnace coke a dollar less. There are also some ordinary grades of foundry occasionally to be had around $16 net ton at ovens.

NEW YORK

Anthracite Conditions Improve — Receipts Are Larger — Steam in Good Demand — Bituminous Market Slackens and Prices Are Easier — English Strike Increases Bunker Demand.

Anthracite—There has been a noticeable improvement in conditions. More coal has been coming to Tidewater although still below normal requirements.

The improvement in production has been reflected here and the dealers have been receiving larger shipments. Most dealers still have unfilled orders dating from March and April. The near-panic created by those who claimed there was danger of New York freezing this winter has subsided considerably, due, probably, to the efforts of the trade in assuring their customers that there would be plenty of coal after the closing down of Lake shipments. The clamor for coal is not as strenuous as it was a week back.

The surrounding territory is in good shape. Dealers have fair sized stocks while all of their customers already have most of their winter coal.

There is a strong demand for independent coals but buyers are not inclined to pay the prices asked unless it is absolutely necessary. The larger independent producers are sticking close to the 75c. differential above the company prices but the smaller operator is quoting anywhere from $12@$14.50 for the prepared coals.

Smaller sizes continue in strong demand. Buckwheat is being quoted by the independents at from $6 and some producers find it necessary to insist upon buyers of domestic taking a share of barley. Quotations for barley range $1.75@$2.25.

Quotations for company coals, per gross ton, at the mine and f.o.b. New York Tidewater, lower ports, are as follows:

	Mine	Tidewater
Broken	$7 60@$7 75	$10 21@$10 36
Egg	7 60@ 7 75	10 21@ 10.36
Stove	7 85@ 8 10	10.46@ 10 71
Chestnut	7 90@ 8 10	10.51@ 10 71
Pea	6 10@ 6 55	8.57@ 9 02
Buckwheat	4 00@ 4 25	6 47@ 6 72
Rice	3 00@ 3 50	5 47@ 5 97
Barley	2 25@ 2 50	4 72@ 4 97
Boiler	2 50@2 75	4 97@ 5 22

Quotations for the domestic coals at the upper ports are generally 5c. higher on account of the difference in freight rates.

Bituminous—Many believe the market is sliding. Demand has fallen off and quotations are easy. Manufacturers are not buying but the demand for bunker supplies has increased considerably. This is due to the efforts of ship owners to put a return supply on their vessels because of the English strike.

The strike in the English mines has not yet been reflected in the local market. Demand for export coal has not shown any noticeable increase but has aided considerably in keeping prices where they are.

That the markets are not overstocked is attributed to a shortage of cars and labor unrest. The former condition is said to be due to the failure of the railroads to have their cars returned from the anthracite fields.

Quotations at the end of the week were easier, ranging from $7.75@$10, dependent upon supply and demand. Pool 11 was quoted $7.75@$8.25 at the mines, Pool 10 from $8.50@$9, Pool 34 $9.25@$10. Tidewater quotations ranged $12.50@$14.

BALTIMORE

Market Is Somewhat Easier — Heavy Export Loadings Break Pier Records — Prices Have Advanced, Due to British Trouble—Car Run to Mines and Loadings Improve—Hard Coal Situation Is Acute—Many Changes in Line of Customers.

Bituminous—There is an undoubted tendency toward an easier market, although prices have just stiffened, following a light break. The supply is good and reports from the railroads show a larger run of empties to the mines and a much better loading. The Eastern car supply is now generally over 60 per cent on the B. & O., over 75 on the Western Maryland and 60 @70 on the Pennsylvania. B. & O. daily car loadings are now generally over the 3,000-ton mark.

British strike complications have not made much difference here so far. There are several coal ships here for cargoes, presumably for England, and several vessels loaded here recently for Rotterdam are said to be really on the way to English ports.

Prices are now 50c. or so better than a week ago. Best coals on both the Pennsylvania and B. & O. are worth around $11. Pool 10 is worth about $10, Pool 11 around $9.50 and Pool 18 is $8.50@$9. Best gas coals are selling at $11, or on a par with the better steam fuels.

More export records are being broken here, despite the close scrutiny of shipments on permits. Up to Oct. 19 a total of about 340,000 tons were loaded. The B. & O. pier at Curtis Bay broke all records for dumping last week when in a single day it turned over 910 cars, or 43,000 tons. At the same time the Locust Point pier dumped 59 cars, and the Canton pier of the Pennsylvania around 200 cars.

Anthracite—The hard coal situation here remains acute, especially as to standard larger sizes, which are almost impossible to get. A few dealers, losing some old business, claim that those supplying the coal to new connections are doing so when they still have a large number of old customers on books with orders undelivered. There is also some talk that a few dealers have charged above the schedule as set by the Baltimore Coal Exchange and this has caused some heated complaints. Such things invariably come up in coal shortage times, however. Warm weather is aiding the situation by halting much early consumption.

Lake

BUFFALO

Steam Prices Still Sagging—Cars Are Fairly Plentiful—Miners Not Working Actively—Big Anthracite Rush.

Bituminous—A decline has unsettled prices till nobody is sure of them. It is not uncommon to get quotations of $7.50 for Pittsburgh, mine price.

So the trade is obliged to proceed with much caution. The consumer also hears of lower prices and he has a way of refusing his purchases on arrival, so that even Pittsburgh, which has all along held firmer, is no longer so much above the Buffalo market. Lump is decidedly stronger than mine run or slack. Buffalo has a way of using the less stable Allegheny Valley market to combat the Pittsburgh strong position for the Allegheny Valley coal is in most instances good enough to meet the needs of consumers and besides there is a second advantage in a lower freight rate.

Gas coal is not weakening. It has become decidedly scarce and the asking price is up to $11@$12. Jobbers here often report that they cannot get any so they are not in any way in control of the situation. This, with the advance of steam lump over slack may soon make it necessary to quote everything separately as in former years.

An easier car situation is noted every week. The miners are not working with much vim, but they do not make the demands that they did.

Anthracite—The local "shortage" has been aggravated by newspaper reports, which prefer to take the scare side and to stir up people needlessly. So the larger retail offices are now beset with orders. Meanwhile the independent operators are asking as high as $17 for egg at the mines and apparently getting it.

There is no real shortage. The usual amount of coal has been distributed and will be right along. The shippers can say that and they do, but the reply is "I want it now," so the rule has been made not to deliver more than two tons on an order. Retail delivered prices are $13@$13.25.

There is the average amount of coal coming in and as soon as the Lakes close that will be turned into the city trade as usual and the clamor will cease.

Lake — Shipments continue good though the shortage from last season

is not likely to be made up. Total for the week is 107,150 net tons, of which 41,000 tons cleared for Duluth and Superior, 33,100 tons for Chicago, 8,000 tons for Milwaukee, 7,800 tons for Fort William, 7,400 tons for Port Arthur, 7,000 tons for Sheboygan, 2,850 tons for Racine. Freight rates are strong, vessels going light to take 7c. grain. Quotations: $1.50 to Racine, 85c. to Chicago, 75c. to Milwaukee, 70c. to Sheboygan, 60c. to Duluth, Fort William and Port Arthur.

Coke—The market is unsteady as usual, as local jobbers are asked chiefly to make up occasional shortages at the big furnaces. Latest quotations from the Connellsville district are $18 at the ovens for 72-hour foundry, $17.50 for 48-hour furnace and $15.50@$16 for high sulphur and stock. Domestic sizes are mostly byproduct obtained of Buffalo producers, $8@$8.50 for chestnut and $5@$5.50 for pea, to which add mostly 50c. for delivery. Domestic coke is very unsteady in price, as it comes from all sources, some of it being blowings from beehive plants.

CLEVELAND

Coal Market Is Unsettled — Quotations Show Weakening Tendency—Operators Welcome Lower Prices — Receipts Are Increasing—Coal Conference To Bring Better Situation.

Bituminous—The expected price reduction has not materialized generally, although a weakening in quotations is apparent. Operators are waiting the outcome of the conference of coal men of the United States, scheduled for Cleveland, at which the subject of cheaper coal will be taken up. Generally speaking, operators and distributors in the northern Ohio district would welcome a readjustment. Such action would probably silence the agitation for Government investigation and bring to a halt the steps now being taken by the Cleveland district attorney.

In Ohio fields the situation is a difficult one because of the unwillingness of the miners to give 100 per cent efficiency. The slightest provocation is sufficient to cause them to become disgruntled. As coal production is now below normal the car supply is adequate. Coal has been coming forward a better rate. The daily average has been worked up to about 87 cars for Cleveland alone, which is nearly double that prevailing two weeks ago.

Prices for spot No. 8 slack at the mines vary. Quotations as low as $4 were named early in the week, while the highest price has been $7. The average price at which spot coal is moving is much lower than a few weeks ago and stands $6@$7. Retail prices for No. 8 dropped from $12 to $10.70. West Virginia Splint and cannel lump advanced slightly.

Pocahontas and Anthracite—Domestic demands have been swelling despite warm weather that has prevailed. Fear of a gas shortage has stimulated the desire to lay in coal supplies. Some of the retailers have been getting better supplies, but deliveries are falling short more than 50 per cent. After suspension of the Lake priority it is expected that coal supplies will be much more plentiful and the prices lower.

Lake—Coal has been coming forward to the Lakes on contract at a good rate. The roads have been dumping about 3,500 cars daily. Vessel movement to the Northwest is running 25,000 tons weekly. These shipments exceed the fixed goal by 1,000 tons.

Retail prices of coal per net ton delivered in Cleveland are:

Anthracite—Egg, $16.50; chestnut and stove, $16.25 @$16.50.
Pocahontas—Shoveled lump, $15@$16; mine-run, $12.50.
Domestic Bituminnus—West Virginia Splint $13.50; No. 8 Pittsburgh, $10.70; Cannel lump, $15.25.
Steam Coal—No. 6 and No. 8 slack, $11@$12; No. 6 and No. 8 mine-run, $12.50; No. 6 ¾ in. lump, $12.50.

MINNEAPOLIS

Milder Weather Aids Fuel Situation — Bituminous Movement Improves — Shortage Is Not So Serious — Anthracite Stocks Are Satisfactory—Trade Is Unwilling To Pay Present Prices.

Due to the prolonged mild weather, the general coal situation seems somewhat better. Some good work has been done in the way of increasing deliveries at the lower Lake ports. Part of the time the dumpings have been over the 4,000 cars a day set for the required amount.

The gain on hard coal, plus the slight increase this year over deliveries of a year ago, make the situation on that grade fairly satisfactory. The comparison with a year ago must take into consideration that there was a surplus last year from the preceding season which did not exist this year. This season's deliveries to Oct. 1 show a gain this year of 79,000 tons which augmented by the saving through the mild weather of the fall, ought to make the total serve pretty well through the winter.

On soft coal, the situation is much different. There is a shortage of receipts to Oct. 1 of nearly 2,000,000 tons, while the carry-over in the spring of 1919 was 2,000,000 tons against about 800,000 only in the spring of 1920. This applies to commercial coal, exclusive of railroad and steel corporation supplies.

It does not seem to be humanly possible to make up any major portion of this amount between now and the close of navigation. Good movement is being made now, but it is only serving to make up in some degree the shortage which prevailed earlier when the deliveries went below the quota.

One serious feature now is the uncertainty as to the mine prices. The present high mine costs would hardly endure if the car situation became sufficiently free to permit capacity runs. Even now, there are reports of an occasional easing of the extreme figures.

The trade feels certain that there will be a shortage of soft coal in the Northwest and that high prices will prevail. Yet it cannot be assured that there may not be some break from the extreme figures at the mine, when there is a catching up of the deliveries so that the demand from other sections is not so urgent. And the chance of a loss, if there should be a break that would drop the price $1 a ton, would be serious.

Coal is accumulating rapidly at the lower ports. All-rail movement has been heavy and the general situation shows a decided improvement of late.

MILWAUKEE

Federal and State Coal Investigation Is in Progress—Lake Receipts Are Better —Retail Situation Is Unsatisfactory.

Interest at Milwaukee and throughout the state is centered just now in an investigation of fuel conditions, both as to price and supply, which was inaugurated by Attorney-General John J. Blaine at Madison, Wis., following complaints lodged by Gov. E. L. Philipp and Marketing Director Edward Nordman. Dealers will be called upon to explain their prices and profits. United States District Attorney H. A. Sawyer is also investigating complaints made by consumers agains Milwaukee retailers.

The average price charged for chestnut anthracite this year is reported to be $16.50 per ton, or $4 above last year's figures and $7 above the price asked in 1916. Milwaukee wholesalers refuse to be quoted in regard to the matter.

Those who have investigated the fuel situation in Wisconsin state that there are thousands of homes without coal at the present time. The first cold snap will cause a stampede for the coal yards and if the supply falls short much suffering is predicted.

Prices of anthracite remain steady. Pocahontas is higher; stove, egg and nut now retail for $16.25 and mine-run at $13.75. Steam Pocahontas is selling at $11. Lake coal is coming in reasonably well. Preparations are being made to take care of an unusually large fleet at the close of the season.

Inland West

INDIANAPOLIS

Trade Is in Critical Condition — Tonnage Goes to Better Markets out of State—Retailers Unable To Get Supplies.

Operators are not selling to Indiana retailers to any marked extent. Most of the coal is going outside the state. Labor troubles are reduced to a minimum and the car service is improving.

The coal commission has made its ruling that the retailer shall not pay more than $3 a ton and allowing the retailer a margin of $2.25. Operators are being offered $6@$8 in Michigan and other surrounding states for the same coal, which if sold in Indiana, would bring $3. The result is that contracts are rapidly being made outside the state.

Jobbers say there is less free coal on the Indiana market now than at any time in the history of production and retailers state their bins are entirely empty, with little prospect of getting them filled, unless the coal commission becomes more liberal in its awards.

To add to the general complexity the intrastate freight rates were increased approximately 33⅓ per cent with the exception of consignments to some of the industrial cities in the north central section, located in the former natural gas region. These cities' rates will be fixed later, but it is generally assumed that the rate will be lower than to other portions of the state.

MIDWEST REVIEW

Conditions Approach Normal—Car and Labor Situation Better — Indiana Coal Goes to Higher Markets—Price Decline Continues.

During the past week, the coal industry has been in a far healthier state than at any time since the beginning of the year. Market conditions have been more normal. labor has been fairly satisfactory, and the car supply, when compared with what the mines have been receiving, has been excellent.

All of the important producing fields have been receiving a car supply of 60@70 per cent. Many different grades, especially steam sizes, have dropped to more normal price levels. Domestic sizes were not much reduced.

Industries are now in fairly good shape, and do not have to pay whatever prices are demanded. The good grades are now obtaining the premium to which they are entitled. Another interesting development is the tendency of the operator to eliminate the jobber or wholesaler. The average operator feels that conditions are now pointing more toward normal, and lower prices. For this reason he is inclined to sell his coal direct and save the jobber's commission. Another reason is the fact that some recent investigations have brought out the fact that a number of wholesalers have been making abnormal profits.

The situation in the Indiana coal fields is rather interesting, although few developments took place last week. Some of the larger and more responsible Indiana operators are taking care of the Indiana trade on the basis outlined by the state commission, but a very large tonnage of Indiana coal is being shipped out of the state, sold at prices far in excess of the figures set by the commission. However, enough coal is being sold in Indiana to keep the commission temporarily satisfied.

Operators and the buying public are now feeling optimistic, as the whole coal situation is now in a fairly healthy condition. If the car supply keeps up the way it has been lately there will be plenty of coal and the market will decline still further. This will have the approval of practically all of the responsible operators, as well as the big buyers, as it is realized that a return to normal as soon as possible, will be the best thing for all concerned.

Current mine prices quoted on the open market are:

Southern Illinois (Franklin, Saline and Williamson Counties)		
Prepared sizes	$6.25@	$7.25
Mine run	5.50@	6.25
Screenings	4.50@	5.00
Springfield District, Illinois:		
Prepared sizes	$6.25@	$7.25
Mine run	5.00@	5.50
Screenings	3.50@	4.25
Northern Illinois:		
Prepared sizes	$6.00@	$7.00
Mine run	5.25@	6.00
Screenings	4.00@	5.00
Indiana (current prices on coal sold outside the State of Indiana) Clinton Field, fourth vein:		
Prepared sizes	$6.75@	$7.25
Mine run	5.00@	6.50
Screenings	4.25@	5.00
Knox County, fifth vein:		
Prepared sizes	$6.00@	$7.00
Mine run	5.00@	5.25
Screenings	4.00@	4.50

COLUMBUS

All Coals Decline — Less Activity in Railroad Fuels — Domestic Trade Is Still Strong—Better Operating Conditions Are Noticed.

Steam coal has declined sharply. Domestic is also lower by about $1. Slowing steam consumption, grand jury investigations and the attitude of operators have all contributed to lower prices. It is stated that prices may fall still further.

Steam trade is generally quiet. Industries have comfortable reserves and are not heavily in the present market. Utilities are now well supplied. Railroads are still buying, but requirements are not as large as formerly. Prices are now down to a point where resumption of buying for reserve purposes may be expected, but this has not developed to any marked degree as yet.

Domestic trade is still active and dealers are buying whenever possible. Pocahontas is still searce and little of that grade is expected to be handled in the Columbus market soon. A considerable tonnage of West Virginia splint is arriving. Kentucky grades are on the market, but the main bulk of the coal comes from the southern Ohio field. Retail prices are also declining. Hocking and Pomeroy Bend lump retails $8.50@$10, while mine run is 50@75c. lower. West Virginia splints are $9.50@$11 and Pocahontas $12.50@$15.

Under the influence of an improved car supply production in practically all Ohio fields has shown an increase. The Hocking Valley produced about 65 to 70 per cent and the same figures are reported from Pomeroy Bend. Cambridge and Crooksville had a run of 65 per cent during the week.

Prices at the mines of coals used in Central Ohio are:

Hocking lump	$6.00@	$7.50
Hocking mine run	5.50@	6.75
Hocking screenings	5.50@	6.50
Pomeroy lump	6.25@	7.50
Pomeroy mine run	6.00@	7.25
Pomeroy screenings	5.75@	7.00
West Virginia splints, lump	6.50@	7.75
West Virginia splints, mine run	6.00@	7.50
West Virginia splints, screenings	5.75@	7.25
Pocahontas lump	7.75@	9.00

ST. LOUIS

Warm Weather Has Eased Conditions —Steam Sizes Are Heavy and Prices Lower—Domestic Is in Good Demand— Car Supply Is Short.

As a result of the investigation in Chicago, steam sizes are heavy in St. Louis and standard screenings are down to $3, with slightly higher prices prevailing on country and Northern shipments.

A general business depression in the North and Northeast is partly responsible for the surplus of steam. The domestic market, however, is good but there it not enough coal to meet the demand. It is easy to understand what the condition would be if the weather were seasonable.

In the Standard field there are petty strikes that seriously cut down the production. At meetings held this week the miners have voted not to work on Saturdays. In the Mt. Olive field two of the largest mines were idle on account of labor troubles.

The car supply in the Standard field is far from satisfactory. The railroad tonnage cuts in heavily and is chiefly mine run. Heavy Government orders have been placed recently.

Standard prices for St. Louis shipments on domestic sizes are $4.25@$5, screenings $3@$4.25. Mt. Olive prices are $4 in St. Louis for all sizes, up to $5.50 in the country and outside.

In the Carterville district conditions are good. The car supply is somewhat short on the Iron Mountain and Illinois Central, but otherwise everything is satisfactory. Operators are asking $4.25@$5.50, while some of the independents are getting as high as $8.

No anthracite shipments are coming in. A little smokeless moving through with nothing from Arkansas. There is no change in retail prices.

Calls for domestic coal in the country are now being handled through a committee representing railroads and operators in an effort to relieve the condition in Missouri and to enable the state to get along without calling for Federal aid in the distribution of coal.

CHICAGO

Bituminous Receipts Are Better—Temperate Weather Aids the Supply — Prices Seek Lower Levels.

A special effort is being made to ship a large tonnage to Chicago, and the results have been very gratifying. Both the steam and domestic trade are now in such a position that they can choose rather than be forced to buy whatever is offered. The continued warm weather has also been effective in keeping prices lower.

A careful investigation of the coal supply, in the city of Chicago, has disclosed that there is approximately 30 days' supply on hand, which is considered fairly satisfactory. The manufacturers and other large buyers of steam coal are in better shape as they have been given an opportunity to accumulate fuel on account of the warm weather

Eastern coals continue to be very scarce and only a few retail dealers have anything from West Virginia, Pennsylvania or Kentucky to offer. There is no denying the fact that there is a very serious shortage of hard coal. So far as Eastern soft coal is concerned, while some has been coming in during the past week, there is but little demand for it on account of the fact that southern Illinois coals are now available in fairly satisfactory quantities. West Virginia and Kentucky coals, prepared sizes, are selling anywhere from $6@$10, f.o.b. mines.

DETROIT

Steam Demand Has Eased Off — Domestic Calls Are Heavy and Receipts Light — Anthracite Situation Is Unchanged.

Bituminous—Owing to manufacturing curtailment there is a material easing off in the inquiry for steam coal. The situation is also relieved somewhat by a freer movement of this coal.

The available supply of domestic is considerably less than requirements of the market. Jobbers report that domestic coal of the better grades is very scarce, as only small shipments are being received from mines in Ohio and West Virginia, which are regarded as the chief source of supply.

A larger proportion of the present supply is reported coming from mines in Indiana and Illinois, which are less highly regarded, the tonnage being restricted by the demand of markets nearer the points of production.

West Virginia mine run is reported at $8.50 and lump $8.75@$9 f.o.b. mines. Hocking mine run holds around $8 and lump is $8.50. Only a small amount of smokeless is being received and the quotation on lump ranges around $10.50 at the mines.

Anthracite — Household consumers who have been unsuccessful so far in obtaining a winter supply of anthracite find little comfort in the future outlook. Retailers are practically without anthracite and report they are unable to get any definite information concerning the probability of a better supply later. Dealers are unable to make much progress in supplying customers, many of whom placed orders months ago. Substitution of bituminous coal and coke is being urged, but either supply is inadequate.

South

BIRMINGHAM

Steam Market Is Easier with More Coal Available — Domestic Shipments Temporarily Confined to State — Car Supply Is Good — Men Are Returning Rapidly.

Inquiry for steam has fallen off perceptibly in the past week. The supply of free coal has shown an increase, consumers being able to obtain a considerable tonnage of Big Seam, Mt. Carmel, Jagger and other medium grades of Walker County. There is little Cahaba, Black Creek or Pratt to be had. Prices range from $5.50 for Big Seam mine run, to $6 for Jagger and Mt. Carmel. Black Creek and Cahaba bring $7.50@$8.

The domestic demand is exceptionally strong, and supply from the mines is far below requirements. State Fuel Administrator Davis has issued an order prohibiting any domestic coal being shipped out of the state for an 18-day period, beginning Oct. 20, this action being taken to enable Alabama consumers to stock up some coal for winter requirements. The railroads have agreed to seize no more lump coal, and this action will greatly remedy the acute situation.

The coal-carrying lines are furnishing all the cars needed at the mines of the district, with the exception of the Louisville & Nashville, which has run a little short in the past few days on account of several hundred cars being taken to the Kentucky fields.

Production for the week ended Oct. 16 is expected to approximate 266,000 tons, which will show an increase over the preceding week of 11,000 tons. Men are reported returning to the mines in large numbers, especially in the Walker County field. However, it is expected that union officials will call all the men out at the so-called "Blue-Book Contract" mines, as it is not considered likely that the operators who signed these contracts for a two-year period from May 1 will consent to enter into negotiations for new contracts or concede to further demands which the union seeks to incorporate in the new contracts.

LOUISVILLE

Industrial Demand Is Falling Off — Prices Slightly Softer—Domestic Market Is Good—Lake Movement Is Heavy —Spot Coal Continues Scarce.

Demand is nothing like it has been, due to industries slowing down. Export promises activity as a result of the situation in England.

Car supply continues about 35 per cent, but tonnage for the field is well up, as there are far more mines, and greater production than formerly. The country situation is improved, and it is believed that there will be no December shortage.

A good many operators are abiding by the $6 maximum agreement, but others are getting $6.50@$8.50 for mine-run, and more for block, which is reported to be selling $9@$10.

One retailer states that out of 40 letters sent to producers in Harlan, Hazard, Elkhorn and Straight Creek districts, eight replies were made. Most of the replies reported "sold up," or not enough coal to cover contracts.

Retail prices show eastern Kentucky or West Virginia block, $11.50; mine-run, $11; nut and slack, $9.50. West Kentucky lump, $10.50; mine-run, $10; screenings, $8.50.

Jeffersonville dealers have been offered an opportunity to place their requirements before the State Food and Fuel commission, but have held off in hopes of securing eastern Kentucky or West Virginia fuels, which are principally used in the market.

Western

DENVER

October Output Is Good—Retail Prices Are Unchanged, but Steam Advances—Wage Increase Hearing Set for Nov. 4.

October output in Colorado bituminous and lignite fields is keeping up to the September figures, but sales are slow in the big cities. Retailers here experienced the biggest business so far this year during September, catching up with back orders.

Little change is expected in bituminous retail grades in November over present prices, but advances in steam coal are already under way. The Victor-American Fuel Co. has increased Routt County Pinnacle bituminous, slack, from $3.50 to $3.90 at the mine, causing an increase to $7.50 a ton on the Denver market. Other grades of steam are $3@$3.50 at the mine, selling for $7 here. Trinidad steam retails for $8.05 to apartment houses and hotels.

No change is reported in lignite slack steam, which is retailing $5.30, although a raise of 10c. and 15c. was made recently at some mines. Cold weather may bring a further increase that will probably be reflected in Denver markets.

First grade lignite lump is selling for $10.15, Leyden lump for $9.35 and Weld County at $9.15. Routt County bituminous lump is bringing $12.50 a ton, while Rockvale is $11.50.

Canada

TORONTO

Mild Weather Causes Decreased Demand—Dealers Still Behind in Deliveries—Continued Scarcity of Anthracite.

The weather for some time has been unusually mild and has caused a considerable slackening in the demand for domestic coal. Dealers, however, are still much behind in filling accumlated orders.

Anthracite is coming forward in fair quantities, but the yards are still almost empty, and deliveries are being made from the cars. The situation as regards bituminous, shows no change, the supply for industrial plants being still very short. The Provincial Fuel Controller, acting in conjunction with the Board of Railway Commissioners, has arranged for supplying emergency shipments for public utilities.

Quotations are as follows:

Retail	
Pea	$15.40
Anthracite, egg, stove, nut and grate	16.90
Bituminous steam	16.00@$17.40
Domestic lump	18.15
Cannel	20.00
Wholesale, f.o.b. cars at destination.	
Three-quarter lump	14.50@$15.00

News From the Coal Fields

Northern Appalachian

CONNELLSVILLE

Coke Market Slumps Sharply — Furnaces Are Curtailing Reserves With Some Expecting To Bank or Blow Out —Production Is Well Maintained.

The spot coke market has had a sharp break, being down $2 on furnace grade. Not only have sales been made at $15, but some offerings at this figure have been refused. To find a price as low as $15 one must go back prior to July 1.

To a small extent the decline in the market is attributable to heavier production, car supplies having permitted an increased output, and supplies in the past week have been but little under actual requirements. In larger measure, however, the decline has been caused by a change of attitude on the part of many of the blast furnaces. Some that were buying spot coke have ceased to do so. Others have instructed operators to curtail shipments on requirement contracts. In each case the lessened demand is due to an intention on the part of the furnacemen either to bank or blow out.

While the coke market may decline somewhat more in the next week, no radical change is to be expected until coal goes much lower, since at $15 coke is bringing not much more than the market value of the coal involved plus cost of conversion.

We quote the spot market at $15 for furnace and at $16@$17 for foundry, per net ton at ovens.

The *Courier* reports production in the Connellsville and Lower Connellsville region in the week ended Oct. 16 at 213,265 tons, an increase of 1,105 tons.

PITTSBURGH

Market Is Easier with Further Declines in Prospect—Lake Coal Demand Very Light—P. R R. Embargo on Export Shipments Is Tighter.

The spot coal market has softened about 50c. on ordinary steam grades and $1@$2 on gas and by-product, bringing the various grades relatively close together. While production has probably increased a trifle, the change is due chiefly to lessened market demand, as buyers are more strongly of the opinion that coal prices are marked for a sharp recession. Consumption is somewhat reduced, with prospects of there being further and sharper reductions, particularly in the iron and steel industry, which clearly is facing a period of much lighter operation.

Practically all coal operators admit that lower prices are in prospect, and definite efforts are being made to see that the decline is an orderly one.

The Pennsylvania embargo on shipments to Tidewater is tighter, very few requests for permits being granted, and this condition has thrown more coal upon the local market. On the B. & O. there is a fairly free movement for export. Demand for Lake coal is now very light, with the end of the shipping season only a few weeks distant, and Lake prices are easier.

The market is $8 for steam coal and $8.50@$9 for best grades of gas and by-product, per net ton at mine, Pittsburgh district.

UNIONTOWN

Coal and Coke Have Slumped Sharply —Car Supply Is Greatly Improved— Labor Is More Plentiful — Pier Shipments Are Greatly Curtailed.

All grades of coal and coke have slumped this week and from present indications the end of the drop is not yet at hand. Coke is off $3 per ton, with coals 50c.@$1.50 under last week's prices.

Furnace coke is selling at $14.50 instead of the $17.50 price of last Monday. Pool 44 coal is $8; P. R.R. Pool 34 is $7.75; B. & O. Pool 34 is $10; P. R.R. steam is $6.75; B. & O. steam is $7.50, and byproduct coal is $8.25.

Car supply has been the best since the week of Sept. 6, the Monongahela Ry. record being 85 per cent on coal and 100 per cent for coke. This has handled the bigger production and resulted in free offerings in all domestic markets. With pier shipments practically ceased, the resultant price drop was discounted. Some talk of 1921 contracts is being heard and will increase if a further market recession is registered.

The Monongahela's excellent car supply came from a P. R.R. 50 per cent coal placement with 1,370 cars against 2,555 required and a Lake Erie 100 per cent coal placement with 4,140 cars out of 3,060 required. In coke placements the Lake Erie scored 125 per cent with 2,120 cars against requirements of 1,690 and retrieved the P. R.R.'s 70 per cent placement.

The average placement over the same period for the Pennsylvania branches was 40 per cent coal and 50 per cent coke, with similar records being made by the B. & O. Yards are once again filling up with loads, 1,600 cars being reported at Youngwood and 200 at Rainey.

Immigration from Europe is increasing and emigration from other American labor fields is reported, the latter principally from the rubber companies of Ohio. Generally speaking, the labor situation is the best of the year.

FAIRMONT

Better Car Supply Improves Production —Lakes and Tide Movement Is Heavy —Prices Generally Reduced as Agreed —Export Price Expected to Stiffen.

With car supply adequate to take care of capacity output for at least half the week, production was on a larger scale. There was a better run of cars in northern West Virginia than in the southern section. Monongahela mines had a fair run during the early part of the week, despite the fact that the

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

BITUMINOUS COAL

	1920 Week	1920 Calendar Year to Date	1919 *a* Week	1919 *a* Calendar Year to Date
Oct. 2*b*	11,350,000	404,112,000	11,518,000	352,794,000
Daily average	1,892,000	1,728,000	1,920,000	1,508,000
Oct. 9*b*	12,091,000	416,204,000	11,888,000	364,682,000
Daily average	2,015,000	1,735,000	1,981,000	1,520,000
Oct. 16*c*	12,135,000	428,339,000	11,829,000	376,511,000
Daily average	2,022,000	1,742,000	1,972,000	1,531,000

ANTHRACITE

Week Ended	1920	1919 *a*
Oct. 2	1,804,000	1,921,000
Oct. 9	1,847,000	1,955,000
Oct. 16	1 855 000	1 916 000

BEEHIVE COKE

United States Total

Week Ended Oct. 16 1920*c*	Week Ended Oct. 9 1920*b*	Week Ended Oct. 18 1919	1920 to Date	1919 to Date *a*
403,000	400,000	383,000	16,874,000	15,485,000

(*a*) Less one day's production during New Year's week to equalize number of days covered for the two years. (*b*) Revised from last report. (*c*) Subject to revision All figures in net tons.

number of assigned empties was unduly large. Cars were also fairly plentiful on the main and branch lines of the Western Maryland.

Lake and Tidewater shipments overshadowed all other movement during the week ended the 16th, but line shipments were on rather a low level, the demand having materially slackened.

During the week the Fair Practice Committee decided to ask operators to adopt the state price policy to cover coal shipped outside of the state. The maximum price for state delivery has been $6. Surface indications are that this price is being generally followed on all line shipments. As a result, the price on Lake shipments has softened to $6@$6.50, a reduction of about one dollar per ton. Because of the British coal strike, the export market will probably stiffen. The price prevailing during the greater part of the week for export coal was $10.50.

NORTHERN PAN HANDLE

Improved Car Supply, Government Agitation and Slackened Demand Have Lowered Prices—Lake Quotas Are Met.

There was a reasonably good car supply, though toward the latter part of the week ended Oct. 16 mines on the Baltimore & Ohio were reduced to partial idleness.

Comparatively little spot coal was available for line shipment because of Lake obligations, which mines were faithfully meeting. The demand for line shipments was not as strong as it had been, yet there was sufficient call to absorb more coal than was available.

Prices for line shipment were somewhat off color. That was partly due to the activities of the Fair Practice Committee both as to local deliveries and to points beyond the confines of West Virginia. The price for Lakes was averaging $6@$6.50 a ton.

An improved car supply and government agitation, with slackened demand among domestic consumers at markets along the Lakes are responsible for the lower prices.

EASTERN OHIO

Labor Indolence Increasing—Radical Element Threatens Loss of Production—Prices Are Softer.

Labor supply has remained about the same as when the recent outlaw strike ended, though it is reported that a great many men have left the field for other districts where they believe they will not find the radical element so much in power.

This element, since the loss of the recent strike, seems to have adopted in many places a Soviet practice, in that this type of loader goes into the mines in the morning and after loading one mine car spends the rest of the day sitting around, being careful not to leave until quitting time and thus give the operators ground for appeal to union officials on account of reduced production by the men quitting the mines when cars are available for loading. The remedy will no doubt be found in the reduction of workers' wages, but it will take some time to convince them by this method that the practice adopted is as detrimental to themselves as they seek to make it to the operators.

Car supply during the week of Oct. 16 was much better, but this week seems to be falling off considerably, due possibly to the railroads transferring the excess empties to other fields, where shortages prevail. Prices are softening somewhat and the whole situation in this direction seems to be improving.

Production for the week ended Oct. 16 remained at approximately 250,000 tons, of which the railroads took about 35 per cent.

Middle Appalachian

NORTHEASTERN KENTUCKY

Car Supply Declines—Kentucky Consumers Get Heavy Tonnage—Set Price Prevails—Coal to Lakes in Good Volume.

Production declined further during the period ended Oct. 16, the output dropping to 110,000 tons. In other words, mines were operating on just about a halftime basis. The additional loss was caused by a 44 per cent car shortage.

A greater percentage of the coal produced in Kentucky is now being shipped to points within the state and at prices much lower than those heretofore prevailing. It is estimated that fully one-half the output of some of the fields in the eastern part of the state is being shipped at the prevailing price of $6 a ton. This seems to be the standard price, as tacitly agreed to by the Government. It is thought that with many cars on shorter hauls it will now be possible to keep a larger number of cars in circulation.

POCAHONTAS AND TUG RIVER

More Cars Available in Tug River—Labor Conditions Improve—Lakes Program Being Pushed—Heavier Western Movement—Export Demand Is Increasing.

An increasing car shortage in the Pocahontas field has not so far greatly cut down the aggregate of production. With an increase in the car shortage loss there has been a decrease in the labor shortage. However, car shortage losses are now equal to combined losses from all sources observed about the first of October, running to 65,000 tons as against only 30,000 due to labor shortage.

There is not so stiff a demand at the Lakes despite the fact that the Government is pushing the Lakes program. Because of the downward trend of prices buyers are refusing to make purchases and that has weakened the Lake demand. There is perhaps more Pocahontas coal going to Western markets than has heretofore been the case. The demand in the East is not quite so strong though little difference is observed in the volume of tonnage bound for Tidewater points.

Coal loading in the Tug River region for the week ended Oct. 16 reached a total of 88,650 net tons, representing an increase of 1,800 tons over the previous week, being close to maximum production for five days' work. More cars were available on the Norfolk & Western in this field owing to the fact that they were taken from the Thacker field in order to equalize the supply.

Tidewater continued to claim a large proportion of Tug River output with the prospect of a heightened demand in view of the British mine strike. There was not so strong a demand at the Lakes. Market fluctuations, however, affected conditions in the Tug River field only to a limited extent.

KANAWHA

Car Shortage Is More Pronounced—Lakes Movement Is Smaller—Prices Are Unchanged.

Decreased production followed a car shortage even more pronounced during the week ended Oct. 16. The car supply was under 50 per cent, taking the week as a whole. No improvement was observable in the supply of empties on the Kanawha & Michigan despite repeated promises.

While 20 per cent was fixed as the quota to be shipped to the Lakes, the per centage actually moved was larger, owing to the limited car supply. The fact that production was not so large, however tended to cut down the Lake movement as compared with the previous week.

There was just as heavy a demand from Inland markets, not only for steam but especially for domestic fuel, the Eastern market leading in that respect. Prices remained virtually unchanged. The prevailing price on spot mine run for Inland markets was about $7.50 and for export was $10.50@$11.

VIRGINIA

Production Now Mainly Curtailed by Labor Loss—Export Demand Grows—Lower Prices for Inland Markets.

While car shortage losses have faded into insignificance a labor shortage is now responsible for virtually all the loss in the field. Production was still ranging around 130,000 tons curtailed to the extent of 20,119 tons or 13.3 per cent by the labor shortage loss.

There was no car shortage to speak of on any road except the Norfolk & Western, where it amounted to only 2 per cent. Production was best at the mines on the C. & O., where the labor shortage affected production only to the extent of 3,650 tons. The most pronounced labor loss was at mines served by the N. & W. where this reached 19 per cent.

There were signs of a growing export demand. While there was not so strong a call for coal at Inland markets, as a result of the waiting policy of buyers, yet the demand was still outstripping the supply. Prices were on a slightly lower level.

LOGAN AND THACKER

Strike Losses Continue to Decrease—Logan Car Placement Is Poor—Lakes Movement Is Heavy—Prices are Slightly Off.

Production in the Williamson field was on a larger scale, owing to progress made at mines so long affected by the strike and partly because of a slight betterment in the car supply. The ranks of working miners have been reinforced by outsiders. In other instances miners are still returning to work and will continue to do so as winter approaches.

The Norfolk & Western has again restricted mines to box cars and it is generally understood in the region that wagon mine operators are experiencing difficulty in disposing of their product because of falling prices.

Not so much coal was mined in the Guyan region in the period ended Oct. 16 as there was a slight decrease in the car supply. Production was not more than 60 per cent of capacity. For a time Lake loadings were rather slim, but on Thursday 24,000 tons, or about two-thirds of output went to Lakes.

There was a little more activity among buyers in the field both for Eastern and Western markets, a portion of the output also finding its way to Tide. Domestic coal was also in good demand but there was a perceptible decrease in the call for slack. Average run of prices for Inland was about $7 a ton, with export at about $10.

NEW RIVER AND THE GULF

New River Output Declines—Gulf Region Hampered With Growing Labor Shortage—Tide Shipments Are Heavy.

There was a marked decrease in the output of coal in the New River region for period ended Oct. 16. On Monday alone was the supply of empties at all adequate, the supply declining from day to day. The shortage was more pronounced than at any time in recent weeks. One trouble seemed to be the inability of the Chesapeake & Ohio to handle loads.

The export demand was strong, with a price of $10.50 being offered in many cases, though most export coal was being moved at a figure far below that. There was no weakening in the Eastern or Western demand for New River smokeless and more coal than usual went to Western markets. However the largest part of the output went to Tide.

Supply on the Virginian Ry. was better than that on the Chesapeake & Ohio in the Gulf region, car shortage loss being only about 30 per cent while mines on the C. & O. were cut down to about half time. Virginian operators, however, were still much perturbed over the growing losses from a labor shortage, especially as such a shortage had begun to develop at a time when the car supply gave promise of marked improvement. As usual, the greater part of the Gulf output was going to Tidewater. There were plenty of bottoms at Tide and export dumpings during the week were larger.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Little Increase in Production—Lake Quota Is Increased—Prices Steady at Grand Jury's Figure.

There was but little if any increase in production for the week ended Oct. 16. Operators have been promised relief so often and then the cars fail to show up, that they do not expect more than two days loading time per week.

The Louisville & Nashville R.R. has notified operators that their quota of Lake coal is now about 7 per cent of the rated output of the mine. This is a material increase in the quota.

District Attorney Slattery continues to try to force the operators to agree to sell coal at a price not to exceed $6. While this is the ruling price for coal, but few, if any of the operators have actually signed an agreement with reference to prices. To an unbiased observer, it can hardly seem fair to furnish local mines the smallest car supply of all the coal fields, and then also hammer down their selling price to a figure lower than that ruling in other districts.

Middle Western

DUQUOIN

Market Is Unchanged—Car Supply Is Good, Production Only Hampered by Labor's Indifference.

Market conditions during the past week have not changed to any extent, although a slight downward trend has been noticed in one or two grades. The mines are still working about 70@80 per cent. One of the greatest drawbacks now is the fact that many of the men do not want to work over three or four days a week and production at the mines is greatly hampered. This is partly attributed to the fact that the recent raise in pay for the shift men gives them more money than they are used to receiving.

Contrary to many reports, the Illinois Central is holding its own in car supply. Scarcely a mine on the main line has been idle for over two weeks for the want of cars. Reports keep coming to the affect that the Illinois Central is one of the weakest in the district, however, mines along the route have not noticed it during the past few weeks.

WESTERN KENTUCKY

Demand Is Keen at Steady Prices—Production Held Down by Poor Car Supply—Field Prospects Are Improving.

Local demand is very good, due to the fact that the field has extended its market, and is getting business this season in several districts which were hardly considered before. While buyers are not in the field as strongly as a while back, still the demand is far in excess of supply.

Since the strike, labor has settled down, and is working much better than for months past. The field is in excellent shape as a whole and only needs empties. Car supply during the past few days has been down to 26 per cent on the L. & N. lines.

Industrial demand is not as heavy as it was in the northern Indiana and Michigan districts, but a very fair volume of coal is moving in that direction, with a good Southern business which is picking up as the cotton ginners get busy.

Quotations last week averaged: prepared sizes $5.70, mine run $5.17, screenings $4.18. However, spot lump is quoted in many instances $7@$8 a ton for good grades, mine run $6@$6.50, screenings $5.50@$5.75.

Western

UTAH

Labor Conditions Are Excellent — Car Supply Is Poor — Retail Stocks Are Short.

Labor conditions in the Utah coal fields are excellent. The men are more anxious to work than in the past, and little mine idleness is being experienced from this source. Car shortage losses, however, are mounting, the supply being about on a par with other sections. This situation is expected to become even more acute in the near future.

Retailers are apprehensively watching the approach of cold weather. Stocks are short, some dealers having only about 20 per cent of their usual supplies for this time of the year.

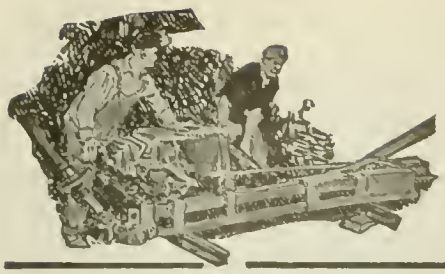
Curtailed output is greatly reducing the trade in Utah coal at the coast. With so much of the production necessarily absorbed for use inside the state, shippers are embarrassed in making deliveries elsewhere.

Canada

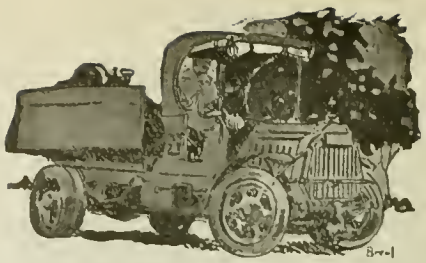
ALBERTA

Official returns of the output of the coal mine in Alberta for July show a production of 3,560,323 tons, an increase of 1,431,354 tons over that of July 1919. The figures for August have not been made up, but an equal rate of increase is expected to be shown for that month and the remainder of the season.

About 225 mines are now at work and those remaining idle are mostly small operations, which will not materially affect the total output. Reports from the large producing mines are to the effect that efforts are being put forth to speed up production. There is some shortage of labor, but with the cessation of work in the harvest fields, more men will shortly be available in the future.



Mine and Company News



ILLINOIS

Springfield—The Peabody Coal Co. has certified to an increase in its capital stock from $5,000,000 to $6,000,000. Francis S. Peabody is president of the company, which has extensive holdings in the Illinois coal fields.

Duquoin—The Security Coal & Mining Co., operating a mine south of this city, is now completing a number of test holes and will within the next year sink one of the largest mines in the state. The site is located about 4 miles southwest of town and about 2 miles west of the Security mine now in operation. A switch will be constructed to the mine and a miners' train will be operated twice daily for the men to go to their work on.

KENTUCKY

Louisville—The Kanawha-Knox Coal Co. of Elys has increased its capital stock from $50,000 to $400,000.

E. N. Ennis, J. A. McDermott and W. H Avant have organized the Ennis Coal Co., at Barboursville, with a capital of $150,000.

The Elkhorn-Coleman Coal Co. has been organized at Willard, with capital of $50,000, by P. Mullins, J. H. M. Brayer and D. B. Ramey.

The Camp Branch Coal Co., at Marrowbone, Pike County, plans a $50,000 investment, with a mine on the B. & O. W. W. Bentley is head of the company.

OHIO

Columbus—A number of coal mining concerns were incorporated during the latter part of September, showing that rapid development work is still going on. Among these were: The Syndicate Coal Co., of Dayton, with a capital of $60,000, by I. F. Craig and others; The Lick Creek Coal Co., of Ironton, with a capital of $25,000, by A. E. McCoy and others; The Rice Coal Co., of Dayton, with a capital of $25,000, by J. W. Rice and others; The Aberdeen Coal Co., of Columbus, with a capital of $25,000, by H. H. Orr and others. The Columbus Board of Purchase has been authorized by the city council to ask for bids for approximately 10,000 tons of mine run coal for the various city departments. The advertisements will be out shortly.

Pomeroy—Reports show that there is a large amount of development work going on in the Pomeroy Bend field. Recent surveys have been made over 18,000 acres of coal lands for the purpose of locating mines and building spurs.

Two new coal operations are now being opened in this section, both by the Essex interests of Columbus. The Stalter & Essex Mining Co., chartered several months ago, has opened a mine on the K. & M. R.R., which has an initial capacity of 400 tons. It is planned to increase this to 1,500 tons daily within a short time. The mine is modern, electrically equipped and taps 1,200 acres of good coal, with a seam five feet thick.

The other mine will be opened about Jan. 1 by the Pomeroy & Hocking Coal Co., also on the K. & M. R.R., about three miles from the other operation. This mine will develop a tract of 4,200 acres of coal, five feet thick. A switch several miles in length is now being built and also a large modern tipple. The officers of both companies are: Calvin Essex, president; Fred Essex, secretary; J. A. Stalter, treasurer, and R. T. West, vice president and general manager. The product of both mines will be sold through the Essex Coal Co.

OKLAHOMA

Gunther City—The Gunther City Coke, Coal and Mining Co. has been organized here. The company is capitalized at $1,000,000 and will work extensive coal mines in Oklahoma and maintain coke ovens at Gunther City, with sales organizations in Oklahoma and other states for its coal and coke products. The incorporators are: E. Webb, Wichita, Kan.; W. H. Brown, Des Moines, Iowa; and C. B. Cordes, Nowata, Okla.

PENNSYLVANIA

Uniontown—Sale was recently made at auction in Pittsburgh of 7,000 shares of the capital stock of the Wetzel Coal & Coke Co. and 3,000 shares of the capital stock of the Liberty Coal Co., formerly held by Josiah V. Thompson of this city. Andrew A. Thompson of Uniontown, son of J. V. Thompson, was the purchaser at figure of $171,000. The stock represents West Virginia coal acreage, a share of stock being issued for each acre of coal land held. Despite the fact that the sale establishes a market value of but $1? per acre on Wetzel County coal land generally held at $100, confirmation of the sale is expected.

Altoona—Lincoln Coal Co. at Nanty-Glo, has abandoned its electric power plant. The company has let a contract to the Penn Central Light and Power Co. for electrical current for the operation of their mine machinery. The new equipment will be installed at once.

TEXAS

San Antonio—The Calvin Coal Co. has voted to increase the capital stock from $60,000 to $240,000. This company conducts a wholesale and retail coal business and it is announced that the increased capital will be employed in increasing its business facilities.

WEST VIRGINIA

Charleston—The fiscal year ending June 30 will show a decrease in the production of coke by the beehive oven method. Many companies have ceased operations for several reasons. The demand for coal has been such as to discourage coke production and the manufacture of coke in beehive ovens means a heavy waste in the chemical value of the coal so burned. In abandoning the beehive method of making coke, a number of companies have in contemplation the construction of large by-product plants. One company alone which has heretofore operated nearly 500 coke ovens—the Penn-Mary Coal Co.—has decided to discontinue this and will probably in the near future build a large by-product coke plant.

Charleston capitalists are behind the newly organized Julian Coal Co. which will operate in the Boone County field of West Virginia, where, it is understood, the company will begin at an early date. The capitalization has been fixed at $50,000. Prominent in the work of effecting a preliminary organization were: J. H. Carter, A. J. Martin, Ada M. Martin and Alpha Carter.

Logan—Operations will be conducted upon a fairly large scale by the Man Mining Co. at Man in the Logan County field. The new concern is capitalized at $100,000. Organizers were: J. C. Miller, Charles S. Porter, William J. Harvie, C. H. Reckard and E. B. Saunders, some of whom are already interested in the Mountain State Coal Corporation also recently organized.

Clarksburg—One of the largest transactions recently consummated in northern West Virginia was that under the terms of which the Fort Pitt Coal Co. acquired the Porter tract of coal near Wilsonburg, Harrison County, some 23,388 acres, which will be developed without delay and on a large scale. When the company begins operations it will be under the necessity of producing 30,000 tons of coal in the first twelve months, being required to pay a royalty of 25c. a ton on this amount. After the first year the company will be required to mine a minimum of 43,338 tons a year until the coal in the tract is exhausted. Failure on the

part of the company to mine the tonnage stated will result in forfeiture of its rights to the tract acquired. The large acreage was purchased from George T. Porter and Hattie Goff Porter.

Meadow Bridge—Smokeless coal will be the principal product of the Thomas Smokeless Coal Co. which will operate near this place. The company has a capitalization of $100,000. Active in organizing this company were: J. R. Chaulton, E. A. Chaulton, of Bencer, W. Va.; C. H. Thomas, of Meadow Bridge; J. E. Cray, of Richmond, Va.; B. B. Richmond, of Cranberry, W. Va.

Mt. Hope—The Glencoe Coal Co. will operate in Kanawha district of Fayette County. P. M. Snyder, one of the leading operators of the Fayette field and other coal men are interested in the new company which has a capitalization of $200,000.

Huntington—A new million-dollar coal concern is the Beckley-Pocahontas Coal Co. The company expects to undertake the development of a large tract of coal land in Raleigh County. Huntington people are most largely interested in the new project, as follows Harry S. Irons, S. S. McNeer, E. C. Wilson, F. M. Livezey and A. J. King.

Kingwood—The operation of the newly organized Roaring Creek Collieries Co. in which Monongalia and Preston County business men are chiefly interested will be in Preston County, near Kingwood, this company having a capital stock of $50,000. Organizers of the new company were: S. P. Mitchell, Kingwood; Everhart Bierier, Morgantown; O. W. Hawley and H. H. Morgan, Masontown; J. Mark Feather, Albright.

Morgantown.—The Davis Coal Co. has recently purchased 200 acres of coal property in the Scott's Run district from the Bierer Coal Co. and is planning for the early development of the lands. This property has a daily output of about 500 tons and connects with two other properties of the Davis Coal Co., and when in operation will produce from 2,500 to 3,000 tons of coal all told.

Beckley—The Low Volatile Consolidated Coal Co., headed by C. H. Mead, of Beckley, has further increased its holdings by taking over the Ragland Coal Co., owned largely by E. M. Funckhouser of Roanoke, the purchase price being in the neighborhood of $375,000. The company aequired had a large acreage in the Winding Gulf branch of the Virginian, operating near McAlpin, W. Va. The Low Volatile Co. has only been in existence a few months, being capitalized at $3,000,000. By the transaction the company will be able to increase its annual output to the extent of 75,000 tons or more. The same company not long ago purchased the Bailey-Wood Coal Co., one of the leading producers on the Virginian.

Having recently sold his coal holdings at Besoco, W. Va., E. C. Minter, one of the well known operators of the Winding Gulf field, is understood to have in mind locating at Beckley with the purpose of organizing a company there to handle the output of several companies in the Gulf region.

Bluefield—Improvements under way at the Wenonah plant of the Turkey Gap Coal & Coke Co. will give that company a large output. The company is pushing work on its new tipple for the Wenonah 3 mine, which equipped with picking tables, shaker screens, etc., will have a daily capacity of 2,000 tons. In view of the increased output for which the company is planning, it has also begun construction work on 50 additional dwellings for miners.

BRITISH COLUMBIA

Victoria—Total coal production of Vancouver Island for the month of September was 150,807 tons. This is made up as follows:

	Tons.
Canadian Western Fuel Co., Nanaimo	56,775
Canadian Collieries (D) Ltd., Comox	42,005
Canadian Collieries, South Wellington	8,461
Canadian Collieries Extension	14,545
Pacific Coast Coal Mines, Ltd., S. Wellington	7,088
Nanoose-Wellington, Nanoose Bay	5,456
Granby Consolidated Mng., S., & P. Co., Cassidy	16,477

These figures indicate that the coal fields of the Island are holding their own in point of output. The outstanding feature is the increase in production of the Granby Collieries at Cassidy, 16,477 tons for September as against 9,019 tons for the month of August.

Association Activities

Northern West Virginia Coal Operators' Association

The "Fair Practices" Committee grew out of recent resolutions adopted by the association which met with the approval of other coal operators of northern West Virginia.

This committee has divided the counties that composed the Northern Judicial District into eight sub-districts and proposes to supply all coal needs in those districts, either to individuals or domestic consumers, at a price of $5@$6 f.o.b. mine mouth.

All complaints regarding coal needs and prices come to this committee through representatives in the districts or through the office of the secretary of the association at Fairmont.

It has developed that the Department of Justice expected every operator in northern West Virginia to have a copy of the resolution originally adopted on Sept. 22 signed by such operator in the office of the Attorney-General by Oct. 12.

It is felt that the action taken by northern West Virginia operators through their Fair Practice Committee and the effect of such action on the general situation is important because it will possibly point the way toward stabilizing conditions in the industry.

The roster of the Fair Practice Committee is as follows: Everett Drennen, chairman; Douglass Gorman, John L. Hatfield, C. H. Jenkins, J. C. McKinley, A. Lisle White. G. T. Bell is secretary and treasurer and Gibbs L. Baker of Washington is counsel.

Team Track Coal Operators' Association of Northern West Virginia

Greater activity among bodies of team track operators is manifested in the decision of the association to hold two meetings a month in the future. So many questions now arise in connection with the operation of team track mines which are assuming a position of importance in northern West Virginia that a month's delay proves costly. The association recently named J. T. Michael as its executive and he is giving all his time to its affairs. The association embraces team track operators in five or six counties. Offices have been opened both at Fairmont and Clarksburg in order that members may keep in touch with association executives.

At a meeting of the association on Oct. 4 President John B. Wyatt laid stress on the fact that the association had been formed for construction purposes and that steps should be taken to put the business of wagon mine operating on such a high plane that it would command respect. Other speakers stressed the importance of daily reports. In short, the association will seek to convince railroad officials that wagon mines are deserving of just as much consideration as tipple operations.

Traffic News

Interstate Commerce Commission.—Hearing in the case of the Consolidated Coal Co. of St. Louis vs. the Director General, scheduled for Chicago, Oct. 25, has been postponed to Oct. 28 in the same city.

In the case of the Seaboard Byproduct Coke C.o vs. the Phila. and Reading Ry., the I. C. C. has decided that the rates charged on bituminous coal from Pennsylvania and other mines to Seaboard, N. J., as reconsigned from Elizabethport and Port Reading, N. J., coal piers, were unjust and unreasonable and awards the company reparation.

In complaints to the I. C. C. the Burns and Hancock Fire Brick & Clay Co. of West Montezuma, Ind., attack coal rates from Clinton, Ind., to West Montezuma, and the Ideal Fuel Co. of Chicago attacks coal rates from Herrin, Ill., to Chicago.

The commission has assigned for hearing at Pittsburgh, Nov. 29 the claim of the Avella Coal Co. of Pittsburgh for damages due to car distribution by the Pittsburgh & West Va. R.R.

An examiner of the Interstate Commerce Commission will conduct a hearing in Omaha, Oct. 28, on the reconsignment complaint brought by the Omaha Chamber of Commerce.

The American Wholesale Lumber Association has attacked the $10 demurrage charge. In that case the American Wholesale Coal Association has intervened asking that this case be consolidated with the reconsignment case. Since it is apparent that the I. C. C. is convinced that these orders are in the public interest there is little expectation that a change can be secured in that quarter. Plans are being made to carry these cases to the courts.

The West Kentucky Coal Bureau in order to enlarge the selling field has filed complaint before the I. C. C. for a rate on coal from western Kentucky mines to northern Arkansas and Missouri, seeking a basis of 25c. a ton over the rate from southern Illinois mines, as against the present combination rates, which are from $2.50@$3 higher than the rates from southern Illinois. The complaint was filed on Oct. 6.

An effort on the part of the carriers to increase by ten cents the rates applying to mines on the Norton & Northern R.R. was ended by a decision of the I. C. C., which held that the mines on this road should be kept on the same rate basis as are other West Virginia mines in that group.

The I. C. C. has canceled the hearing in the case of the Whitwell Coal Co. vs. the Railroad and Public Utilities Commission of Tennessee, which had been scheduled to take place Oct. 23 at Chattanooga.

The I. C. C. has vacated its recent order suspending proposed increased switching rate on soft coal from certain mines at Springfield, Ill., and discontinued its proceedings in the case. This permits the taking effect of an advance from 10c to 20c. per ton switching rate on soft coal from Citizens Mines A and B at Springfield to junctions with connecting lines at that place when destined beyond. The Central Illinois Traffic Bureau had opposed the increases, but at the hearing withdrew its objections.

On Oct. 13 arguments were heard by the I. C. C. in the case of the Meyersdale Smokeless Coal Co. vs. the B. & O. R.R., and hearings held in the case of the Stone Branch Coal Co. vs. the C. & O. R.R.; also in the investigation of coal rates from West Virginia mines to Southern points.

The Minnesota Byproduct Coking Co., of St. Paul, has been refused a preference in securing coal cars.

The Minnesota Railroad Commission will investigate a complaint that retail dealers of St. Paul and Minneapolis are refusing orders of hard coal for immediate delivery.

Canadian Freights.—Further steps are being taken to do away with prepayment of freight charges on coal going to Canada. A conference between the Board of Railway Commissioners of Canada and the Interstate Commerce Commission is under consideration.

The St. Paul Gas Light Co. recently made application to the council to increase its rate from 85c. to $1. The request was referred to an expert who has advised that the increase is justified by increased costs.

Utah Public Utilities Commission.—The action of the commission in refusing to permit increases in freight rates is to be investigated by the Interstate Commerce Commission. Should the railroad companies win it will again increase coal prices. It is claimed by the coal trade that the rates are already higher than those in effect elsewhere under similar shipping conditions.

Missouri Public Service Commission.—A committee consisting of the commission and the Attorney-General had a recent meeting in St. Louis relative to the coal shortage throughout Missouri. A committee of railroaders and coal men was appointed to work out a plan for supplying the country districts. This resulted in several operators agreeing to furnish their share of coal at reasonable prices to take care of the inland towns. W. J. McGarry, chairman of the St. Louis Committee on Car Service, will represent the railroads and E. J. Wallace, the coal operators, in this distribution.

Industrial News

Pittsburgh, Pa.—The Morrison & Risman Co., jobbers in railway track equipment, announces the removal of its local office to 209 Hous Building.

St. Louis, Mo.—The Hyatt Roller Bearing Co. has appointed L. A. Shea to represent the company in the Central States territory with headquarters at 2516 Warren Street, St. Louis, Mo. Mr. Shea will work with the mine car manufacturers and operators in the surrounding territory.

Philadelphia, Pa.—The Philadelphia & Reading Coal & Iron Co. has elected an entire new board of directors, preliminary to the separation of the coal properties from the other Reading holdings. The new members are **Robert J. Carey, George H. Campbell, William D. Pollard, Jacob Ulmer, George C. Coughlin** and **Robert J. Montgomery. William J. Richards** was re-elected president.

New York, N. Y.—The New York Fuel Distribution Commitee, appointed by Public Service Commissioner Nixon, is composed of **S. W. Lieb**, chairman; **Frank Hedley, M. S. Sloan, Walter R. Addicks, C. Andre, Jr., William Welsh**, and **R. H. Nexsen**. The object of the organization is to supervise the coal supply of public utility companies in the city.

Philadelphia, Pa.—The Ainsworth Coal & Iron Co. announces the opening of a foreign office in Copenhagen, Denmark. Hemming Ege is the manager of the new office.

Publications Received

West Virginia Labor Injunction.—The Pocahontas Operator's Association has issued a pamphlet containing the bill, answer and injunction granted in the recent case of the operators against labor organizers, agitators and others "having designs on interfering with a non-union labor situation." Reference to the granting of this injunction was made in a recent issue of *Coal Age*. Those wishing copies should apply to W. E. Koepler, secretary Pocahontas Operator's Association, Bluefield, W. Va.

Monthly statements of Coal Mine Fatalities in the United States, June and July, 1920. Bureau of Mines, Department of the Interior. Pp. 13; 6 x 9 in.

Obituary

Thomas Earls, 81 years old, retired coal dealer, died at his home, 124 Regent Avenue, Bond Hill, Cincinnati, Ohio. Previous to his retirement several years ago Mr. Earls had been engaged in the coal business nearly 20 years.

Richard Lamb, 61 years old, of Brooklyn, a well-known consulting and constructing engineer, with offices at 90 West Street, Manhattan, died recently after a short illness. Mr. Lamb was born in Norfolk, Va., and was a graduate of Brown University. One of his first important engineering works was the surveying of the Albemarle and Chesapeake Canal, which brought him into notice. He built the largest coal pier in the world.

Colonel J. J. McAlester, 77 years old, the discoverer of coal outcroppings in the State of Oklahoma and the man who perhaps more than all others developed coal mining in that section, died at his home in McAlester, Okla., recently. Colonel McAlester founded the city of McAlester, was first corporation commissioner of the state, served as lieutenant governor and was active all his life in the advancement of his state. Coming to Oklahoma at the close of the Civil War, he established a freighting line from Fort Smith, Ark., into what was then the Indian Territory. While operating his freight line Col. McAlester discovered outcroppings of coal in 1871. He was prominently identified with coal mining interests about McAlester up to the time of his death.

Personals

Henry B. Adams, of Lynchburg, Va., has been elected president of the Pinnacle Block Coal Co., which incorporated recently with $1,000,000 capital. The company is organized to develop 3,000 acres of coal land. This property is located in the district around Altman, W. Va., and the management of the new company plans a daily coal output of 2,000 tons.

Harry C. Williams, for 5 years chief construction engineer of the Louisville & Nashville R.R., has resigned to become president and general manager of the Campbell Coal Co. operations with offices in Knoxville, Tenn.

D. C. Kennedy, Secretary-Commissioner of the Kanawha Operators' Association, with headquarters at Charleston, who has been in extremely poor health for several months and who has been undergoing treatment at a Baltimore hospital, is able to be at his desk once again.

G. H. Hornickel, manager of the plants of the Anchor Coal Co., operating at Highcoal, W. Va., is recovering from the effects of an operation for appendicitis.

Harry Faught has been appointed as District Manager of the Boone Coal Sales Co., with headquarters at Huntington, W. Va.

J. Chilberg, for twenty years vice president of the Colorado Fuel and Iron Co., has resigned his position because of ill health. His successor, **A. H. Lichty**, of Columbus, Ohio, will confine his labors to employes' representation, but will not assume charge of the sales department, of which Mr. Chilberg was the head for many years. Other changes effective Oct. 1 were the appointment of **Fred Farrar** of the legal department as executive assistant to the president and the appointment of **E. S. Cowdrick**, editor of the company's *Industrial Bulletin*, as assistant to Vice President Lichty.

George R. Arbuckle, formerly with the Union Colliery Co., of St. Louis and other concerns in Southern Illinois, is now with the Jewel Coal & Mining Co., at Du Quoin, Ill.

William Griffith Tytus, auditor of the Sunday Creek Coal Co., Columbus, Ohio, was married recently to Miss Frances Jones, daughter of J. S. Jones, head of the company, at the latter's residence near Granville, Ohio.

W. A. Chandler has resigned his position as electrical engineer for the H. C. Frick Coke Co. of Uniontown, Pa., to become associated with the Hudson Coal Co., of Scranton. **George E. Gramm** succeeds Mr. Chandler.

G. R. Delamater has resigned as assistant superintendent of the by-product coke oven department of the Harrisburg plant of the Bethlehem Steel Co. Mr. Delamater leaves his present position to become vice-president and general manager of the Anthracite Production Corporation.

J. W. Powell, General Superintendent of the Consolidation Coal Co., Jenkins, Ky., has resigned his position and gone to the Bull Mountain Coal fields of Montana where he has been engaged to make an examination and report on the coal holdings of The Bull Mountain Coal & Realty Co., whose head office is in Eau Claire, Wis. The property is located 29 miles northeast of Billings.

Charles A. Owen has been elected president of the Tidewater Coal Exchange and **J. W. Howe** elected secretary, treasurer and commissioner.

W. C. Hippard, formerly with the Willisville Coal & Mining Co., of St. Louis, has been appointed as chief mining engineer for the Kathleen mine at Dowell, Ill., owned by the Union Colliery Co., of St. Louis. Mr. Hippard is a man of some experience in his line and he fills a vacancy left by **D. W. Detweiler**, who is now superintendent of the mine.

Jesse C. Suter, Thomas J. Donovan, Allan Davis and **D. H. York** were appointed by the Federation of Citizens Associations to consider alleged unreasonable prices being charged for coal in the District of Columbia.

Trade Catalogs

Defend Your Steam. Magnesia Association of America, Philadelphia, Pa. Pp. 80; 8 x 11 in.; illustrated. Describing phases of heat and fuel savings with magnesia pipe and boiler covering.—Advertiser.

Control of Motor-Driven Steel Mill Machinery. The Cutler Hammer Mfg. Co., Milwaukee, Wis. Publication 870; pp. 48; 8 x 11 in.; illustrated. Describing C-H products used in mining and ore handling, furnace and mill practice.—Advertiser.

Dings Magnetic Separators. Dings Magnetic Separator Co., Milwaukee, Wis. Bulletin 81; pp. 23; 3½ x 6 in.; illustrated. Describing operation, practical uses and application of principle of magnetic separation.—Advertiser.

Waugh "90" Drills. The Denver Rock Drill Mfg. Co., Denver, Col. Pp. 16; 6 x 9 in.; illustrated. Cuts and general specifications of the "90" drill.—Advertiser.

Webster Method. The Webster Mfg. Co., Chicago, Ill. October publication, containing articles and photographs of recent interesting installations in the coal mining and other fields.—Advertiser.

Nonpareil Insulating Brick. Armstrong Cork Co., Pittsburgh, Pa. Pp. 72; illustrated; 6 x 9 in. Insulation of high temperature industrial equipment.

Link-Belt Traveling Water Screen. Link-Belt Co., Chicago, Ill. Book 352; pp. 24; illustrated. Describing effective and economical screening of condensing water.—Advertiser.

Dorman Wave Power Tools. W. H. Dorman & Co., Ltd., Stafford, England. Pp. 68; 8½ x 11 in.; illustrated. The first of a series of appliances originated and designed by sole British licensees and manufacturers of wave portable, percussion and rotary tools.

Coming Meetings

Illinois Mining Inst. will hold its next meeting on Nov. 20 at Springfield, Ill. Secretary, Martin Bolt, Springfield, Ill.

Coal Mining Institute of America will hold its annual meeting Dec. 8, 9 and 10, 1920, in the Chamber of Commerce Auditorium, Pittsburgh, Pa. Secretary, H. D. Mason, Jr., Chamber of Commerce Bldg., Pittsburgh, Pa.

American Mining Congress will hold its annual meeting at Denver, Col., Nov. 15 to 19. Secretary J. F. Callbreath, Munsey Building, Washington, D. C.

The American Society of Mechanical Engineers will hold its annual meeting Dec. 7, 8, 9 and 10 in the Engineering Societies Building, 29 West 39th St., New York City. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

COAL AGE

The Weekly Journal of the Coal and Coke Industries

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Putting Prices Down

TAKING Attorney General Palmer's assurances of good faith at face value the bituminous coal operators at Cleveland adopted the only course open to them in controlling prices. Collectively they agreed to take the subject of prices back home, where each field and group could best act. Definite assurances were sent out from Cleveland that prices will be reduced; the country is expecting the operators to make good on the promise.

The essence of the Cleveland resolution (*Coal Age*, Oct. 28, page 915) is that the industry recognized that prices, in part at least, have been unreasonably high and that some trade practices have been unwise. The industry deplores such things and at the request of the Government will seek to cure these conditions. It is important to note that these resolutions promise to *condemn and eliminate* unwise practices, among which, it is assumed, is that of charging unreasonably high prices.

It will not suffice for nine out of every ten operators to refrain from charging such high prices, unless the tenth man, who will not voluntarily follow the spirit of the resolutions, is forced into line. It has been made evident time and again by the Attorney General and his many assistants that evidence is necessary to convict, that the honest coal man must help the department in bringing the dishonest or unwise individual to the sense of his responsibility, if not actually before the bar of justice.

The meeting at Cleveland and the Fair Price Committees at home will not satisfy the country or the Attorney General unless the sales of coal at what every man knows are unreasonably high prices are stopped at once, even if to accomplish this it is necessary for the operators themselves to publicly brand the guilty.

An Early Decision Wanted

EVERY effort should be made to hasten the decision of the Supreme Court in the Lambert Run Coal Co. case—the assigned-car suit—which originated in the Fairmont field. It will be remembered that the decision of the Circuit Court, from which appeal to the Supreme Court has been had, was to the effect that the Transportation Act gives the Interstate Commerce Commission power to authorize the assigning of cars by the railroads for fuel coal when an emergency exists and when, because of car shortage, the railroads cannot otherwise obtain necessary fuel. This was the basis of the order of the commission last April, when assigned cars were authorized for the first time after they had been banned by the President at the instance of Dr. Garfield early in 1918. Should the Supreme Court agree with the last decision in the Lambert Run case and, as is generally expected, there be no car shortage and no emergency the coming spring, then the commission will of necessity rescind its permission to the railroads to assign cars for fuel.

As can well be imagined, this will have a very material influence on the contract market next spring, for if the railroads cannot buy coal in part with car supply they will be no better off than any other consumer and their business is likely to be more generally distributed than otherwise would be the case. The question should by all means be concluded at an early date in order to avert confusion in the contracting period such as characterized the market in 1918, 1919 and again this year, because of the policies of the railroads in buying fuel coal. Without a final decision at an early date everyone will be uncertain and confused on this class of business, which represents more than one-third of the commercial coal that enters the market.

Our Lack of Facts

WHATEVER may be the disadvantages of any form of governmental control and regulation of business, it certainly never proceeds without definite and positive facts. Our own Fuel Administration was successful in the degree to which it collected facts and used them and the most refreshing thing about the present controversy between the British coal miners on one side and the owners and Government on the other is that they are armed with the same set of basic, and practically uncontroverted and incontrovertible, statistics. The only points about which they may now argue relate to what the future may develop in considering the facts at hand relating to the past and present.

In other words, each side has positive knowledge of the earnings of the men, the cost of production of coal, the sales prices and the profits to the owners as well as the part that the Government takes as its share. The miners know, for instance, that the industry in Great Britain earned as surplus after deducting interest, depreciation, capital adjustments and the owners' fixed profits, the sum of £750,000 in the three months ended last June. They are asking an increase in wages which it is estimated will add about £7,000,000 per quarter, without being willing to give any assurance that they will increase the output of the mines (which they have in their power to do) to enable the producers to export more coal and thereby increase the surplus from which to pay the increase in wages.

It was not possible last winter after our strike to reduce the demands of the miners in this country to such a simple basis because we did not have the data regarding costs and profits in a form that was acceptable to all. This winter the coal industry is going before the bar of public opinion and will be subjected to the investigation of Congress because of the high prices that have been the rule in the open market last summer and the present autumn. How are you to meet the charges? Nothing short of full, accurate statistics

on costs of production, selling prices and realization as well as profits will satisfy any impartial investigator. It cannot fail to be brought out that the figures that the Government was collecting along these very lines have been withheld by the legal proceedings instigated by the coal operators themselves, and at a time when the prices were just getting well started on an upward swing. It cannot fail to be noted that the data on costs collected by the Federal Trade Commission were at best incomplete and cover but the first few months of the year.

Colonel Wentz has opened the way for the industry to redeem itself in this regard. He has announced that the National Coal Association will circularize its membership, which includes 60 per cent of the total production of bituminous coal, with questionnaires asking for the production, sales, costs of production and selling, realization from sales, and profits, and that he will compile the reports he receives in order to be prepared for Congress and the investigators this winter. If the operators will but give him the figures he asks for and will give them at once in order that the huge job of compilation may be completed in time, he will be prepared to present the case of coal as it should be presented. If the operators—not a few, but many, if not all—do not fall in with this proposal, then Colonel Wentz and the other officers and representatives of the operators in their national organization will have to battle unarmed.

We Get What We Pay For

DURING the last ten years industrial management has made tremendous strides in the United States. System has been a demigod in factory organization. Quantity production, through systematized planning and routing, division of labor, time studies and bonus systems, has been developed in this country till today the American factory system leads the world. When the United States went to the assistance of Europe in the production of war materials, both here and abroad, the foreigner marveled at our efficient factory methods.

Coal mining is an industry greater in point of investment, value of output and number of employees than any of those in which such strides in scientific management have been made. For our vaunted superiority in obtaining lower operating costs than foreign coal producers public opinion generally gives all the credit to favorable natural conditions, and it is true that we have hardly yet begun in the coal industry to travel the road of scientific organization and management. Cheap mining has made cheap coal, and both producer and consumer have been correspondingly careless in developing better, more efficient and cheaper methods of mining and burning coal.

With marvelous results that humblest of occupations, shoveling, has been made in the iron and steel industry the subject of scientific inquiry. Traffic vs. transportation as a study is yet to be developed in coal mines, but it is a subject for ever-increasing investigation and progress in the world of daylight. Functional vs. military systems of management have advocates in factory organization, but, in coal mining, executives have but hazy ideas of the relative merits of either and, as a result, mine organizations are haphazard and in general represent the growth of tradition. They are not the product of modern thought.

In a paper by Daniel Harrington, an engineer of the Bureau of Mines, in this issue of *Coal Age*, some of the shortcomings of our system of coal-mine organization are concisely set forth. Mr. Harrington points out that the law places upon the fireboss responsibility for the safety of the men, but he is so restricted in his authority, so poorly paid and overworked as to decrease his possibility for usefulness. It would appear that a clear separation of the functions of the fireboss and mine foreman or superintendent would cure this trouble, elevating the fireboss without lowering the position of the other officials.

The fireboss is so vital a force for safety in the mine that the industry cannot afford to see his position lowered. Supply and demand may well be expected to regulate the pay of those who are engaged in production. We readily see that it pays well to give a bigger wage to larger producers, but when we come to consider agents for safety or education, supply and demand are found less readily operative. We probably never will be without teachers, regardless of the rate of pay, but the quality will deteriorate till we might as well provide no instruction at all for our youths or children. Regardless of wage or salary, we may be able to get state inspectors and officials for our Bureau of Mines, but what good will they do us if those we secure do not have powers of direction and leadership; if their judgment, ability and experience are such that we shall ignore their advice and scout their authority?

So also with firebosses; they are and will be what they pay them. If we really value safety we will buy it at the price it should command; we will give it the opportunity it requires; we will seek it in the market in which it may be bought; we will buy it in such quantity as its importance deserves. But, if we do not value safety we will pay for it sparingly; we will give it little opportunity; we will seek it in the market where we get our least instructed labor; we will purchase as little of it as will pass muster.

Is it the law that gives us firebosses or do we engage them out of a high sense of duty and responsibility and with a knowledge that the safety of the persons in the mine and the safety of the mine itself are the ends we have at heart? Do we want cheap or real insurance? Do we want a policy that does not protect or one that gives us full protection? Do we want a fireboss who saves life or one who endangers it?

SO MUCH CRITICISM of the railroads has been uttered by the coal operators and so much feeling has at times been evident on the surface between these two big industries, that friends of both will rejoice in the unstinted praise of Daniel Willard and the Association of American Railway Executives, of which he is chairman, publicly expressed by the president of the National Coal Association at the Cleveland meeting.

IN COAL MINING adequate safety has always had to face opposition from inadequate funds. Now that coal mining has been profitable for some years there is no longer that reason for neglect in providing all that safety demands. In 1920 the short running time should have furnished plenty of opportunity for reconstruction work in relation to safety and the profits at bituminous mines—where long-time contracts were not too numerous—should have furnished the money. The mines therefore should be safer by far today and so in a degree they are. However, it is hard for an industry to outlive the disposition to take short cuts which early penury inculcates.

Jobber vs. Producer Under the Lever Act

"Prices" Apply to Sales by Producer—"Rates and Charges" Cover Additions by Jobbers and Dealers—Section 4, Drafted to Catch Avaricious Middleman, Declared Inapplicable to Producer

By E. J. McVann*

DURING the recent argument before the U. S. Supreme Court of various cases arising under the Lever Act an incident occurred of tremendous importance to the coal operators of the country. Little or no attention was paid to it, however, because the interest of everybody was centered upon the main question before the Court—the constitutionality of the law and whether the definition of crimes contained in it was sufficiently clear to be made the basis for a criminal indictment.

Solicitor General Frierson was presenting the case for the Government. He stated that he wished to make clear to the court the construction the Department of Justice placed upon section 4 and went on to explain the use of the phrases "rates and charges" as compared with "prices."

Coal Operator Not Strictly a Producer

I will not attempt to quote the Solicitor General, but the effect of what he said was that during the long period since August, 1917, during which the Lever Act was administered, the word "prices" had been used in connection with sales made by the producer or manufacturer and the words "rates and charges" to cover the additions made by the dealer or middleman and that the administration, in its representations to Congress which resulted in the passage of amended section 4, had made it clear that what was wanted was a law which would enable the Government to get after the "avaricious middleman" and that a producer or manufacturer could hardly be indicted under the amended section unless he "conspired, agreed, combined, or arranged with" another person or persons to "exact excessive prices." Congress, he added, said "prices" where prices were meant and "rates and charges" where the middlemen were concerned.

I think the learned Solicitor General realized, when he had heard his own words, the far-reaching importance of them, because he immediately sought to qualify them by suggesting that, in the view of the Department of Justice, the coal "miner" (operator) was not, in the strict sense, a producer. He was called upon at once, from the bench, to explain this attempted exclusion of the coal operator from the ranks of the producers, but did not succeed very well. Justice Pitney, by one or two questions, disposed effectually of the distinction sought to be made, and the Solicitor General dropped the point and went on with his argument.

Conspiracy Necessary to Involve Operator

In every case where my advice has been asked upon the construction of section 4 I have placed the same construction upon it as that stated by the Solicitor General, viz, that the language "to make any unjust or unreasonable rate or charge in handling or dealing in or with any necessaries" could only apply to the middleman or other person who *rendered a service* as distinguished from producing and selling, and that the only offense which could be charged against an operator (or producer) in connection with *price* was that of "conspiring, combining, agreeing or arranging with" another person to "exact an excessive price." In other words, conspiracy was an essential part of the charge that must be brought against the coal operator for exacting excessive prices, while the charge of making unjust or unreasonable charge in handling or dealing could be made against any one person engaged in performing any of the services performed between the production and sale and the final delivery to the consumer.

Anyone who has been familiar with the administration of the Lever Act by the Fuel Administration and with the construction placed by Dr. Garfield and his associates upon it and with the rules and regulations promulgated by them from time to time, will agree that there has been a distinct classification along the lines suggested by the Solicitor General. Whenever the Fuel Administration spoke of "prices" it always meant the price fixed at the mine, accruing to the operator. Whenever the administration dealt with the middleman, or other handler, it spoke of "gross margin," "compensation," "commission" or used some other term that made it clear that the allowance was for a service performed. Keeping that fact in mind and remembering that the Solicitor General advised the Supreme Court that the administration represented to Congress, when the amendment of section 4 was being considered, that what was wanted was a check upon "avaricious middlemen," it must be concluded that Congress used the language contained in section 4 advisedly and not loosely.

To obtain and sustain indictments against those engaged in the coal business, therefore, the representatives of the Department of Justice must follow the construction of the law laid down by its representative, the Solicitor General. The coal operator may not be charged merely with "exacting excessive prices" when the price he charges is excessive in the view of the Department of Justice; it must also be shown that he has "conspired, agreed, combined" or had an understanding with others to exact those prices. Hence all the widely heralded announcements of district attorneys and grand juries that anyone who exacts a price in excess of some figure named by them will be indicted and prosecuted is not of much effect as against a coal producer because if there is one fact about the coal operator that is known to all the world, it is that he understands thoroughly the unlawful character of any practice which even approaches combination, conspiracy, or agreement with others as to prices and that each coal operator has "gone it alone" upon this question and all others even remotely related to it. The coal operator has even balked at getting together with his neighbors to discuss the question of *reducing* prices for fear such action might be misinterpreted or misconstrued.

Wording Too Loose To Be Intelligible

No cases involving coal sales or prices were before the Supreme Court in this argument. All were cases against retailers or wholesalers of "necessaries." The main arguments were upon the question of whether section 4 was constitutional or unconstitutional. The two big points urged were (1) that there was no definition in the section of a crime and that the language was too loose to permit a reasonable and law-abiding citizen to know when he was violating it, and (2) that the exclusion from the law of farmers, gardeners and others was an arbitrary classification that permitted a very large class to do, without breaking the law, what would be a crime if done by another class. Justice Hughes put one of these points quite effectively when he suggested that it was an amazing thing if the Congress of the United States, a year after the cessation of hostilities, could constitutionally enact a law which would operate to make it a crime for a retail dealer to sell a silk shirt over the counter in his store at Binghamton, N. Y., at a price considered unreasonable by a U. S. grand jury.

In the article entitled "Mine, Shut Down Over Sunday, Explodes When Power Is Turned On," which appeared in our issue of July 29, the author says that the "power is purchased from the West Penn Power Co." We have been assured that the power supplied was obtained from another source.

*Attorney at law and secretary of the Smokeless Coal Operators' Association of West Virginia.

Lackawanna Speeds Up Car Movement

Figures just compiled by the Delaware, Lackawanna and Western Railroad Co. show the progress of that company's efficiency campaign. The following figures show what the improvement has been:

AVERAGE MILES PER CAR PER DAY

	1919	1920
March	22.5	26.9
April	25.1	*15.3
May	28.3	*24 7
June	28.3	33 0
July	29.3	31 1
August	31 4	34 0
September	30 2	31 9

TONS HAULED ONE MILE (THOUSANDS)

	1919	1920
March	346,802	473,722
April	382,711	*232,354
May	431,246	*379,443
June	407,345	484,872
July	430,926	520,459
August	461,385	547,609
September	428,504	489,429

* Strike period.

In presenting the figures the company said that even better results are now being attempted.

Fuel Commission Sought in Kentucky

The Allied Public Service League, of Louisville, Ky., has appealed to Governor Morrow, of Kentucky, to call a special session of the State Legislature for the purpose of enacting legislation for the creation of a board such as the Indiana Fuel and Food Commission, with the right to regulate the price of fuel in the state. The organization charges that prices are too high and that distribution of cars has worked unfair discrimination against consumers of Kentucky.

Movement of Coal Through the Panama Canal

During August 36,119 tons of coal passed through the Panama Canal from the Atlantic to the Pacific. Eight of the cargoes going to make up this total originated at Norfolk and one at New York. All were destined to points on the West coast of South America. Two cargoes of fuel briquets, originating at Norfolk, were consigned to Callao and Iquique. One cargo of coal passed through the Canal from the Pacific to the Atlantic. It originated at Vancouver and went to Rio de Janeiro.

U. S. Passes Great Britain in Exportation of Coal

In the Foreign Trade Record, of the National City Bank of New York, is a statement on coal which says in part: "The United States is now the world's largest coal exporter. Prior to the war we ranked third among coal exporters, our exports in the year immediately preceding the war having been slightly less than 20,000,000 tons against 76,000,000 tons by Great Britain and approximately 30,000,000 by Germany. In eight months ending with August, 1920, our exports of coal were, in round terms, 23,000,000 tons, while those of Great Britain were in the same period but 18,375,000 tons and those of Germany far less than those of either the United States or Great Britain."

New York Receives 11,000 Cars Of Coal in a Week

More than 11,000 carloads of coal were shipped into New York City during the week ending Oct. 23, Joseph Lonergan, chief inspector of the Health Department, reported to Health Commissioner Copeland. Of this total 6,000 carloads were anthracite and over 5,000 carloads were bituminous. The commissioner said if the city can "get by" the next few weeks the coal situation will be satisfactorily worked out. "Each one of these carloads," Dr. Copeland asserted, "contains forty-five tons, and the coal now being brought here is being sold to dealers at the regular price."

NEWS BRIEFS

Terse Items Chronicling Events of Interest to the Industry

Order Indiana Coal Men to Supply Home Needs

All coal companies in Indiana were ordered Oct. 23 by the State Coal and Food Commission to offer for sale each week within Indiana sufficient coal to meet domestic consumption. The commission set 1,600,000 tons of coal monthly as the quantity needed for the state and apportioned this supply among the companies, specifying how much each should supply weekly.

To Conserve Natural Gas

According to a statement recently issued by the Bureau of Mines, the situation in regard to natural gas supply in the States of Ohio and Pennsylvania, which consume 54 per cent of the natural gas used for light, heat and fuel in this country, is so serious that extraordinary measures are being adopted by the authorities of both states looking toward conservation of the gas supply.

E. S. Carman Is New Head of Mechanical Engineers

Edwin S. Carman, manufacturer, of Cleveland, has been elected president of the American Society of Mechanical Engineers in a mail ballot covering a membership of 13,000, comprising engineers, managers and technologists in every industrial centre of the country. Mr. Carman succeeds Major Fred J. Miller of New York, and will take office after the society's annual convention, to be held in New York in December.

Marburg Refuses Shipping Board Post; New Yorker Wanted

Theodore Marburg, of Baltimore, U. S. Minister to Belgium under the Taft administration, has declined appointment by President Wilson as Republican member of the U. S. Shipping Board. Governor Smith of New York and Darwin P. Kingsley, president of the Chamber of Commerce of the State of New York, have sent telegrams to President Wilson urging the appointment of at least one Shipping Board Commissioner from New York.

Three Railroads Make Record For Car Movement

Three railroads established new car movement records on Oct. 18. The Chicago, Burlington & Quincy moved 40,596 cars on that day, the New Haven 25,880 cars and the Mobile & Ohio 3,951 cars. The Pennsylvania on the same day came within one-tenth of 1 per cent of its record daily movement, the total on Oct. 18 being 144,444 cars.

Wants All Coal Moved on Net Ton Basis

Plans for a renewed effort to have all coal moved on a net basis were discussed at the meeting of the Railroads Relations Committee of the National Coal Association, held in Washington Sept. 29. It was stated at the meeting that throughout two-thirds of the area of the country the net ton is being used exclusively, but it is not being used in the remaining third, which produces the majority of coal tonnage.

Coal Miners in Alberta to Get $1.15 More a Day

An increase of $1.15 a day in the wages of Alberta coal miners granted by operators in conference with representatives of the United Mine Workers of America was announced Oct. 25.

Steel Corporation Earnings Climb

Total earnings of the United States Steel Corporation for the third quarter of 1920 amounted to $48,051,540, a gain of $4,895,835 over the corresponding period in the preceding year.

Preparing Anthracite for Market Without The Use of Water

Anthracite May Be Prepared Either Wet or Dry—Dry Breakers Are More Exposed to Fire Than Wet—Mechanical Equipment and "Dust Suckers" Render Dry Treatment Almost as Free from Dust as Wet Preparation

By Dever C. Ashmead
Wilkes-Barre, Pa.

PROBABLY most breakers now in use in the anthracite region employ wet preparation—that is, the coal is cleaned in jigs and on concentrating tables. This wet process is, however, by no means the only one followed. It is possible to prepare coal satisfactorily in a dry state. But, of course, the character of the coal has much to do with the method adopted. Furthermore, the original design of the breaker must be considered when determining the method to be followed.

It is probable that if a breaker were being designed today, the wet method of preparation would be chosen, as it possesses some advantages over dry treatment. Among these might be mentioned the fact that no dust is made in a wet-preparation process, whereas by the dry method a considerable quantity is formed, and means must be provided for removing it as far as possible.

Another advantage of the wet over the dry process lies in the reduced fire hazard. The risk of fire is greatly minimized with wet preparation, as in that event the breaker is continually soaked with water. Fig. 1 shows a fire in the top of the breaker of the Kingston Coal Co. at Edwardsville, Pa. This building is a dry-preparation plant, and had it not been for the excellent fire protection provided it doubtless would have been entirely destroyed. After the fire was extinguished the damaged portion of the building was reconstructed, the result being shown in Fig. 2. This is the No. 4 breaker of the above-named company and is the one wherein the preparation methods described in this article are followed.

FIG. 1.

Tower of Breaker on Fire

Strange to say, though this was a dry-preparation breaker, the arrangements for fighting the fire were so complete that the rest of the breaker was saved.

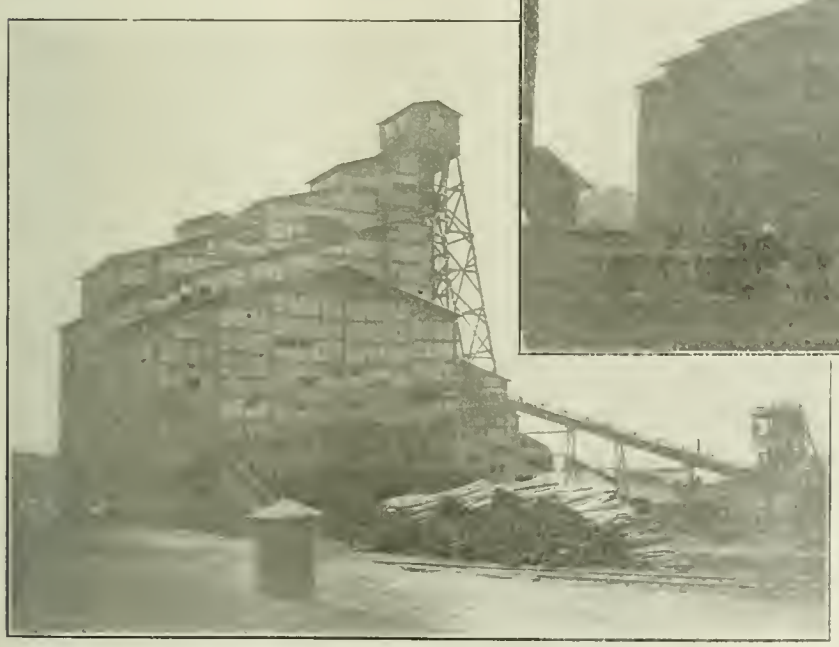


FIG. 2.

No. 4 Breaker, Kingston Coal Co.

Lofty and well-lighted, the breaker is one of the most imposing of structures in the anthracite region but frequently one of the least handsome.

Only Smaller Sizes and Culm Are Washed

Practically the entire treatment of the coal at this breaker is dry, the exception being that the smaller sizes are washed. Coal also from an old culm bank is being treated, and this material is jigged, but the treatment of this coal has no relation to the preparation of the freshly-mined material. The rewashed culm is not even

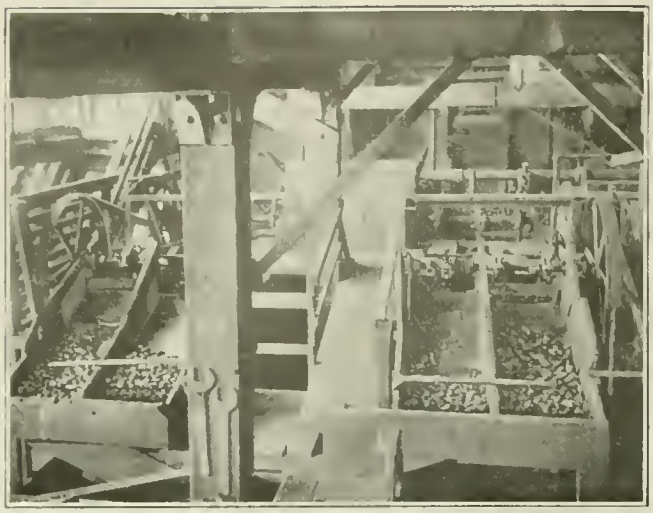


FIG. 3. JIGS IN NO. 2 BREAKER

Balustrades protect the runways and fences guard the machinery. Getting hurt, never too hard an accomplishment, is more difficult today than in years past.

being mixed with the prepared coal after treatment, but is consumed in the company's power plant for the generation of steam. It has a small part of the breaker to itself, a dragline conveyor bringing the culm from the bank to the breaker for treatment. For convenience in following the description of the preparation process the numbers in parentheses occurring throughout the text are duplicated in the flow sheet. Thus each successive step may be readily followed.

From the various shafts which are tributary to this plant the coal is brought by storage-battery locomotives to the foot of the breaker. It is hoisted to the top of the building in self-dumping cages (1), and passes directly to a hopper (2). At that point it is fed by an automatic feeder (3) to a multi-deck shaker (4). The feeder was designed by employees of the company and has given excellent results. The shaker has four decks; the upper one separates lump from the remainder of the material; the second deck takes out broken; the third deck egg and the fourth deck stove coal. Material under stove size passes through the lower deck.

Breaker Divided Into Three Separate Parts

The lump then passes over a picking chute (5), which is an extension of the upper deck of the shaker. Here the rock is removed and goes to the rock crushers in the basement of the breaker, while the coal passes through the main rolls (6), and is crushed to broken and smaller. One of the interesting details of this breaker is the fact that it is divided into three main parts. All the coal from the rolls is prepared in the front of the building, while all the sizes from the upper screen are treated on the left side and all that passes through the shaker above mentioned is treated on the

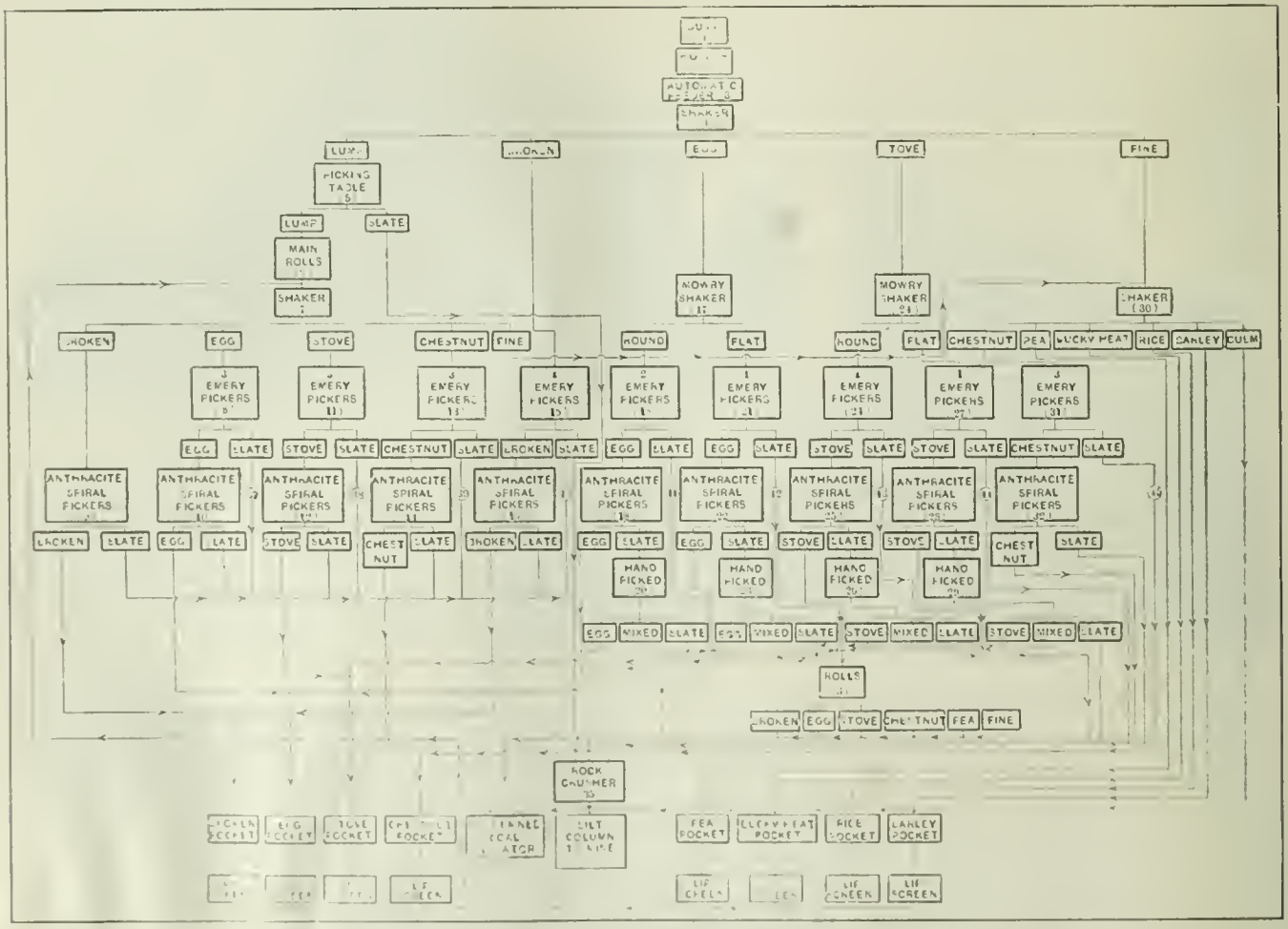


FIG. 4. FLOW SHEET OF THE DRY-PREPARATION PLANT

There is a degree of similarity in the treatment of the larger sizes—broken, egg, stove and chestnut. All pass through Emery and spiral pickers except coal that is made "broken" by hard experiences in the main rolls, which coal only passes over the spiral pickers. Such of the egg and stove as is of that size as it comes from the mines goes also through the Mowry shaker and both are hand picked. Egg and stove, which have acquired their size in the main rolls, are treated on Emery and spiral pickers and are not subjected to the Mowry shaker or the hand-picking process. The fine sizes—pea, buckwheat, rice and barley—are delivered direct to their respective pockets without undergoing any further treatment

FIG. 5. PICKING TABLE AT NO. 4 BREAKER

Rough "coal" from the mines passes over this table and the slate is taken out by the pickers. All this slate is passed to a rock crusher with the finer slate from the spiral pickers. After it has been crushed it is flushed into the silt column and thence into the mine for hydraulic filling.

right side of the breaker. None of this coal is mixed in treatment until it reaches the pockets.

From the main rolls (6) the coal goes to a four-decked shaker (7) making five sizes. The broken passes to a set of anthracite spiral pickers (9), which remove the slate, the coal going to the broken-coal pocket, while the slate passes to the slate crushers (35), which have been mentioned already. The egg coal from shaker 7 is sent to three Emery pickers (8), where the coal and slate are separated and both pass over anthracite spiral pickers (10), the first to remove the slate from the coal and the second to remove the coal from the slate. Because it would make the flow sheet too complicated to depict all this in detail, the treatment of the coal by the anthracite spiral pickers is shown, but the treatment of the slate is not shown, except that the process is indicated by a small circle containing a number.

Mowry Shaker Separates Flat from Round

The stove and chestnut coal from shaker 7 receives exactly the same treatment as that accorded the egg. The treatment of the fine coal from this shaker will be discussed later when the preparation given to the remainder of the fine material is considered. Broken coal from the shaker 4 goes to an Emery picker (15), after passing which both coal and slate receive the same treatment as that given the egg. The egg coal from shaker 4 goes to a Mowry shaker (17), which separates the material into flat pieces and comparatively round pieces. The round pieces of slate and coal are then passed to two Emery pickers (18).

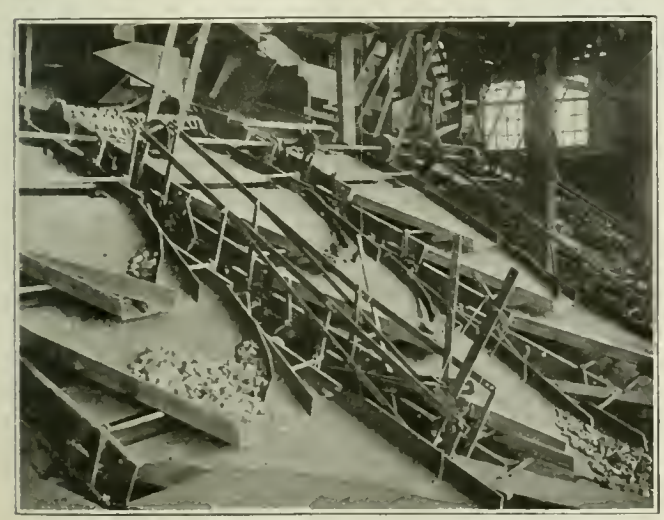


FIG. 6. BATTERY OF EMERY PICKERS

Eighteen pickers do the picking before the spirals get in their work.

The egg coal and slate separated on these pickers are then sent to anthracite spiral pickers (19) and (41), where the coal is finally cleared of slate, and the slate is cleared of coal. The flat particles receive the same treatment as the round ones. The slate from the Emery pickers (19) and (41) is hand-picked, the coal being sent with the rest of the cleaned material, and the particles of slate that have coal adhering to them, and likewise those particles of coal that have slate attached to them are separated from the rest of the material and sent to another chute. The slate goes to the slate crusher (75) while the mixed particles containing both coal and slate go to the rolls (33), where they are recrushed so that the valuable may be separated from the worthless material. The product of these rolls (33) goes to an elevator and is raised to shaker 7, where it is recleaned and retreated.

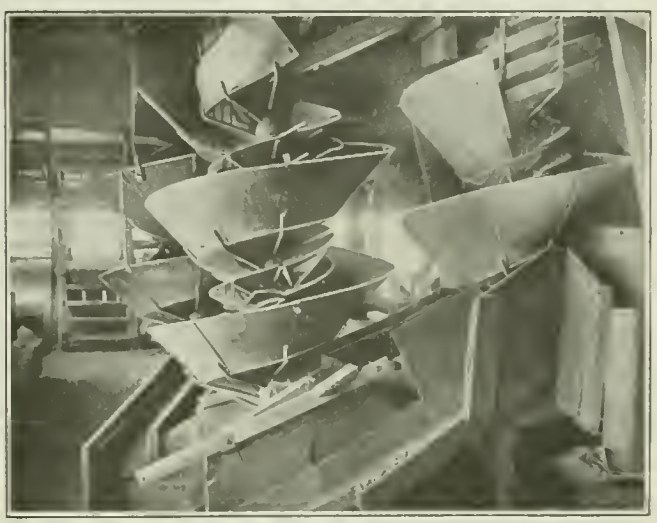


FIG. 7. ANTHRACITE SPIRAL PICKERS

Here the nimble coal by its wild action on the spiral soon leaves the sluggish, flat-bottomed slate, one being destined for the market and the other, after crushing, for the interior of the mine.

Stove coal from shaker 4 receives a treatment identical with that accorded the egg. The fine coal from that shaker passes through another shaker (30) having five decks and making six sizes. The largest size made on this shaker is chestnut. This is treated on Emery pickers and then on anthracite spirals (32) and (45) in the same manner as has been described for the egg coal.

Pea, buckwheat, rice and barley coals are sprayed and the fine dust washed out. It is not necessary to give these sizes any further treatment, as this coal is practically clean. The culm or fine material that passes through the bottom deck of shaker 30 is returned to the mine for filling purposes, as it contains too much dirt to be of commercial value.

Broken coal from shakers 7 and 4 goes to the pockets for that size of coal. At times when this size cannot be marketed it is sent to crusher 33, where it is reduced to smaller sizes and sent by means of the condemned-coal conveyor to shaker 7 for retreatment. The egg coal

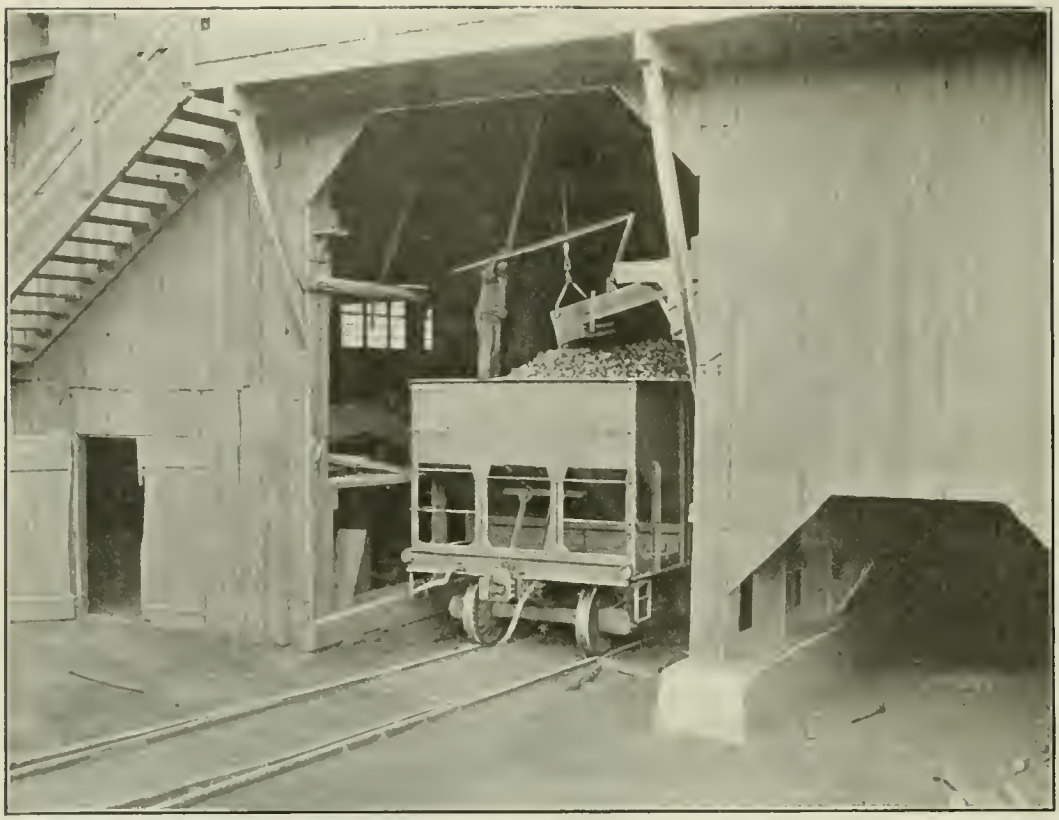


FIG. 8.

Loading Chute

Filling a car of egg coal at No. 4 Breaker. This chute is designed to minimize breakage, so that the coal which has been so carefully sized in the breaker does not lose by degradation or create degradation sizes which may have to be screened out at the receiving yard.

from shaker 7 mixes with that made upon both decks of the Mowry shaker (17) after it has been cleaned on Emery and spiral pickers. Coal from both sources then goes to the egg pocket and is ready for shipment. The stove coal from shaker 7 unites with that from the Mowry shaker (24) in the same manner as did the egg, after which it passes to the stove-coal pocket. Chestnut coal from shakers 7, 4 and 30 is brought together after treatment and is sent to the proper pocket.

All the slate is collected at the rock crusher, where it is crushed to a sufficently small size so that it is possible to send it through boreholes into the mine to be used for filling, or flushing, worked-out territories. Any coal that is condemned because it does not come up to the standard of the inspectors is sent to the condemned-coal conveyor. All the undersized coal from the lip screens is also taken by this conveyor to shaker 17 for retreatment.

Although all except the smaller sizes of coal in this breaker are treated dry, comparatively little dust is made. A Carpenter system of exhausting the dust is employed. Every piece of apparatus in the breaker in which large amounts of dust are liable to be formed, such as shaking screens and rolls, is inclosed and the dust is drawn out and collected in a settling tower by means of water or exhaust steam. It is surprising to note the clearness of the air that comes from the suction fan. What little dust rises in this breaker comes chiefly from the pickers and it would be possible to inclose these, so that even this dust could be removed by suction. In the winter less dust is perceptible than during the summer, as at this season the windows in the breaker are closed and the exhaust fan not only sucks air from the inclosed places but also from the breaker building itself.

Great care is taken to place safeguards around the machinery installed in this breaker. Every belt and moving element is carefully guarded so as to lessen the danger of a man being caught. All walkways and stairways that are even slightly dark are lighted by electricity and provided with guard rails to prevent anyone from stepping or falling sideways.

From the pockets the coal is loaded into railroad cars by means of specially-constructed chutes that lower it to the bottom of the car with the least possible drop.

This breaker does not require any more men for its operation than do many of the wet breakers. In fact it requires a smaller force than many of the jigging plants. In this building there are only two places where hand picking is performed, namely, at the head of the breaker where there is a picking table for the lump coal, and at the foot of the spiral pickers that clean the coal from the two Mowry shakers. This compares favorably with the requirements of a wet breaker, where men are employed to remove the rock at the head of the breaker and also to hand-pick the coal and rock coming from the egg and sometimes from the stove jigs, and in a few cases also to hand-pick the chestnut.

In this building fifty-four anthracite spiral pickers are employed, as well as nineteen Emery pickers and two Mowry shakers. Three sets of shaker screens, two sets of rolls and two rock crushers also form part of the installation.

Shoot Mine Superintendent and Prosecuting Attorney in Mingo County

UNIDENTIFIED persons shot John Yates, superintendent of the Gates mine of the Crystal Block Mining Co., on Oct. 23 while he was walking along the Mingo County road near the company store at Gates, ten miles east of Williamson, W. Va. The next day S. U. G. Rhodes, a former prosecuting attorney of Mingo County, who had incurred the enmity of the mine workers, was dragged from his mule at Devon, W. Va., and shot in the face with a rifle after addressing a political meeting at Beech Creek, near Devon. Federal troops are actively seeking the perpetrators of these acts of violence.

Tests Show That Buildings May Be Rendered Fireproof with Gunite

When Properly Constructed a Gunite Wall Will Withstand Heat as Efficiently as a Wall of Brick—Gunite Has the Further Advantage of Being Weather- and Damp-Proof—It May Be Used as a Coating or as a Structural Material

By B. C. Collier
Allentown, Pa.

ONE of the most interesting materials being utilized in the effort to reduce fire hazards is "gunite," which is sand and cement mortar placed by the "cement gun." In the early stages of the development of this material tests were made upon its fire-resisting qualities by constructing small houses with 2 x 4 in. studs, over which, inside and out, a layer of tar paper and reinforcing mesh was placed on which was shot an inch of gunite.

House Ready to Gunite

Building is shrouded in tar paper and covered with reinforcing mesh and stands ready for the "man behind the gun," who in a short time will cover it with the most durable of paints—cement mortar.

Row of Gunited Houses

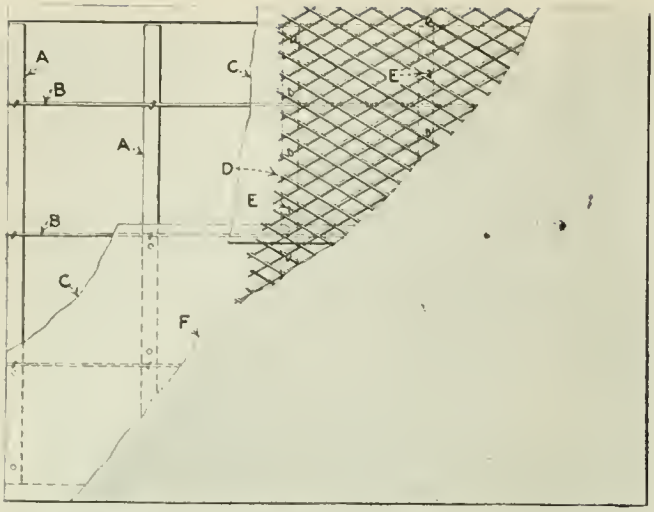
Nothing makes frame buildings more substantial than a coating of gunite and nothing renders the walls of those buildings more resistant to exterior fire hazards, or to all fire hazards if they are similarly treated internally.

Test to Determine Value for Mine Work

These houses were then filled with highly inflammable material, which was ignited, and, while they were still hot, water was turned on them. This resulted in only slight spalling of the gunite. In one of these cases the studs were left exposed on one side, the outer coat of gunite being omitted. This was for the purpose of ascertaining whether the studs would become charred. The heat was so intense that the tar in the paper was melted on the back of the inner slab, but no charring of the studs occurred.

The next most conspicuous illustration of the fireproofing qualities of gunite was the test which the Anaconda Copper Mining Co. made before it decided to use this material as a means of fireproofing all its shaft and entry timbers. These tests, described in a paper published by E. M. Morris in the Bulletin of the American Institute of Mining Engineers, consisted in covering timbers with a ½-in. coating or reinforced gunite, and placing them in a bonfire. Here the coating was brought to a red heat and kept at that temperature for one-half hour. The fire was then allowed to die down, and the samples were examined to discover the amount of charring. None was noted except a slight amount on the corners, where the gunite was cracked. This test led to a rapidly extended use of gunite as a protection against fire.

As a proof of the serviceability of gunite as a fire protection, tests have been made during the current year at the Underwriters Laboratory in Chicago. The first tests were made during the meeting of the Concrete Institute in February and were witnessed by many of the prominent engineers and building commissioners present at that gathering. Reinforced slabs 1 in. thick shot over tar paper attached to 2 x 4-in. studs were made the fourth wall of a gas furnace. The heat



RECOMMENDED FORM OF GUNITE CONSTRUCTION

A frame of 2 x 4-in. studding (A) set on 16-in. centers over which is stretched No. 9 black-iron wire (B) spaced on 15-in. centers and firmly stapled to studs, the whole covered with three-ply tarred felt 32 in. wide, (C) nailed to the studs over the wire. Expanded metal 1¾ x 3½ in. mesh, No. 16 gage (D) or its equivalent spread over the tarred felt and attached to the studding by a special wire chair with eight-penny nails which hold the reinforcing ¾ in. from the felt. Gunite (F) on the outside of the above, 1-in. thick containing one part cement to three parts sand.

attained after five minutes was 500 deg., and in the next thirty minutes it increased gradually to 1,500 deg. It continued to grow hotter at a rate which would bring it to about 1,700 deg. in one hour.

The first slab tested began to show marked indications of expansion in about five minutes, and as the reinforcing mesh had been attached to the studs with heavy nails the studs were bent toward the heat by the pull of this expansion. This pull continued until the studs had bent about four inches, when the nails were released, allowing the studs to return to their original position. This expansion continued until the slab, which was about 8 x 12 ft., showed a curvature of about eight inches.

At forty-three minutes, when the heat was over 1,500 deg., the gases escaping through the joint between the panel and the inclosing frame set fire to the timber cap piece at the top of the slab. It consequently was decided to withdraw the slab, and expose it to the effect of a stream of water under 30 lb. pressure for three minutes. This was done with absolutely no sign of spalling or breaking down of the slab.

Used for Construction, Not as Mere Coating

Gunite has been used for some years in the construction of the walls of industrial buildings, as well as to form the covering of the walls of cottages where timbers were used as the framework. It has thus been shown that not only is such a covering weatherproof but that it is a definite means for providing a permanent and fire-resisting wall. A demand still existed, however, for a type of construction that would be absolutely fireproof through the elimination of all timber framing. Consequently there has been developed a type of cottage construction, recently described in several of the technical journals, wherein the walls, supporting columns and floor-carrying girders are shot monolithically. This produces a structure that is better and cheaper than brick and which is absolutely fire- and weather-proof so far as the outer walls are concerned. The forms against which these walls are shot are built up of light framing covered with tar paper. They are left in place, so that the framing members act as the furring strips for the attachment of the interior lath and plaster.

A further development of this principle has been made by Messrs. Ballinger and Perrot, architects, of Philadelphia, during the last few months for the construction of exterior walls and fire partition walls in a large lumber-storage warehouse belonging to the Victor Talking Machine Co., at Camden, N. J. The outer walls have been constructed in a highly ingenious manner by building up at about 4 ft. centers, three-sided hollow boxes of 1 x 6-in. plank, which act not only as temporary supports for the roof members but also as forms for the construction of the reinforced gunite columns. Between these boxes temporary wooden panels are erected, and the wall of the reinforced gunite 1½ in. thick between these supporting columns is then built in place.

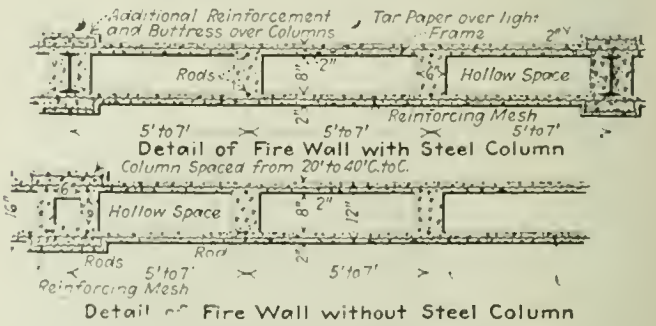
Fasten Reinforcing Firmly to Outer Studs

The fire partition walls used in this warehouse are the result of a further development of this general principle, and samples have been subjected to a remarkable test at the Underwriters Laboratory. The investigation of the first test above described led to the conclusion that, because of the expansion, it was necessary to provide a slab measuring from 4 ft. to 7 ft. between supports, and consequently it is now recommended that on wooden-frame houses the reinforcing mesh shall be firmly fastened at the corners, top, bottom and around windows, but shall be only lightly fastened at the intermediate studs.

Gunite Is Used as Fourth Wall of Furnace

The wall construction tested in June and used in the building above referred to is built by setting up forms consisting of light frames covered with tar paper, so spaced that a recess of 6 in. is left between adjacent panels. In this recess are set up two reinforcing rods tied together, to which the reinforcing mesh is fastened on both sides of the panel. In the particular wall tested these forms were eight inches between their side faces, and over each side was shot two inches of gunite. This creates a cellular wall consisting of two 2-in. outer walls and an 8-in. air space between them with 6 x 8-in. columns spaced on about 7 ft. centers.

Two samples of such a wall were tested in the Underwriters Laboratory by building up panels to form the fourth wall of a furnace. These panels consisted of two column members with their connecting walls, and additional walls extending eighteen inches beyond the



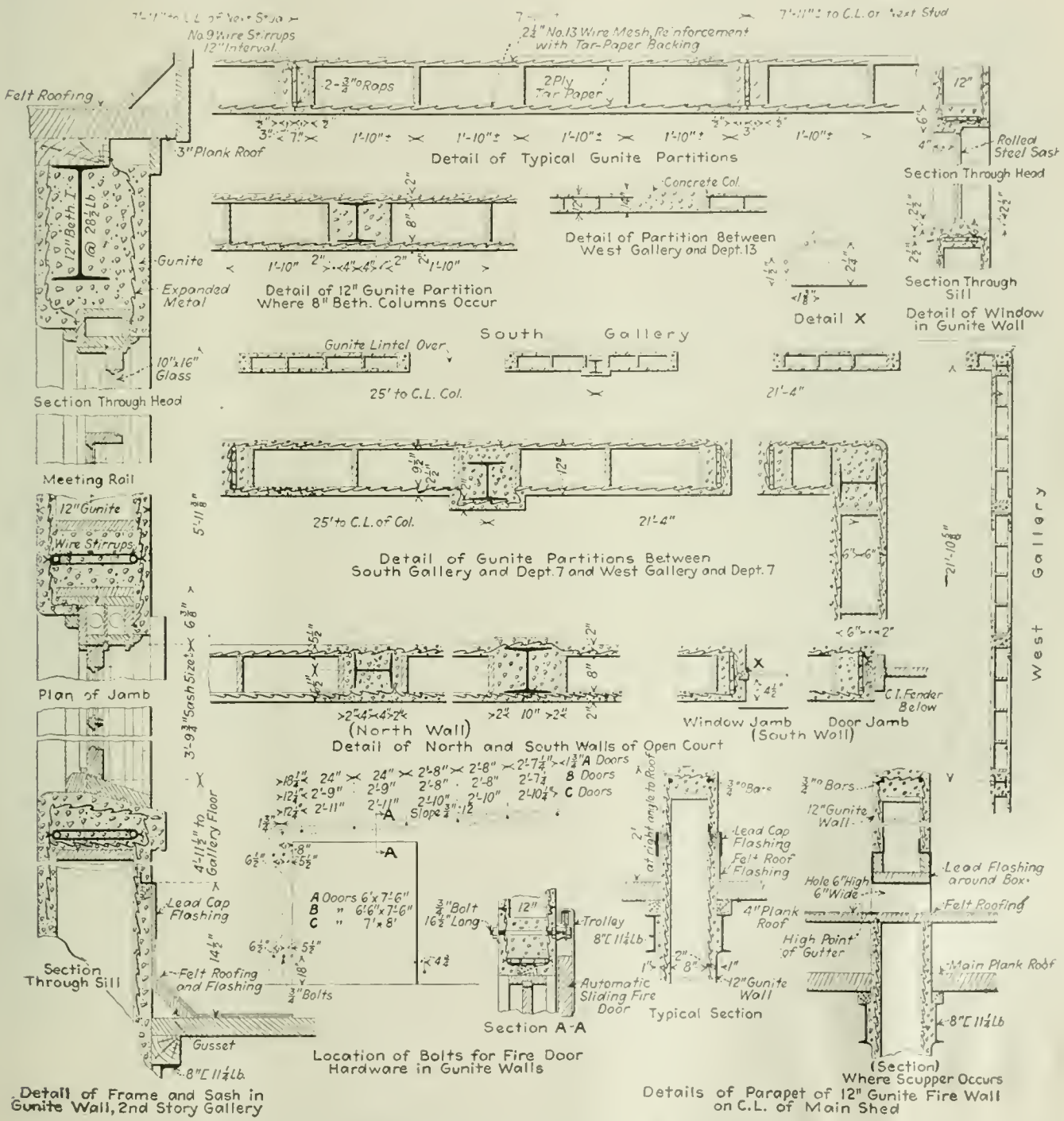
HORIZONTAL AND VERTICAL WALL SECTIONS TESTED AT UNDERWRITERS LABORATORY

A wall like this was made the fourth wall of a furnace and after curing 40 days, was subjected to a hot fire for four hours with the results described in the article.

columns to meet the framework of the support. After curing for about forty days they were tested with the full fire load specified by the Committee of the Concrete Institute—that is, a heat of 900 deg. in five minutes, rising to 1,600 deg. in one hour, and continuing on to about 2,100 deg. in four hours.

The first sample was kept under this heat for four hours and fifteen minutes, and although expansion caused the breaking of a hole in one of the short connections between the studs and the frame no damage was done to the portion between the studs, which was the real test, and no fire got beyond the outer wall of the portion where the hole had broken through. The specifications for such a test call for a wall that will show not more than 300 deg. on that face of the gunite which is away from the fire. Out of five thermometers, only one showed this temperature after about four hours and ten minutes, and hence the test was stopped five minutes later, as the specifications call for only four hours and the engineers desired to hold the sample for a further breaking-down test.

A second sample built up in the same manner was tested for one hour on the following day (June 4) and then withdrawn and subjected immediately to a stream of water at 50 lb. pressure for five minutes. A hole similar in appearance and at the same location had broken through the fire face as a result of the same expansive action on the short span, but no damage



USE OF GUNITE IN CONSTRUCTION OF LARGE BUILDINGS

The wood here is merely the form on which the gunite is shot. The strength is in the gunite and not in the wood. Consequently, the quantity of lumber used is small, and the amount which could be exposed is inconsiderable, even if the gunite should collapse under [illegible], as has been shown, is entirely unlikely. The drawing shows how the fire doors may be hung

occurred to the main tested portion between studs (or columns).

Both of these trials were witnessed by a number of engineers well versed in such tests, and it was said that no material other than a brick wall thirteen inches thick had ever withstood such usage. Some of those present pronounced such a wall better than one composed of brick.

These developments have established a method of construction peculiarly advantageous for all kinds of buildings, for not only is it now clearly proven that this type of wall is easily adaptable, but a wall is provided that is much more quickly and economically constructed than is one composed of brick. It is lighter, is positively insulated against heat and cold and is absolutely damp-proof. Furthermore, it is, as has been shown by tests described, fully equivalent to a brick wall as a fireproofing medium.

Coal Mining Institute Will Meet Early in December

Only Six Technical Papers—A Session of Practical Questions and Still More Practical Answers—Six Different Presiding Officers—Trip on Third Day

IN THESE days the Coal Mining Institute of America needs a big hall and procures it—the Pittsburgh Chamber of Commerce Auditorium. The hall, by the way, has comfortable seats which do not strain the back like the fancy gold chairs of earlier days which were built for "looks" and not for comfort. The meeting will open on Wednesday, Dec. 8, at 9:30 a.m., with reports of officers and committees, election of new members and election of officers.

Then Dr. George H. Ashley, state geologist, of Harrisburg, Pa., is to deliver a paper on "The Geology of Oil and Gas." Thereafter two questions will be presented: (1) To what extent is the storage of coal at the mine economically justified? (2) To what extent is purchased electric power cheaper or dearer than plant-produced power based on statistics of cost of production extending over not less than one year? W. E. Fohl will preside.

In the afternoon, commencing at 2 o'clock, Dr. E. S. Moore, of State College, Pa., will preside and present three questions: (3) What is the best means of educating the miner and proving to him that his lot is not so bad after all? (4) Are accidents per ton of coal mined being reduced in proportion to the energy and money expended for safety work? (5) What is the range of temperature in a coal mine? The session will conclude with a paper by E. E. Bach, director of the Americanization Bureau, Department of Labor and Industry, Harrisburg, Pa., entitled "What Has Been Accomplished in Americanization Work in Our Pennsylvania Mining Communities During 1920."

On the evening of the first day is the annual dinner of the institute at the William Penn Hotel with the genial William L. Affelder in the chair. *Coal Age* will be represented by Jack Armor; the Safety Institute of America by Dr. Riley F. Little, of New York City; the Presbyterian Board of Home Missions by the Rev. John McDowell; the mines by Carl Scholz, Charleston, W. Va., and Howard I. Smith of Sullivan, Ind.; the *Saturday Evening Post* by Floyd W. Parsons, now its industrial editor and formerly editor of *Coal Age*; the Bureau of Mines by its director, Dr. F. G. Cottrell.

The sessions will open on the second day with John I. Pratt, state mine inspector, holding the gavel. The questions to be asked by him are: (6) What are the merits and demerits of modern coal-cutting machines? and (7) What is the consensus of opinion of those present as to the standardization of all coal-mining equipment?

William G. Duncan, director of extension work for the School of Mines, Pennsylvania State College, then will read a paper on "Modern Safety Appliances for Hoisting Shafts and Cages." Thomas Chester, manager of the American Blower Co., will read a paper entitled "Some Data on Mine Fans."

In the afternoon F. W. Cunningham, state mine inspector, will present a single question: (8) Should "booster" fans be allowed in coal mines? Then Dr. Rheinhardt Thiessen, chemist of the U. S. Bureau of Mines, will give a paper on "New Developments in the Microscopic Study of Coals." This will be illustrated with slides.

F. W. Cunningham will then step down and give William J. Affelder place, who will present two questions: (9) Is the so-called "thick Freeport coal" a combination of the upper and lower Freeport beds, or an abnormal development of the upper Freeport? (10) What are the different forms of sulphur in coal and why are some less objectionable than others? The session will wind up with an article on "Some Peculiar Roof Conditions Found in the Central Pennsylvania Field," by Superintendent Alfred E. Roberts of the Monroe Coal Mining Co., of Ebensburg, Pa.

On Friday, the third and last day, the members will make a valiant effort to get up early enough to visit the byproduct coke plant of the Jones & Laughlin Steel Co. at 9 a.m.

ALABAMA MINE-PROP LAW.—Under the section of the Alabama mining statutes requiring coal mine operators to keep on hand a sufficient supply of props, etc., for use of those working in the mine, the duty to designate the props or timbers desired or to give notice of the number and kind needed, and of the place at which they are to be delivered, devolves upon the miner himself. He must make the required designation before any duty to furnish the props, etc., is imposed upon the operators. (*Alabama Supreme Court, Kelly vs. Altoona Coal Co., 83 Southern Reporter, 62.*)

A CHANGE IN THE method of handling applications for shipments of emergency coal to Canadian public utilities has been announced by the Board of Railway Commissioners through their fuel control representative. Where a critical condition may arise special application forms for securing coal stocks may be secured from the fuel administrator for the province, who will make the necessary recommendation to the railway board. If the application is approved representations will be made to a special committee at Washington just appointed by the United States.

IN THE CASE of the Illinois Steel Co. vs. the Joliet & Eastern R.R. a tentative report of an I. C. C. examiner recommends that the rate of $5 per car plus 15c. per ton for coke from ovens to the complainant's plant at Gary, Ind., from June 25, 1918, to Sept. 22, 1918, was not unreasonable, and that the claim for reparation be denied.

Give the Fireboss a Fair Chance and You Will Get a Far Safer Mine*

Pay of Fireboss Usually Below Pay of Contract Miners Inadequate Time to Perform Safety Duties and Insufficient Authority Make It Impossible for Him to Assure the Company by Which He Is Employed That the Mines Will Be Reasonably Free from Accident

By D. Harrington†

THOUGH the fireboss in coal mines and the shiftboss in metal mines are alike held responsible for the safety of the underground employees and the security of the mine, they are, it seems to me, not always vested with sufficient authority nor given compensation commensurate with their duties. The metal-mine shiftboss, although his position between the employer on the one hand and the employee on the other frequently makes his work an unenviable one, has as a rule much more authority than the fireboss and is not expected to perform the menial tasks which many coal-mining companies require of the latter.

Firebosses should be men of technical ability and training, routed for executive positions. Shiftbosses at metal mines are often of that type. Too much actual labor is required of firebosses. They should be safety inspectors with an authority equal to the reliance that is placed on their work.

In most coal-mining states the coal-mine foreman and the fireboss are required to possess a certificate of competency granted only after the passing of an examination. The foreman is legally responsible for the safety of the miners, for the superintendent is rarely required to pass an examination. Although in the eyes of the law the foreman is responsible for the safety of the miners, mine legislation does not, in general, compel the superintendent or other higher officials to delegate sufficient authority to the foreman to enable him to put his wishes or judgment into effect; and this condition has tended in many instances toward perpetuation of unsafe conditions.

The fireboss is held legally responsible for conditions in his "beat," but he is generally given only such authority as the mine foreman sees fit to delegate, and this is frequently but little. Moreover, the fireboss is generally required to cover his "beat" within the two hours that precede the entrance of the workers into the mine. Only too often his territory is so great that in order to reach all the working faces and chalk the required date at the face, he must travel at a rapid walk or even run. When such haste is necessary to cover the required ground, it is manifestly impossible for the fireboss to make a careful inspection or examination of the roof, timbering, wiring, gas, etc., at each place, and doubtless in his hurry many unsafe conditions escape his notice.

After he has completed his morning rounds, recorded the state of the mine in the book provided at the office for that purpose and has eaten breakfast the fireboss is usually required to return to the mine to spend several hours in building or repairing brattices, doors, stoppings or some similar duty—in other words, to perform work which any skillful laborer could do. If dangerous conditions were encountered during the inspection the fireboss is expected to correct them immediately, or if this is not feasible, he should return to the mine and correct them as soon as possible after making his morning's report.

The shiftboss usually has twenty-five to fifty men for whose safety he is responsible, but the fireboss at a coal mine has frequently several times that number; the shiftboss has practically unlimited time in which to make his rounds, but the fireboss must complete his morning inspection within about two hours. The shiftboss usually is delegated almost full power to enforce his wishes, but the fireboss frequently has no authority other than to make recommendations to the foreman.

In many coal mines the fireboss is paid by the day, like an ordinary mine laborer, or he receives a stipulated monthly salary, but deductions are made for days of absence from duty. This practically puts him, regardless of his monthly salary, on a basis of daily pay. Yet the fireboss receives in many mines a remuneration below that given common labor, and certainly far below that received by contract miners. Also, whenever the general wage scale is increased, only too frequently the fireboss, in common with other so-called salaried men, continues on the former schedule, although this may be, even at that time, low compared with that which other workers receive.

Shiftbosses Often Have Technical Training

The shiftboss at a metal mine is fairly well paid as compared with other mine employees, and works the same hours; he has generally the power of discharging undesirables, is in direct contact with actual operations, and the experience thus gained qualifies him for higher positions. The fireboss, on the other hand, with practically no authority other than recommendatory, with practical exclusion from actual operations, generally with inadequate pay, abnormal working hours, and heavy responsibility as to both lives and property, certainly is not in an enviable position. His work

*Paper read at the meeting of the Rocky Mountain Coal Mining Institute, Denver, Col., Sept. 9-11, entitled "Duties, Trials and Difficulties of the Coal-Mine Fireboss and Co-operation of Officials with Him."

†Mining engineer, U. S. Bureau of Mines.

entails greater personal danger and greater responsibility than does that of the shiftboss, and it should call for a higher degree of education and intelligence than the latter position.

Nevertheless it is extremely noticeable that whereas a large proportion of shiftbosses in metal mines have had technical training, the proportion of technically trained firebosses is negligible. In fact after more than twenty years' experience in and around coal mines in seventeen states, I have yet to see a man with technical training serving as fireboss or, except for a few instances, as foreman of a coal mine. This condition is inherently wrong. Surely the men on whom the safety of all of the lives within a mine almost directly depends should be selected from among those who have had the best opportunity to become thoroughly familiar with the underlying conditions or combinations of conditions that may result in disaster.

During the last five years I have had occasion to investigate carefully sixteen coal-mine fires and explosions in seven states. In ten of the sixteen cases I could only classify the underlying cause as faulty inspection of the fireboss or other employee who performed this duty, in three instances as direct violations of the law, in one case as gross carelessness, and in two cases as unavoidable accidents. In at least five of the ten disasters caused by faulty inspection the employee who was examining the mine was himself the cause of the trouble and in four instances lost his life; in one case in which the law was broken it was by an inspector who similarly made payment for his indiscretion. From this it would appear that present methods of daily coal-mine inspection are faulty, and, in my opinion, the chief fault lies in the giving of an inadequate status to the fireboss in the organization of the mine.

Mine Officials Inadequately Informed

The fireboss ostensibly is required to pass an examination preparatory to obtaining a certificate of competency, but in many instances the certificate is granted practically without examination, and only too often the examinations are a farce. Frequently the applicants are poorly-educated men, who have "crammed up" on a few facts (real or alleged) on gases, air flow, etc., and have only a vague idea as to the actual meaning of these facts. As a rule, such men, even if they pass the examination fairly well, will forget practically every detail within a month.

Many firebosses and mine foremen are wholly at sea as to important facts directly affecting mine safety; for instance, some of them know nothing of the properties of methane other than that it gives a "cap" in a safety lamp, with practically no idea as to the significance of various heights of cap; and would find it a hopeless puzzle to obtain with an anemometer and a tape line the volume of air flowing through an entry.

A still more serious matter is that many firebosses and coal-mine foremen are almost wholly unfamiliar with the state laws regulating the safe operation of coal mines. In several of the disasters I have attended it was definitely established that the disaster resulted directly from the lack of even elementary knowledge exhibited by the fireboss, foreman or local inspector as to the properties of mine gases or as to the state laws governing the operation of coal mines.

In my opinion no man should be permitted to qualify as fireboss until he has had at least five years' experience in underground work and has passed an examination requiring a thorough practical knowledge of mine gases, dusts, electrical equipment with especial respect to its dangers and also many details in regard to modern ventilation practice and approved safety methods. At the mine he should be required to act as safety engineer, as well as fireboss, and while held responsible for removal of gas, for keeping flow of air free and continuous, and for general inspection of shot-firing, etc., he should not be required to do such manual work as hanging doors, building brattices, loading holes, etc.

Should Have Almost Same Salary as Foreman

His compensation should be on a basis similar to that of the foreman and it should be only slightly less than that paid to that functionary, and certainly should equal the day wage that is at present paid to ordinary miners. Both foreman and mine superintendent should qualify, and should act, as fireboss before being promoted to their positions. The superintendent and his mine foreman, as well as the fireboss, should be required by law to take a rigid examination at intervals not exceeding five years, with a special view to compelling them to keep in touch with the state laws and to changes in the law, and to keep informed as to the latest progress in general matters of mine safety, especially as regards gases, dusts, air control, etc.

In gaseous mines the area each fireboss is required to patrol should be such that he may cover his morning "beat" and still have sufficient time to devote at least a few minutes to actual inspection at each working face. He should be given state authority and state protection to close any place or places deemed unsafe, even should the mine management object; this is drastic, yet the fireboss, not the mine superintendent or manager, is held responsible if a disaster occurs after conditions are known and not remedied.

The foregoing recommendations may appear radical to some, but my personal experience at coal-mine disasters convinces me that unless sweeping changes are made in the methods of daily mine inspection we cannot expect to make the progress we would toward a reduction in the frequency of mine fires, explosions, and accidents.

Foreign Mine Labor Getting Scarcer

IMMIGRATION figures for the fiscal year ended June 30 show that the trend toward America is again gathering force, but that up to date the mines have not benefited. During the fiscal year 430,001 aliens were admitted and 288,315 departed, leaving a net increase of 141,686.

Of the aliens arriving in this country 3,081 became miners and of those departing 5,279 were miners, a net loss to the mines of 2,198.

The situation, so far as Pennsylvania is concerned, is not exactly satisfactory. That state, once a favorite destination for immigrants, is one of the few important states which show losses in the immigration statistics. During the fiscal year the state received 27,637 newcomers, but emigration totaled 44,156, leaving a net loss of 16,519.

THE SCALE COMMITTEE of the United Mine Workers of District 16, embracing the Georges Creek region and the Upper Potomac field, began a series of meetings on Oct. 19 at the special call of Frank J. Drum, district president. The meetings were called for the purpose of considering matters relating to a rearrangement of the scale in District 16. A survey of wages and other conditions has recently been made by John P White, formerly president of the United Mine Workers, who submitted a report as to his findings.

Rules for Prevention of Gas Explosions*

Degree of Immunity from Gas Explosions Depends on Fidelity with Which Two Simple Rules Are Followed—Hit-or-Miss Ventilation Is Dangerous, as Is Also Either an Inadequate or Superfluous Flow of Air—Ventilation Engineers Should Prepare Specifications for Fans

By R. A. Walter†
Benham, Ky.

THIS article is an endeavor to condense into a few readily understandable rules the results of many years of experience gained in bituminous coal mines, which prior to the adoption of the methods herein outlined had a continual tendency to blow up upon the slightest provocation.

Throughout this article when the word "gas" is used it should be interpreted as meaning the mixture of air, methane and accompanying gases commonly known as firedamp. Other explosive gases and mixtures exist, of course, but usually as the outcome of an explosion or mine fire. Their presence can be detected readily by the experienced observer, who must decide what precautionary measures will have to be taken in this instance, which are not necessary when only methane has to be controlled.

A successful engineer-manager. For many years he was chief mining engineer of the Consolidation Coal Co. in the Georges Creek field. As mine owner and manager he has been an advocate of thoroughness, believing the householder is not safe as long as one window or one door is left unfastened. Nearly safe is unsafe.

Coal dust in suspension may make it possible to ignite a mixture of air with only one per cent of gas. As the ignition point is above 5 per cent when no coal dust is present, the importance of humidification to keep down the dust becomes readily apparent. Gassy mines are frequently dry and dusty and the most elaborate system of gas control will not make such operations explosion-proof unless the dust is rendered harmless by sprinkling or other appropriate treatment.

Gas explosions in bituminous coal mines can be prevented by the observance of two rules: First, ventilation; provide such ventilating current under proper control as will dilute all explosive gases to a harmless mixture and carry them away. Second, precautionary measures; keep from dangerously gas-laden mine air all flames and such sparks as are sufficiently hot and sustained to cause ignition. Only by faithful observance of these two rules can gas explosions be entirely prevented. Immunity from such disasters varies in direct proportion to the fidelity with which they are observed. Close adherence to the following details is important.

Ventilation: For every man, 150 cu.ft. of air per minute must be delivered at the working face and 500 cu.ft. must be provided for every mule, with such further volume as may be necessary to dilute to 0.5 per cent the gas content in individual splits and to 0.33 per cent the gas content in the entire return from the mine. A fan must be selected that will deliver air to meet the above requirements after due allowance has been made for leakage and friction. The fan wheel must be substantially constructed and well balanced. Bearings and drives must be so designed as to permit continuous operation.

The fan should have two separate drives, preferably from entirely different sources of power. Clutches should be located outside the fan chamber. They should be so arranged that not over five minutes will be required to make the change from one drive to the other. The fan should normally exhaust air from the mine, but it must be reversible. Fan housing and fan house must be of fireproof construction and explosion doors must be provided. The fan must be equipped with an accurate continuous recording pressure gage and with an automatic low-pressure alarm signal. Too much importance cannot be attached to proper proportioning of air courses and the construction of overcasts, stoppings, regulators, brattices and doors. Air splits should be proportioned with due regard to the quantity of gas transpired, the number of men in the workings, the air velocity and the location of old workings.

If the operation is a shaft mine, the entire shaft, or all the shafts, should be concrete lined, but should this not be feasible, at least the air compartment must be lined with concrete from top to bottom.

Stopping Material Should Hold Up Slate

Air courses must be of such size and number as to reduce to a minimum, commensurate with cost of driving, the friction of the ventilating current. Local conditions vary too much to give any formulae that will cover all cases, but in every instance this problem can be reduced to simple figures and solved. In old mines this may become difficult, but even then a careful study and calculation of air-course construction versus power costs generally results not only in better ventilation but in an appreciable reduction in the cost of operation.

*Paper, entitled "General Rules for Gas Explosion Prevention," read before the Ninth Annual Safety Congress of the National Safety Council, Milwaukee, Wis., Sept. 27, 1920.

†Superintendent, Wisconsin Steel Co., Benham, Ky.

Overcasts should be constructed of fireproof material and of standard design. They must be so built as to narrow neither haulway nor airway.

On all headings only the innermost crosscut should be left open; all others should be closed with airtight stoppings constructed of fireproof material. These stoppings should be strong enough to support the draw slate; otherwise it might subside and permit the air to leak in important quantity through crevices thus formed. These crevices, once open, cannot be closed except at prohibitive cost.

Regulators should be constructed of fireproof material. They may be of the sliding or door type, but in any case they should be so constructed that they can be locked to any desired opening. Brattices should be built from all inside working crosscuts to within 15 ft. of the working face, or nearer if this fails to sweep out the gas. Only closely-woven brattice cloth of strong texture should be used for this purpose. It should be supported at the top and bottom with wooden strips.

Doors must have attendants or be of the automatic type. They should be arranged in pairs, with room between them for a full trip of cars.

Splits from the main ventilating current must be so proportioned that each individual return shall contain not more than 0.5 per cent of gas, and so far as possible that the maximum and minimum velocities will not exceed 500 or be less than 125 ft. per minute. Not more than seventy men should be permitted to work on any one split.

Use Return Air to Ventilate Old Workings

It is desirable to so arrange the splits that old workings may be ventilated with return air, rendering unnecessary the diversion of fresh air for this purpose.

Abandoned and worked-out sections should be sealed off with heavy fireproof airtight stoppings provided with bleeders opening to return air. Frequent analyses and measurement of the gases escaping from these bleeders will determine the extent to which the sealing-off operations should be carried. Should a large quantity of explosive gas accumulate it must on no account be turned out onto men in working sections of the mine. Should gas accumulate in large quantities under pressure, boreholes should be driven from the surface into an open space in the sealed-off section.

In the event of total stoppage of the fan for an interval sufficiently protracted to permit dangerous accumulations of gas, open all switches to inside power lines. Upon resumption of ventilation every working face must be tested by the firebosses before the power may be again turned on in the mine.

Fireboss Should Do His Own Bratticing

A sufficient number of skilled firebosses must be provided so that all of them can cover in two hours the territory assigned to them. After making his run each will make his report to the mine foreman, check every man into his section, return to it and utilize the remainder of the shift in hanging brattice cloth and performing such other work as may be necessary to maintain ventilation. This definitely fixes responsibility and invariably results in better work than can be attained where the fireboss merely tests his section and does not supervise the work necessary to assure ventilation.

The fireboss shall mark out, with a board bearing the word "Gas" in large letters, all places in which gas has accumulated in dangerous quantities, and shall make note of them in his report to the mine foreman. These boards shall be removed by the fireboss only, and then not until after the gas has been removed.

Give Fireboss Electric and "Safety" Lamp

Each fireboss shall be provided with a closed electric cap lamp and with a flame safety lamp which will detect a 1½ per cent to 2 per cent mixture of gas. Places that show no gas cap with this lamp are safe if no coal dust is in suspension. Should coal dust be present the gas content which may safely be present becomes so low that nothing but a special lamp or detector in the hands of a skilled observer can show its presence. In ordinary hands the extremely sensitive lamp may become a menace and it is not properly a fireboss' instrument. The best results and greatest speed and safety will be attained by using for testing purposes a flat-wick naphtha-burning lamp with double gauze hood, magnetic lock and internal relighting device.

At regular intervals analyses should be made of the air in every return. If any individual split shows gas in excess of 0.5 per cent, analyses should be made daily. If below this amount once a week will be sufficient. For approximate work a Burrell gas detector is satisfactory. For more precise results the Haldane type of apparatus is preferred. Both should be part of the equipment of every gaseous mine. The latter is a laboratory instrument and necessitates the use of containers in which to take samples of the mine air. For this purpose nothing should be used except glass pipettes either of the evacuated type or the variety provided with two stop-cocks.

Should Know Volume of Gas Splint Generates

When gas readings or samples are taken, simultaneous observations should be made of volume and humidity, using a properly calibrated anemometer and a wet and dry bulb thermometer in a sling mounting. From these data can be calculated the total amount of gas transpired, its point of origin, and the amount of moisture carried in and out of the mine by the ventilating current, all of which information is essential to efficient control of gas and ventilation. It should be compiled in tabular form for ready reference.

A recording barometer should be installed at the mine, and comparison made between the barometric chart and the tabulated gas readings. A correspondence will be noted between the two which will be an invaluable guide in regulating fan speed and indicating when special precautions should be taken.

Precautionary Measures.—Only permissible explosives shall be used and no holes shall be loaded with more than 1.5 lb. of powder. All shots shall be fired with electric detonators and battery and shall be loaded, tamped and fired by men instructed and skilled in such work. All shooting shall be done when none but shotfirers are in the mine. All shotfiring systems require constant vigilance and the most careful supervision or they may become sources of real danger. Use sand or clay for stemming and tamp all holes full to the collar. No coal dust ought to be left in the hole, nor ought any hole to be shot on the solid.

No open lamps shall be permitted in a gaseous mine. Electric cap lamps are recommended in preference to the flame safety lamp. Shift leaders, machine runners,

shotfirers and all inside officials will carry in addition a locked, flame safety lamp of the type that is standard at the mine.

No machinery driven by internal combustion engines shall be permitted inside the mine. No fires shall be allowed below ground. Smoking is prohibited and matches shall not be carried. No electric locomotives shall be operated in return air. Electric or air locomotives may be used in the intake, but air locomotives or mules only may be used on the return.

All switches, fuses and electrical machinery on return air must be inclosed and made explosion-proof. Mining machines and controllers must be of approved explosion-proof type. Machine men while cutting must make tests for gas every thirty minutes.

Good Ventilation Pays Speedy Dividends

After a perusal of these rules the question may well be asked, "Will it pay?" I answer most emphatically, "It will. It will pay not only from a humanitarian standpoint and in protection to property but in lowering operating costs as well."

I have in mind an operation producing half a million tons of coal annually. Twelve thousand dollars expended on two of the main air courses eight years ago would have reduced power costs for fan drive alone 6c. per ton. Rather than spend this $12,000 the owners have for eight years thrown away $30,000 annually in forcing the ventilating current through inadequate air courses.

Another operation prides itself on erring on the side of safety. Some of its air courses are unnecessarily large and expensive. Twice the requisite amount of air is being delivered at many of the working faces. The available data are insufficient for precise figures, but I conservatively estimate that amortization of excess capital tied up in ventilating accessories, plus excess power costs, adds 8c. per ton to operating expense.

The first of these operations is merely "getting by." Men are frequently being burned by gas in the working faces. Many places are marked out for gas daily. A serious explosion may occur at any time.

Strange to say, the second operation is no more safe than the first. Face velocities are too high. During the winter months it is almost a physical impossibility to lay the dust by humidification and sprinkling. Much dust is carried in suspension. No shotfiring system is employed and some day a blown-out shot may cause "fireworks." In either case revision of the ventilating system to accord with the foregoing rules would result in increasing the safety factor and in reducing operating costs.

Proper Brattices Give Safety and Economy

Another instance: A mine producing 1,500 tons of coal per day was using $60 worth of brattice cloth daily, hanging it from prop to prop with no intermediate supports. The cloth sagged away from the roof; shots tore it down; at least ten places were marked out daily on account of gas. It was decided to support this cloth on wooden strips at both top and bottom. Within a month the consumption of cloth was cut to $30 per day—a saving of 2c. per ton—and not over two or three places were being marked out on account of gas accumulations, because the brattices when effectively built did not fail to carry the air.

These are not isolated cases. The ventilating systems of 75 per cent of the bituminous coal mines in this country are susceptible of improvement. All are not such flagrant instances as those quoted; some are far worse.

Parallel instances can be cited as we go down the list of explosion-prevention rules. For example, a special man may be needed to take daily gas, air and humidity readings, but his wages and laboratory expenses can be saved many times over through scaling splits and reducing fan speed and power, as opposed to the common system of supplying excess air in an effort to make the mine safe when there is no knowledge as to the exact requirements.

Electric Cap Lamps Pay, Gas or No Gas

With one exception precautionary measures will show no direct economy in operation. On the contrary, they may involve expensive changes if the present practice is dangerous. Nevertheless all of them are essential to safety.

The exception noted is that of installing electric cap lamps. These should be installed in every mine generating explosive gases, no matter how small the amount given off. It will be discovered after trial that these lamps cost less to maintain than either open lights or flame safety lamps; that the light is satisfactory in every way and that increased efficiency will be obtained from all employees because no time need be wasted in filling or nursing refractory lamps.

In conclusion I would say that gas explosions can positively be prevented. It is probable, however, that they will increase rather than decrease in number unless radical changes are made in ventilating practice. Mine workings are daily advancing under deeper cover and to greater distances from the outcrop, and the old hit-or-miss ventilating system, which, like Topsy, "just growed," must go.

Wanted: A Consulting Ventilating Engineer

Take, for instance, an average mining development. Millions are spent to achieve the last word in efficiency of prime movers, haulage and cutting equipment. More millions are invested in tipples, housing, etc., but the ventilating system is selected by guess, and the fan, through lack of definite knowledge, is purchased because of the performance promised by the salesman. This is a most reprehensible practice, the penalty for which is inefficient or unsafe operation and excessive costs for thorough gas control.

The ultimate solution of the problem of efficient gas control will be solved by a new type of mining technician, the ventilating engineer, who will have a thorough knowledge of the chemistry and action of mine gases, of fan design, of the action of the ventilating current under all conditions, of humidification and of the many other items entering into explosion prevention.

Air courses will be designed with as much care as is now bestowed upon the most complicated electrical installation. The fans installed will be selected as to type and will be designed for the service required. The proper amount of humidification will be added to the mine air. Stone dust will be applied just where needed. Splits will be scaled to the correct volume. Gas contents will be determined by analyses, not by estimation, and finally, half the money now spent for ventilation and gas control will be saved and carried over to the profit side of the operator's ledger, where it properly belongs.

Real Factors Determining Export Trade—I

An Answer to J. D. Davis' "Coal Quality—A Factor in Export Trade"—Author Declares That Coals in Europe and America Have Wider Variations Than Mr. Davis Recognizes

By F. R. Wadleigh
New York City

IN COAL AGE, Sept. 9, J. D. Davis, of the Bureau of Mines, contributed an article, "Coal Quality—A Factor in Export Trade," which contains some statements that I do not regard as quite accurate and which tend to give, in my opinion, wrong impressions, not only of various foreign coals and competitors but also of general conditions pertaining to the export coal trade.

Mr. Davis' article, for instance, contains this statement: [Coals] "in the Central and Appalachian regions are readily available for export." If by the "Central" region is meant that section immediately west of the Appalachian coal area, this statement is misleading. Many coals from this section are neither suitable for export nor are they available, if by the latter term it is meant that their comparative cost is such f.o.b. tidewater that they can advantageously enter the foreign market; nor are *all* of the coals even in the Appalachian region suitable for export, owing to the poor quality of some of the beds that field contains.

Mr. Davis further states that "New River and Pocahontas coals are quite similar to the English Cardiff coal," whereas they are not at all similar to *some* of the "Cardiff" coals and differ in structure and burning qualities from any of them. "Cardiff coal" is, in fact, rather a loose term. Several different kinds of coal are shipped from Cardiff; none is mined there. Coals shipped from that port vary in quality and character, from bituminous to the so-called "dry" steam coals, the volatile contents of which range from 11 per cent to over 30 per cent.

The analyses given of New River and Pocahontas coals do not show the full range of volatile matter, for in some coals from the New River field the volatile content will run as high as 25 per cent, and for this reason the U. S. Navy will not purchase coals from certain mines in this field, although the fuel they produce is quite equal in heating value to that of coals having a lower percentage of volatile matter.

According to the figures given out by permission of the U. S. Bureau of Mines in the Jan. 2, 1919, issue of *Coal Age*, the ash-softening temperatures of Pocahontas coals range from 2,100 deg. F. to 3,070 deg. F., the average being 2,440 deg. F. from No. 3 bed and 2,480 deg. F. from No. 4 bed. For New River coals the figures given range from 2,070 deg. F. to 3,010 deg. F., the average for the three beds being 2,560 deg. F., the Sewell bed coal averaging 2,540 deg. F., the Fire Creek and the Beckley 2,800 deg. F.

In the description of fuel from region 1 in the map accompanying Mr. Davis' article no mention is made of the Kanawha coals, which are now in such great demand for export. Some of them are equal to the best gas and byproduct coals in this country or abroad. Nor is anything said about the excellent steam, gas and coking coals from southwestern Virginia, a district apparently included in region 1.

Some of the figures in Mr. Davis' table of "Limits in Analysis and Ash-Softening Temperatures of Coals from European Production Areas" are decidedly open to question. The maximum heating value given for German Westphalia (Ruhr) coals is entirely too low. I have shipment analyses and tests of coals from this field showing much higher B.t.u. value than the 14,000 given.

English coal (chiefly Cardiff), according to Mr. Davis' analysis, has a maximum ash content of 8.8 per cent and a minimum of 4.5 per cent. If we take all British coals, the minimum ash content should be not over 3.5 per cent and the maximum at least 15 per cent. I have shipment analyses showing ash as low as 3.2 per cent and as high as over 20 per cent.

As to volatile matter, Mr. Davis' article states: "Maximum, 37.8 per cent; minimum, 12.4 per cent." The maximum should be 40 per cent and the minimum 10 per cent, the maximum being the volatile content of some Ayrshire and Yorkshire "house" coals, and the minimum being that of the Welsh "dry" steam coals.

The maximum heating value of English coal given in the table is 14,400 B.t.u. All of the good Welsh, best North Country and the best Scotch steam coals will run higher than this, even as an average, the maximum being around 15,100. There also are some British coals that will run lower in heating value than the 12,150 B.t.u. given as a minimum.

If we take the coals shipped from Cardiff alone, the analyses for actual shipments will range as in Table I.

TABLE I RANGE OF ANALYSES OF CARDIFF COAL

Moisture		Ash		Volatile		B.t.u.	
Max	Min.	Max.	Min	Max.	Min	Max.	Min
2 81	0 88	17.0	3 0	32 0	11 0	15,130	14,050

The minimum ash content of French coals is 11.2 per cent, according to Mr. Davis' table, whereas actual analyses show the minimum to be not over 4 per cent. The maximum volatile, which Mr. Davis states as 35.6 per cent, should be 45 per cent, and the minimum volatile, which he gives as 16.9 per cent, should be 10 per cent.

Region 2, on the map herewith, is credited with producing coal of two classes—steam and gas. To this classification should be added coking coal. The composition and heat value of the steam coals from this region, which would include all the Pennsylvania low-volatile steam coals, is given as in Table II.

TABLE II. COMPOSITION AND HEATING VALUE OF STEAM COALS FROM REGION 2

	Per Cent Maximum	Per Cent Minimum
Moisture	2 50	2 50
Ash	10 00	6 00
Volatile	20 00	19 00
Sulphur	1 25	1 25
Heating value (B.t.u.)	14,670	14,000

Shipment analyses made by the Bureau of Mines and recorded in Bulletin 119 do not agree with the analyses given in any item. In this bulletin the analyses given vary as in Table III.

TABLE III. ANALYSES AND HEATING VALUE OF STEAM COALS FROM REGION 2 (SEE BULLETIN NO. 119)

	Per Cent Maximum	Per Cent Minimum
Moisture, as received	4 86	1 30
Ash, dry basis	11 50	6 00
Volatile basis	26 00	15 40
Sulphur basis	2 57	0 80
Heating value (B t u) dry basis	14,700	13,500

In the statement "The gas fuels from this region make excellent metallurgical coke," what does the expression "gas fuels" mean as applied to coals? Gas coal is usually taken to mean coal suitable for the manufacture of illuminating gas. Some of the higher-volatile coals from this region are excellent for this purpose and well known abroad; but all the coals apparently included by the author under the term "gas fuel" and so given in the table of analyses variations are not suitable for gas manufacture—a 28 per cent volatile coal would not usually be considered as a "gas" coal—nor do all the gas coals from this region make excellent coke.

Some of the higher-volatile coals from region 2 also are among the best locomotive coals in the world, and a large tonnage of them is being exported for that purpose. The variation in composition and heating value given are not wide enough, as any one familiar with the Pittsburgh and Fairmont coals would at once see. Table IV would, we think, more nearly represent the true facts:

TABLE IV. COMPOSITION AND HEATING VALUE OF GAS COALS IN REGION 2

	Per Cent Maximum	Per Cent Minimum
Moisture	4 6	1 0
Ash	11.00	6.00
Volatile	40.00	26 00
Sulphur	3 00	0 70
Heating value (B t u)	14,400	13,400

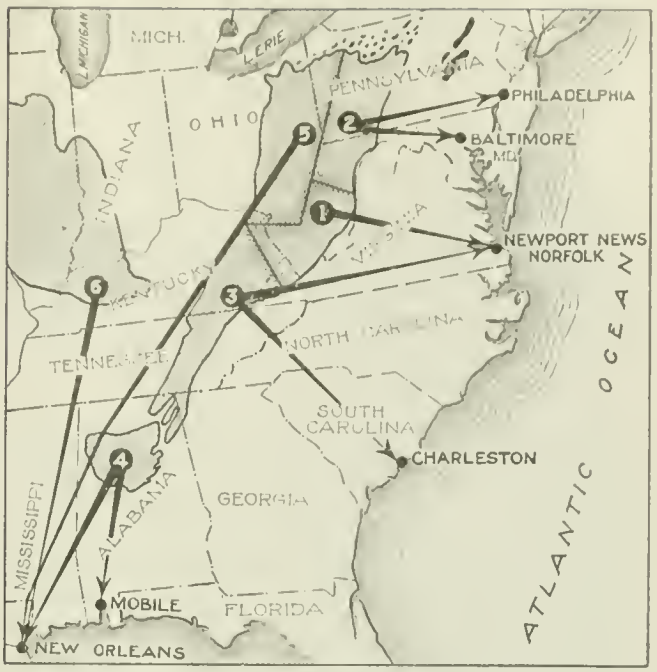
The fusibility of the ash, Mr. Davis' table shows, varies from 2,370 deg. F. to 2,910 deg. F. According to the Bureau of Mines tests, as given in *Coal Age*, Jan. 2, 1919, issue, the variation for high-volatile coals from region 2 is greater than that given—from 1,970 deg. F. to 3,010 deg. F.

According to the regional map coals from region 3 would include eastern Kentucky and Tennessee coals. These would be excellent for export, but as yet comparatively small tonnages have been shipped to Tidewater, owing to the distance of the mines from the ocean and the poor transportation and dumping facilities when Tidewater is reached. No mention is made of the varied uses to which these coals are adapted or of the fact that this region contains some of the best coking, gas and locomotive coals in the world.

TABLE V. COMPOSITION AND HEATING VALUE OF COALS FROM REGION 3

	Per Cent Maximum	Per Cent Minimum
Moisture	4.00	2 00
Ash	4 00	10 00
Volatile	41 00	32 00
Sulphur *	1 50	0 50
Heating value (B.t.u.)	14,700	13,200

* Some of the eastern Tennessee coals run up to 5 per cent or more sulphur.



DAVIS MAP OF COAL FIELDS AND PORTS

Truly important exporting fields are Nos. 1 and 2, in the northern end of the main or Appalachian field. The Central field, in Illinois, Indiana and western Kentucky, is not, at least as yet, an exporting area, and indeed it probably never will be, as the coal fields are remote and the quality of the fuel is not as high as those of the Appalachian field. As an exporting point, Mr. Wadleigh emphasizes the importance of Pensacola, which is more east than Mobile by 40 miles and like that port, on the Louisville & Nashville R.R.

The table of analyses given does not show the actual variations, which I would give as in Table V.

"Coals from region 4 are well suited for gas making," Mr. Davis continues. According to the regional map, region 4 includes only the Alabama fields; if so, the statement quoted needs explanation. Some of the Alabama coals are suitable for gas making, but the tonnage used for that purpose is small, and the greater part of the Alabama coal output is not at all suitable for gas making, if by gas making is meant the manufacture of illuminating gas.

Table VI, showing the distribution of Alabama coals, is taken from *Coal Age*, Jan. 22 issue.

TABLE VI. PURPOSES FOR WHICH ALABAMA COAL IS USED

Uses	Per Cent
Coal made into coke	33
Iron companies	10
Railroads	20
Steamships	5
Domestic purposes	10
Miscellaneous steam purposes	22

As far as the export trade is concerned, Alabama coals are as yet a small factor. In 1919 the total exports were: From Pensacola, 40,606 tons; from Mobile, 6,224 tons. From New Orleans 15,818 tons were exported in 1919, most of which probably was Alabama coal.

It will be noticed that the regional map does not give Pensacola as a tidewater port for the Alabama region. Today about 20,000 tons per week are being exported from Pensacola and Mobile, mostly to Cuba and South America.

The table giving "The average composition and heat value" of coals from region 4 does not by any means give a correct idea of the coals in this region. The maximum variations of all sizes of Alabama coal, as shown in Bulletin 119, are given in Table VII.

TABLE VII. VARIATION IN PROXIMATE ANALYSIS AND HEATING VALUE OF ALABAMA COALS AS GIVEN IN BULLETIN NO. 119

	Per Cent Maximum	Per Cent Minimum
Moisture, as received	6.90	1.00
Ash, dry basis	12.00	5.20
Volatile, dry basis	39.20	28.20
Sulphur, dry basis	2.13	0.47
Heating value (B.t.u.), dry basis	14,626	13,071

If, however, we take the whole range of Alabama coals, the variation is still greater, especially as regards volatile content, coking coals from the Tuscaloosa and Birmingham districts averaging from 25 per cent to 26 per cent volatile.

There also is considerable variation in the structure and hardness of the Alabama coals, not mentioned in the article under consideration, the lower-volatile coking coals being considerably softer than are the high-volatile coals. As a rule the only Alabama coals suitable or available for export are the high-volatile coals, some of which are of excellent quality and hard enough to stand transportation and dumping with but little breakage.

Mr. Davis' statement that "coals of region 5 are quite similar to those of region 4" is not strictly accurate and is too broad—some of the coals in region 5 are similar to some of those in region 4 would be more in keeping with the facts. At any rate, the coals from region 5 are neither suitable nor available for export, the latter owing to their geographical location.

Liquid Oxygen Ousts Powder in Germany*

By George S. Rice†

SOON after the armistice I conducted as thorough an investigation as was permitted at that time, into the use in Germany of liquefied oxygen for explosives. The results of this inquiry were published in Technical Paper 243, entitled "Development of Liquid-Oxygen Explosives During the War."

Recently, through the courtesy of Dr. C. L. Parsons, former chief chemist of the bureau, who was visiting Germany, and Chester L. Benson, of the American Expeditionary Forces in Germany, data concerning the number of plants which had been installed in Germany during the period following the armistice were obtained from the Deutsche Oxyhydric Actien Gesellschaft, at Surth, near Cologne, Rhenish Prussia (one of the principal manufacturers of liquid-oxygen installations). An analysis of the figures obtained shows the following installations in different kinds of mining operation.

LIQUID OXYGEN PLANTS OF DEUTSCHE OXYHYDRIC ACTIEN GESELLSCHAFT

Location	Plants	Capacity Liters per Hour	Total
Saar coal fields	7	20 to 50	185
Ruhr coal fields	5	20	100
Upper Silesian coal fields	52	6 to 50	1,535
Metal mines, chiefly iron mines in Germany and upper Silesia	37	5 to 75	1,137
French iron mines	9	30	270
At potash and salt mines	14	20 to 60	450
For miscellaneous uses chiefly military	12	3 to 50	120
Grand total	136		3,797

It will be noted that there are 136 plants, with a gross capacity of 3,797 liters of liquid oxygen per hour. Necessarily there are standby and other losses in the plants, and probably in many cases the plant capacity was in excess of the needs. If we suppose that the liquid oxygen utilized was only one-fourth of the total capacity, or 900 liters of liquid oxygen per hour, and further assume that the plants operated for only nine hours in the day and for 300 days in the year, 2,430,000 liters, or 5,346,000 lb., would have been utilized in the course of the year. Roughly, this would produce a quantity of explosives which would be equivalent to about 8,000,000 lb. of dynamite. It is not known at the time of writing whether there are other installations not included in the foregoing.

One of the most interesting features of the development has been the design and construction of small portable liquid-oxygen making plants of a capacity of only three to five liters of liquid oxygen per hour. Such plants have been constructed for moving about on trucks, thus making liquid oxygen much more available for small plants and engineerng enterprises.

*Reports of investigations, U. S. Bureau of Mines. Article entitled "Data Concerning Use of Liquid-Oxygen Explosives in Germany."

†Chief mining engineer, U. S. Bureau of Mines.

Liens May Be Enforced Against Vessel For Coal Supplies

THE act of Congress which gives a lien against a vessel for supplies, etc., furnished to it does not authorize a lien against one vessel of a fleet for coal furnished to another, and an agreement by the owner to permit such a lien is invalid as against a mortgage of the vessel against which it is sought to enforce a lien for fuel furnished to another.

But where coal is furnished for a fleet, without knowledge of the parties as to just what vessel will receive it, there may be enforcement of a lien against the vessel actually receiving it. The fact that a bill for coal is charged personally against the owner of a vessel, rather than to the vessel itself, or that a note is taken to cover the price will not forfeit the right to a lien, in the absence of further showing of intention on the part of the seller to waive his security against the vessel.

Where a coal dealer holds the note of a customer and receives a payment without applying it to the note, the dealer cannot afterward so apply it, and treat an open account as uncredited, relying upon a lien to secure that account, to the prejudice of a third party holding a lien against the vessel sought to be held to secure payment of the coal account. (*U. S. District Court for Rhode Island, The William B. Murray, 240 Federal Reporter, 147.*)

Claims in Bankruptcy

CLAIMANT sold machinery to the St. Louis Coal Co., taking back a chattel mortgage on the machinery to cover part of the purchase price, and that coal company afterward sold the machinery to the Pittsburgh-Big Muddy Coal Co. subject to the mortgage.

Held, in bankruptcy proceedings against the latter company, that the seller of the machinery could not be deemed to be a creditor of the bankrupt in such sense as to entitle him to object to an order for sale of the bankrupt company's property as a unit, it not appearing that there had been any substitution of the second coal company for the first, as the primary debtor. (*U. S. Circuit Court of Appeals, Seventh Circuit; in re Pittsburgh-Big Muddy Coal Co., 215 Federal Reporter, 703.*)

Discussion by Readers

Edited by
James T. Beard

Rectangular Shafts Giving Place to Other Types

American practice has long inclined to the opinion that a rectangular shaft in mining is less expensive to sink and more desirable on other accounts. Modern methods have proved, however, that this idea is a fallacy.

KINDLY permit me to refer to a statement made in a recent article describing the visit of the engineers to the Copper and Iron Ranges, *Coal Age*, Sept. 9, p. 532. The statement reads as follows: "As has been American experience, a rectangular shaft is found saving of labor and economical of space and to be recommended where no great pressures have to be withstood."

My attention was drawn to this statement by the general manager of a West Virginia coal company, who is anxious to ascertain what is the best practice in sinking shafts in coal mining. Believing that this statement has inadvertently crept into a long article, and that it might mislead many to think that the rectangular shaft represents the best practice, I am taking the liberty of offering a brief comment on this subject.

According to our experience in the sinking of shafts and estimating the relative costs of different types, I have no hesitancy in stating that the general opinion of engineers, in this section of the country at least, is that the rectangular shaft is more expensive to sink than either the elliptical or circular form.

Modern Practice Prefers the Circular Form or Flat Sides and Arched Ends

It can even be said that, for the past ten or twelve years, the practice in sinking a concrete-lined hoisting shaft has been to construct it with flat sides and arched ends; and, in the case of air shafts without stairways, the circular form is preferred as providing the least rubbing surface per square foot of sectional area, thereby reducing the friction of the passing air to a minimum. If an air shaft is to have a stairway, however, the air end of the shaft is made as nearly circular as possible.

Experiment has proved that eddies form in the corners of a rectangular shaft to such an extent as to render that space of little service in providing the necessary area for the pasasge of the required air volume. This well-known principle has led modern designers to plan shafts as nearly circular as possible.

In planning a concrete-lined hoisting shaft, today, the practice is to make the sides flat, which provides a rectangular section for the hoisting compartment; but the two ends of the shaft are curved or made semicircular, thereby not only providing convenient compartments for installing pipes, conducting wires and ladderways, but affording ample space for the round of air occasioned by the passing of the cages up and down the shaft.

These comments, of course, refer particularly to concrete-lined shafts and to timber-lined air shafts in which there are no stairways. In many states or districts the most common form of cross-section is a hexagon or octagon and the frames are set or placed accordingly.

THE R. G. JOHNSON CO.
Pittsburgh, Pa.

Centrifugal Force in Fan Action

Centrifugal force held to be the basic principle of the action of all types of ventilating fans constructed after the general form of this class of machines.

READING the article of David W. Evans, *Coal Age*, Sept. 2, p. 487, leads one to conclude that the theory of centrifugal fans is less understood than that of any other mechanical appliance used in mining practice. In spite of all that Mr. Evans has said regarding his experiments, which are interesting, it is my firm belief that the efficiency obtained is due to the kinetic energy imparted to the air by the movement of the fan blades.

Centrifugal force is one of the fundamental principles of revolving bodies, depending on their weight and speed of rotation. It is well known that air possesses weight and, with some modification is subject to the same laws of nature as any other medium. If this was not so it would not have been possible for Professor Rateau, a well known authority, to have constructed his turbo compressor, which depends on the centrifugal force of the air revolved in the machine.

While I have not had the opportunity to conduct experimental tests, as Mr. Evans has done, I feel sure

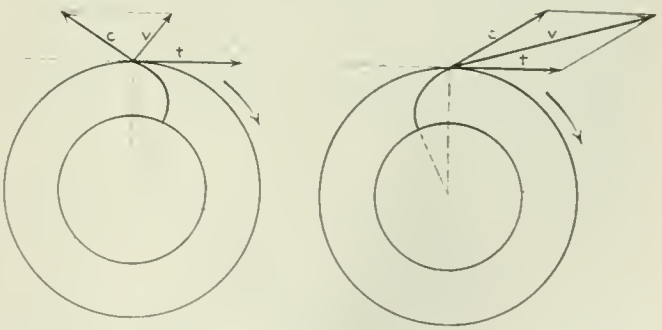


DIAGRAM SHOWING THE EFFECT OF BLADES CURVED BACKWARD AND FORWARD

that his conclusion that air "is not subject to the same laws of centrifugal force as is a more solid medium" is wrong. Some time ago I constructed a diagram showing the reaction of the forces at the blade tips when the blades are curved forward in the direction of rotation.

On the left of the accompanying diagram is shown the usual manner of illustrating the reacting forces when the blades are curved backward. On the right, is shown what takes place when the blades are curved forward. In each of these figures, *c* represents the velocity of the air traveling along the face of the

blade and due to centrifugal force; t is the tangential velocity of the blade tips; and v the resultant velocity of the air. The two diagrams make clear how the force of the expelled air is increased when the blades curve forward.

It was on this principle that the Rateau fan and turbo compressor were each designed and constructed. At one colliery, I remember this fan gave 250 m³ against a water gage of 400 mm., showing an equivalent orifice of 0.083 m². This is equivalent to an air volume of $250 \times 35{,}315 = 8.829$ cu.ft. per min., against a water gage of $400 \times 0.039 = 15.6$ in., which shows an equivalent orifice of

$$A = \frac{0.0004 \times 8{,}829}{\sqrt{15.6}} = 0.894 \text{ sq.ft.}$$

Or, $$0.894 \times 0.093 = 0.083 \text{ sq.m.}$$

The tendency in modern fan practice is to give the fan blades a curvature forward. This is shown in the change that has been made in the construction of the more recent Capell fans, the blades of which were formerly curved backward.

Objection Urged to Large Scoop Blades

It appears as though fan designers have attempted to utilize both the centrifugal force, and the benefit to be derived from the vacuous space behind the blades, by giving the latter the shape of a large scoop; also, by placing small auxiliary blades between the main blades. It seems to me, however, that a greater pressure is exerted on the large scoop blades, and more power is required to force the air through the fan, which would account for the lower efficiency of this type of fan.

In closing, there is one point that puzzles me in connection with the illustration Mr. Evans gives of the great rush of air that follows behind a fast moving train. Now, it is reasonable to assume that this rush of air depends on the vacuous space left behind the train; and the smaller the size of the cars, the less will be the rush of the air. Then, applying this reasoning to the fan, why did Mr. Evans decide to reduce the size of the blades in his last design, if the action of the fan depended primarily on the vacuous space behind the revolving blades? Henry Bock.

Staunton, Ill.

System the Chief Factor in Production in American Coal Mining

Better organization and a superior system of mining the coal and hauling it from the working face to the shaft bottom have contributed more largely to a greater production at lower cost in American mines, as compared to those in Great Britain, than the natural advantages, which are often claimed to favor coal mining in America.

READING the article of T. J. Shenton, *Coal Age*, Aug. 12, p. 350, would lead one to think that the mining of coal in Great Britain will soon have reached the stage where it will be no longer profitable because of the small output per man and the resulting high cost of production.

Mr. Shenton ascribes the general thinness of the coal seams and great distance of underground haulage as the main causes of low production. But my experience as a mine official for seven years in England, causes me to express the opinion that the system of haulage in British mines is much at fault. It is not alone the length of haul which always comes with the increased development of a mine.

In most of the mines in England the endless-rope system of haulage is employed on the main roads, which necessitates providing and maintaining a double roadway 12 to 14 ft. in width. Because of the great depth and thinness of the coal seams, the longwall method of mining is generally employed, and the resulting settlement of the overburden greatly increases the cost of keeping these wide roads open. Under such conditions the outlay for timber for the length of haulage rope required is excessive, to say nothing of rails and track rollers for the double track.

However, these items of increased cost, do not fully answer the question why American miners produce more coal per man than those in Great Britain. I cannot agree with Mr. Shenton's assertion that the coal operators in America are willing to incur greater risks in the operation of their mines than is permitted in England, referring chiefly, I suppose to the use of electricity in mines.

In that regard I agree with Mr. Rice, who claims that with proper precautions electric haulage and electric coal-cutting machines could be used in Great Britain, but that existing conditions have forced them out of the mines. In my opinion, it is neither wholly the fault of the operators, nor is it the result of natural conditions.

Former Attitude of Labor Toward the Introduction of Machine Mining

For example, a number of years ago the Gillot & Copely cutting machine driven by compressed air was introduced into some of the mines, and it was not long before the English miners, long accustomed to mining coal with a pick, declared a strike. They told the "putters" or "drawers," that they were opposed to the use of the "iron man," as they called the machine. The result was that the machines had to be taken out of the mines before the men would return to work.

In another instance, a Hurd bar coal-cutter electrically driven, was installed in the mine and, after a lot of persuasion, was allowed to work. Now, if the operators of Great Britain were unwilling to incur the risk of using electricity in the mines, they would not have installed either of these machines, and there would have been no need for a law prohibiting the use of electrical power in the mines.

The argument of unwillingness to incur risk in mining has no foundation in fact. On the other hand, the higher wages paid miners in America and a better system of organization and co-operation have increased the output per man and reduced the cost of production in America, while the lack of system in England is the chief handicap in the operation of mines in the latter country. To appreciate that fact one has but to study the conditions that prevail in British mines.

In practically all the mines in England, small cars having a capacity of from 600 to 1,000 lb. are used. In most of the mines these cars are not conveyed to the working face, which is often a long distance, say from 500 to 2,500 ft. from the main haulage road. The English miner digs his coal and is then compelled to hire a putter or drawer to push or haul the coal from the working face to the main haulage road.

Ordinarily, it takes two drawers to handle the coal, in this manner, that a single miner will dig and these

helpers seldom do other work. The system here described is the rule and not the exception in British mines. Without question, it is an antiquated system and the chief cause of the handicap in English mining. Finally, let me say the suggestion of "superiority" in scientific mining in America is one born of prejudice and is unreasonable, as Mr. Shenton suggests.

New Castle, Col. V. FRODSHAM.

Other Safeguards Needed in Electric Firing

Accidents of various kinds that occur in connection with electric firing show the need of special safeguards to render them less liable to happen. The fact that men become careless and forgetful is the chief cause of these accidents.

WHAT has been suggested by R. H. Sisley, in respect to soldering together the lead wires of an electric fuse, *Coal Age*, Sept. 9, p. 546, is a good plan as far as it goes. It will not, however, eliminate all the sources of danger in this method of firing.

Allow me to mention at least four causes that should be considered when striving to make electric firing safer. Before doing so, however, I want to refer to one or two accidents that have occurred in my own knowledge only recently. I believe that these will serve to show clearly the need of the utmost caution and presence of mind on the part of men engaged in this work.

A short time since, a man coming from the powder magazine and holding in his hand ten or twelve caps or detonators accidentally struck his head against the trolley wire, with the result that the caps he held in his hand exploded and the man was blown to pieces. No doubt, this man was careless and held the caps in any shape, many of them perhaps being crosswise, which would make them liable to explode when the shock of the electric current was felt and the man's grasp tightened.

Another accident happened in another mine where a man, having two shots to fire and using a portable electric battery for that purpose, put off one of the shots first and a little later approached the face to arrange for firing the second shot, without taking the precaution or forgetting to disconnect the firing cable from the battery, which may have retained some of the charge. The moment the lead wires of the second shot were connected with the cable that shot exploded killing the man instantly.

OTHER SOURCES OF DANGER IN ELECTRIC FIRING

Now, what I want to suggest is that, while the plan of soldering together the lead wires of an electric fuse, as suggested by Mr. Sisley is a good thing, it only serves to eliminate one source of danger. It will prevent the explosion of the shot up to the moment the lead wires are pulled apart.

Another source of danger, however, arises from the exposed copper tube of the cap, which I want to urge should be insulated with proper material in order to avoid an explosion following the accidental contact of the cap with a live wire or other source of electricity. Had this been the case with the caps the man carried in his hand when he struck his head against the trolley wire, they might not have been exploded. Of course, the lead wires themselves should be thoroughly insulated leaving only the ends of the wires bare for attachment to the firing cable.

But, more important than all, let me say, is to have the countersunk buttons of the receiving attachment of the generator so adjusted that they will be automatically released by the discharge from the battery. Such an automatic release would have prevented the second accident I have mentioned in which the man forgot to disconnect the firing cable from the battery before proceeding to connect up the lead wires of the second shot in readiness for firing.

It is my belief that if the four safeguards I have mentioned were put into practice—namely, insulation of the copper tubes of the caps; insulation of the lead wires; soldering together of the ends of these wires, as mentioned by Mr. Sisley; and the automatic release of the leads of the shotfiring cable—most of the dangers attending electric shotfiring would be eliminated, and fatal accidents from this cause avoided.

Unfortunately, men will be careless and forgetful. The miner is naturally unmindful of his own safety and prone to take chances in the hope of expediting his work. While it is not always possible to eradicate these elements of human nature, it is possible to safeguard the appliances used in the work of shotfiring.

Leckrone, Pa. MINE FOREMAN.

To Improve Air-Lift Efficiency

Items in the design of an air lift that, if carefully considered, greatly improve its operating efficiency and reduce the cost of installation.

REFERRING to the interesting question regarding an air-lift installation, answered in *Coal Age*, Oct. 14, p. 810, kindly allow me to draw attention to one or two points that are worthy of notice.

While the reply is undoubtedly right in the conclusion reached that it would be inadvisable to change the present installation to a two-stage lift, the calculation of the volume of free air required to lift 20 gal. of water per minute a height of 200 ft. is double what has been found necessary in installations we have made.

It is only fair to assume that this is due largely or wholly to the failure to install properly designed footpieces and proportion the piping to meet the requirements of the desired flow. In the present instance the 2-in. discharge pipe is too large for a flow of 20 gal. per min., resulting in slippage.

For this flow, I would use a 1¼-in. pipe at the bottom, enlarging this to a 1½-in. for the upper portion of the lift and provide a submergence of 50 per cent. As a matter of fact, the results would exceed the estimate, these figures being liberal, and the operation should not require an air pressure exceeding 90 lb. per sq.in., including friction.

In regard to the efficiency of a properly designed air lift, nearly all of our small lifts will run from 22 to 29 per cent overall efficiency; and in the larger installations this has reached 41 per cent. The statement that an air lift "rarely shows more than 10 per cent efficiency" cannot be taken as referring to any modern and well designed installation.

J. E. M. SCHULTER,
Knoxville, Tenn. Sullivan Machinery Co.

[We are glad that this correspondent has drawn attention to the great advance that has been attained in the design of air-lift pumping. Reference to the tabulated results obtained in two recent installations show submergencies of 41.8 and 46 per cent. In estimating the air volume required, the constant 125 used in the formula, page 810, will vary from 250 to 300, depending on the size of the installation.—EDITOR.]

Inquiries of General Interest

Answered by

James T. Beard

Gas Gives a Cap But Will Not Explode

Carbon dioxide diffusing into methane or marsh gas, under conditions that practically exclude the air, produces a mixture that gives a brief flame cap in the lamp, but is not explosive.

RECENTLY, when making my daily examination of the mine I discovered gas at the face of a room that had been driven in a distance of about 50 ft. from the heading. The pitch is such that the coal is about 5 ft. higher at the face of this room than on the heading. Using a normal flame, this was lengthened to a height of 3 in., while a ¼-in. flame gave a 2-in. cap. The air in the place was very poor. The mixture, however, is not explosive.

Kindly say what this gas may be; and state whether it is possible to cap carbon monoxide and give its explosive range and the maximum explosive point.

Spangler, Pa. FIREBOSS.

As has frequently been explained in *Coal Age*, the gas in this instance was probably "flashdamp," which is a mixture of methane and carbon dioxide, specific gravity, 0.924. Although commonly explosive, it is probable that an excess of carbon dioxide rendered this mixture inexplosive.

The explosive range of carbon monoxide is from 16.5 per cent to 75.0 per cent; maximum explosive point, 29.5 per cent. Owing to its being extremely poisonous, it is not possible to cap this gas in the mine.

Working Badly Contorted Coal

The loss of much coal is certain in the working of highly contorted seams, unless special methods are used that are adapted to the varying conditions, and experienced workers employed.

AFTER making many attempts to find a safe and sane method of working out the coal in a strangely contorted seam in this region I decided that it would make a good subject for discussion in *Coal Age;* and I

CONTORTED COAL SEAM, LOWER APPALACHIAN SYSTEM

am taking the liberty of presenting it in the hope of receiving some good suggestions.

The sketch that I am sending shows about how the seam lies. The coal varies from 3½ to 35 ft., in height, and pitches from 5 to 45 deg. It lies in pockets or basins that are formed by the folding of the strata. In working this coal, it has happened time and again that thousands of tons had to be abandoned and were lost beyond recovery.

As can well be imagined from the sketch I have drawn, there are times when the rock that should form the roof of the coal is almost perpendicular. The coal is soft and cokes well, much like Pennsylvania coal; but the top is mean to handle under a heavy roof pressure, especially on the steep pitches.

What I want to know is how this seam should be worked to get out the largest amount of the coal safely. We have used the room-and-pillar system, but with little success. At times the face of the coal will stand 75 ft. high; and again it will thin out to less than 3 ft. The thinnest coal worked is 3½ ft. thick.

Any information that will tell how such coal can be safely and economically worked will be appreciated.

Rockwood, Tenn. P. C. CRAVEN.

The seam described by this correspondent appears similar to the more contorted seams of the anthracite region. It is quite probable that *Coal Age* readers who have had experience in working those folded seams can give many helpful suggestions in this instance. The method of extraction will change with the changing character of the seam. Chutes must be driven up from the gangway levels where the coal pitches sharply. The work under those conditions is dangerous and requires experience. Let us hear from the anthracite men.

Submergence in an Air Lift

HAVING read with a great deal of interest the reply to an inquiry regarding an air lift, which appeared in *Coal Age*, Oct. 14, p. 810, I want to ask if the depth of submergence given as "50 per cent greater than the actual lift," is not too much, or at least more than necessary. It would make the discharge pipe submerged 60 per cent of its entire length. Some notes that I have recommend 50 per cent, which makes the depth the pipe is submerged equal to the actual lift. Users of this form of equipment are naturally always anxious to reduce the submergence to a minimum.

The reply also estimates the required air pressure as sufficient to overcome the head due to the depth of submergence, only. Should not the air pressure be calculated for the entire length of the discharge pipe?

Chicago, Ill. SHELDON SMILLIE.

The question of ascertaining the necessary depth of submergence in an air lift depends on the style of equipment in use. Attention has already been called to this matter in a short letter on the preceding page, discussing this feature of air-lift practice in the more recent designs of the Sullivan Machinery Co. In some modern installations the submergence is but slightly in excess of 40 per cent.

In reply to the second question, it can be said that the required air pressure is what will force the air down the air pipe to where it enters the discharge line, after which the bouyancy of the air does the rest, causing it to rise and lifting the water as it rises.

Examination Questions

Answered by

James T. Beard

Mine Foremen's Examination. Charleston, W. Va., 1920

(Selected Questions.)

QUESTION—*(a) What are the duties of a mine foreman as to slopes, planes and haulways? (b) How often should he visit the working places and when should he go to the next place?*

ANSWER—(a) The foreman is required by law (Sec. 65) to see that all slopes, engine planes and haulage roads are driven of sufficient width to permit men to pass moving cars safely. Or refuge holes, 5 ft. wide and 4 ft. deep must be made level with the road and not more than 60 ft. apart and kept free of all obstructions. These holes must be whitewashed and the roof and sides made secure.

(b) The foreman or his assistant is required (Sec. 69) to visit and carefully examine each working place in the mine, each day, while the men are at work. If danger is found he must not leave the place until it is made safe.

QUESTION—*(a) The anemometer registers 170 r.p.m. in an airway 7 ft. high and 12 ft. wide; what quantity of air is passing? (b) Where would you apply the water gage; and does it increase or decrease as the workings are extended, all other conditions remaining the same? Why?*

ANSWER—(a) The sectional area of this airway is $7 \times 12 = 84$ sq.ft., and assuming this is an average reading for the entire area, the estimated volume of air passing is $170 \times 84 = 14{,}280$ cu.ft. per min.

(b) The water gage should be placed on the side of the fan drift, at a suitable distance from the fan, in order to include the resistance of the shafts. When placed on the door or brattice separating the main intake and return airways, the reading of the gage represents the mine resistance only and does not include the shaft resistances.

As the workings are extended, the resisting power of the mine increases, which means a higher gage pressure and lesser air volume, for the same power producing the circulation. The reason is that the gage is a measure of the frictional resistance of the mine as determined by the amount of rubbing surface per square foot of sectional area.

QUESTION—*(a) How should electric wires be installed inside a coal mine? (b) What precautions are required for same? State fully.*

ANSWER—(a) As far as practicable, electric conductors should be kept off the travelingways. On shaft or slope bottoms and at all points where men are obliged to pass or to work, all live wires should be properly protected so as to avoid accidental contact of persons with the wires. The wires must be hung on substantial supports and insulators. Trolley wires should be hung on one side of the haulage road, opposite to that on which men may travel. If possible, high-power conductors should be carried over the surface to a point nearly over the working face and taken down into the mine through a drillhole at that point.

(b) All electrical installations should be made by a competent electrician who is familiar with mine conditions and requirements. Danger signs should be posted in conspicuous places, warning persons of the presence of live wires. Rules and regulations should be adopted and enforced to insure the safety of the workmen.

QUESTION—*(a) What is the mining law regarding shooting coal from the solid? (b) What dangers may arise from same? (c) What kind of explosives would you recommend from a safety standpoint? (d) How many shots can be fired at one time in any place?*

ANSWER—(a) A written permit must first be obtained from the district mine inspector (Sec. 36), before any coal may be shot from the solid; and miners must obtain permission from the operator or foreman to do such work. The permit must state the conditions under which solid shooting can be performed in the mine.

(b) Solid shooting is liable to cause a blownout shot, in which case the force of the explosion will be largely expended on the air and may cause a dust explosion.

(c) With a view to insuring the greatest degree of safety in blasting in mines, only permissible powders should be used.

(d) The West Virginia Mining Law (Sec. 79) forbids the firing of more than one shot at a time, in a miner's place.

QUESTION—*(a) In a mine where 480 men are employed and 53 mules, what would be the minimum quantity of air required? (b) What is the rubbing surface of an entry 750 ft. in length, 6 ft. high and 14 ft. wide?*

ANSWER—(a) The requirement of the state mining law (Sec. 17) is a minimum air volume of 100 cu.ft. per min. for each person employed in the mine, which would demand, in this case, $480 \times 100 = 48{,}000$ cu.ft. per min. It is a custom, moreover, to allow a minimum of 500 cu.ft. per min. for each animal underground, which would be an additional $53 \times 500 = 26{,}500$ cu.ft. per min. The total circulation in this mine should therefore be 74,500, say 75,000 cu.ft. per min.

(b) The perimeter of a 6×14-ft. airway is $2(6 + 14) = 40$ ft.; and the rubbing surface is therefore $750 \times 40 = 30{,}000$ sq.ft.

QUESTION—*(a) Is it necessary for a miner to examine his working place? If so, when should this be done and why? (b) State the mining law in regard to furnishing timbers and setting of same.*

ANSWER—(a) Yes, as required by law (Sec. 76), and for his own safety and knowledge, every miner should carefully examine his place before starting to perform any work therein.

(b) The law requires every workman in need of props, cap-pieces and timbers to notify the mine foreman or other person in charge, one day in advance, giving length and number wanted and to set such timbers properly. In an emergency, timbers may be ordered for immediate delivery.

Electric Plants Pay More and Get Poorer Coal*

Fuel Situation Causes Average Increase of 176 Per Cent in Price to Central Stations — 20 Per Cent Greater Consumption Necessitated by Poor Quality — Low Efficiency and Higher Price Raise Cost 217 Per Cent

WHILE all readers of *Coal Age* know the effect of the present coal situation in their immediate neighborhood, the specific effects on storage, prices, economy, boiler rating, haulage, etc., in different parts of the country have not been so generally familiar. The *Electrical World*, New York, has collected data on coal consumption, prices, stocks, etc., from fifty-four central stations scattered around the United States and having a total coal consumption of 2,214,568 tons (January to June, 1920). The data are presented in the accompanying table.

With few exceptions, the present supply of coal is sufficient only to meet the normal operating requirements. No particular section of the country is favored in this respect, although in those states where water power is predominant the situation is somewhat better. Nearly as much difficulty is experienced by those companies operating near the coal fields as by those operating in more remote sections.

With an average of only twenty-two days' storage as against a normal supply of sixty days, it is very evident that there is a low margin of safety in the present storage of companies. Should the supply of coal be interrupted for three weeks, electric service would have to be curtailed so much that the public would be greatly inconvenienced and industrial plants subjected to great losses. There is a bright side, however, in that some companies report slightly better deliveries on contract with less buying in the open market.

Reserves of East and West Nearly Equal

In the two sections where the study was most complete—namely, the Eastern Atlantic and Middle Western States—storage conditions are practically the same, twenty-two Eastern companies reporting an average of eighteen days' storage on hand and twenty-one Western companies fourteen days' supply. Normal requirements of Eastern companies would average fifty-one days and those of the Middle West companies thirty-six days. Present storage is, therefore, 35 and 39 per cent respectively in these two sections of the country.

Even if coal could be obtained under present conditions, the general problem of utility operation is far from satisfactory. Price and quality of coal in their effect on the cost of power, to say nothing of the effect of the quality on operating difficulties, are items that should certainly be taken into consideration in determining equitable rates. A comparison with conditions in 1914, which are taken as normal, show that utilities are paying from 80 per cent to 500 per cent more for coal. Reports of fourteen Eastern companies show an average increase of 190 per cent and seventeen Mid-Western utilities show average increases of 172 per cent. An average of forty-three companies shows an increase of 176 per cent. While this is a serious problem to those companies whose rates are not on a basis of coal prices, the most interest lies in the general reduction in the quality of coal. Virtually all companies are buying coal wherever it can be had, but even those companies that are obtaining a supply from the same sources as in 1914 are suffering from a reduction in quality. High moisture and ash content, dirt, sulphur, clinkering and difficulty in keeping up fires have reduced the efficiency of the boiler room. Although their coal is virtually all bought from the same mines as in 1914, twelve of these companies which had modern equipment and made no change are burning 20 per cent more coal per kilowatt-hour than they did in 1914, owing to the lower quality of the coal. These same companies are paying an average of 181 per cent more for coal than in 1914. In other words, the combined increase due to cost of coal and loss of efficiency is 217 per cent. The plants considered are typical average plants with a coal consumption of 2.5 lb. to 4.0 lb. per kilowatt-hour.

In the majority of cases, plants were not as modernly equipped in 1914 as at present, so that there has been a reduction in pounds of coal burned per kilowatt-hour even with present coal. With coal of the same grade as that of 1914, the increase in efficiency would be even more marked for those companies that have shown improvement. It is evident, therefore, that the central station is not realizing on the result of careful engineering practice in so far as increased profits are concerned and that the improvements have helped only to meet the present high prices and poor quality of coal.

In general, there has been little change in the district from which coal is obtained since 1914. Of twenty-two Middle Western companies, sixteen are still obtaining their coal in local districts as in 1914. Three companies that had formerly been using Eastern coal have changed to local coal and three companies still continue to obtain their coal from Eastern territory. The hauls of Middle Western companies are about 400 miles (644 km.) as a maximum, with most hauls not over 125 miles (201 km.). In the Eastern Atlantic States there has been very little change in the source of supply other than local changes. The maximum haul is about 500 miles (804 km.), with a haul of not over 100 miles (161 km.) in most cases.

Plants Forced to Buy Coal in Open Market

Delivery conditions are about the same throughout the country, the supply received being sufficient for immediate requirements in most cases. In numerous instances operators are not fulfilling their contracts and central-station companies have found it necessary to buy coal in the open market to keep plants operating.

So many factors enter into the cost of storing and handling coal that little uniformity is shown in the costs given for this work. The cost for unloading and handling through bunkers seems to be in the neighborhood of from 10 cents to 15 cents per ton, while the next uniform price for yard storage and handling jumps to 50 cents per ton. With those companies which maintain more elaborate storage facilities and which include in their figures all items—depreciation, interest on the investment and everything that enters into this expense—the cost is approximately $1 per ton.

*Abstracted from *Electrical World*, Oct. 16, 1920.

How the Coal Situation Has Affected Central Stations in the Last Six Years

O. M—Open Market. C—Contract. L. T—Long Ton. R of M—Run of Mine. M R—Meeting Requirements

Company	Total Load, Jan. 1 to July 1, 1920	Kw.-Hr. During Period	Load Factor	Tons of 1914 Coal That Would Have Been Used in Same Period	Tons on Hand Prospects	Stored Coal for Year	Supply and Distance from Mines: Previous	Supply and Distance from Mines: 1914	Condition of Delivery	Coal Contracts	Price per Ton	Kind of Coal	Kw.-Hr. Sales per Ton	Price per Ton	Method of Obtaining Coal	Cost per Ton for Handling and Storing	Coal Reserves: 1920	Coal Reserves: 1914	Ind. Kw.-Hr. per Lb.
NEW ENGLAND																			
Cambridge (Mass.) Electric Lighting Co	37,609	15,547,747	42	15,540	5,338 L. T.		Pa.	Norfolk	Tidewater supply		2								2.46 2.27
Edison Electric Illuminating Co. of Brockton, Mass	21,306	23,926,810	60	20,284	9,184 Very poor	20,000	West Va.	West Va.	M R		1,900 15 6 4 40 2 56				4,600				
New Bedford (Mass.) Gas & Edison Light Co	53,745	63,632,775	52	15% less	13,000 Fair	18,000	Pa.	Pa.	No regular										1.94 1.13
Pittsfield (Mass.) Electric Co	18,500	6,000,000		6,000	5,000 poor	9,000	Pa.	Pa.	M R		6,000 20 10				14,500 19 8				18% more
Turner Falls (Mass.) Power & Electric Co.	12,000	10,000,000	81 5 Reserve plant	Same	2,400	2,400	350 Cambria, Pa.	Same	10% price to July 27, 1000 to be assigned acc. at present		1,700 20 10 1		$3 10 at mines		16,500 27 4 3				7 5
Danbury & Bethel Gas & Electric Light Co., Danbury, Conn	5,792	2,899,071	69 1		600 Poor	2,500	200 Pa.	Same					$15 90 del.	Bennette		$7 25	O. M Very little coming on contract	C	50	
EASTERN ATLANTIC																			
New York																			
Buffalo General Electric Co	60,000				None	60,000	250 Pittsburgh		M R	Various	32 50 36 6 11 6 5 1						C	Not operating	$1 00	
Central Hudson Gas & Electric Co., Poughkeepsie	20,000 L. T.	16,059,980	65	18,000 L. T.		10,000	400 Du Bois Clearfield W. Moreland	Same	M R		12 100 27 15 5	$7 12 alongside			14,000 3 0 6 0 2 0	$5 16 alongside		C	25	2 7 2 2
Company "A"	22,453	8,210,973	36 2	Same	5,000	15,000	650	400	M R	Bituminous	13 000 21 6 5 1 4	$1 75					C	C	20	Same
Flatbush Gas Co., Brooklyn	12,473	6,041,870	32 47	11,200	5,000	Same	St. Clair Pa.	Pittston, Pa.	O. K.	Base Run	11,000 65 25 15 20 10	$4 70			12,200 12 15	$2 40	C	C		6 70 6 92
Richmond (N. Y. City) Light & Railroad Co.	23,708	19,234,000	62	18,000	400 Poor	3,800	Connelsville, Pa.	Same	Poor	Various	1,800 Ns 22 6 16 2 6 4	$11 00	Connelsville		13,800 28 5 4	$3 70	C 50% O. M.	C		Same
Pennsylvania																			
Company "B"	7,004	2,652,585	82	6,100	600		160 mi Cambria County Pa.	Same	M R	R. of M. Cambria	14 500	$4 00	Same			$1 25 from bins	C	C		10% more
Counties Gas & Electric Co., Norristown	31,053	21,330,400	35	Same	1,500 Poor	10,000	500 W. Va. W. Pa.	Same	50%	Various	13 800 16 20 8 38 5 0	$4 50	Various			$2 35	C	C		2 25
Duquesne Light Co., Pittsburgh	449,441	340,606,250	20	Same	58,211 Poor	124,500	30 90 Eighth Pool Monongahela	Same	M R	R. of M	12,600 10 95 4 14	$3 84	Kit. Black		12,764 10 75 400	$1 13	C	...		2 0 2 3
Hanover Light & Power Co., Scranton	3,839	1,680,047	83 2	Not operating	850 Night	1,200	175 mi Pa.	100 mi W. Va.	M R		13 700 28 92 9 56 6 69	$6 78					C		18	
Jefferson Electric Co., Scranton	2,937	1,378,604	45	Same	275 Night	800	Local	Local	M R			$3 25				$1 25	C			4 46 4 5
Ohio Service Co., Scranton	28,235	12,728,910	46	Same	1,441	10,000	10-50 mi Ohio	Same	M R		11,180 36 8 10 3 5 12	$3 26				$1 25	C. & O. M.		88	3 96 3 0
Penn Central Light & Power Co., Altoona	46,820	39,043,960	83 6	Same	600 Good	18,000	25 to 40 mi Cambria and Clearfield	Same	M R	R. of M.	13,692 23 38 8 98 2 5	$3 69	R. of M.		13,878 21 63 9 2 1 7	$1 09	C. Own mines	C.	50	2 35
Susquehanna County Light & Power Co., Scranton	1,305	336,395	14 Standby		1a Slight	150	50 mi	50 mi	M R			$4 15					O. M.	Not operating	15	
Warren Light & Power Co., Scranton	6,661	3,746,606	44 3	Same	913	2,900	75 mi	25 mi	M R		15 590 31 62 10 6 1 12	$7 06				$2 50	C. & O. M.		44	3 6 5 0
New Jersey-Maryland																			
Monmouth Lighting Co., Keyport, N. J.	10,400	6,817,858		9,000	1,500 No prospects	4,000	200 mi Clearfield	O. M.	M R	Trojan No. 2	14,000 8 14 1 5	$4 16	Various				C	O. M.		6 5
Hagerstown & Frederick Railway Co. (Md.)	23,258	14,229,000	55	28,000	500	5,000	100 Georges Creek	Same		Various	15	$7 50			7	$2 40	C. & O. M. own mines		35	3 8 2 4
Municipal Electric Light Plant, Hagerstown, Md.	6,250	3,160,000	46	5,256	100 No prospects	1,200	225 Consolidation Mines	150 Jerome Mines	M R			$7 20 alongside $4 55 at mine	Jerome			$3.00	C.	C.		4 06 3 75
Potomac Electric Power Co., Washington	95,146 L. T.	110,348,933	63 3		6 500	10,000	200 330	200 George Creek	M R	Big Vein	14,700 17 0 10 0 0 9	$7 02 L. T. del.	Big Vein		14,600 17 18 0 9	$3 25 L. T. del.	C	O	17	1 95 2 68
West Virginia and Virginia																			
Company "C"	30,067	31,342,280	46 2	Same	1,400 Rusher Storage only	1,400	Local	Local	Satisfactory	Pitts. Seam	14 10; 37 76 6 34 1 20		Same	Same			Own mines	O. M	85	1.70 4-6
Consolidated Light, Heat & Power Co., Huntington, W. Va.	14,243 Also natural gas	40,705,800			2,525 Better since Aug. 1	6,000	80 mi W. Va.	Same	Gaining 100 tons per day	Don Mine	12 500 31 27 1a 17 3 66	$4 01 alongside					C	C	87	2 a better
Wheeling Electric Co., Wheeling, W. Va.	26,331	15,389,270		Same	Full storage		Local	Local	Delivering as required		14 000	$3 85	Same		14,000	$1 40	C			
Electric Transmission Co., Big Stone Gap, Va.	15,328	15,299,000	47	Same	2,300	3,000	13	Local	100%	Kenova	6 20; 35 5 3 05 1 0	$4 0r del.		Same		60 del.	C	C	18	2 a 6 8
Newport News & Hampton (Va.) Railway Gas & Electric Co.	24,205	20,185,400	51 2	22,000	500 Poor	3,000	Cabin Creek Jct.	Same	M R	Anchor		$2 85 at mines $13 50 to M					C	30		2 30 3 00
SOUTHEASTERN																			
Pensacola (Fla.) Electric Co.	7,000	6,788,780	42 6	Same	No storage no prospects	3,000	500 Ala.	Same	M R	Pratt	16 000	$5 40 alongside	Pratt			$2 50 alongside	C	C	20	Same
Valdosta (Ga.) Lighting Co.	5,895	1,951,598		6,300	600 No prospects	2,500	Big Stone Gap	Talkeetna	70%	Various	25	$6 25 alongside	Southern Star		14,200 8	$3 50 alongside	70% contract Balance spot market	C	50	4 3 5 5 8
Charleston (S. C.) Consolidated Railway & Lighting Co.	20,400	12,002,000	65	Same	1,200 No prospects	15,000	Big Creek Gap, Va.	Same	Just barely M R	Stuart's Church Field		$4 00 and $4 50	Same				C & O. M. to prevent shutdown		30	

HOW THE COAL SITUATION HAS AFFECTED CENTRAL STATIONS IN THE LAST SIX YEARS. (Continued)

O. M. Open Market. C.—Contract. L. T.—Long Ton. R. of M. Run of Mine. M. R.—Meeting Requirement

Company	Tons Used, Jan. 1, 1920 to July 1, 1920	Kw.-Hr. During Period	Load Factor	Tons of 1914 Coal That Would Have Been Used in Same Period	Tons on Hand and Prospects	Storage Should Be, Tons	Source of Coal Supply and Distance from Station: Present	Source of Coal Supply and Distance from Station: 1914	Condition of Deliveries	Name of Coal, 1920	B.t.u. Volatile, Fixed C, Moisture	Price per Ton	Name of Coal, 1914	B.t.u. Volatile, Fixed C, Moisture	Price per Ton	Method of Obtaining Coal in: 1920	Method of Obtaining Coal in: 1914	Cost per Ton for Handling and Storing	Lbs. per Kw.-Hr. 1920-1914
Athens (Ga.) Railway & Electric Co.	2,617	1,133,812	42	2,400	727	1,500	140 Ky.	340 373 Ky. Tenn.	Very poor	Red Feather	10,972 32 24 24 38 2 04	$10 39	Winter	14,740 36 41 9 50 1 05	to 70 del.	O. M.	O. M.	15	3 5 4 5
MIDDLE WEST																			
Wisconsin																			
Eastern Wisconsin Electric Co., Sheboygan	15,165	8,655,289			1,171					Various						O. M.	....	20	3 07 3 31
Milwaukee Electric Railway & Light Co.	256,380	112,965,858	48	247,141	42,180	90,547	400 Ill. Ind. Ohio Penn.	400 Pa. W. Va.	Falling short	Various	9,500-12,000 6-25 6 10	$8 50		13,000 9 11 9 4 7	$2 60	C. & O. M.	O. M.	.36	2 76 2 66
Wells Power Co., Milwaukee	14,800	2,280,300	16	12,600	None	None				Ill.	10,890 34 17 15-20 10 15	$7 00		12,800 6-11 5-9	$3 02	O. M.	O. M.	....	8 6
Iowa, Illinois, Michigan																			
Board of Water & Electric Light Commissioners, Lansing, Mich.	45,070	18,253,350	55		1,000	13,000	300 400 Ohio Ind. Ill.	400 500 W. Va. Ky.	Have gained in storage approx. 5,000 tons since July 1	Ill. Ohio Ind.		$3 60 to $6 75 mine	W. Va.		70c. to 90c. f.o.b. mine	O. M.	C.	....	4-6 25 3-3 25
City of Detroit Public Lighting Commission	21,152	12,011,266	53 3	16,517	2,210 Fair	9,000	Hobson, Ohio	W. Va.	Gaining about 300 tons per week	Hocking Valley	12,270 19 40 12 40 4 88	$5 37 $7 35 del.	Meadow Brook	14,741 17 98 4 52 1 30	$2 40	C. & O. M.	C.	....	3.65 2.75
Consolidated Light & Power Co., Kewanee, Ill.	6,044	1,489,868	40	5,500	None	1,000	150 Franklin County, Ill.	85 Fulton County, Ill.	10%				Fulton			C. & O. M.	C.	.75	2# more
Consumers Power Co., Jackson, Mich.	157,719	107,252,925	45 9	10 less	32,176	78,000	475 W. Va. Logan Co.	Same	M. R.	Various	13,000-14,000	$2 25 10 00	Various W. Va.	13,000-14,000	$0 85 1 25	O. M. & C.	C.	....	2 48 2.79
Moline (Ill.), Rock Island Manufacturing Co.	60,940	41,006,000	41 72	About 5% less	2,650 Poor	8,000 to 10,000	85	Same	M. R.	Various Ill.	10,332 to 11,680 21 4-35.5 20-24.5 13-16 2	$3 66	Various	10,214-11,238 34.9-37.8 19 3-24 5 12 1-16 1	$1 71	C. & O. M.	O. M.	12 labor charge only	2.95 3.97
Sioux City (Iowa) Gas & Electric Co.	15,000	8,924,134	60	13,000	1,400 No prospects	6,000	Franklin County, Ill.	Same	85% now, was 25%	Ill.	11,500 35 10 8	$3 00 mine	So. Ill.	12,000 10 8	$0 90 mine	C.	C.	.50	3.4 3.0
People's Gas & Electric Co., Muscatine, Ia.	14,561	5,962,000		Same	1,078	5,000	350 North. Ill.	Same	Meeting requirements		11,065 36 21 2 16	$2 35	Same		.....	C.	C.	....	4 7
Ohio																			
Central Electric Producing Co., Floodwood	15,865	7,899,350	40	Same			Local	Local	Ample	Hocking Valley	10,500 27 97 25 57 4 5	$3 26	.....		$1 01	Own mines	Same	....	....
Massillon Electric & Gas Co.	29,522	8,620,269	70	Same	750	2,000	60 Athens, Ohio	80 Belmont, Ohio	About five cars a week above requirements	Somers Belmont	12,000 40 20 10	$3.25	Same	Same	$2 08	C. & O. M.	C.	1 5b	$3 5 less
Northwestern Ohio Light Co., Lima	14,000	4,905,619		Same	500	5,300	190 W. Va.	Same	Meeting requirements	W. Va.	13,500 16	$8 75 mines		14,000 12	$3 00 to $4 50	C. & O.	C.	20	....
Toledo & Indiana Railroad	7,300	3,515,000	50	6,200	1,020	2,000	450 Cardinal, Ky.	Same	Gaining about 50 tons per week	Ky.	15,000	$3 96 mines	Same		$1 05 mines	C.	O.	65	4 4 3.2
Toledo Railway & Light Co.	132,278	105,294,890		10,100	6,630 poor	15,000	140 Hocking Valley Mines	140 to 250 Cambridge Ohio & W. Va.	M. R.	Hocking Valley	10,000-11,500 31 56 11 25 6 10	$4 78	Cambridge, Ohio and W. Va.	13,000-13,500		C.	C.	0 10 to 0 25	2 52 3 34
Trumbull Public Service Co., Warren	60,594	42,686,000	62	43,600	3,000	20,000	100 Pitts., Pa.	Same	Meeting requirements	Various	12,148 32 18 8	$5 09 del.		13,758 36 8 4	$2 00	O. M. & C.	C.	30	70%
Union Gas & Electric Company, Cincinnati	80,200	135,545,910	59 04	Same	10,000 Fair	85,000	245 W. Va.	210 250 N. Y., W. Va.	40 Supply	Logan	12,111 12 88 4 17	$7 00	Keely Creek Hazard Logan	13,000 33 0 7-14	1 79 to 1 84 del.	O. M. & Own Mine	C.	0 25	1 50 3 13
Indiana											12,500								
Indiana Power Co., Vincennes	22,700	12,800,000	60	Same	2,500 Poor	6,000 to 10,000	Local									Own mines		12	....
Indiana Railways & Light Co. Kokomo	22,010	9,970,000		20,000	600 No prospects	5,000	150 Ind.	Same	Contractor furnishes 15% requirements						$7 30	85% O. M. 15% C.	C.	....	Same
Indiana Service Corp., Fort Wayne	4,594	25,925,129	53 65	Same	1,718	7,000	165 Linton, Ind.		Good	R. of M.	11,560 30 14 9	$2 05 to $6 00	Same		$2 00	225 tons daily from own mine, balance O. M.	C.	05	
Laporte Gas & Electric Co.	1,000	2,791,814	50	Same	500	1,000	200 Ill. or Ind.	Same	M. R.		10 500 10	$2 25 C. $5 50 O. M.	Various	10,500	$0 90	10% C. 45% O. M.	C.	20	Same
Northern Indiana Gas & Electric Co., Michigan City	1,400	4,360,000	40	1,000	1,000 Very poor	3,000	140 Linton Field, Ind.	Same	30%		10 100 30 16 12	$3 40 del.		11,500 30 10 10	$3 60 del.	O. M.	C.	35	20% more
Northern Indiana Gas & Electric Co., Lafayette	24,000	15,459,964			500	3,000	118 Midland	Same	M. R.	Linton, No. 4	10,480 32 5 15 49 11 49	$3 61	Same	Same		O. M.		1 00	
Colorado, Missouri, Nebraska, Kansas																			
Grand Junction Electric, Gas & Manufacturing Co., Colorado	6,000	1,860,914	35	Same			14 Colo.	12 Colo.	M. R.	Canon and Palisade	12,000 17 7 4	$1 00 and $1 40	Same	12,000 17 7 4	$3 20	C.	C.		Same
Empire District Electric Co., Joplin, Mo.	6,527	8,836,360	65		4,830 poor	12,000	40 Kansas	Same	About meeting requirements	Kansas	11,000 14 10 9	$3 92 to $4 53	Same	11,000 to 10 9	$1 8 to $2 60	O. M.	C.		
Little Rock, Ark., Railway & Electric Co.	1,000	3,194,000	7	Same	1,000	5,000	200 Hartford, Ark.	Same	M. R.	Hartford Ark. Coal	13,000 13 40 10 1 9	$2 25	Same	Same	$1 25	C.	O. M.	04	3 5
Lincoln, Neb., Traction Co.	1,000	6,000,000	Very poor	6,000	6,000	5,000	Kansas	Same	M. R.		12,500 36 2 6		Same	Same		C.			Same
WESTERN																			
Albuquerque, N. M., Gas & Electric Co.	85	38,200	3	5,427	900	1,500	250 Raton, N. M.	Same	M. R.		10 0 10 05 10 64 5 12	$6 25	Same		$1 35	O. M.	O. M.	25	3 37 5 00
Deming, N. M., Ice & Electric Co.	1,000	6,640	50 1	Same	Poor	400	100 Tyrone, N. Mex.	500 Raton, N. Mex.	M. R.	Raton	12,500 27 14 1	$5 00 at mine	Superior	5	$2 50	C. Some on O. M.	O. M.	40	
Denver, Col., Gas & Electric Co.	53,617	28,200,560	59	55,000	4,550	60,000	35 Evans	35 Evans	60% of requirements	Lignite Canon	9,000 30 6 5 21	$1 00 at mine	Lignite	9,000 25 6 5	$0 50	C.	No contract	3 15	3 5 6 5

Production of Coal in United States and Some European Countries, by Months, First Half of 1920, and Monthly Averages, 1913-1919[a]

(In Metric Tons of 2,205 lb)

Period	United States (All Coal)[b]	United Kingdom (All Coal)[b]	France[c]	Belgium	Netherlands Coal	Netherlands Lignite	Germany[d] Bituminous	Germany[d] Lignite
Monthly average:								
1913	43,089,000	24,344,000	3,404,000	1,904,000	159,000	.....	14,383,000	7,260,000
1914	38,822,000	22,500,000	2,294,000	1,393,000	165,000	.....	12,331,000	6,996,000
1915	40,190,000	21,445,000	1,628,000	1,181,000	194,000	.....	11,340,000	7,364,000
1916	44,611,000	21,714,000	1,776,000	1,405,000	221,000	.....	12,281,000	7,861,000
1917	49,245,000	21,047,000	2,410,000	1,243,000	261,000	.....	12,822,000	7,963,000
1918	51,272,000	19,289,000	2,188,000	1,152,000	296,000	119,000	12,301,000	8,389,000
1919	41,145,000	19,731,000	1,822,000	1,541,000	283,000	152,000	9,049,000	7,817,000
1919 January	44,577,000	19,855,000	2,473,000	1,233,000	298,000	221,000	8,832,000	(e)
February	33,165,000	19,700,000	2,284,000	1,269,000	260,000	145,000	8,389,000	(e)
March	35,197,000	20,515,000	2,125,000	1,426,000	283,000	237,000	9,358,000	7,424,000
April	35,290,000	19,273,000	1,745,000	1,494,000	270,000	244,000	5,145,000	7,452,000
May	40,743,000	22,048,000	1,733,000	1,572,000	290,000	165,000	8,824,000	7,917,000
June	40,187,000	13,526,000	858,000	1,456,000	262,000	112,000	8,357,000	7,119,000
1920 January	50,852,000	21,685,000	2,927,000	1,870,000	307,000	128,000	10,400,000	8,700,000
February	42,150,000	19,790,000	2,715,000	1,684,000	274,000	118,000	10,157,000	8,426,000
March	49,556,000	21,815,000	2,380,000	2,006,000	312,000	129,000	10,146,000	7,902,000
April	40,046,000	19,508,000	2,553,000	1,901,000	295,000	124,000	10,035,000	8,900,000
May	42,574,000	19,829,000	2,766,000	.....	288,000	111,000	10,224,000	8,705,000
June	48,318,000	20,835,000	.....	.....	334,000	118,000	11,008,000	9,572,000

(a) Figures from the Monthly Bulletin of Statistics of the Supreme Economic Council for July, 1920.
(b) Monthly figures estimated from weekly reports.
(c) Includes output of Alsace-Lorraine in 1919.
(d) Includes bituminous output of the Ruhr, Upper and Lower Silesia, Saxony, and Aachen districts. Excludes the Saar and Alsace-Lorraine.
(e) Statistics not available.

Withdraw Suits Against Price Fixing in Indiana; Court Indorsement Likely

WITHDRAWAL Oct. 20 of nineteen of the suits brought by retail coal dealers of Indiana to invalidate the retail selling margin of $2.25 a ton fixed by the State Fuel and Food Commission was considered by Jesse E. Eschbach to indicate that many coal men are of the opinion that the price-fixing orders will be sustained in the Marion Circuit Court.

It was pointed out that dealers in many localities are willing to operate under practically the same conditions as dealers who have brought suit to have the $2.25 margin set aside. This situation, it is said, will make it difficult for dealers who remain parties to the legal action to maintain their position.

Coal supplies in many sections of Indiana are inadequate to meet the demands of domestic consumers in the event of colder weather, according to letters received by the commission. Mr. Eschbach directed a letter to retail dealers last week asking for information concerning supplies of coal on hand and the amount of fuel necessary for emergency purposes. Mr. Eschbach has indicated that an effort will be made to supply coal for emergency purposes at the state prices.

Monongalia Men Try to Dynamite Their Way to Success in Strike

WHETHER sanctioned or not by the United Mine Workers it became evident on Sunday night, Oct. 17, that resort to the methods in vogue among some of the strikers in the Williamson field of West Virginia were being made in Monongalia County, West Virginia, where a strike has been in progress for several months, for on that date agitators of the strike, according to the Connellsville Basin Coal & Coke Co., attempted to blow up with dynamite the tipple and entrance to that company's Rockford mine. They succeeded, however, in blowing up only the water tank and a portion of the tipple, the damage being such as not to interfere with operations. The mine was working full tilt on Oct. 18. There were men in the mine at the time of the explosion, but no one was hurt. The first reports of the explosion were to the effect that a dozen men had been trapped in the mine and that the power house had been attacked, but such reports appear to be incorrect.

This was the first serious trouble in the district since the beginning of the strike early in July, although there have been numerous clashes between union and non-union miners and other minor disturbances, non-union miners at one of the Penn-Mary mines only recently having been fired upon. A squad of state police was sent to Rockford following the explosion.

All those who participated in the unauthorized strike at the Monon mine, in northern West Virginia, operated by S. D. Brady, during the latter part of September in defiance of orders from district headquarters of the United Mine Workers, which resulted in the withdrawal of the charter of the Monon local, are back at work. It is probable that the charter will be restored to the local if officials of the United Mine Workers are convinced there will be no further disobedience of orders.

Reported Exports of American Coal to Canada During September

RECEIPTS of American coal in Canada during the month of September are reported by the Dominion Bureau of Statistics as follows (in net tons):

Anthracite:	
Egg, nut, etc	303,731
Dust	67,895
Total anthracite	371,626
Bituminous	1,787,455

The anthracite receipts fell off sharply in comparison with the 596,555 tons reported in August, principally because of the strike in the anthracite region of Pennsylvania. Receipts of bituminous coal, although smaller by 246,000 tons than the August receipts, were the largest in any September of recent years. Cumulative receipts of both hard and soft coal during the first nine months of each of the years 1914 to 1920 have been as follows (in net tons):

First Nine Months	Anthracite	Bituminous
1914	3,433,000	7,442,000
1915	2,940,000	5,588,000
1916	3,474,000	9,421,000
1917	3,990,000	11,432,000
1918	3,503,000	12,686,000
1919	3712,000	9,481,000
Average 1914-19	3,510,000	9,342,000
1920	3,698,000	10,144,000

The 1920 movement of anthracite to Canada is thus behind 1917 and 1919 but exceeds the 6-year average of 1914-19 by 188,000 tons, or 5.4 per cent.

The bituminous movement, while much behind 1917 and 1918, likewise is ahead of the 6-year average. Against an average of 9,342,000 tons in the first nine months of 1914-19 the year 1920 shows 10,144,000 tons, an increase of 802,000 tons, or 8.6 per cent.

Freight-Car Loadings Set Record

A NEW record for this year for the number of cars loaded with commercial freight on the railroads of the United States was set during the week ending Oct. 9, according to reports compiled by the Car Service Division of the American Railway Association. The total was 1,009,787 cars, as compared with 982,171 for the corresponding week of 1919 and 959,722 during the corresponding week of 1918.

This was the first week this year in which the freight car loading passed the million mark and represents an increase of nearly 34,000 over the week of Oct. 2. The total of 1,009,787 for a week has been exceeded only once, according to the records of the Car Service Division. In one week of 1919 the total car loading was reported as 1,011,422. Increases as compared with the corresponding week of 1919 are shown in the Allegheny, Eastern, Northwestern, Central Western and Southwestern districts, while there were decreases in the Southern and Pocahontas districts. Increases are shown in the loading of coal, coke, ore and forest products, while there were decreases in grain and grain products, livestock, merchandise and miscellaneous freight, as compared with the corresponding week of the previous year.

Government Ownership of Mines Favored

JAMES HAMILTON LEWIS, Democratic candidate for Governor of Illinois, who during his term as U. S. Senator from that state was regarded in some quarters as a spokesman for the national administration, recently made a speech at Virden, Ill., in which he came out unreservedly for Government ownership and operation of coal mines. The points in the program he proposed were:

(1) Miners to work under a contract made with the Government.

(2) Government agents to supervise the mines for safety with regard to gas and general health conditions.

(3) Government to contract with the miners or their representatives for the output and distribution of coal to such points as necessity might demand.

(4) Government standing board to hear all grievances and settle all demands arising between mine workers and mine owners.

The latter point seems a little hazy, because, if the original working contract were made with the Government, it is difficult to see how there could be a mine owner, or if there were, how such owner could possibly be interested in any demand the miners might make.

Bankers Call Proposed Nationalization of Industries an Economic Fallacy

NATIONALIZATION of industry and reduction of output by labor are branded as economic fallacies in resolutions adopted by the American Bankers' Association in its convention in Washington last week. The resolutions read:

We would brand as a proven economic, political and social fallacy the widespread agitation for the so-called nationalizing of industry, and express our complete disapproval of such socialistic theories as they have been concretely expressed in the proposed Plumb plan for nationalizing the railroads. We assert the supreme importance to the maintenance of American progress, of the American idea of individual freedom and initiative in business and the private ownership of property. We disapprove any steps looking toward the further participation of the Government in business activities and regard as demonstrated beyond possible question the inefficiency and wastefulness of public ownership or management in any form of business enterprise.

We would regard with apprehension and disfavor any further extension of governmental activities into the banking field, and while we approve of the postal savings system as a means of service to a large number of people not otherwise in touch with banking accommodations, we believe that any extension of this system through increased interest rates or otherwise, which would place it in competition with privately-owned banks, would be a mistake and in the long run opposed to public interests.

With especial emphasis we would call the attention of labor to the essential unity of the three great elements entering into the industrial structure—labor, capital and brains. A fair balancing of interests between these factors in production of wealth must be maintained to insure their common prosperity. Failure to preserve this balance may easily wreck industry, and we call upon each factor involved to recognize this basic truth. Only through the increased production of wealth can there be a larger distribution of wealth and we call upon labor to abandon the economic fallacy that it can attain greater prosperity through reduction of output. The tremendous costs to the country through unwarranted strikes, limited production and unsound shop practices are suffered by labor and capital alike and seriously hamper the prosperity and progress of the whole country.

Alabama Operators with "Blue-Book" Contracts Face Strike

OFFICIALS of District 20, United Mine Workers, have issued a call for a conference between the union and those operators who have signed the so-called "Blue-Book" contracts. It is asserted by the union that these operators have never put into full effect the award of the Bituminous Coal Commission and that they have in other ways failed to fulfill the agreements. The union desires to negotiate directly with the operators and to secure contracts which will supersede those now in effect.

The present agreements were made between the men and their employers, and they provide for union representation on the committees formed for final adjustment of disputes. These agreements were approved by officials of District 20 and are in effect from April 1, 1920, to March 31, 1922. Only two large operations signed the "Blue-Book" contracts and it is reported that mine owners entering into these agreements will insist that they be observed. The indications are that all the men working under "Blue-Book" contracts will be called out on strike.

President Lewis Wants Legal Action to Compel Collective Bargaining

ARGUING that under the war powers the President of the United States can compel the operators to grant the starving strikers of Alabama the right to bargain collectively, President Lewis addressed a letter Oct. 24 to Mr. Wilson asking him to direct "the Department of Justice to institute such legal proceedings as may be necessary to compel observance of collective bargaining and the protection of the civil rights of the mine workers of Alabama." Mr. Lewis avers that the right of collective bargaining was guaranteed the miners and all other workers during the war in the President's proclamation of April 8, 1918, and that the same right is pledged in the Democratic national platform. Mr Lewis appears to believe that the United States is governed not by law but by proclamation and party platforms.

FREDERICK VAN NUYS, U. S. Attorney, and L. Ert Slack, Special Assistant U. S. Attorney in Indiana, will go to Washington within the next two weeks, where they will confer with A. Mitchell Palmer, Attorney General, regarding the trial of 125 bituminous coal operators and miners before Judge A. B Anderson. The trial has been set for Nov. 8. Removal proceedings against defendants living in districts outside Indiana have not yet been completed and probably will not be before Nov. 8, but it is thought that the trial will not be delayed.

ASSUMING JURISDICTION, THE Colorado Industrial Commission has ordered the leaders of United Mine Workers, District 15, and operators of the lignite field to appear Nov. 4 for a hearing regarding demands made by the miners for a 20-per cent increase for deadwork and a working agreement with the mine owners. Until the commission has heard both sides and rendered its decision, which is persuasive but not binding, the 3,000 miners will not be allowed to participate in a general walkout.

HEARING IN THE case of the Chicago-Springfield Coal Co. vs. the Illinois Central, scheduled for Oct. 26, was canceled and reassigned for hearing Oct. 28 at Chicago before Examiner Bardwell.

Urge Metal-Mining Man as Successor to Dr. Cottrell as Mine Bureau Chief

WHEN Dr. F. G. Cottrell accepted the directorship of the Bureau of Mines, less than a year ago, it was generally understood that it was his desire to be relieved from the position at an early date. His selection to direct the chemical work of the National Research Council stimulated his desire to resume chemical research work.

Since then there has been considerable discussion as to the type of man who should direct the activities of the Bureau of Mines. There has been strong pressure behind the suggestion that this position should go to a metal-mining engineer who has had successful experience as a commercial executive.

Chemists particularly take issue with the claim of the metal-mining industry. They see no reason why a chemist with executive ability cannot guide the Bureau of Mines as well as can a metal-mining engineer. The petroleum industry is being served by the Government in a technological way by the Bureau of Mines only. As the petroleum division of the bureau is an important part of this work, that industry sees no reason why a petroleum technologist should not direct the bureau's work.

The coal-mining industry, it is pointed out, perhaps has even a greater claim on the position than has any other of the industries, as the volume of work done for the coal industry is greater than that done for any of the other industries. In view of the controversy about the matter, the latest suggestion is that Dr. Cottrell may retain the position until there is more accord as to who should succeed him.

Bituminous Output of Pennsylvania in 1919 137,058,500 Tons; Value $327,475,400

BITUMINOUS coal having a value of $327,475 400 was mined in the soft coal fields of Pennsylvania during the year 1919, according to a report submitted Oct. 27 to James F. Woodward, Secretary of Internal Affairs of Pennsylvania, by M. Hoke Gottschall, chief of the Bureau of Statistics and Information in the Pennsylvania Department of Internal Affairs.

The mine workers during the year mined a total of 137,058,500 tons of bituminous coal and were paid a total wage of $196,024,700, or approximately 60 per cent of the value of the state's bituminous output.

According to a report on the mineral resources of the United States in 1919, issued in September by the U. S. Geological Survey, it is estimated that bituminous coal production in Pennsylvania last year was 145,300,000 tons. The figures announced by the Pennsylvania Department of Internal Affairs, however, are based on actual production and have been tabulated from reports made to the statistical bureau of the department by the mine operators themselves. The actual production, therefore, it is seen, does not come up to the production that had been expected by the U. S. Geological Survey.

During 1918, records in the State Department of Internal Affairs show, 161,050,300 tons of bituminous coal were mined in the state, or approximately 24,000,000 tons more than last year, notwithstanding that there were almost 2,000 less employees in 1918 than there were in 1919. In 1918 the mine workers were paid $226,055,600 and the coal mined was worth $407,585,200.

Statistical records of the Department of Internal Affairs show that there were 1,106 bituminous coal operations in the state during the year against 1,077 in 1918, the greatest number being found in Cambria County, where 136 were reported. The average number of days the mines were operated in the various soft-coal counties varied considerably, the records showing that the mines in the entire field were operated an average of only 193 days. The highest average of days worked is shown in the report for Lawrence County, where mine workers were engaged an average of 284 days. In Mercer County the mine workers worked an average of 158 days, while in Tioga County the average was 170; in Armstrong, 172; Blair, 178; Clarion, 173; Clearfield, 177; Greene, 176, and Center, 175. The average number of days worked in the other counties ranged from 182 in Bedford County up to 211 days in Allegheny County and 215 days in Fulton County.

Although the greatest number of operations was found in Cambria County, the greatest number of persons engaged in bituminous-coal mining was found in Fayette County, where the payrolls carried the names of 25,328. There were 20,536 employed in Westmoreland County, 18,801 in Washington County, 10,801 in Clearfield County, 19,487 in Cambria County and 14,950 in Allegheny County. In Lycoming County there were only twenty-five persons engaged in the soft coal industry.

In the value of coal mined Fayette County led all the other counties in the soft-coal field with a production value of $59,641,500. Second in line was Westmoreland County with a valuation of $51,434,300, while the third position was taken by Cambria County with a valuation of $41,631,500. Lycoming County was at the bottom of the list last year with a valuation of but $34 400.

In the entire bituminous field there were 153,207 persons engaged last year, while in 1918 there were 151,455. Of the 1919 total 91,266 were foreigners, 59,330 were Americans, white, and 2,611 were Americans, colored, the figures showing that American workmen represented only about 40 per cent of all the persons employed.

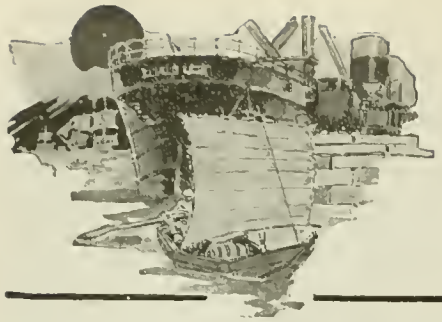
A table showing the number of persons employed in soft coal mining in the various bituminous counties, the amount of wages they were paid and the value of the production, follows:

County	No. Employed	Amount of Wages	Tonnage	Value Produced
Allegheny	14,950	$18,100,500	13,3[illegible]2,200	$30,725,200
Armstrong	5,451	6,122,900	4,125,400	10,830,100
Beaver	121	144,400	156,000	187,300
Bedford	1,111	1,167,100	621,400	1,670,900
Blair	182	161,800	97,900	285,000
Butler	1,595	1,702,300	931,400	2,253 800
Cambria	19,487	2,230,000	15,529,400	41,631,500
Center	1,591	1,838,100	1,032,700	2,941,100
Clarion	1,763	1,934,200	1,112,800	2,794,100
Clearfield	10,801	11,842,400	7,399,100	19,754,200
Clinton	352	448,800	286,900	719,200
Elk	1,150	1,280,300	731,500	1,888,100
Fayette	25,328	35,302,400	28,113,700	59,641,500
Fulton	49	45,000	27,300	68,200
Greene	968	1,228,100	903,300	2,063,500
Huntingdon	1,461	1,446,200	823,800	2,392,500
Indiana	9,214	11,185,300	6,982,400	18,228,800
Jefferson	4,834	5,231,100	3,310,400	8,535,500
Lawrence	151	195,800	93,900	234,700
Lycoming	25	22,100	8,500	34,400
Mercer	802	790,600	446,100	1,196,100
Somerset	10,852	14,683,400	9,366,500	25,770,500
Tioga	1,132	1,121,400	513,200	1,555,500
Washington	18,801	24,559,000	18,810,900	40,588,800
Westmoreland	20,536	29,126,500	22,246,200	51,434,300

Red Jacket Company's Injunction Delayed

OWING to the time consumed in arguing the granting of an injunction in the Lever Act cases, no time was left to hear the argument on the injunction sought by the Red Jacket Consolidated Coal Co. from the Federal Court at Huntington which came to an end on Oct. 15. The Red Jacket company applied to the United States District Court about Oct. 1 for an injunction to restrain the United Mine Workers from organizing the miners employed at the Red Jacket mines, notices of the injunction being served on John L. Lewis, president of the United Mine Workers; "Mother" Jones and others. It was expected however, that the Federal court would pass upon the application for an injunction during its session at Bluefield, W. Va., which began on Oct. 19.

Scope of Proof in Personal Injury Action.—In a suit to recover for injuries sustained by plaintiff in a gas explosion while he was at work in defendant's mine, it was improper for the trial judge to receive evidence tending to show negligence on the part of the defendant in permitting air courses to become and remain obstructed, or in failing to properly regulate the firing of shots in the mine, where there were no allegations of such negligence in the petition filed by plaintiff in the suit. *(Kentucky Court of Appeals, Turner vs. Daniel Boone Coal Co., 205 Southwestern Reporter, 981.)*



Foreign Markets and Export News

New South Wales Produces Nearly Half Million Tons of Coal in a Month

According to a cablegram received from the American consul at Newcastle, New South Wales, the total amount of coal mined in New South Wales, Australia, during the month of September was 468,000 tons; 117,600 tons, valued at £100,868, were exported overseas, excluding 3,217 tons for bunkers to oversea vessels; the remainder was for Australian consumption. On Sept. 27 the price of all coal was raised 4s. per ton. Supplies are not equal to demands. Freight rates are as follows: 90 to 120s. to the West Coast, the rate being regulated according to the ports and charter-party conditions; $12 United States gold to Manila and $10 to Honolulu. Seven American vessels awaiting coal cargoes were in port the day the cablegram was sent.

British Colliery Strike Causes France to Seek Coal In Other Countries

French factories in which thousands of workmen are employed on Oct. 18 faced the possibility of having to close down because of the British coal strike. Until the embargo against exportation of coal stopped shipments England sent France three-quarters of a million tons monthly.

France may turn to China for more coal in the event of inability to get it in the United States. China, according to advices, has already contracted to furnish 100,000 tons of coal to France, 10,000 tons to Denmark and is offering 200,000 tons more for delivery in Europe.

India is said to be sending coal to France, Italy and Egypt, while South Africa has also been exporting to Egypt and Italy. Coal from Australia has reached Scandinavia.

Industrial Conditions and Germany's War Debts Cause Fuel Shortage in Denmark

Industrial conditions in Denmark, according to Maurice P. Dunlap, American Consul at Copenhagen, are such as to emphasize the lack of sufficient fuel and the general need of a future reliable market for coal. The source of cheap coal supply before the war was Germany, but whereas about 100,000 tons were formerly imported per month only about one-fourth of that quantity was being imported in the beginning of 1919, and by April the figure had fallen to about 4,000 tons. Later it averaged about 15,000 to 20,000 tons a month. The price on the German article had, however, gone much higher than the price on English coal, so that Germany is becoming a negligible quantity as a source of supply for fuel.

Denmark received from England about 125,000 tons in January and 135,000 in February, which amount went to 260,000 tons in June and 280,000 in July. It then seemed that the great problem was solved, for theaters and restaurants were permitted to remain open longer and the war-long rationing of coal was partly dispensed with. August put a sudden end to prospects, as a strike occurred in England and the rise in the value of English currency made matters worse. During the rest of the year coal imports from England averaged about 100,000 tons and the former rationing had to be resorted to.

A small coal import from Belgium may indicate future possibilities. This in July amounted to 30,000 tons, but this source is for the time being closed by export restrictions from Belgium.

America as a coal market is still one of the big after-the-war possibilities that has not materialized. There have been about 10,000 tons of coal shipped to Denmark from the United States every month since June, an almost neglible quantity. But Sweden and Norway have received larger amounts from America and the United States may still become a competitor with England for the Danish market. Labor conditions and freight rates will play an important part in the ultimate course of this commerce, factors at present so variable and uncertain that it seems quite impossible to prophesy what this course will be. Denmark's minimum coal consumption can at present be reckoned at from 200,000 to 250,000 metric tons per month.

After a Period of Firmness Foreign Freight Rates Soften

According to W. W. Battie & Co.'s coal trade freight report, the freight market on coals to European and South American ports has been firmer during the last week, but freights are beginning show a softening tendency. West Indian freights also are easier. Tonnage is offered freely to carry coals to all destinations.

Freight rates by steamer are as follows:

		Tons Discharged Daily
Malmo	About $13 50	1,000
Copenhagen	About 13 50	1,000
Stockholm	About 14 00	800
Gothenburg	About 13.50	1,000
Antwerp/Rotterdam	9 50—10 00	1,000
Hamburg	About 12.00	1,000
French Atlantic (ex Rouen)	11 00—11.50	700
Algiers	About 13 50	800
West Italy	About 13 50	1,000
Marseilles	About 13 50	1,000
Piraeus	About 14 00	1,000
Trieste/Venice	About 15 50	1,000
Port Said	14 00—15 00	1,000
Constantinople	About 15.50	500
Gibraltar	About 13.00	1,000
Pernambuco	About 13.50	500
Bahia	About 13 50	500
Rio	About 13 25	1,000
Santos	13 75—14 00	600
Buenos Aires or Montevideo or La Plata	About 13.00	750
Para	About 13 50	500
Rosario	About 13 75	750
To Nitrate Range	9 00— 9.50	750
Havana	About 6 00	500
Sagua or Cardenas	About 7 50	300
Cienfuegos	About 7 50	500
Cnibarien	About 7 50	300
Guantanamo	About 7 50	500
Manzanillo	About 8 00	300
Bermuda (p. c. and dis. free)	About 7 00	300
Kingston	About 8 50	400
Barbados	8 00— 9 00	500
St. Lucia	8 00— 9 00	500
Santiago	7 00— 7 50	500
Port of Spain, Trin	8 00— 9 00	500
Curacao (free p. c.)	8 00— 9 00	500
St. Thomas	About 8 00	500

All above rates gross form charter.

Italian Commission Denies That Business in This Country Will Be Placed Through London

Reports having become current in shipping circles that all business of the Italian Government Commission in this country would be transacted through London, Signor Quattrone, representative of the commission in New York, cabled the Italian Government for confirmation of the rumor. In reply he received a dispatch from Signor Sitta, Italian Under Secretary of Transports, flatly denying that such business would be transacted through London. The false report is said to have emanated from London.

More Reasonable Prices and Improved Distribution Result from Cleveland Meeting

TELEGRAPHIC reports to *Coal Age* from every coal field indicate that the movement to eliminate exorbitant prices and other bad practices in the distribution of bituminous coal is bearing fruit. Following the Cleveland meeting of Oct. 26, at which the whole industry gave its sanction to the drive for lower prices, nearly every field has speeded up the machinery for bringing into line those who had not already read the handwriting on the wall.

From Colorado comes the report that the operators will support the Cleveland fair-price committee movement but that their prices have at no time been out of line.

The fair-price committee formed a few weeks ago at Chicago at the request of the District Attorney, composed of two operators, two wholesalers, and two retailers, has the coal situation well in hand. While no committee has been appointed as a direct result of the Cleveland meeting of the National Coal Association practically all responsible operators are following the plans outlined at the meeting relative to bringing the coal industry in the Middle West back to more normal conditions. During the last week the coal market has been much easier in spite of the fact that car supply has dropped from between 70 and 80 to around 60 per cent.

Cleveland Committee at Work Oct. 26

The Cleveland group appointed a Fair-Practice Committee composed of S. H. Robbins, C. E. Maurer, Whitney Warner, Thomas K. Maher, Michael Gallagher with D. F. Hurd, as secretary, which was in action the day of the national meeting in that city. A circular was sent to all operators in northern and central Ohio and to all local jobbers and retail dealers stating that:

> In order that effective steps may be taken to secure a supply of coal for the domestic consumers and public utilities of northern Ohio at reasonable prices, in accordance with the request of the Attorney General of the United States and U. S. Attorney Wertz, and in line with the action taken at the meeting of the coal operators held at Cleveland, Ohio, on Oct. 26 all available means will be taken to eliminate any and all practices that may be found that tend to increase the price of bituminous coal to the consumer, and to take any steps that may be legal to prevent unreasonable charges.
>
> The public should understand that this committee has no right to fix prices, nor will it attempt to do so. . . .
>
> If any dealer or consumer of bituminous coal feels he is being asked unreasonable prices and will acquaint the committee with the fact, such information will be given to the Department of Justice with the names of the offending individual or corporation, in order that this department of the Government may take such steps as it may deem advisable.

There is a general feeling in Cleveland that few complaints will be received by the committee for the reason that the cause of the trouble has already been and will in future be eliminated through the voluntary action of the operators, jobbers and retailers themselves.

With prices of steam grades tumbling and Lake priority off, coal men of Columbus generally believe that the law of supply and demand will regulate prices of domestic lump. All action taken toward supplying dealers with stocks have not contemplated any price fixing or any campaign to regulate quotations. The psychological tendency is downward and coal is leading in this movement. The larger operators have been ready to co-operate in reducing prices to more reasonable levels and this factor will be more in evidence as Lake shipments are not required of the producers. Some operators with large tonnages have never quoted lump coal over $4.50 to $5 and that seems to be the level to which prices are going.

At a conference held in Columbus Oct. 27 and 28 between B. F. Nigh, secretary of the Michigan-Ohio-Indiana Coal Association; W. D. McKinney, commissioner of the Southern Ohio Coal Exchange; J. D. A. Morrow, vice-president of the National Coal Association; C. C. Marshall, chairman of the Ohio Utilities Commission; A. G. Gutheim, manager of the car service division of the American Railway Association and others it was decided to inform dealers in the three states named that in case of emergency cars of coal will at once be started to the locality in case B. F. Nigh is notified of the situation.

Messrs. Morrow and Gutheim stopped off in Columbus on their way from the Cleveland conference in order to get first-hand information of the situation in that section. They were informed that the smaller towns are in the worst shape as to coal supply, as the dealers in those places had not purchased coal at the prevailing high prices. They also were told that many school districts in Ohio were entirely without fuel.

St. Louis Prices Based on Low Illinois Rates

From St. Louis comes the report that no action will be taken as a result of the Cleveland meeting because retail prices of coal in St. Louis are based on the low circular prices of Illinois operators, which do not exceed $4.50 per ton at the mines as a maximum and $3 as a minimum. Coal prices in St. Louis are more reasonable than at any other place in the country under similar conditions and there has been no complaint and no action deemed necessary to change prices there. Retailers have just finished a cost survey of doing business and report that their margin of profit is below what they are justified in receiving.

Sufficient time has hardly elapsed since the meeting of the bituminous coal operators of the country at Cleveland to mature plans for the creation of special committees to handle the distribution of coal to consumers and to correct any abuses which may have crept in, either in the southern West Virginia fields or in the northeast Kentucky and southwest Virginia fields although in all the fields mentioned the advisability of creating committees of the character described is under consideration by operators.

Plans for the formation of such committees appear to be somewhat further advanced in northeast Kentucky and in Virginia. While no definite action has so far been taken by the northeast Kentucky district. The Northeast Kentucky Operators' Association will hold a meeting on Nov 9, at which time it is stated the kind of a committee suggested at Cleveland probably will be appointed. No formal action had been taken during the last week of the month in the Virginia field but it is understood that a meeting of Virginia operators will be held during the first week of November when a fair-practice committee will be named in accordance with the action taken at Cleveland.

In neither the Logan, Kanawha nor Williamson field had any definite action been taken looking toward the creation of special committees up until Oct. 30 and it is not possible to say just what action will be taken in those fields though it is considered possible that such committees will be appointed.

The situation with reference to the four smokeless fields of New River, Winding Gulf, Pocahontas and Tug River is perhaps different from that of any of the other fields in the country in that a special committee has been functioning for several months in co-operation with the Government. It is not thought that it will be necessary to appoint special committees in the four regions named, as virtually all of the coal in such fields has been contracted for for a long time and the operators of those fields have been taking care of the needs of nearby towns and have also contributed liberally to cities in Virginia and the Carolinas as well as furnishing their share of coal for the Government. Pocahontas operators are considering the situation and will determine later whether the necessity exists for a fair-practice committee.

Retail Association Repudiates Profiteers

The National Retail Coal Merchants' Association recognizes that coal prices are necessarily high, but that some are too high. While admitting that, unfortunately, there are a few undesirables in the coal trade, the organization repudiates them, announcing that any complaint which proves upon investigation to be justified will result in can-

cellation of membership, so far as that organization is concerned, and denial of all benefits or protection.

In indorsing the action of the conference at Cleveland, the retail merchants' association reiterated the following from a declaration of principles adopted at their annual convention in Detroit, June 12, 1920: "The merchant who stoops to take unfair advantage of consumers by profiteering in seasons of great demand or in other emergencies has no honorable place in the business world, and is hereby declared undesirable as a member of the National Retail Coal Merchants' Association and its affiliated associations."

Sales Realization $3.44 a Ton; Margin, 74c.; Suspend Trade Commission Bulletin

IN ISSUING its sixth monthly bulletin on bituminous coal costs covering June, 1920, the Federal Trade Commission on Nov. 1 announced the suspension of its publication.

The average sales realization of the 555 operators reporting to the commission for June was $3.44 per ton; total reported f.o.b. mine cost was $2.70. Of the latter amount $2.02 represented labor costs per ton; 31c. the cost of supplies, and 37c. general expense (or overhead). The difference between the sales realization and the f.o.b. mine cost per ton is the "margin," which was 74c. per ton. The commission emphasizes the point that the "margin" is not the same as profit.

The commission also points out that these average figures for companies in all parts of the country should not be considered applicable to any one region or district because of marked variation in costs and sales realizations due to quality of the coal and market conditions. The bulletin, therefore, gives figures for six general competitive regions of the country and also for sixty-eight of the seventy-four districts in twenty-four coal-producing states.

Comparable information is shown for the first three months of 1920 and the year 1918, and also for May, 1920. The number of identical operators covered in the comparison between June, the first three months of 1920, and the year 1918 is 448, and 535 identical operators are covered in the comparison of June with May. The average working time of the mines of the 535 operators in May was only seventeen days as against nineteen in June. The sales realizations of the 535 operators increased from $3.23 per ton in May, 1920, to $3.43 in June, while their total reported f.o.b. mine cost decreased from $2.72 per ton to $2.69, and their resultant margin consequently increased from 51c. per ton in May to 74c. in June.

The increase in reported cost of the 448 operators in June, 1920, over 1918 was 30 per cent, while their production in June fell 12 per cent below their average in 1918. Their absolute amount of reported margin in June, 1920, was 47 per cent more than in 1918, though the commission warns that the amount of investment may have been appreciably different at the two periods, that the month of June is usually more favorable than the average month for production at low cost, and that the 448 operators may not be representative of those that did not report.

On the other hand, in twenty-one districts (principally west of the Mississippi) 114 companies reported lower margins per ton in June, 1920, than in their average month in 1918, and as a group produced less coal (1,523,060 tons in June as against a monthly average of 1,886,000 in 1918). These twenty-one districts were: Alabama No. 1 (Big Seam) and No. 4; Arkansas, Excelsior-Logan; Colorado, Lignite; Illinois, No. 1; Iowa, all districts; Kansas, all districts; Kentucky, No. 2; Missouri, all districts; Montana; New Mexico, all districts; Oklahoma, all districts; Texas, bituminous; West Virginia, Kanawha; and Wyoming.

The increase in total mining cost in June as compared with the first quarter of 1920 and with the average for 1918 is explained as chiefly due to decreased production in June as compared with the other two periods and the two awards increasing the wages of mining labor, one of 14 per cent effective in November, 1919, the other of 27 per cent (including the previous 14 per cent advance) effective April 1, 1920.

Coal Exported in September

EXPORTS of bituminous coal from United States, as reported by the Bureau of Foreign and Domestic Commerce, reached a total of 4,011,424 gross tons, a decrease of nearly 100,000 tons from August. Canada, the largest importer of our coal, is shown by these figures to have received 1,763,246 gross tons in September compared with 1,867,006 tons in August, and the decrease is, therefore, in shipments to that country, and not in sea-borne shipments.

Shipments to Denmark fell off nearly 100,000 tons, while those to France more than doubled, nearly half a million tons having been shipped to France in September.

Countries	Anthracite — Gross Tons	Anthracite — Value	Bituminous — Gross Tons	Bituminous — Value
Azores and Maderia Is.	....	.....	2,491	$37,372
Belgium	....	.....	24,101	305,608
Denmark	....	.....	176,531	2,600,476
Finland	....	.....	6,071	94,100
France	5,278	$99,494	449,704	5,960,274
Germany	....	.....	7,777	116,600
Gibraltar	....	.....	20,011	225,318
Greece	12	180	30,216	393,469
Italy	....	.....	150,580	1,487,921
Netherlands	7,079	45,000	290,786	4,367,905
Norway	....	.....	90,937	1,324,776
Portugal	....	.....	8,364	76,721
Sweden	3,506	27,860	144,502	1,825,858
Switzerland	....	.....	51,667	754,109
Tuckey in Europe	....	.....	20,573	285,905
Bermuda	....	.....	1,643	13,883
British Honduras	....	.....	46	534
Canada	297,064	2,901,275	1,763,246	11,844,456
Guatemala	1	40	1	24
Honduras	....	.....	1,782	16,172
Nicaragua	....	.....	134	1,205
Salvador	....	.....	2	35
Greenland	....	.....	402	6,432
Mexico	428	5,158	15,847	114,028
Newfoundland and Labrador	861	9,444	6,259	81,122
Barbados	....	.....	3,179	32,590
Jamaica	....	.....	11,119	107,269
Other British West Indies	....	.....	5,121	57,382
Cuba	4,177	55,413	125,156	1,532,579
Dutch West Indies	....	.....	11,454	127,775
French West Indies	6,284	116,244	5,311	68,902
Dominican Republic	....	.....	2,040	36,720
Argentina	98	1,819	276,680	3,551,431
Brazil	....	.....	135,561	1,761,025
Chile	....	.....	38,007	529,196
Colombia	....	.....	1,334	11,666
British Guiana	....	.....	2,848	22,930
Dutch Guiana	....	.....	200	1,610
Peru	....	.....	3,012	45,187
Uruguay	....	.....	48,549	796,069
Russia in Asia	....	.....	3	84
New Zealand	....	.....	5,996	95,936
Canary Islands	....	.....	2,092	41,840
French Africa	....	.....	12,581	201,087
Egypt	446	7,146	57,408	663,062
Totals	325,234	$3,269,073	4,011,424	$41,618,670

Urge Supreme Court to Advance Hearing of Lambert Run Appeal

THE U. S. Supreme Court was requested by counsel for the Lambert Run Coal Co. on Oct. 25 to advance for early hearing its case against the Baltimore & Ohio R.R., from the Circuit Court, Fourth Circuit, which involves the construction of paragraphs 12 and 15 of the Interstate Commerce Act, covering distributive share of mines in the matter of coal cars. It is pointed out that because of conflicting opinions of lower courts as to whether a statute or a regulation of the I. C. C. governs, early action should be had by the court on the interpretation of the matter in view of its public importance.

Strike in Northern Colorado Coal Fields

APPROXIMATELY 2,000 mine workers in thirty northern Colorado lignite mines walked out last Thursday to compel the operators to recognize the union. This cut off about 75 per cent of the coal needed for Denver's daily consumption.

The State Industrial Commission is investigating to find out who is to blame for this strike, which is alleged to be in violation of the law that requires thirty days' notice before a suspension of work. A daily fine of $50 must be paid by those who violate the law, and fear of consequences is causing several hundred strikers to leave for Wyoming and Utah. The men want not only union recognition but a 20-per cent increase for daywork. This the companies are ready to consider.

British Make Scale that Slides Up and Down with Output of Coal

SETTLEMENT of the big coal strike was reached Oct. 28 between the representatives of the government and the strikers, but not until the result of the ballot of Tuesday, Nov. 2, is reached can it be told whether the mine workers themselves will accept it, though endorsement is expected with a resumption toward the end of the week.

The agreement reached gives the miners an immediate increase in wages of two shillings (or 48.7c., at standard rates of exchange) per day. A plan is provided for an investigation of wages throughout the industry with the purpose of a complete reclassification by March 31, 1921. Thereafter wages will be fixed by a national wage board which will arrange a sliding scale that takes into consideration not only the output of the mines but the profits of the business, giving the workers a share in surplus profits. A lot of elaborate machinery is provided for adjusting wages between the present date and March 31, 1921. Many possible contingencies are taken into consideration in the terms of the suggested contract.

It is arranged that both coal operators and mine workers shall be penalized if the tonnage of last September is not maintained; the coal operators by a reduction in the 10 per cent share of the surplus profits and the mine workers by a reduction of sixpence (12c.) a day in wages, if the output does not come up to the September figures. There will be a reward of sixpence if the tonnage is exceeded, but apparently this is not distributed so broadly as the penalty, for there is nothing said as to an award to the mine operators should the output be exceeded.

The mine worker has been a chronic absentee, but he has quite generally thrust the blame for low tonnage on the operator. The workingman complains that as he cannot control the machinery he should not be held responsible for the output. The British operator, like our own, is said to be restricting output, probably with as little reason.

Every increase of £228,000 above the revenue derived from mining in September is to entitle the mine worker to a rise in wage of sixpence. No fractions of £228,000 are to be considered as justifying an increase. The wages will be automatically adjusted Jan. 3 and again on Jan. 31 and thereafter every four weeks following the previous test period.

Following Lifting of Service Order No. 10 Buyers Ask Price Concessions at Lakes

AFTER nearly a week of anxious waiting the Interstate Commerce Commission on Wednesday, Oct. 27, suspended indefinitely Service Order No. 10, generally known as the Lake priority order. Although far from the 30,000,000 tons of Lake coal so urgently demanded by the Northwest last spring can be shipped this season the condition of the market at Lake Erie ports and the requirements of the Middle West for domestic fuel have become such in the last ten days that the commission indefinitely suspended the order. It is understood that the dock operators are generally of the opinion that they have sufficient mine-run coal on hand or under contract for this season and they have lately been fearful that under a continuance of the priority order docks would be overstocked with slack and a repetition of the condition experienced last winter is far from their liking.

The fact that the railroads in the Northwest have purchased so heavily from Illinois is one of the reasons for the decrease in demand for Lake coal and for mine-run coal in particular. Accumulations at lower Lake ports up to the time of the suspension of the order were such as to cause a general feeling of uneasiness and a fear that H. M. Griggs would find it necessary, in his capacity of manager of the exchange, to embargo shipments from the mines. It is generally understood that Lake coal buyers will absorb all the prepared coal that will be offered the remainder of the season but that price concessions are being sought. The I. C. C. issued the following statement, announcing the suspension of the Lake order:

The Interstate Commerce Commission today suspended, until further order, its Service Order No. 10, entered July 20, 1920. That order was designed to give a preference in the use of coal cars to Lake Erie ports with the primary object of conserving equipment and movement needed to get an adequate supply of bituminous coal to the Northwest, by requiring a full utilization of the rail and lake routes during the season of open navigation. Simultaneously and continuously, a vigorous effort has been made to increase the supply of cars available for the loading of coal, which has been so successful that while during June the ratio of cars supplied to cars ordered was 62.2 per cent., it was in July 74.7 per cent, August 80 per cent and September 85.6 per cent. The following statement shows the daily average number of cars at the ports, and of cars dumped:

	Average at Port	Average Dumped
July	5,617	2,198
August	9,212	3,457
September	7,670	3,288
Oct. 1 to 26	9,412	2,868

The demand for coal at the Lake Erie ports for transshipment by water to the head of the Lakes is now less than at any time since Service Order No. 10 was promulgated. As a result there are extensive accumulations of coal at these ports and a large volume en route. Up to Oct. 26 there had been actually dumped into vessels at the lower Lake ports 18,572,518 tons, with 580,000 tons in cars at the ports awaiting dumping and approximately the same amount en route. We are assured that the customary lake suppliers will continue to ship their commitments to the lower Lake ports for transshipment without preference order from the commission. This year an unusually large amount of coal has already been moved to the Northwest by the all-rail lines. The production of coal and car supply have been considerbly increased and are now considered ample to take care of the Northwest without a special priority order.

There is a shortage in the Central territory of coal for domestic use for which additional transportation must be supplied before cold weather sets in. The suspension of Service Order No. 10 should enable the mines and railroads to take care of that territory promptly and fully, and will make more fluid the movement of traffic throughout this territory, and also enhance the general car supply. Notice of the situation was given by the commission to representatives of the Northwestern States and to interested parties, and no information has been received from them which indicates that the continuance of the order is now essential.

The situation will, as in the past, be carefully watched, and should occasion appear for the further exercise of the commission's emergency powers, such action will be taken as the facts warrant.

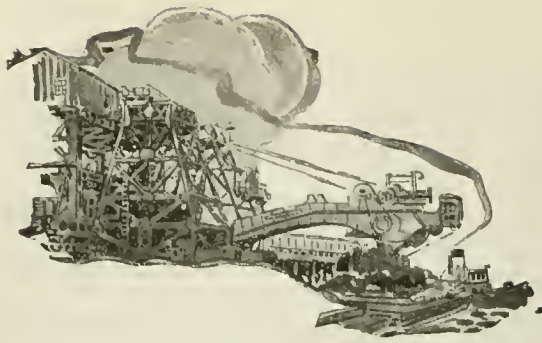
As illustrating the improvement in the coal situation, attention may be drawn to the fact that since Oct. 15, it has not been found necessary to issue a priority order for any public utility or governmental agency, as the needs of such institutions have been taken care of out of the current car supply. The withdrawal of Service Order No. 10 leaves in force no priorities, except the general priority of coal over other traffic moving in open-top cars suitable for coal loading, and about 170,000 cars have been specially released from that priority order for the movement of building and road materials, and certain perishables such as sugar beets.

At a session of the Interstate Commerce Commission, Division 5, held at its office in Washington, D. C., Oct. 27, 1920, the following amendment to Service Order No. 10 was issued:

It appearing that present conditions so warrant and require:

It is ordered that the operation of Service Order No. 10, made and entered July 20, 1920, as amended, be, and the same is hereby, suspended until the further order of the commission, effective at midnight of this day, except as to coal delivered to a carrier for transportation and billed before that hour.

It is further ordered that copies of this order be served upon the carriers described in said Service Order No. 10 and that notice of this order be given to the general public by depositing a copy hereof in the office of the secretary of the commission at Washington, D. C.



Production and the Market

Weekly Review

LOOKING ahead of the present with its record output, fair-price and fair-practice committees, declining markets and general uncertainty, there is plainly discernible in the near future a period of slack demand for bituminous coal. The largest factor contributing to this situation is the recuperation of the railroads. The struggle for increased output of soft coal that began last April has had many setbacks throughout the summer, but has finally culminated in a performance of 2,000,000 tons a day throughout October with what amounts to a certainty that the railroads can now keep up this pace as long as may be necessary. Whether big production and ample supply or the fair-price movement started by Attorney General Palmer, or both, are responsible, prices are rapidly getting back to a steady base.

Present Needs Can Be Met in East and Midwest

The lifting of the Lake priority order will result in coal being available in sufficient quantity for immediate needs at practically every point in the Middle West and the north Atlantic States, as it is estimated that fully two thousand cars of coal daily have been released by the raising of the Lake order. There still is some nervousness among public utilities companies, but few emergencies have developed. A large number of public-utility companies were without contracts other than those made for assigned cars, which of course are now inoperative.

It is understood that there is no intention of resuming the permit system for the use of open-top cars for the use of industries other than coal, and that other industries will have to wait for cars until the coal situation is entirely cleared up.

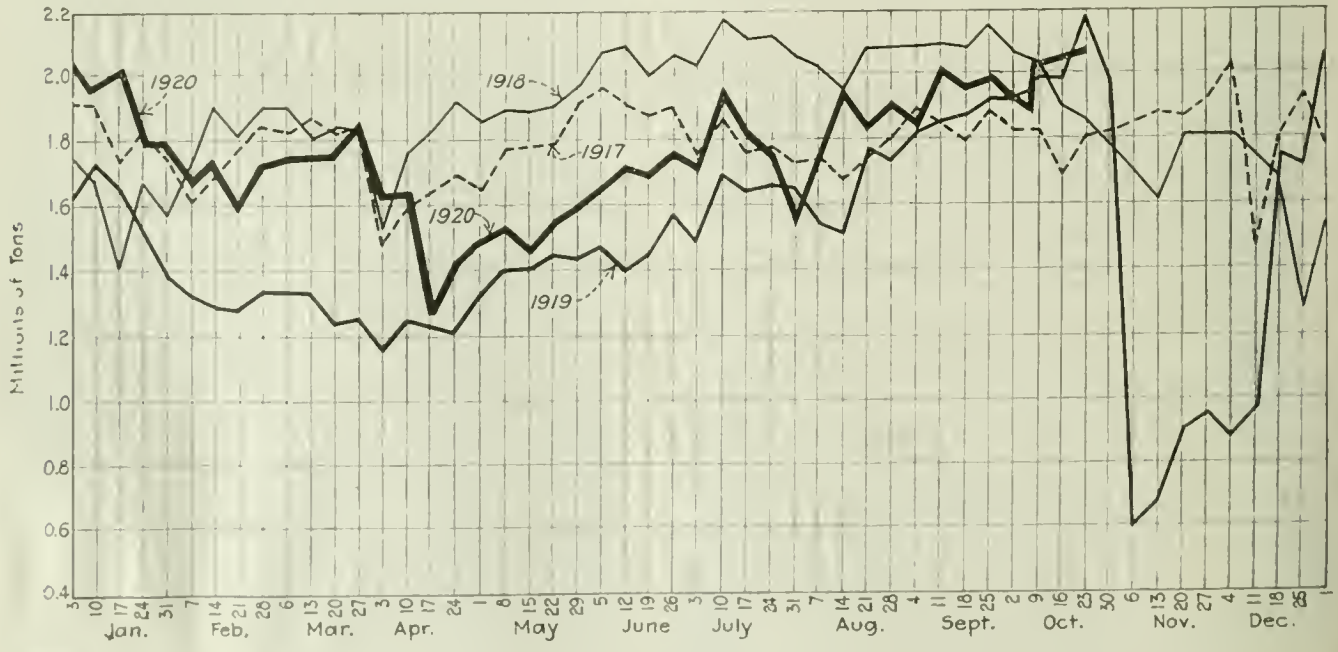
BITUMINOUS

For the third week in succession production has exceeded the 12,000,000-ton mark. According to the Geological Survey, the output for the week ended Oct. 23 was 12,146,000 net tons, an increase compared with the preceding week of 45,000 tons and with preliminary reports indicating the same high rate the last week of the month. Production this year to date is now only 8,500,000 tons behind that of 1917.

The labor situation is good, losses from this source having decreased rapidly. Labor is returning in large numbers to coal mining from other industries where it had been lured by the fancy wages paid until recently. In the Thacker and Alabama strike sections production is steadily mounting with the return of old workers and an influx of new men, and in the face of fresh intimidating practices on the part of Thacker strikers. The eastern Ohio section is still disturbed, the men being dissatisfied over results of the recent strike and giving only very indifferent service. A few minor troubles and an indolent labor attitude are reported in the Belleville district. A strike is in effect in the Colorado lignite field, endangering the domestic coal supply of Denver.

A slow return movement of empties from Western points and congestion at Lake ports caused a shortage of cars in some sections of the northern and middle Appalachian regions. However, the supply was greatly improved, as a

Average Daily Production of Bituminous Coal*



*From weekly report of Geological Survey

Lake Coal Dumped Season to Nov. 1

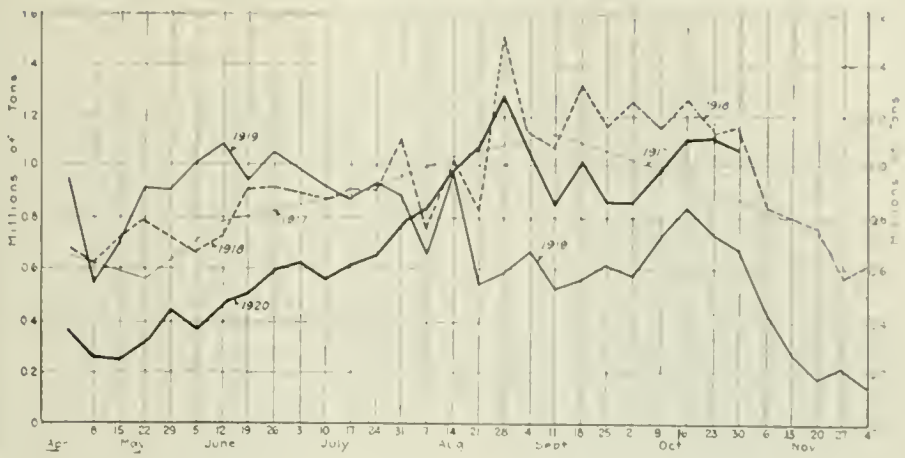
(NET TONS)

	1919	1920
Total	21,890,084	20,043,275

Week of Nov. 1, 1920

Cargo	1,037,678
Fuel	43,597
Total	1,081,275

Weekly Dumpings, Bituminous Coal at Lake Erie Ports



whole, compared with the preceding week. The Midwest section had the best placement in many weeks although late reports show the car supply is again declining to about 60 per cent. Alabama mines had an adequate supply for all available output not affected by the strike. Kentucky operations are still hampered by the poorest supply of any section in the country, in some parts of the state producers getting only 30 per cent placement.

Prices declined sharply in the week ended Oct. 23. At the meeting in Cleveland operators took definite action toward lowering unreasonably high prices and discontinuing unwise practices in marketing bituminous coal. A general contraction of manufacturing activity also is having a decided effect on current demand.

Prices Weaker in Principal Markets

Fairmont quotations are unchanged—$6@$6.50 to conform to fair practice recommendations. The Pittsburgh district is greatly weakened; steam $6 and by-product $7@$8. Pittsburgh No. 8 market is softer, ranging $5.50@$6.50. The New York market is weaker, with steam quoted at $7.75 and ranging up to $9.75@$10.50 on the various pools. Philadelphia export market is $14@$14.50 f.o.b.; steam has declined to about $8.50; Pool 34 is $8. Baltimore quotations are firm at about $10. Lake price is greatly reduced to around $5.50@$6. Columbus quotations show Hocking $4.50@$6.50. St. Louis prices are: Standard and Mt. Olive, $4@$4.50; Carterville, $4@$5.50 and independent quotations up to $8. Louisville quotations are firm, $6@$8.50 with decline seen in greatly weakened demand. Alabama steam coal is off, domestic conforming to prices fixed by the state fuel administrator. Boston reports a very general slump in demand. Prices have been reduced to $7.50@$9.

Cars of bituminous coal dumped over Tidewater piers for the week ended Oct. 23 numbered 27,596, as shown in the following table:

Week Ended	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Total
Oct. 2	9,121	3,673	4,197	8,872	498	26,361
Oct. 9	9,304	4,188	4,242	9,587	376	27,697
Oct. 16	8,565	4,061	5,176	8,328	227	26,357
Oct. 23	9,856	4,194	4,675	8,531	337	27,596

According to the Geological Survey, Tidewater dumpings reached the high figure of 1,375,000 net tons. New England shipments still further declined and exports decreased somewhat. Bunker coal, however, increased 41 per cent, attributed to increased demand accompanying the British coal strike. The tonnage handled at Tide was destined as follows:

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Total Dumped
Coastwise to New England	75,000	14,000	26,000	79,000		194,000
Exports	1,000	125,000	186,000	340,000	12,000	664,000
Bunker	122,000	19,000	24,000	83,000	2,000	250,000
Inside capes		42,000	21,000	11,000		74,000
Other tonnage	175,000	3,000		15,000		193,000
Total	373,000	203,000	257,000	528,000	14,000	1,375,000

All-rail movement to New England recovered again during the week ended Oct. 23, when 5,532 cars were forwarded through the five gateways, as compared with 5,163 cars during the preceding week.

Service Order 10 was temporarily suspended Oct. 27, when it became apparent that the Northwest could not absorb the heavy volume of tonnage allotted to it. On Monday preceding the suspension, 4,600 cars were loaded for the Lakes while accumulated cars at lower ports were reported at 11,666 on Oct. 28. Release of a considerable tonnage heretofore shipped on Order 10 will materially aid the domestic situation, although the sudden suspension caused some confusion to shippers trying to place this unexpected free coal. Docks at the Head-of-the-Lakes are reported as well up on run of mine, but willing to take a considerable tonnage of lump. The matter of price has become an issue, as dock companies hesitate to stock at figures which they feel will be materially reduced in the near future. Shipments to the Lakes during the period ended Oct. 30 were 1,081,275 net tons.

ANTHRACITE

Unbroken increase in shipments continued during the week ended Oct. 23, when 1,915,000 net tons were loaded as compared with 1,855,000 tons for the preceding period. Prices are firm, one large producer even advancing his quotations slightly. Independents continue to command premium figures. Demand is stronger than ever, while immediate diversion of a considerable supply to the District of Columbia is being urged. The fact that a shortage exists in the capital is giving the trade some concern and considerable pressure is being brought to bear to relieve this condition.

Anthracite Scale To Be Virtually Reopened

Miners' demands were presented by officers of the U. M. W. when operators and representatives of the mine workers met in Philadelphia, Oct. 26. These demands really amount to a reopening of the award and are quite a different thing from adjusting any inequalities of that award. It would seem that the present time is an illogical one to seek increased wages, with general price recessions on many commodities under full headway and while labor is less actively employed. Owing to the broad nature of the propositions an adjournment of the meeting was taken until Nov. 5.

COKE

Production declined slightly during the week ended Oct. 23, apparently because of slackening demand. The total output is estimated by the Geological Survey at 389,000 net tons, or a decrease of 14,000 tons, compared with the preceding week. Every district shared in the decrease.

Prices declined sharply, Connellsville furnace being quoted $10 and foundry $15. Still further declines are seen in the sluggish market; several furnaces are banking or blowing out and "discontinue notices" on requirement contracts are common.

Reports From the Market Centers

New England

BOSTON

Market Softens Perceptibly—Operators Eager for Spot Orders—Prices Likely to Recede Further—Bunker Grades Available in Less Volume at New York and Philadelphia—Rail Movement Continues to Decrease — Anthracite Domestic Sizes in Heavy Demand.

Bituminous—The past few days have witnessed a notably easier market for spot shipment, particularly medium and fair grades. Prices have weakened to the slack demand and there is an amount of fine tooth canvassing, such as the trade has not seen for many months. There is only a scattering inquiry for the most part on behalf of small plants and retail dealers. Many of the latter have accumulated stocks at higher prices and even they are making every effort to sell. The forecast today is for an extremely dull market for weeks to come.

Operators in central Pennsylvania are importuning their agencies by wire to move coal. Frequently of late cars have been loaded in advance of sale and in consequence an increasing amount of business is being done on offers.

Spot quotations are still well above contract figures although operators are just now passing to the consumer the cost of the wage increases. The cost of this at different operations varies from 20c.@30c. per net ton. It is well within possibilities, however, that there will be a marked slump in prices of the ordinary grades. Offerings are free at $7.50 and producers will not stop at that figure if it is a question of keeping mines in operation.

Pier reports show less high grade, low-volatiles available for bunker and export. In fact, prices on the more favorably known grades are relatively firm; $8.75 has been paid for Pool 10 within a few days and the range seems reasonably well maintained. Both at New York and Philadelphia there are cargo and bunker ships waiting sometimes for several days while special grades are accumulated.

Receipts at the Hudson River gateways as well as by water show a gradual decrease. Not only have manufacturers ceased buying, but they are actually at the point of declining deliveries on contract even when the shippers record hitherto this season has been unexceptionable. In this connection is is interesting to note that consignees in Boston & Maine R.R. territory have been embargoed in the aggregate 85 working days since April 1.

Quotations on bituminous at wholesale range about as follows:

	Clearfields	Cambrias and Somersets
F.o.b. mines, net tons	$7.00@ 8.00	$7.75@ 9.00
F.o.b. Philadelphia, gross tons	10.49@11.61	11.33@12.73
F.o.b. New York, gross tons	11.00@12.10	11.80@13.20

Anthracite—There is no abatement in the demand although it is foreseen that an easier situation is not so many weeks ahead. Retail dealers, in their exertion to meet popular demand, have filled a great many cellars through a free buying policy, taking coal at any price offered, and some time not late in the winter they will have accumulated all the odd sizes like chestnut and pea that there is any prospect of moving. This has regard, of course, for points where shipments this season have been fairly liberal and where it will be feasible to ship through December and January.

Certain of the steam sizes show a falling off in demand. This was only to be expected with the reversal of form suffered by the bituminous market. A widening market has been made for these coals, however, and more and more consumers are giving the use of them some study.

Tidewater

PHILADELPHIA

Retail Yards Continue Short — One Large Company Slightly Relieves Situation — Bituminous Local Trade Is Easier—Export Tonnage Big, but Permit Restriction Causes Drop in Gas—All Prices Tend To Shade Off.

Anthracite—Shortage of coal in the retail yards continues and the only real change has been on the part of one of the largest operating companies, who on a few days this week made a distribution of a limited number of cars.

The retail trade reports that the demand made by consumers grows from day to day, despite the remarkably warm weather that has been experienced throughout the month of October. The consumer is also upset by the reopening of the wage conference and the report that the men will insist on 10 per cent more or stop work. If an increase in wages is allowed it is taken for granted that another boost in the retail prices will be in order and the public are wanting assurance that their orders will be filled without increasing the price. While there are varying retail prices throughout the city a good average at this time is $15 a gross ton for stove and nut, $14.50 egg and $12 pea.

There is nothing new to record in the steam trade, the demand for buckwheat and rice being fully up to the production. Most of the company buckwheat is selling for $4.10@$4.25 to the regular trade, no one being willing to take on new business. Individuals are still able to get a premium of $1@$1.50 on this size. Among the latter rice is selling about 50c.@75c. higher than company figure of $3. Barley can be had from all shippers at $2.25.

One of the largest producers increased the price of stove 10c. at mines to $7.95 and pea 15c. to $6.25, effective Oct. 21. All prices are still quoted as subject to change without notice.

For November, prices per gross ton at mines for line trade and f.o.b. Port Richmond for Tide are as follows:

	Line.	Tide.
Broken	$7.35	$10.05
Egg	7.60	10.25
Stove	7.95	10.60
Nut	7.95	10.60
Pea	6.25	8.65
Buckwheat	4.10	6.50
Rice	3.00	5.40
Boiler	2.50	4.90
Barley	2.25	4.65
Culm	1.50	3.90

Bituminous — With production approaching normal there is certain to be a softening in demand, which is quite evident in the local market at this time.

Of course, the British strike has done much to hold prices firm, although with port facilities working to their full capacity it cannot mean much in the way of increased business. It begins to look as if the export trade will be the real backbone of the coal business, where once it was merely an incident. Most of this business is being taken at $14@$14.50 at Tide, per net ton.

In the local trade there is very little interest shown by the consumer to take in more coal than sufficient to meet current demand, plus moderate stocks. The hesitancy to buy has been particularly pronounced during the past week and is no doubt due to the Cleveland meeting sending forth the news that lower prices will likely prevail. On the best grades of Pennsylvania steam the prices have run $9@$9.50, while some of the good coals were being offered around $8.50, with some very ordinary coal at $8. Wagon mine coal in box cars has recently been offered around $7 and it would appear that this grade is fast approaching the point where it will be eliminated on account of production cost.

Export trade is in a way again feeling the restriction of permits, although this will not be felt in fullest force until another week, as heavy tonnages on former permits are now in transit. However, the fact that permits were more difficult to get had an almost immediate effect on the gas coals, and a price of $8 was pretty generally in effect on spot deliveries, such as Pool 34, although from the Southern territory the price was at times $1.50 stronger. Puddling coals, such as Greensburg, were also affected, these generally ruling $7.75@$8.

NEW YORK

Increased Anthracite Shipments Put Trade in Better Frame of Mind—Situation Is Slowly Clearing—Considerable Reliance Is Placed in Conditions at End of Lake Season—Demand for Bituminous Slow—Quotations Fluctuate—Bunker Coals in Strong Call.

Anthracite—With receipts showing a gradual increase and weather conditions remaining ideal the outlook is better than a week back. Demand continues urgent and dealers are distributing their coal carefully. Instances of where consumers have none in their bins are gradually disappearing.

At this time when certain industries are curtailing production, the reopening of the wage agreement and the new demands of the mine workers interest the trade and make most consumers feel uneasy.

Retail dealers have no difficulty in inducing customers to take any one of the prepared coals in case the size requested is not in stock, some dealers going to the trouble of delivering a few hundred pounds at a time.

Considerable reliance is being placed on the assurance that receipts after Lake shipments will have been ended will be sufficient to supply the market. At the same time it must be remembered that cities situated like Buffalo are in need of fuel and must also be taken care of. With the absence from the newspapers of glaring headlines depicting a near-famine in coal the public has quieted and is not now rushing to the retail yards for coal.

The demand on the smaller independent producer is not so strong. Retailers are not falling over themselves to get this coal at high prices. Those independents who have been asking the usual advance over the company schedules continue to easily dispose of their holdings. Quotations for the product of the smaller operators show a lower trend.

The steam sizes, with the exception of barley, are in good demand. Buckwheat ranges $6 50 at the mine; rice $4 @$4.25 and barley $2@$2.25. No change in price schedules from last week.

Bituminous—The local situation is comparatively quiet. There is plenty of coal coming forward to meet all urgent needs but consumers are not buying heavily. Many are waiting for lower prices as a result of the Cleveland conference while others point to full bins and believe there is a slump due.

Efforts of some shippers to obtain permits for assigned cars for some customers early in the week elicited the information from Washington that cars were not now being assigned but that efforts were being made to supply everyone. Car supply has taken a backward turn, some of the mines receiving about 50 per cent last week.

Early in the week reports from the regions were that the $6 mark had been reached. Quotations as low as this figure were not heard here. Some grades were quoted $7.75, but these were only temporary. There has been a considerable changing of quotations during the week.

There is considerable coal moving for bunker purposes. The demand for export keeps going, a heavy cut in freight rates to Dutch ports being reported the middle of the week.

The Navy Department is receiving considerable coal over the local docks for down East shipment, this somewhat delaying the handling of coal for local delivery.

Toward the close of the week quotations at the mine for Pool 9 ranged $9.75@$10; Pool 10, $9.75@$10.25; Pool 11, $9@$9.25 and Pool 34, $9.75@$10.50.

At Tidewater, quotations were heard of Pool 10, $14.50@$14.75 f.o.b. docks, and $13.75@$14 for Pool 11.

BALTIMORE

Market Remains Fairly Firm on Best Grade Bituminous—Reports of Breaking Price From Other Quarters—Records Being Smashed by Export Business—Hard Coal Trade in Whirl Over Price at Mines.

Bituminous—In the face of reports from various sources that a break has come in soft coal, the trading here has remained comparatively firm. This is specially true of the best grade coals, which are still commanding $10 or better. That lesser grades are breaking somewhat is sure, however, and a rapid decline in this respect is looked for by many of the coal men here.

The strictly local situation is probably bolstered by the remarkable demand for export and bunker. In the former a new element was added the past week by the diversion to this port of a number of general cargo ships with orders to load coal for England because of the strike there.

From present prospects the total cargo loading at this port for foreign delivery for October will run close to 600,000 tons, the greatest by over 100,000 for any one month in the history of the port. For the first three weeks of the month the official figures show a loading of 470,000 tons. Since that time the daily average has been increased, and on last Monday the B. & O. pier at Curtis Bay broke its daily record for loading, when the pier dumped 1,082 cars.

Anthracite—The retail trade here is in a whirl over prices, due to the recent announcement of one of the largest dealers that he could not get coal without paying a premium of about $3 at the mines and would therefore increase his prices to $17 for popular sizes, or $1.50 a ton above the schedule observed by members of the Baltimore Coal Exchange. The public is apparently not blaming the retailer, especially as he advised his customers "not to buy at the outrageous rate unless absolutely forced to do so," but there is a growing demand for some plan for equalization of hard coal selling at the mines which would protect against excessive premium charging.

Meanwhile, because dealers are in many cases refusing to buy the higher priced coal, very little supply is coming in. The dealer who raised prices to $17 for instance, announced that he still had 15,000 tons of orders on the books.

Lake

BUFFALO

Prices Slump Further — Cars Are Fairly Adequate and Labor Is Better —Anthracite Demand Is Unabated.

Bituminous—Just now prices seem to be dropping faster than ever. The Cleveland meeting of the National Coal Association seems to have broken down the last stand for high prices. Some startling figures have been made inside of a day or two, slack refused at $5.50, gas coal at $6, and the like.

It is now confidently expected that cold weather will see still lower prices instead of higher, if only because the decline has been delayed by the efforts of the seller, when the logical condition was for the bottom to have been reached months ago.

Pittsburgh lump sells for $7.50@$8 with slack $2 lower and mine run fluctuating all the way between the extremes. Youghiogheny gas is $10. All genuine gas coal, as well as smithing, is very scarce and smokeless is practically out of the market.

There are still some strikes in the Allegheny Valley and neighboring districts, but they are generally of a local character. The trade believes that it is not the policy of the miners to enter on any general strike, though they are still more or less restless and ready to take offense. The amount of coal produced appears to be in excess of consumption, which can have but one tendency.

Car supply is good and a surplus in most lines of the carrying trade is now reported to be accumulating. At the same time the big freight yards are generally cleaned up, showing that more efficiency has taken the place of more cars.

Anthracite—The demand is if possible more insistent than before, but the supply does not increase and is not expected to now. It is sufficient to last till the Lakes close. The retailers seem to have been careless or discriminating, for there are plenty of consumers with little or no coal, while many others have a winter's supply.

It seems as if the average consumer is bound to do the wrong thing or at least to listen to the wrong adviser. At any rate he gets the idea that there is not going to be coal enough for everybody and that if he gets any he must do something unusual, either tease his coal out of the regular retailer or pay an exorbitant price for it.

Lake—Shipments for the week were 92,300 net tons, of which 4,500 tons cleared for the Canadian "Soo," 14,500 for Milwaukee, 15,200 for Fort William, 22,800 for Chicago and 25,300 for Duluth and Superior. Vessels are so eager to go after wheat that coal shippers are short of tonnage. Rates are 60c. to Duluth, Fort Williams; 75c.

to Milwaukee, 85c. to Chicago and $1.50 to the Soo.

Coke — Prices have come down sharly, mostly on account of the decline of coal. Standard 72-hour Connellsville foundry sells to jobbers at the ovens $14.50@$16; furnace $13@$14 and stock and off grades $11@$12. Domestic sizes are scarce at $9 for chestnut and $5 for pea.

MINNEAPOLIS

Suspension of Lakes Priority Follows Congestion at Lower Ports—Jobbers Unwilling to Accept Coal at Higher Prices — Shortage Feared with Approach of Winter.

The recurring hints of reduced prices have resulted in a cessation of buying at the Lower Lake ports. As a result, there was a quick piling up of coal sent there under priority order, which speedily began backing up and threatened congestion. The situation immediately brought down the wrath of those sections which had been barred by the priority order and the suspension of Service Order 10 followed. The Northwest was accused of failing to take the coal for which it had been so strenuously laboring.

The rumor of lower prices, with soft coal selling at retail up to $15 in the Twin Cities, was a most alluring one, and very easy to believe by those who wished for cheaper coal. No one wanted to be caught with high-priced coal on hand. Orders fell off while awaiting development of the longed-for decline.

Judge McGee, who is the fuel commissioner for Minnesota, stated that consumers who wanted to be assured of coal for the winter must be prepared to pay the going price now. He pointed out that the remainder of the period of navigation was short and after that Eastern coal must come by rail. He added that the railroads of the Northwest had diverted their buying to the Illinois fields, where they could get coal on their own cars and in some instances hauled by their own locomotives, but that the ordinary consumer would have to take his chances of getting the same kind of coal after the railroad orders had been filled.

The whole situation is most unfortunate to develop at almost the close of navigation. The month of November is all that remains in which to load at the Lower Lake ports. Any delay in loading now means simply that much less tonnage for the docks. It is impossible to say whether there will be lower prices. Until the demand subsides or is filled, the high prices seem likely to be maintained by force of circumstances. A small decline made now would be more than absorbed in the greater freight charges which would accrue from having to ship coal all-rail from the Eastern mines. This has been done before, but it means a heavy cost under the prevailing freight charges.

A change to colder weather accompanied by snow in some parts of the interior, had the effect of starting anew the demand for coal to the country, which will speedily help out the accumulation at the lower ports. In the meantime, valuable time has been lost and cannot be made up this season.

Many points in the interior of the Northwest have not had any coal shipped in for months. Some have had a single car or so, several weeks ago, but have not touched anywhere near their usual quantity for this date. When cold weather forces action in moving coal, it will soon show how long the limited dock supplies will last into the winter. Some members of the trade expect to see the stores on the docks down to almost nothing before December is over.

MILWAUKEE

Market Is Quiet and Steady, with Prices Firm—Impending Investigation Causes Some Uneasiness — Winter's Outlook Is Somewhat Improved.

Consumers hope for a slump in prices and many are holding back their orders, but dealers say there is no chance for a drop under prevailing circumstances. Wholesalers are disturbed over the coming investigation of coal conditions and prices by the state authorities. Attorney-General John J. Blaine has received complaints that handlers of soft coal are retaining stocks in their yards in order to accentuate the shortage idea and keep prices on the uward grade. This condition may obtain at points back in the state, but it is not apparent in Milwaukee.

United States District Attorney H. A. Sawyer rules that the holding of coal on track or in the yards in expectancy of a raise in prices constitutes a violation of the Lever act and will invite prompt action by the Federal authorities. Milwaukee coal men say they invite investigation.

Receipts of coal by Lake thus far in October foot up 112,556 tons of anthracite and 313,638 tons of soft coal, making the season's receipts 696,202 tons of the former and 1,780,038 tons of the latter. The port of Green Bay has received 453,483 tons of coal thus far this season, which is 50,000 tons less than the yearly average. More than 30,000 tons have been shipped from that port to Fox River Valley points during the past two weeks.

Altogether the outlook for this district for the coming winter does not look as bad as it did, and if rail transportation conditions are reasonably efficient during that period there should be no suffering.

CLEVELAND

Operators Pledged To Eliminate Unreasonable Prices — Lakes Order Is Suspended—Prices Soften with Weaker Demand — Domestic Receipts Are Increasing.

Bituminous—At an open meeting in Cleveland of the bituminous coal operators of the country, a resolution was passed to co-operate with the Department of Justice in bringing about more stable conditions in the industry. It was further recommended at the meeting that each bituminous district establish a committee for the purpose of co-operating with the Department in an effort to eliminate unreasonable prices and practices.

Sagging prices and weakening demand continue in the local market as the result of industrial contraction. Many plants are either closed down or have reduced working time. Some operators are selling spot slack at $4 a ton, but the prevailing steam price is $6@$7. The most drastic decline is in Lake prices. Coal men at the meeting would not forecast the speed nor the extent of the anticipated decline.

Car supply in the No. 8 district is improving the production although dissatisfaction among the miners is costing considerable tonnage.

Pocahontas and Anthracite—Declines in the soft coal market have not spread to Pocahontas and anthracite grades. Supply is still limited and despite mild weather, the public is anxious to accumulate its winter needs. However, receipts of coal are daily increasing; during September, domestic receipts averaged 28 cars daily; for the majority of October this averaged 38 cars, and now is running nearly twice that figure. Pronounced improvement is expected with increasing production and curtailed Lake shipments.

Lake—On Oct. 27, Service Order 10 covering Lake priority was temporarily suspended. Coal had been coming forward faster than it could be handled, and some congestion had resulted. The Northwest trade is reported well-stocked on mine run, apparently refusing to absorb further tonnage of this grade, although anxious to secure lump supplies at figures which are somewhat below the current market.

Retail prices of coal delivered in Cleveland are:

Anthracite—Egg $16; chestnut and stove $16.25.

Pocahontas—Shoveled lump $14; mine run $12.50.

Domestic Bituminous—West Virginia splint $13.25; No. 8 $12; Millfield lump $12.50; cannel lump $12.

Steam Coal—No. 6 and No. 8 slack $11@$12; mine run $12.50; No. 6 3 in. lump $12.50.

Inland West

INDIANAPOLIS

Operators Ship Larger Tonnage for Indiana Consumption—Retailers Withdrawing Suits — Production Improves with Better Car Supply.

A sudden reversal of form on the part of Indiana operators, following the Cleveland meeting, has lead to a reduction in the price of coal for Indiana consumption. Approximately 50 per cent of the coal mined last week was shipped to points in the state.

All of the coal was sold at prices fixed by the commission, or at lower figures. The information was received by the commission in compliance with the order issued last week, requiring operators to make weekly reports concerning the production, distribution and

sale of Indiana coal. The fact that only a few of the 80 retailers who filed suit remain in a hostile attitude is having its effect on the trade in general.

Some contracts are being made by operators outside the state but the general disposition has been during the past week to obey the rulings of the commission, which would keep approximately 1,600,000 tons monthly in Indiana for domestic consumption. This is being done with apparent good grace in spite of the fact that the price of Indiana coal outside the state is about 75 per cent more than that inside the state limits.

Production continues to be fair and the car service shows every indication of improving.

CHICAGO

Both Steam and Retail Supplies Are Improved—Government Investigation Continues — Anthracite Receipts Are Larger.

The fuel supply is in such a shape that the average dealer no longer buys any kind of coal that is offered but now is in position to pick and choose. The manufacturers are also in a very strong position, as practically all of them have substantial supplies on hand.

The Chicago Real Estate Board, however, still claims that there is a very serious shortage and states that a number of the large coal-carrying railroads coming into Chicago are disobeying rulings of the Interstate Commerce Commission, and using coal cars in carrying other materials.

The district attorney in Chicago is still carrying on a very thorough investigation and several more jobbers are in difficulties. It seems that these jobbers wrote circular letters to the trade, offering coal at very high prices. The various district attorneys throughout the Middle-West are now co-operating; for instance, if a Chicago jobber sells a car of coal at an exorbitant price in Iowa, the district attorney there reports the matter to the Chicago district attorney. If the coal was mined and shipped under his jurisdiction he attends to the matter himself.

Anthracite coal is now coming in more liberally than at any time during the past 12 weeks. However, such a very serious shortage exists that it is doubtful if the public will obtain as much of this fuel as is desired. Considerable shipments of Pocahontas have been coming in, but most of this coal has been applied on old contracts that were made early last spring.

MIDWEST REVIEW

Prices Recede Further—Car Improvement Is Marked—Labor Situation Much Better.

The past week showed still further reductions in the prices of the poorer grade coals produced in this territory. On account of the very good car supply, both in the Springfield District and the Standard District, prices moved down toward more normal levels.

There has been, however, no signs of weakness in the better grades like the Franklin, Saline and Williamson County products. What little coal from these three counties that has been selling on the open market has gone at fairly high figures, although not as high as three or four weeks ago. This, however, is not because the demand has dropped off, but because there is a concentrated effort being made to keep prices at more reasonable levels.

From a great many sources it is noted that the labor situation has vastly improved. Miners who were lured away by higher wages in various manufacturing lines have been forced to return to the mines on account of the noticeable let-down in practically all manufacturing industries in the Middle-West. Labor is showing a very decided inclination to do more work than heretofore and is now doing a normal amount of work in the course of an eight-hour day. In addition, the railroads are having no difficulty in hiring just about as much help as they want and there has been a gradual but noticeable improvement all through.

The car supply for the mines in Indiana and Illinois is averaging somewhere between 60 and 70 per cent, which is a decided improvement. The fact that the mines are now able to run more has had something to do with the let-up in the demand.

DETROIT

Bituminous Receipts Improve—Demand Is Sluggish and Prices Weaken—Retail Trade Unusually Quiet—Little Anthracite Comes In.

Bituminous—While some dealers believe they can see a slight improvement in the movement to the local market the supply is still meager in comparison with normal requirements. With numerous large manufacturing plants and industrial consumers operating on a basis much short of full capacity, the inquiry for steam has been substantially reduced and in consequence the present moderate receipts appear to be providing for the needs of consumers. Some users are evincing a lack of interest in the market either because of their uncertainty concerning the business outlook or because of the expectation that reductions will soon be made in selling prices. The result is a rather sluggish market.

In the hope of buying more cheaply the household consumers show a slackening interest in making provision for future requirements. The very moderate temperature continues to encourage delay in buying domestic, despite the fact that supplies are so limited that any sudden cold spell probably would speedily exhaust available stocks.

Mine run from West Virginia is quoted $8.50 at the mines, lump is $8.75@$9, with the supply very small. Hocking mine run brings $8 and lump $8.50, with little in sight.

Anthracite—Retail dealers say they are getting a little anthracite, but the movement is irregular and uncertain. Though the inquiry from household consumers lacks the urgency of cold weather demand the dealers have been unable to accumulate any stocks in yards and have not yet succeeded in filling the orders of many customers. Retail prices show considerable range. In some parts of the city chestnut brings $20 and elsewhere $17.50.

COLUMBUS

Weakness in Steam Grades Is More Apparent — Domestic Is Still Fairly Strong — Lake Trade Is Active — Production Shows Increase in Most Districts.

Domestic trade shows considerable activity but the Cleveland price conference had the effect of curtailing buying. Dealers who were in the market for stocks held off to see what action would be taken and as a result some weakness in domestic prices developed.

Retail stocks are not heavy and some dealers are not in a position to take care of their customers. Retail prices have not declined to any extent as yet. Hocking lump retails $9.50@$11, mine run $9@$9.50. Pomeroy Bend lump is $9.75@$11. West Virginia splints sell $10.50@$11.50 and Pocahontas is $12.50 @$14 for lump and $11.50 for mine run.

Steam grades are weaker all along the line and reductions have amounted to practically $2 a ton. This is due to reduced demand from industries. Railroads are not purchasing as heavily as formerly. Public utilities are well supplied and some cheaper prices for that kind of business are heard.

Lake trade was still active and a larger tonnage was being moved.

Vessel movement is generally good and no congestion is reported at any point.

Production is fairly good in all Ohio fields as a slight improvement in the car supply is reported. The Southern Ohio Coal Exchange reports that for the week ending Oct. 16 the southern Ohio field produced 304,800 tons as compared with a capacity of 617,800 tons. Of the shortage 171,000 tons was due to no cars. In the Hocking Valley field the output is between 50 and 60 per cent. Pomeroy Bend reports the same percentage while eastern Ohio is credited with 65 per cent production.

Prices at the mines of the principal coals used in central Ohio are:

Hocking lump ...	$5 00@$7 25
Hocking mine run	4 50@ 6 50
Hocking screenings	4 25@ 6 25
Pomeroy lump	5 25@ 7 25
Pomeroy mine run	5 00@ 7 00
Pomeroy screenings	4 75@ 6 50
West Virginia splints, lump	6 00@ 7 75
West Virginia splints, mine run	5 50@ 7 00
West Virginia splints, screenings	5 25@ 7 00
Pocahontas lump	6 75@ 8 00
Pocahontas mine run	6 25@ 7 75
Kentucky lump ..	6 50@ 7 75

ST. LOUIS

Quiet Market Prevails — Steam Sizes Are Heavy—Colder Weather Indicates Better Market Conditions—Car Supply Is Short, with Many Minor Labor Troubles.

The St. Louis market continues heavy with steam sizes from the Standard field. Screenings are down to $3 and are hard to move, with the result that many operators are selling mine-run to

railroads at $4@$4.50. Domestic ranges $4@$5.50 per ton at the mine.

Car supply throughout the Standard field is about three days per week, with many labor troubles of a minor nature. Most of these are taken in the form of Saturday holidays, the miners refusing to work the sixth day.

In Chicago the market has eased up, throwing an unusually heavy tonnage here, although the movement Northwest to Kansas City, St. Joseph and Omaha is good, everything considered.

The Missouri district west of the river is getting far more coal. This is largely a result of the activity of the local coal bureau, working under the supervision of representatives of the Illinois operators and the railroads, who were appointed by the Public Service Commission of Missouri.

Conditions in Mt. Olive continue to be about normal, with the usual heavy railroad tonnage. Some labor trouble has been observed the past week or two. Prices are $4@$5 for domestic sizes, with most of the steam going on contract.

In the Carterville field fairly good working time is secured, excepting on the Missouri Pacific, which has, however, shown up better the past week than for sometime past. In a general way the field gets from three to four days a week, with a heavy railroad tonnage at mines making better working time. Prices range $4@$5.50, the circular price with big operators. Independents are playing the market as high as $8 on all sizes.

In the past week something like 10 or 15 cars of anthracite have moved in to St. Louis and it is understood that there will be no additional shipments until after the first of the year. Perhaps almost as many cars of smokeless have been received and a good tonnage of by-product coke is moving from Alabama through the St. Louis gateway, with nothing in the way of Arkansas coal listed.

The domestic demand has been quiet for the last week or two, but colder weather indicates more activity. There is no change in retail prices.

South

LOUISVILLE

Car Supply Is Still Short — Demand Good, but Prospects Are for Lower Prices as Result of Slackening Demand from Lakes and Northern Industrials.

The coal trade has received with interest developments of the association meeting in Cleveland. It is believed that much good will be accomplished as a result of the meeting, and that this will have a general bearing on future production and distribution.

Announcement of the withdrawal of allotments for Lakes movement is taken to mean that car supply will be better. It is held that with shorter hauls closer to home, cars will make more trips and work to better advantage with quicker turn-around.

Action of the Indiana Food & Fuel Commission last week, ordering operators to first supply 1,600,000 tons of coal for state use monthly, before accepting additional outside business, and apportioning the amount that each operator shall supply, is considered rather highhanded, and probably unconstitutional. Such an order would prevent operators from receiving better prices than set by the commission from outside sources.

Eastern Kentucky production is improving slightly as a result of a small improvement in car supply. Good weather is resulting in steady operations at the mines, and better production for the fields as a whole.

A fair amount of both eastern and western Kentucky and West Virginia coal is coming to Louisville by rail, with some West Virginia river coal arriving. However, domestic sizes are in good demand, and retailers report that they are still far behind on orders. Retail prices are steady.

Prices quoted local dealers and industrial consumers on eastern Kentucky coal run $6@$8.50 a ton on mine-run and screenings, with practically no lump offered.

Retailers are asking $10.40 for west Kentucky lump, $11.50 for east Kentucky, $10 for west Kentucky mine-run, $11 for east Kentucky, $9.50 for east Kentucky screenings, and $8.50 for western.

BIRMINGHAM

Decreased Steam Demand Lowers Prices — Domestic Market Is Strong — Car Supply Adequate—Production Increases Steadily — Labor Situation Improves.

Inquiry for steam coal in the local market is not as strong as a week ago and spot prices have receded somewhat, coal now bringing $5@$7.50. While there is more coal available than for quite a while, the trade requirements are sufficient to absorb all offered.

Cahaba, Black Creek, Pratt and other grades of like quality are still not available in quantity. Probably 90 per cent of the output is being applied against contracts, and few of the larger companies have any coal to offer the spot trade.

All domestic grades are still in strong demand, though the tenseness of inquiry has been relieved somewhat by the order of the State Fuel Administrator prohibiting the shipment of any domestic out of the state during the period from Sept. 20 to Nov. 8. This will provide for current needs of the various distributing centers and probably enable retailers to stock ahead a little.

A gross margin of profit of $3.60 per net ton has been fixed for dealers in Montgomery, Mobile and Birmingham, out of which must come all expenses except freights. This, in connection with the lower prices at the mines, provided for in the contract between the state and operators, will result in a saving to the consumer of $1.50@$2 per ton.

Operating conditions are rapidly approaching normal. Working forces are much larger than a week ago and there is a strong inclination among the strikers to seek employment. In the Walker County fields reports indicate that men are returning to work as rapidly as they can be placed. During the week the mines at Brookwood and Searles, in Tuscaloosa County, which operations were working under the Blue Book contract, not made direct with the union but approved by local union officials, went out on strike, but these mines are now running again and will not suffer much loss in output.

Cars are being supplied in sufficient numbers to enable steady operation and production is steadily gaining. This is reflected in the easier market conditions and lower prices.

Western

DENVER

Heavy Interstate Movement Causes Car Shortage and Inadequate Local Stocks—Prices Are Firm—Miners' Demands To Be Decided Nov. 4.

Loss of production in the southern Colorado bituminous fields due to lack of cars is traceable in part to the tremendous shipments, continued during a period of favorable weather, to Missouri river points that ordinarily are not supplied with Colorado coal.

This is the indirect answer given to complaints from four mines in the Walsenburg district that were forced to close down for several days within the week on account of no cars for loading.

Cars for interstate shipments are slow in returning and as a result many dealers will not be able to get the kind of coal they are in the habit of purchasing. This indicates a distribution of various grades of bituminous in Colorado before the end of the winter.

Prices are to remain at present levels during November, according to general expressions among dealers. This will depend somewhat on the outcome of the hearing of operators and union officials before the state industrial commission concerning demands of miners for a 20 per cent increase in pay in the lignite fields. The higher wage applies to "dead" work, lost at present, miners claim. The hearing is set for Nov. 4.

There are more cars, proportionately, in the lignite fields, but railroads explain that the shipments are mostly intrastate, thus enabling equipment to remain within the district.

The demand in big cities is spotted, with little activity shown here. Dealers have only small reserve stocks, due to inability to get bituminous in quantities and because lignite does not store well. Consumers seem to be buying as they go along, despite the earnings of regulatory methods for distribution that may have to be invoked unless present production is uninterrupted by labor troubles.

News From the Coal Fields

Northern Appalachian

NORTHERN PAN HANDLE

Increased Car Supply Enables Better Production — Prices Tumble — Lakes Market Weakens.

While car supply varied in the week ended Oct. 23, yet upon the whole, a substantial gain in production was made possible by an increased supply of empties. The Pennsylvania R.R. was able to furnish the mines on its line a full run of cars during the greater part of the week. The Baltimore & Ohio supply was less satisfactory, as mines on that road were forced to be content with 60 per cent of mine rating.

There was a most decided downward trend to prices. That was particularly true as to the Lakes market, where it was apparent that there had been a decided slackening in the demand, due partly to lack of bottoms and also to the belief that lower prices would prevail.

While the shortage of cars on the Baltimore & Ohio was attributed in part to slow dumping at the Lakes and to failure of Western connections to return cars promptly, nevertheless, the rail movement was good and there was little or no delay either on the Pennsylvania or the Baltimore & Ohio.

CONNELLSVILLE

Spectacular Slump in Coke Prices—Furnace Market Leads Decline — Future Price Level Is Uncertain.

The expected slump in spot coke prices has begun, and prices have declined from day to day, exceeding the extreme predictions that were made.

Inasmuch as Connellsville furnace coke sold at an average price of under $1 in 1894, for spot shipment at $1.50 in May, 1915, at as high as $15 in August, 1917, at $6 during the period of war control, at $3.60 in April, 1919, and at $19 last August, any price that may now be made can be called relatively high or low, according to the viewpoint. Declines may continue from the $10 level seen at this writing. Nor can any influence in the direction of a stable market be expected to be exerted by the position of consumers, as to what they can afford or are willing to pay, because the blast furnaces have no idea as to the future of pig iron prices, that market declining on the appearance of almost every inquiry.

The decline in spot furnace coke was caused by several furnaces deciding to bank or blow out, accordingly instructing operators to discontinue shipments on their requirement contracts, this throwing extra coke on the spot market at the same time that the buying pressure diminished. Production has continued at approximately the same rate as formerly.

Spot foundry coke has yielded much less, but simply because it naturally presents a more sluggish market. As coke producers who have not lately been offering foundry find a restricted outlet they will doubtless offer this in such manner as to cause it to decline to a normal relation with furnace coke. At the moment spot furnace coke is quotable at $10 and foundry at $15.

PITTSBURGH

No Complaint of Car Supply — Spot Demand Is Extremely Light—Fear Is Expressed That Some Operators Will Reverse Their Position and Sell at a Loss.

Car supplies have averaged a trifle heavier. There is practically no complaint now on this score, but the change is due less to the increase in supplies than to the decided falling off in market demand, which is more or less spectacular in character.

The change seems to be due more to the different attitude of buyers than to a change in the rate of consumption, though there is no doubt that on the whole there is a material decrease in consumption by the majority of industries. The decrease is rather marked in the case of the steel industry, but this does not apply to the Steel Corporation, whose operations are undiminished.

The market has become so dull, and values have yielded to such an extent that at the moment it is hardly quotable, but may be named about $6 for steam and $7@$8 for gas and by-product.

Conservative operators, who confined their operations to shipments against contracts, fear that some of the producers, who secured the highest prices on the spot market, will now spend a fraction of their accumulated profits in an effort to buy their way back into regular trade, selling coal temporarily at a loss for this purpose.

CENTRAL PENNSYLVANIA

Car Supply Is Improved — Good Demand for Export — Labor Situation Is Fair — Prices Are Weaker.

Car supply during the past week has been reported much better, with an average of 60 per cent over both the Pensylvania and the Baltimore & Ohio. The demand for Baltimore & Ohio shipments is much stronger than for P. R.R. fuel, due to embargoes on export coal over the Pennsylvania.

Operators in central Pennsylvania report the labor situation fair at the present time. Almost every mining concern in the district could use more men, but the situation seems quiet and there are comparatively few labor disputes.

Prevailing prices offered for coal are: Pool 10, $9.75 per ton; Pool 11, $9, and Pool 18, $6.50. During the past week there has been a decided drop in the demand for Pool 18 coal, which is of an inferior grade. Buyers seem to be looking for a better grade of fuel at the present time.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

BITUMINOUS COAL

	1920 Week	1920 Calendar Year to Date	1919a Week	1919a Calendar Year to Date
Oct. 9b	12,103,000	416,215,000	11,888,000	364,682,000
Daily average	2,017,000	1,735,000	1,981,000	1,520,000
Oct. 16b	12,101,000	428,316,000	11,829,000	376,511,000
Daily average	2,017,000	1,742,000	1,972,000	1,531,000
Oct. 23c	12,146,000	440,462,000	13,140,000	389,651,000
Daily average	2,024,000	1,749,000	2,190,000	1,547,000

ANTHRACITE

(In Net Tons)

Week Ended	1920	1919
October 9	1,847,000	1,955,000
October 16	1,855,000	1,916,000
October 23	1,915,000	1,992,000

BEEHIVE COKE

United States Total

Week Ended Oct. 23c 1920	Week Ended Oct. 16b 1920	Oct. 25 1919	1920 to Date	1919a to Date
389,000	404,000	366,000	17,264,000	15,852,000

(a) Less one day's production during New Year's week to equalize number of days covered for the two years. (b) Revised from last report. (c) Subject to revision. All figures in net tons.

EASTERN OHIO

Suspension of Lake Priority Releases Coal for Local Trade—Labor Situation Shows Little Improvement—Cars Adequate—Prices Are Still Falling.

Interest during the past week was centered in the meeting called by the officers of the National Coal Association in Cleveland in response to the suggestion of Attorney General Palmer to consider methods for reduction of prices and the elimination of undesirable practices in connection with the marketing of coal.

The temporary suspension of the Lakes priority order was caused by heavy loadings, accumulation at lower ports, and the fact that the Northwest would not absorb a continued heavy tonnage at current prices. The result will probably be that there will be some reduction in the quantity sent to Lakes from eastern Ohio, thus providing an increased tonnage for local trade.

Labor situation shows little improvement and there seems to be a feeling of unrest and general dissatisfaction with conditions among the men.

The car supply during the past week has been about 75 per cent of mine ratings, but this was sufficient to meet the requirements of most mines, on account of the labor situation.

Prices still show a tendency to fall—lump being quoted $5.50@$6. Production during the week was probably in the neighborhood of 400,000 tons, of which about 35 per cent was railroad fuel.

UNIONTOWN

Price Slump Continues — Car Supply Meets All Needs — Labor Situation Greatly Improved — Coke Market Is Very Weak.

If a sudden check is not placed on the present slump in prices, November will bring the local market level to half its early fall average.

Spot furnace coke is selling at $11.50. This is just $3 less than last Friday's figure and a full $6 under the price one week ago. Foundry grades command an additional dollar per ton, though one sale of fair size was reported yesterday at $10.

Coal is also quoted generally lower, though the loss is not so drastic. By-product coal is now $8; Pool 44 is $7.25; steam coal on all roads is $6.75@$7.25; P. R.R. Pool 34 is $7.50, B. & O. $10. B. & O. shipments have suffered least.

Few permit shipments are going to the piers, their number and size being quite insufficient to act as a drag on the downward price trend. Nation-wide efforts to continue the movement of lower prices are also becoming effective.

Producers find the worst feature of the present market is the fact that it is merely nominal. Price adjustments are being made from day to day merely to place production, and even this is becoming a matter of difficulty. The coke market is particularly narrow, most of the quantity buyers remaining out of the market and evincing no disposition to resume their purchases.

Production is very good. Labor is daily becoming easier, the influx of Ohio workmen continuing in all parts of the region. Car supply is so good as to be almost embarrassing. The recent 100 per cent coal and coke car placement records of the Monongahela Ry. are being maintained and with them correspondingly better placements on the Pennsylvania and B. & O. branches.

FAIRMONT

Production Declines With Smaller Car Supply—Export Market Is Attractive —Prices Weaken Slightly.

Production was on a smaller scale during the week ended Oct. 23 than during the preceding week, cars not being so plentiful. The supply was adequate on Monday in the Fairmont and other regions but slumped badly after that, especially on the Baltimore & Ohio. Other roads in northern West Virginia and especially the Western Maryland supplied a larger percentage, though there was a rather heavy assignment of cars on the Monongahela Ry. Indications seemed to point to Western connection as being responsible for the shortage of cars in the northern part of the state.

There appeared to be a gain in the volume of coal shipped to Western markets, though of course export business was the most attractive. A heavy tonnage was still being poured in upon the Lakes.

The demand for line shipments could not be considered especially strong and prices for such were not averaging more than $6@$6.50 a ton. There was a stable market for export and as much coal as possible was being sent to Curtis Bay and other Eastern piers although from some points in the field Tidewater shipments were embargoed.

Middle Appalachian

NORTHEAST KENTUCKY

Slight Increase in Car Supply—Lake Business Takes Large Part of Output —State Domestic Demand Given Preference.

Conditions in the week ended Oct. 23 were more conducive to larger production than had been the case during the previous week, although the gain was not particularly marked and failed to bring the output much over half of potential capacity.

Only 112,000 tons or 53 per cent of capacity were produced, leaving a loss from all sources of 110,000 tons or 47 per cent. The greater part of the loss was due, as usual, to a car shortage of 41 per cent. The Millers Creek field had no cars at all on Thursday, Oct. 21.

Lake business required a fairly large part of the output though shipments in that respect were not so heavy during the latter part of the week as earlier in the period.

In common with other Kentucky mines those in northeast Kentucky were endeavoring to take care of state requirements, especially among domestic consumers. It is believed that there will be a quicker return of cars than there has been, because of comparatively short hauls. In many instances a price of $6@$6.50 a ton was prevailing for run of mine coal.

KANAWHA

Production Improves with Better Run of Cars—Lake Shipments Are Heavy —Prices Weaken—Restrictions Cut Export Movement.

Served with about a 60 per cent car supply during the week ended Oct. 23 mines were able to make some progress in speeding up production. For the latter part of the week, however, the supply was averaging about 58 per cent on the Chesapeake & Ohio, but on the Kanawha & Michigan there was less than a 50 per cent run during the greater part of the period.

Heavy shipment Lakeward on Service Order 10 had a tendency to depress prices. Quotations were $5.50 for Lake as against about $6 for line shipments. The Tidewater embargo in force throughout the greater part of the week, applying to all shipments except in 70-ton cars, restricted the market and forced prices down to some extent.

NEW RIVER AND THE GULF

New River Output Increases—Gulf Car Supply Is Unchanged—Domestic Demand Grows—Prices Are Firm— Some Labor Indolence in Gulf.

Gains were scored in the production in the New River field during the week ended Oct. 23. With cars coming into the region in larger numbers, the first day's supply, combined with what was furnished on Tuesday and Wednesday, enabled mines to produce to capacity. During the latter part of the week, however, production underwent a decrease.

There may have been a slight weakening of the demand for New River fuel but it was not particularly marked. While the export business done was on a large scale, it was stated that inquiries for Inland, both East and West, were fairly strong. In fact, a larger tonnage is going to Western markets than for some time, owing to an increase in the domestic demand.

While the gap between the car supply furnished Winding Gulf mines by the Chesapeake & Ohio R.R. and that supplied by the Virginian Ry. was closed to some extent, the latter still had more empties for its mines, the supply still averaging about 70 per cent. On the Chesapeake & Ohio it was not more than 60 per cent.

There continued to be a strong call for Winding Gulf fuel in all markets and especially at Tidewater, where prices showed little signs of any recession and bottoms were plentiful enough to take care of the heavy volume of dumpings. Indolence on the part of the miners was still retarding production to some extent.

LOGAN AND THACKER

Logan Car Placement Is Better—Lake Market Slumps — Heavy Western Movement—Prices Are a Trifle Lower —Thacker Production Gains in Face of Strike Tactics.

Shipments were rather heavy to Lake during the early part of the week, but there was a falling demand in that quarter which lowered prices. While the demand at Tidewater showed little change, yet it was not until Thursday that mines were permitted to ship either Eastward or to Tidewater unless in 70-ton cars. There was a good call in the Huntington market, but high volatile was not in such good demand as to line shipments. There appeared to be little change in the market for by-product. As nearly as it was possible to tell the general price, spot mine-run for Inland delivery was in the neighborhood of $6@$6.50.

A 25 per cent shortage on the Norfolk & Western was not felt to a great extent in the Williamson field, owing to the strike. Still, 37 of the 44 mines which had been closed down when the strike began early in July were again in operation. Production for the first half of the month in the area directly affected indicates an output of 100,000 tons for October.

After a period of quietness, covering the first half of the month, strikers are renewing their attacks on men and plants, being prompted to do so by the realization that the strike is going against them.

Such coal as was being produced was moving for the most part to Western markets.

POCAHONTAS AND TUG RIVER

Heavy Lakes Movement—Good Domestic and Export Calls—Prices Are Fairly Firm—Cars Are Scarcer and Production Suffers.

Such a shortage was responsible in cutting down the production in the Tug River field from 87,000 to about 70,000 tons. Shipments to the Lakes were heavier than usual, due to insistence of the Norfolk & Western Ry. that operators make up their proportion before the close of the season.

A part of the tonnage shipped to the Lakes would otherwise have gone to Tidewater, as demand at that point continued to be heavy. There was a growth in the Western demand, because of increasing domestic needs. Prices appeared to be pretty well stabilized. While a labor shortage was still affecting the output, it was not doing so to the extent that the car shortage was.

More than 100,000 tons production was lost in the Pocahontas field because of an insufficient car supply, the shortage being even somewhat more pronounced than during the preceding week. During the greater part of the week supply amounted to less than 75 per cent of requirements. The output was limited to 300,000 tons or less.

During the greater part of October the car supply on the N. & W. was considerably under par. That condition is laid at the door of Western railroads and also to the fact that cars are not coming back from the Lakes.

Conditions were such as to make it possible to easily market all the coal produced, especially in view of an excellent Tidewater demand and a growing Western domestic business. While it was not believed that so much coal was needed at the Lakes, yet Pocahontas mines were required to keep a large volume flowing to Lower Lake points.

VIRGINIA

Production Increases Slightly—State Institutions and Domestic Needs Get First Call on Output—Inland Market Is Weaker.

A labor shortage was proving the greatest hindrance to production in southwest Virginia in the period ended Oct. 23, the loss amounting to 8.9 per cent of potential capacity.

While there was a reduction of about 5 per cent in the labor loss there was an increase in the loss from a car shortage of 4 per cent. The shortage of empties was making it necessary to use about 41,000 tons of coal in making coke. Shortage was greatest on the N. & N., though the Norfolk & Western had only an 84 per cent supply for its Virginia mines.

Operators were using every effort to take care of domestic consumers, state institutions and public buildings even at a sacrific. While export prices were much lower than had prevailed, nevertheless producers had all they could handle. The demand for Inland was somewhat off color.

Middle Western

WESTERN KENTUCKY

Demand Is Good — Field Operating to Capacity of Car Supply — Steady Increase in Demand from New Markets.

While some fields of the country are beginning to report weakness as the big demand is filled, the western Kentucky operators are finding demand greater than production ability. The call for western Kentucky steam is growing so rapidly that the field today is paying more attention to mine run than to lump, which was formerly the principal item in demand.

Some coal is now selling as far north as the Dakotas. There is also an increasing movement into the Cincinnati market. A good Southern market obtains on prepared sizes, while points close to the field are taking good supplies of both grades.

Western Kentucky operators are feeling more cheerful than for many years, as they have finally secured equitable rates to markets for steam as well as other sizes, and it is believed these markets will be retained even after conditions return to normal.

Production is merely a question of car supply, which for October averaged about 34 per cent on the L. & N. and 57 on the I. C. Supply on the L. & N has been poor for the past 10 days, being under 30 per cent, and dropping as low as 27 per cent on several occasions.

Quotations show lump $6.50@$8; mine run $5@$6.50; screenings $4.50@$5.50.

DUQUOIN

Slight Decrease in Placements—Steam Prices Decline—Bulk of Tonnage Is Moving North.

Conditions are about the same as the week before last, with possibly a slight falling off in car supply. The greater part of the shipments are going North and Northwest, with a small portion moving South and into St. Louis.

Continued summer weather caused a slump in the market. However, it is sure that the first cold spell, which cannot be far off, will make inevitable the usual scramble for coal.

Mines along the Illinois Central R.R. are working about 65@70 per cent of normal. Operations to the north of here, on the Wabash, Chester & Western, are working a little better than their average, the road having shown better service during the last two months.

During the week prices on mine run and screenings seemed to slack off somewhat, while lump held its own. Mine run varied $4.70@$5; screenings $4@$5.25; lump $6@$6.50.

Southern Appalachian

SOUTHEASTERN KENTUCKY

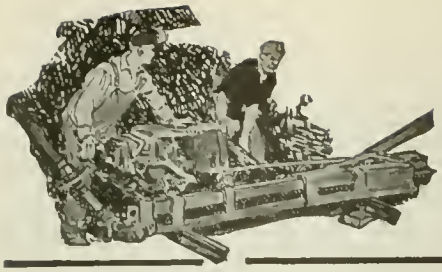
Strong Demand for Domestic—Price Ruling Is Generally Observed—No Orders Being Placed Under Service Order 21—Car Supply Shows No Improvement—Labor Conditions Good.

The first cold snap has greatly increased the demand for domestic. The market for steam coal is sufficient to take all the nut and slack offered at the Slattery price of $6 per ton.

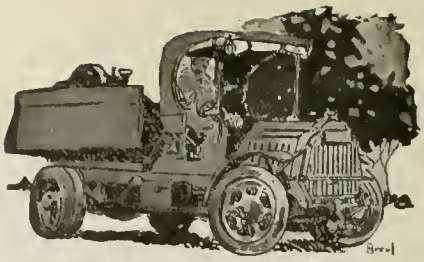
Car supply is about the normal two days per week, with an occasional three days' run for some of the mines. Public utilities are receiving but scant consideration under Service Order 21, as not a single order has been placed for assigned cars in this field.

The recent increase of $1.50 to day workers seems to have greatly improved the labor situation, as no friction has been reported for several weeks. The decline in prices has also put a stop to the practice among the small operators of bidding up the scale in their attempts to increase their production.

Operators are still up in the air as to what action they shall take on the District Attorney's attempt to dictate prices. While practically no one is willing to predict the outcome, yet it is certain that Mr. Slattery cannot control prices very long via the "bluff" route.



Mine and Company News



ALABAMA

The Weller Coal Co. has been incorporated at Birmingham with a capital stock of $10,000. J. M. Donaldson, president; Mattie Stobert, vice-president, and Thomas Stobert, secretary-treasurer, all of Birmingham.

The Big Warrior Coal Co., of Birmingham, has filed notice of a change in name to the Mount Carmel Coal Co.

Plans are being arranged by the **Big Four Coal Co.**, of North Birmingham, for the rebuilding of its coal tipple recently destroyed by fire.

COLORADO

Colorado Mines produced 1,027,884 tons of coal during September, compared with 1,043,593 in August, according to the monthly coal production report issued by James Dalrymple, state coal mine inspector.

To Sept. 30, this year, 9,033,050 tons of coal had been mined in Colorado an increase of 1,448,976 tons over the same period in 1919. An average of 13,063 men were employed in the mines during September.

The slight decrease in tonnage during September, compared with August is due to shortage of cars.

INDIANA

The Simplex Coal and Mining Co., an organization formed at Petersburg, has been incorporated for the purpose of operating coal mines. The directors are Earl Field, Harry Weeks and Harry Patrick. Articles were filed the same day by the **H. Hoch Coal Co.**, with home offices in Evansville. The directors of this company are Margaret Hoch, David Ellison and Martin Bettag.

The Northwestern Indiana Coal Co., an Illinois corporation, has applied for admission to Indiana. The company is capitalized at $307,000.

ILLINOIS

Coal leases seven miles northeast of Murphysboro in Somerset and DeSoto townships are being taken by **George Dowelt** of Duquoin.

The Midland Coal Co. is also said to be leasing coal tracts in that territory within striking distance from the mine operations at DeSoto, and it is understood that one or two new prospects are in line for new mines to go down in this section.

The Southern Gem Coal Co. has made arrangements for the sinking of a large mine south of Herrin. The company has in operation a number of mines in southern Illinois and is considered to be among the leaders of the state. The output of the mine has been announced as 5,000 tons daily.

The Jewel Coal & Mining Co., of St. Louis, is progressing nicely with its new shaft west of Duquoin. The plant will be one of the most modern in the vicinity and is one of the main industrial projects which at the present seem to be giving Du Quoin a financial and industrial boom. The mine will be equipped with a steel tipple with shaker screens and booms complete and the coal will be hoisted with steam. Electric mining machines will be installed and electric haulage used to transport the coal to the shaft bottom. The company has secured ample acreage, having under lease or option some 1,500 to 2,000 acres. Coal will be hoisted from the air shaft within 2 or 3 months; however, the main shaft will not be ready for operations before the first of the year, plans now being made for the mine to be running full blast by that time. Supt W. S. Burris, new of the Jewel mine, will be general superintendent of the two mines.

Mine No. 18 of the **Peabody Coal Co.**, near West Frankfort, recently was the scene of another serious explosion. The explosion killed one man and injured several others. It will be remembered that this was the mine in which Philip H. White, general superintendent of the Peabody interests lost his life two months ago while attempting to put out a mine fire. Rescue teams from various towns were rushed to the scene.

The Madison Coal Corporation which is erecting a mine tipple and buildings at its new shaft near Cambria is rapidly nearing the finish of the job and will soon be hoisting coal. The investment in the sinking and erection of the mine will be $3,000,000. One of the features is the fact that the company is doing its own work of erecting the building and top works instead of letting the work out on contract.

Work has been started on the Felton mine north of Auburn, by the **Illinois Coal & Coke Co.**, who are the new owners of the plant. The mine was formerly owned and operated by the Pittsburg Coal Co. before the tipple was destroyed.

KENTUCKY

The Logan Elkhorn Coal Co., of Whitaker, has perfected plans for the erection of an additional coal tipple on a local site.

The R. H. Elkhorn Coal Co., up Shelby creek, is launching an important new development on the Baltimore & Ohio R.R. entering Jenkins. They will soon be in readiness to begin shipping coal. Another new concern just above is the **Buckfield Coal Co.**, who are constructing an incline and bucket conveyors, which will be nearly 100 feet high. It is planned to load about 1,000 tons daily when the mine is operating. **The Elkhorn Seams Colliery Co.**, at Collins, a new town, also further up Beaver Creek, have started coal shipments, but are adding extensions and improvements which will soon enable them to double their present capacity.

Other development in that section of importance is the **Ford Elkhorn Coal Co.**, at the mouth of Robinson, and the **Etkhorn-Shelby Creek Coal Co.**, at Esco, both making varied increases and extensions. Large power houses are being completed. **The Kentucky Block Fuel Co.**, at Elwood, on the Baltimore & Ohio at Shelby Creek, is making extensions in its plant.

The Prestonburg Coal Co., which recently increased its capital, is adding a new development in the Bull Creek section. A spur line of railroad is also being extended. They have another modern mining plant nearer Prestonburg.

At the mouth of Beaver Creek the **Malone-Elkhorn Coal Co.** is opening several hundred acres and developing a first-class plant. They will begin shipping coal at once.

In the Harlan County field there is the **Black Mountain Coal Co.**, a $50,000 corporation, just organized for a development project. Senator H. M. Brock is the leading incorporator. Leases have been made and every arrangement perfected for the new work.

In Dizney, upper Harlan county, the **Kenvir Railroad Co.** has been organized by F. A. Kruse, N. D. Bachman, and others. They will construct several miles of railroad into a new territory and open extensive coal lands for early development. The Harlan field is also active. At Allcock, in the Carr's Fork field.

The Carrs Fork Coal Co., of Allcock, is having plans perfected for the development of about 2,400 acres of coal property, recently acquired and it is expected to increase the daily output from 200 to 2,500 tons. Electrical equipment for all features of operation estimated to cost about $50,000 will be installed. The company recently filed notice of an increase in capital from $300,000 to $400,000.

OHIO

The New York Coal Co. has a large force of workmen engaged in making a new mine opening and constructing a new tipple and buildings on the Gossman farm just east of Crooksville. The Showers constructing company is in charge of the outside work, which with favorable weather will be rushed to completion within the next 60 days. The mine will tap an immense block of coal owned by the company and when completed will be one of the best equipped mines in the Crooksville field.

One of the most modern mines in the country will be opened between Lowell and Coal Run, by the **Muskingum River Coal Co.**, incorporated for $50,000. The incorporators are Loring Stagg and N. E. Kidd, of Marietta; R. C. Whitehill, A. L. McDonald and J. J. Powell, Jr., of Woodlawn, Pa. Property of the new company is located near Coal Run. Equipment for a modern electrical mine has been ordered and coal will be mined on an extensive scale. A. L. McDonald is President.

The Morgan Coal Co., of Bannock, has acquired 500 acres of coal property and extensive plans are being prepared for its development with daily output of about 400 tons. Electrical and mechanical equipment will be installed at an early date.

PENNSYLVANIA

In an explosion in the Baltimore No. 5 mine of the **Hudson Coal Co.**, six men were burned and two were injured by flying rock. The explosion occurred about half a mile from the foot of the shaft.

The Shamokin Red Ash Coal Co., through D. H. McGhee, president, has notified the State authorities in Harrisburg, that it has increased its capital stock from $10,000 to $60,000.

Joseph P. Morrison and Samuel Spector, both of Mount Carmel, and Patrick J. Dempsey, of Girardville, have taken out a charter for the **Girnrdville Coal Co.**, of Girardville. The new concern, capitalized at $6,000, will "dig, dredge, wash and prepare" coal for market.

Construction work is under way on the new buildings for the **Pine Run Coal Co.**, of New Bethlehem, and operations will be commenced at an early date. The structures are one-story and estimated to cost about $200,000.

The Roberta Coal Co., of Johnstown, recently closed a deal of $300,000 for the coal holdings of the Jacob Tome Institute, of Baltimore, Md., and located generally in Chest and Burnside townships, Clearfield County.

The Union Coal & Coke Co., a subsidiary of the Midvale Steel & Ordnance Co., expect to construct soon 200 dwellings at their new mine, the opening of which was started about a year ago, in Washington county, Pa. a couple of miles from their Mananna mine, formerly owned by **Rochester & Pittsburg Coal Co**

UTAH

Frank Ramsey and **Sheriff Williams** of Provo who have just returned from an inspection trip to the Sheriff's coal property at Red Narrows in Spanish Fork canyon report the coal vein is seven feet wide and that some portions of it are already showing a good grade of fuel They brought back with them samples of coal taken from a tunnel which has been driven 200 feet into the mountain. One of these samples has the appearance of charcoal and looks something like a pressed tree. Work is being continued on the property.

The Sunnyside mine of the **Utah Fuel Co.** of Salt Lake City, which has been on fire for some time, has been opened. Appearances indicate that the blaze has been smothered by its own gases, it is stated. A number of men protected by helmets are in the mine trying to locate the trouble and as soon as the mine has been cleared of the foul air operations will be resumed.

WEST VIRGINIA

With the purchase by the **United States Coal Co.** of the holdings of the **Midland Coal Co.** in Philippi Barbour County, development of the new acquired holdings will be started on a large scale in the near future. It is stated in fact that the United States Co. will have the largest operation in that county. It is proposed to develop the holdings which are about three miles from this city.

Following a reorganization of the **Birch Fork Coal Co.**, of Charleston, which operates near Jarrol's Valley on March Fork of Coal River, under which a controlling interest is held by T. E. B. Siler and associates, it is announced that many improvements will be made with a view to increasing production. Something like $500,000 was involved in the reorganization of the company, reorganization plans having been completed with the election of the following officers: T. E. B. Siler, president; R. G. Hubbard, vice president; T. D. Siler, secretary; Floyd Heatt, general manager; J. F. Johnson, superintendent.

The company is now producing about 500 tons a day, principally from the Coalburg seam, but plans are being evolved for the development of coal in the gas seam. A large number of new miners' dwellings are being built for the accommodation of about 100 more miners.

Progress has been made by the **Richland-Marshall Coal Co.**, of Moundsville, in driving a slope to the coal in the new mine which it is preparing to operate on Little Grave Creek in Marshall County. While the slope has been driven more than 100 ft. the company is now engaged in concreting that part of the slope already driven. The mouth of the mine will be protected from floods by a concrete wall. The new mine will be equipped throughout with electrical machinery.

The Peerless Smokeless Smithing Coal Co. of Morgantown, with headquarters in Charleston, will undertake, it is indicated, the development of coal tracts in Glade and Fork Lick districts of **Webster Co.**, this company having been organized by Morgantown people in large part, with a capitalization of $100,000, those most closely connected with the new corporation being A. D. Williams, Albert Layton, W. J. Campbell and Joseph W. Johnson, of Morgantown; E. W. Swan, of Parkersburg.

Organization of the **Fairmont-Reynoldsville Collieries Co.** of Clarksburg, with a capitalization of $75,000 presages the development of Harrison County coal territory in the near future on a fairly large scale. Active in organizing the new company were: Virgil S. Swearinger, Harry C. Morrison, Flora R. Morrison, N. Fred Rader and Nina O. Rader, all of Clarksburg.

The Ferndell Coal Co., of Philippi, will engage in the production of coal in Philippi District of Barbour County, this company having just been formed with Fairmont people largely interested. The new corporation has a capital stock of $25,000. Back of the new company are: U. A. Knapp Samuel B. Brooke, Henry O. Ross, Ray Pepper, Madge Barnes, all of Fairmont.

Harrison County coal lands will be developed by the **H. N. Hough Coal Company** which will operate near Lumberport, W. Va. This company is capitalized at $50,000. Having an active part in launching the new company were: L. A. Johnson, Clarksburg; H. N. Hough, V. L. Hornor, J. H. Hornor, all of Lumberport; E. M. Robinson, of Shinnston.

A new Huntington corporation is the **Dulcaport Coal Corporation** of Huntington, capitalized at $100,000. Plans as to where the company will operate have not so far been disclosed. Behind the new concern are: Harry Leaberry, Henry L. Porter, R. M. Davis, H. D. Davis and F. Leaberry, all of Huntington.

Coal territory in Grant District of Monongalia County will be developed within a short time by the **Dents Run Coal Co.**, of Morgantown, W. Va., just ushered into existence with a capital stock of $50,000. This company was organized by Joseph Bicrer, Paul H. Keener, Everhart Bierer, John F. Keener and William E. Glasscock, Jr., all of Morgantown.

One of the Northern West Virginia coal companies—the **Thermal Coal Co.**, Fairmont, has been consolidated with an Ohio mining company—the **Coal Ridge Mining Co.** of Cleveland—in a new million dollar corporation to be known as the **Champion Collieries Co.**, with general offices at Cleveland, O. This company will be headed by George D. Rowland of Cincinnati.

The largest charter in point of capitalization issued to any coal company in recent weeks has been that secured by the **Connellsville By-Products Coal Co.**, which is regarded generally as being a subsidiary of the Valley Camp Coal Co., as James A. Paisley, of the last named company, is one of the incorporators of the new concern which was organized to take over the 14,000 acres in the Cochran tract recently purchased by Mr. Paisley, and to develop that tract on a very extensive scale. It will be necessary to build a railroad to the holdings of the By-Product Company in Clay, Cass and Grant districts, but provision has been made for that in the charter of the new company. It is also understood that the newly organized concern may later embark in the business of manufacturing the byproducts of coal. Principally interested in the new company in addition to Mr. Paisley are: Stephen Arkwright, of Fairmont; Robert Buka, of Cleveland; Ross I. Davis, Pittsburgh; John M. Kennedy, Parnassus, Pa.; P. W. Sherman, Lakewood, Ohio; John J. Snure, of Ward.

A small tract of coal in Lincoln County, near Sand Fork, will be developed by the **Eden Park City Co.**, newly organized, with a capitalization of $10,000. Back of the new company are: D. P. Crockett, of Big Creek; Shelby Shelton, John W. Shelton, Maggie Shelton and Gracie Shelton, all of Sand Creek.

The Lancaster Coal & Coke Co. will operate near Kanes Fork. This company represents an investment of Pennsylvania capital with mine in Preston County. It is capitalized at $35,000, the following people having been active in effecting the preliminary organization: Edward A. Robson, Houston Run, Washington County, Pa.; Joseph H. Johnson, Samuel Aquilina and Edward B. Lancaster, of Charleroi, Pa.; Frank Bertine, Elizabeth, Pa.

The Mary Coal Co. has acquired a tract near Kingwood. One of the leading figures in this concern, which is capitalized at $100,000, is Howard Cross of Maryland. Others interested in the new company are: J. L. Maust, E. Costelow, H. R Poland and R. A. Poland, of Kingwood.

The Suddath Coal Co. will operate Upshur County, headquarters of the company for the time being to be established in Grafton. This concern has a capital stock of $25,000. It was organized by: S. F. Suddath, of Grafton; J. W. Snider, Grafton; J. Ray Smott, Newberg; J. C. Federer, Morgantown; G. L. Humphreys, of Point Marion, W. Va.

Traffic News

Interstate Commerce Commission—In a complaint to the I. C. C. the Merchants Coal & Coke Co. of Chicago attacks as unreasonable the rates on coal from Belleville and Cantine, Ill., to stations in the Chicago district.

The West Kentucky Coal Bureau in a complaint alleges unreasonable rates on coal from mines in western Kentucky on the Illinois Central railroad to destinations in Missouri and Kansas, and request is made for rates not more than 25c per ton higher than from mines in southern Illinois.

The Slogo Coal Co. of Johnson City, Ill., in a complaint alleges that the Missouri Pacific and other roads refuse to establish through routes and joint rates from its mines to destinations on the C. B. and Q. The Commission is asked to establish joint through rates which shall not exceed those in effect July 1, 1917, by more than 15 cents per ton plus advances under Gen. Order No. 28.

In the complaint of the Atlantic Refining Co. the I. C. C. has decided that charges for switching numerous carload shipments of bituminous coal at Philadelphia were unreasonable and unlawful and awards the company reparation.

Deciding the complaint of Frank A. Coakley and other retail coal dealers of South Utica, N. Y., the commission holds that the rates charged on anthracite coal from the Carbondale district of Pennsylvania to South Utica, N. Y., for delivery on the West Shore R.R., are unreasonable and prejudicial because they exceed rates to Utica.

In the complaint of Parlin and Orendorff Co., the commission decides that the rates of $3.45 @ $3.40 per ton on bituminous coal from Yamacraw and Worley, Ky., via Peoria, Ill., to Canton, Ill., from September, 1919, to February, 1919, were unreasonable because they exceeded rates of $3.25 and $3.15 per ton, established June 10, 1919, and awards reparation to the complainant.

A brief has been filed by the defendant railroads in the complaint of the Du Pont Co., defending the rate of $3.47 on coal from Midland, Ind., to Grayling, Mich.

In a tentative report an I. C. C. examiner in the case of the Cannon Manufacturing Co. vs. the Southern Railway recommends that rates on coal from Morning Glory, Tenn., to Kannapolis and Concord, N. C., and from Catoosa, Tenn., to Albemarle, N. C., be declared unreasonable because they exceed rates from the same points to various points in Carolina territory.

The Comptroller of the Treasury has authorized payment of a claim of $233 by the Midland Coal Co., of Kansas City, Mo., against the Interior Department.

The Interstate Commerce Commission has ordered an investigation into the failure of Missouri to increase intrastate rates in accordance with the interstate rate increase recently ordered. An allegation of the railroads in this case is that the Public Service Commission of Missouri has permitted increases in intrastate rates on coal and coke, among other articles while not permitting the increased interstate rates to become effective. The case will be heard before an examiner of the commission at St. Louis on Nov. 8.

The capacity of mines on the Morgantown & Wheeling R.R., rather than the physical capacity of that railroad which connects with the Monongahela Ry. at Maidsville, W. Va., will be the basis on which cars will be allotted hereafter by the Monongahela Ry. as a result of a decision of the Interstate Commerce Commission, which reverses the policy of the Monongahela and which will also force the Monongahela Ry. to make up for the shortage its arbitrary position caused.

Mines along the Monongahela Ry. and the Morgantown & Wheeling Ry. will be plentifully supplied with cars because the Interstate Commerce Commission has held that the Pittsburgh & Lake Erie and the Pennsylvania R.R. did not allot all the cars to which mines on the Monongahela were entitled.

It is reported that the railroads contemplate making appliation to the I. C. C. for further advances in freight and passenger rates, based on their failure to obtain increased net revenues due to increased cost of labor and coal.

The Pennsylvania Public Service Commission has granted the application of the Pennsylvania R.R. Co. for the revocation of its order of 1917, governing the supply of open-top equipment to wagon mines. Under the order just issued, the Interstate Commerce Commission order of Sept. 19, 1920, will apply to intrastate commerce in coal. In other words, open-top equipment will go to mines prepared to load cars and move them in quick order. The commission holds that the public interest will be best served during car and equipment shortage by getting coal over the lines as quickly as possible. This means that wagon mines, having neither tipples nor sidings of their own, will have to confine themselves chiefly to purely local trade.

The Illinois Central Railroad Co. has announced that it has placed an order with the Baldwin Locomotive Works, for 25 new switching engines for use in the Southern Illinois coal fields. This comes as a direct cause from the increased coal traffic up the main line to Chicago and other large industrial centers. Contrary to many reports that the Illinois Central is falling down on the coal traffic problem this fall, it has shown that it is holding its own with other roads. The mines which are entirely dependent upon the I. C. for cars are now working 80 and 90 per cent full time.

Double tracking of the Baltimore & Ohio R.R. between Fairmont and Connellsville, known as the Fairmont, Morgantown & Pittsburgh division, seems imminent, according to present plans of officials of the Baltimore & Ohio, and if such an improvement is undertaken it will involve an outlay of about $2,000,000, it is understood.

Announcement has been made to the effect that the B. & O. will improve thirty miles of line in the Eastern Kentucky district between Shelby Station and Jenkins, in the Elkhorn field.

There has been a separation of the Millers Creek field from the Sandy Valley & Elkhorn, served by the Chesapeake & Ohio, in so far as car distribution is concerned, and hereafter the supply for the Millers Creek region will have its own supply.

Industrial News

The Cement Gun Co. announces the removal of its main office from Allentown, Pa., to Cornwells, Bucks county, Pa., (a suburb of Philadelphia), where the vice president and general manager, Mr. B. C. Collier, Mem. A. S. C. E., will connect himself in an executive capacity in the distribution of the Traylor trucks and farm tractors, manufactured by the Traylor Eng. & Mfg. Co.

The Ohio Valley Improvement Association has arranged to meet at Paducah, Ky., Nov. 16 and 17, and will outline plans for an effort to get Congress to appropriate a larger sum for hurrying lock and dam work on the Ohio next season.

The Illinois state miners' examining board, will hold an examination at the Illinois state arsenal in Springfield, Nov. 22. Other examinations set for November are as follows:—Nov. 8, Centralia; 9, DuQuoin; 10, Benton; 11, Harrisburg; 12, Marion; 13, Percy; 15, Collinsville; 16, Staunton; 17, Danville; 18, Canton; 19 Peoria.

Association Activities

Smokeless Coal Operators' Association of West Virginia

Serious consideration was given by the Smokeless Coal Operators' Association of West Virginia at its meeting held in New York, on Oct. 14, to the shortage of coal in the Panama Canal Zone and also to the shortage of coal in Virginia. Impressed with the importance of the fuel needs of the Panama Canal and of the Panama R.R., and informed that 20,000 tons of smokeless coal per month over and above the present supply were necessary, assurances were given that the necessary tonnage would be furnished at a price of $4.30 per ton, not counting any addition to the cost by virtue of a wage advance.

Tangible action was taken looking toward meeting the situation in Virginia after the opinion was freely expressed that the Virginia situation should be taken care of. In order to see that the requirements of Virginia consumers were met a special committee was created. The committee consists of one representative from each of the four smokeless districts of West Virginia as follows: D. M. Deyerle, Pocahontas; C. C. Morfit, Tug River; G. H. Caperton, New River; George Wolfe, Winding Gulf.

Upper Potomac Coal Association

Resolutions recently presented to the Department of Justice by Northern West Virginia operators and which form the basis for the guidance of the Fair Practice Committee of the Northern West Virginia Association, were explained to the members of the Upper Potomac Canal Association by Douglas Gorman of Baltimore, at a meeting of the association held in Cumberland, Md., on Oct. 11. Mr. Gorman represents the Upper Potomac region on the Fair Practice Committee and conveyed the wishes of the Upper Potomac Association with respect to the action or actions to be taken by the Fair Practice Committee.

Northern West Virginia Operators Association

A meeting of the Fair Practice Committee of the Northern West Virginia operators was held in Wheeling on Tuesday, Oct. 19, for the purpose of giving further impetus to its plans to keep down the price of coal. Since the committee began to function there has been rather a marked decrease in prices of coal produced in Northern West Virginia.

It was rumored in connection with the Wheeling meeting of the Fair Practice Committee that prosecution of the operators of Northern West Virginia would be resumed at the term of federal district court, scheduled to be begun on Tuesday, Oct. 19.

The average price of coal to consumers in West Virginia at the mines will be between $5 and $6 a ton as the direct result of action taken by the Fair Practice Committee of the Northern West Virginia Operators' Association at a series of meetings held during the week ending Oct. 16 in Washington and New York.

Everett Drennen, chairman of the committee, acted as its spokesman in announcing a price of $5 a ton for run of mine and $6 a ton for screened coal, at the mine, for consumers in Northern West Virginia.

During the course of the committee's session in New York a telegram was received from Attorney-General Palmer, the text of which was as follows:

"Referring to your report as chairman of a committee of bituminous coal operators from the northern district of West Virginia that prices of bituminous coal delivered in that district have been recently substantially reduced through the efforts of your committee. This is gratifying, but does not afford relief to the rest of the country. It is of the highest importance that the reduction in prices thus begun should be extended so as to include operations in other districts and coal for delivery throughout the country."

In reply the following telegram was sent to the Attorney-General.

"Your telegram this date referring to the report of the Fair Practice Committee of Northern West Virginia coal operators received. Our committee will immediately exert every effort to follow your suggestion."

Trade Catalogs

Worthington Marine Pumps and Auxiliaries. Worthington Pump and Machinery Corp., New York, N. Y. Catalog BK-3,000. Pp. 125, 6 x 9 in., illustrated. Contains descriptive matter for general use in marine circles.—Advertiser.

The Oxygraph. David-Bournonville Co., Jersey City, N. J. Pp. 11; illustrated; 8½ x 11 in. Illustrating oxy-acetylene cutting with Oxygraphs No. 1-A and No. 2.

C-H Motor Control Apparatus. Cutler-Hammer Mfg. Co., Milwaukee, Wis. Publication 860; pp. 40; 8½ x 11 in.; illustrated. Giving information concerning control apparatus for use with motor driven pumps, compressors and similar machines.—Advertiser.

Personals

L. A. Norton, until recently with the Consolidated Coal Co. of St. Louis, has been appointed secretary and treasurer of the Wallace Coal Co. of that city.

W. W. Kicker, who recently resigned as superintendent of the Palos Division of the Republic Iron & Steel Co., has been appointed by Governor Kilby as assistant Alabama mine inspector, with jurisdiction in the sixth inspection district; vice **John R. Smith** resigned.

Timothy R. Atkinson and **Francis J. Seery,** engineers, appointed to the Geological Survey during the war to make power investigations in connection with fuel conservation, have resigned, the emergency having passed.

James R. Offield, of Chicago, was re-elected president at the annual meeting of the directors and stockholders of the Bon Air Coal and Mining Co., Bon Air, Tenn. Other officials elected were **W. J. Cummins,** vice-president and general manager; **Frederick Leake,** New York, secretary and **John MacBowman,** Chicago, treasurer.

Allen MacLeod of Boston recently returned from an eight months trip to Europe on which he made a particular study of the coal situation abroad.

E. V. Reinhold has been appointed assistant purchasing agent in charge of fuel for the New York Central R.R. Co., with office at New York City.

H. C. Greer, coal operator and manufacturer of Morgantown, W. Va., has purchased the J. P. McKinney residence in Pittsburgh.

E. Floyd has resigned his position as manager of the Nanoose-Wellington Collieries, Ltd., Nanoose Bay, Vancouver Island.

Burwell G. Davis, of Montgomery, Ala., assistant attorney general, has been appointed by Governor Kilby as state fuel administrator a recent act of the legislature having created this office to provide for the distribution of coal within the state and the fixing of prices thereon in emergencies of coal shortage such as now exists. Mr. Davis will be charged with the duty of placing in effect the agreement between the Governor and operators recently entered into, fixing a schedule of prices at the mines for all coal in excess of contract obligations to be distributed to consumers throughout the state. He will also arrange a schedule of maximum prices to be charged by retailers.

The coal men's golf tournament at Buffalo, in which 14 contestants took part, after having been on for about a fortnight, was concluded on Oct. 6th. **J. Burt Ross** winning over **Grant H. Jones** by a single hole, which had to be played extra, after the regular 18 had proven a tie. Mr. Ross takes a silver cup as prize. Extraordinary interest has been taken in the tournament and it is now stated that a much larger one will be played next season.

William H. Sterling has resigned as superintendent of the Docena Mine of the Tennessee Coal, Iron & Railroad Company, at Docena, near Pratt City, Ala., and has returned to his old home in southwestern Pennsylvania.

M. R. Campbell of the Geological Survey is in Virginia reviewing some work in the bituminous coal fields.

Roy C. Brett, engineer, who was appointed during the war to make power investigations in connection with the conservation of fuel, has resigned from the Geological Survey, the emergency having passed.

Thomas H. Edelblute has resigned as secretary of the Pittsburgh Mining Machinery Co., and has opened offices in the Fulton Bldg., Pittsburgh, Pa., to engage in a general brokerage business in coal and mining equipment.

Frank Mann, of Chicago, has accepted a position with the Sterling-Midland Coal Co., having formerly been connected with the Chicago, Wilmington & Franklin Coal Co. Both companies have large operations in southern Illinois.

T. J. Brown has retired from the managership of the Inverness Coal Co. It is less than a month since Mr. Brown resigned as manager of the Nova Scotia Steel and Coal Co. and joined the Inverness staff. Report has it that Mr. Brown may join the executive of the British Empire Steel Corporation.

J. Thomas Dovey, ten years president of the Seattle Engineers Co. and well known in Northwest engineering circles, has been recently made assistant vice president of the Pacific Coast Coal Co.

A. Stephen Knowles announces the opening of an office in New York City to do general consulting work in coal and its by-products, specializing in testing coal for coking properties, preparing reports on plants and processes, and designing, constructing, and operating by-product ovens.

At a recent meeting of the Board of Directors, **J. J. Arnsfield,** advertising manager of Fairbanks, Morse & Co., was elected president of the Engineering Advertisers' Association of Chicago to fill the vacancy made by the resignation of **A. H. Hopkins,** who severed his connection with the C. F. Pease Co. to take charge of the domestic advertising division of the J. Roland Kay Co. **Mr. Keith J. Evans** advertising manager of **Jos. T Ryerson & Son,** was elected vice-president, and Julius Holl, advertising manager of Link-Belt Co., was elected to the board of directors to fill the vacancy made by Mr. Hopkins' retirement.

Coming Meetings

Illinois Mining Institute will hold its next meeting on Nov. 20 at Springfield, Ill. Secretary, Martin Boll, Springfield, Ill.

Coal Mining Institute of America will hold its annual meeting Dec. 8, 9 and 10, 1920, in the Chamber of Commerce Auditorium Pittsburgh, Pa. Secretary, H. D. Mason, Jr., Chamber of Commerce Bldg. Pittsburgh, Pa.

American Mining Congress will hold its annual meeting at Denver, Col., Nov. 15 to 19. Secretary, J. F. Callbreath, Munsey Building, Washington, D. C.

The American Society of Mechanical Engineers will hold its annual meeting Dec. 7, 8, 9 and 10 in the Engineering Societies Building, 29 West 39th St., New York City. Secretary, Calvin W. Rice 29 West 39th St. New York City.

COAL AGE

The Weekly Journal of the Coal and Coke Industries

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Unfair and Unfounded

BECAUSE he daily told the President of the United States, through his secretary, of the progress the coal operators were making in their constructive program of putting the coal where it was most needed Colonel Wentz is now accused of having played politics in an effort to secretly put over under cover of governmental offices the priority orders of the Interstate Commerce Commission. It is further being charged that he did this to permit operators to ship to those who would pay high prices for coal as against those with whom the operators had low-priced contracts. The criticism is unfair and the charge unfounded.

In the issue of *Coal Age* of July 8 we said, "The present policy of temporizing with the distribution problem will lead to serious trouble this fall and winter as it did three years ago. No good can come from plastering one transportation priority order on top of another. The personnel of the Interstate Commerce Commission is no more qualified to handle national distribution of coal than was Dr. Garfield personally. Dr. Garfield called the operators to his assistance; so should those at Washington attempting to handle the situation. Either leave distribution of coal to the operators or invite them to Washington to do the work for the government. If the combined judgment of the commission, the railroads and the operators is that control of distribution is necessary, the way can be found to make it effective." It is but repeating history that this was the program followed and that the coal men did combine forces with the government and the railroads in the effort to meet the situation. That they did meet it is our opinion, for even before cold weather has set in all but one of the measures taken to put the coal situation right has been indefinitely suspended.

Something had to be done last July and the things that were done were, by common consent, the best that could be devised. And the president of the National Coal Association, as it is presumed also did the leading representatives of the railroads, kept the President of the United States informed of the progress that was being made on this program, in which the government was a party.

Just who benefited financially in the priority orders of the commission that directed coal to New England: the operator who was turned away from the export market or the consumer in New England who sat back and waited for the coal to come to him? New England wanted and got this order for the purpose of getting coal cheaper. Who benefited by the Lake priority order: the operator who was forced to send a definite share of his output to the Northwest or the consumer in that territory who demanded a lower price and got it because of the compulsion of that order?

And most important of all, who is benefiting in the open-top-car priority order unless it be the consumer? The record rate of output that order has produced has broken down the price, just as it was foretold that it would. Individually many operators and shippers took toll as a result of each of these measures and many took losses because they were obliged to ship where the market was lower than their contracts and some were compelled to forsake high-price business to fill their share of the percentages laid on them for the favored sections. No better evidence of the fact that these acts fostered by the National Coal Association did not suit the pocketbooks of all the coal trade can be found than the protest recently made by a section of the New York trade to the commission against the Lake order. These distributors contended that they were being deprived of their rights because they were obliged to ship West on priority orders when they had perfectly good business in the East.

The National Coal Association cannot tell the coal operators where to ship their coal and much less can it tell any one what to charge for coal. The latter it cannot do because of the laws of the land and the first because the coal operator and shipper is, as a tribe, not so tractable. A heavy club is all that the average run of small operator can understand when it comes to national problems and to have told shippers to send their coal to the Northwest when the price was better in some other direction would have been as effective as crying "Shoo" at a pack of hungry wolves. To contend that the officers of the National Coal Association acted in concert with the other agents to enable its members to get better prices for coal is to overlook the fact that the Cleveland meeting of that association was for the purpose of bringing into line the doubting ones who were laboring under the belief that what had been done by their officers was too highhanded and interfered too greatly with their business—for which they conceived they had not selected these officers.

Senator Calder, whose attitude and whose questioning of Colonel Wentz in New York last week at a hearing before his committee on reconstruction has brought this thought before the public, says that he does not favor government control of the coal or any other industry. He has not pretended to say what should have been done by the coal men in the emergency of last summer; we commend to him the brand of courage of Colonel Wentz and the other officers and members of the coal association who dared their membership with a temporary form of control of distribution, much to the dislike of those members, in order that a more permanent form of federal control might be avoided.

The coal industry needs control, but it should first be given credit for the brand of self-control that has been exercised through its several national associations. The tales of graft in coal that now fill the daily press are in most every instance traceable to the practice of assigned cars, against which the best men of the industry have been and are unalterably opposed. It would seem

that every opportunity opened this year for graft, dishonest speculation and extortion has been seized upon and many have entered the coal business this year through the attraction of easy money. It cannot be charged that a constructive policy on distribution is at fault because of these.

Which Way Is the Wind Blowing?

COMMENTING on domestic prices the monthly review of the Federal Reserve Board for the New York District says that the general drop in prices has proceeded with increased momentum and only a relatively small number of commodities has remained unaffected. Reports from various markets in all sections give unmistakable evidence that readjustment is in progress.

"Many of the basic raw products, such as hides, leather, rubber, cereals, sugar, cotton and potatoes," the Reserve Board's review states, "have declined rather abruptly, and certain manufactured articles, notably textiles, automobiles and a number of other products have had substantial declines also. The non-ferrous metals such as copper, lead and tin show substantial declines."

The important question to the coal trade is whether, as in the United States, the demand for coal abroad will decline and in consequence our export market be curtailed. The answer will be found in the size of Europe's stockpile. If stocks are sufficiently near normal to satisfy the needs of the consumer he will cease buying except for current requirements. It should be fully appreciated that the feverish demand for coal, not only here but in all foreign countries, in the last eighteen months has largely been caused by anxiety to replenish stock. A further and more potent factor at this time is the general decline in commodity prices all over the world. This decline of prices abroad will of necessity be accompanied by a slowing up in buying, which in turn will result in a slackening of production of all commodities, which, of course, means a decrease in the consumption of coal. Europe has not been taking our coal at present rates of exchange and high delivered prices except under dire necessity. Any condition that takes off the sharp edge of this necessity will reduce our market.

Excepting only England and the devastated coal fields of France the rate of coal production in Europe has almost if not entirely reached the rate of consumption and the point has actually been reached at which the European buyer can afford to be particular as to the quality of coal he gets and the price he pays.

"The world-wide check in prices which still continues is convincing evidence that price declines are not purely national phenomena," says the Federal Reserve Board.

The board's statement also says that the forward export demand for American products other than coal, wheat and oil recorded a further decline in October, and in many important lines new orders have been reduced: "The fall in prices of many commodities in foreign as well as domestic markets, with the attendant financial strain abroad, has curtailed buying power and everywhere the tendency is toward hand-to-mouth purchasing. Many report that large amounts of goods have been turned back, and the disposition toward cancellations has been more general. Exporters are unusually cautious in accepting orders or making shipments."

The present situation of the market for coal on our Atlantic seaboard may be briefly stated. As early as the middle of September European buyers were hesitant at taking our coal at $30 delivered, the approximate general average at which business had been done during the summer, and there were times when as many as ten cargoes of American coal were reported at European ports on demurrage. The prospective British strike and the strike itself served throughout October to hold up the market on this side, despite the fact that both France and Italy, as well as the Northern Peninsula countries, reported stocks sufficient to see them through several weeks without additional British coal. As soon as the news was received in this country that a basis for settlement of the British strike had been reached the backbone of the export market on coal was broken. Nevertheless the demand for current requirements abroad that must be supplied from this country will continue sufficiently strong to lead the coal market in this country, but the pace of last summer cannot be maintained.

Till the Next Time

GREAT BRITAIN breathes more easily because the wage dispute is settled—at least for a while. However, though the coal miners will resume work, the industrial workers will not do so until the manufacturers and steel masters for whom they work can obtain coal. It may be some time before Great Britain speeds up again, for shortage of coal has but added to the deficiency in basic materials on which her industrial life depends. The mine workers laid their axe at the very root of Great Britain's prosperity. The effect of the mine workers' inaction will therefore last long after the strike ends.

The grave consequences to be apprehended were emphasized by the presence of twice the ordinary number of police on the streets of London. There are no miners within a radius of many miles, but there are many men who are idle and cold by reason of the strike. They are disposed to blame the Government and their employers and not the men who by laying down their tools have made their idleness inevitable.

For these strikers the idle men have a lively sympathy, because they cannot believe that increased wages must mean either higher prices or, with the confiscation of excess profits, increased taxes. But the impost of one or the other is inevitable, however obscure and indirect may be the course which causation travels. We may look to see Great Britain entirely out of the export coal trade. The British mines will be like the American railroads—legislated into inefficiency, bound hand and foot and helpless as an overshackled slave.

But we must pause for a moment to admire British ingenuity. In the plan to be outlined is something even we have not yet thought of. When the miners take holidays and refuse to work, the British mine owner is to be penalized for the inadequacy of his tonnage and is to lose part of his 10 per cent share of surplus profits. The mine workers evidently thought it only fair that if they were to be penalized for non-production, it was only right that the operators should pay a penalty also, so they had this provision inserted. But everybody knows the repeated absenteeism of the mine worker from his working place is the cause of the falling off in output, so laying the burden equally on the mine operator and the mine worker is an impartial punishment of the just and the unjust for the offences of the latter.

Mexican Government May Take Over Sabinas Coal Mines

It is reported that the Mexican government is about to take over the mines in the Sabinas coal basin in order to relieve the existing coal shortage, pending agreement between miners and owners. Meantime Mexican railroads are buying coal in the United States wherever possible.

Shipping Board Orders 24 Small Ships Retired

Orders to withdraw twenty-four Lake-type steel steamers, aggregating approximately 84,000 deadweight tons, from service were issued Nov. 3 by the Shipping Board. The vessels are to be tied up at Norfolk, Va., under caretakers. The general shipping situation makes it difficult for the smaller craft such as these to find cargoes because of the slump in ocean freight rates, officials explained.

Alabama Grand Jury Indicts Retail Coal Men

Eleven retail coal dealers and two mine operators were indicted by the Federal Grand Jury at Birmingham, Ala., Oct. 30 on charges of violating the Lever Act. The indictments followed protests from any sections of the state against present prices of coal.

Commerce Commission Upholds New York Demurrage Rates

Existing regulations on New York railroads for demurrage charges in transferring freight received for export upon domestic bills of lading between the rail terminals and ships in port were found just and reasonable Nov. 1 by the Interstate Commerce Commission. The commission upheld the provision in the regulations which provides that delivery of the property when covered by domestic bills of lading only will be made upon the payment or satisfactory guarantee of demurrage charges.

Would Impeach Alabama Governor

The Alabama Federation of Labor, in convention at Birmingham on Oct. 30, adopted by unanimous vote a resolution demanding the impeachment of Governor Kilby for sending state troops into the coal strike district.

M. J. Gillen, of Wisconsin, Declines Shipping Board Post

Martin J. Gillen, of Wisconsin, has telegraphed President Wilson declining to serve on the new Shipping Board. Mr. Gillen is the third of the seven men selected by the President to decline appointment. The others are Theodore Marburg, of Baltimore, and Gavin McNab, of San Francisco. The only one of seven known to have accepted appointment is Joseph N. Teal, of Portland, Ore.

Herbert N. Shenton Retires from Council of National Defense.

Herbert N. Shenton retired Oct. 31 as director of the Council of National Defense to resume his duties at Columbia University. E. K. Ellsworth was made acting director.

Government-Controlled Railways Of Canada Largest in World

With the merging of the Canadian National and Grand Trunk lines, the Canadian Government now owns the largest railroad system in the world. Government lines control 22,000 miles, employ 70,000 persons, operate 2,000 modern locomotives, 1,800 passenger cars and 70,000 freight cars with a carrying capacity of 600,000 tons.

NEWS BRIEFS

Terse Items Chronicling Events of Interest to the Industry

Mine Explosion in China Kills 422 Men

An explosion and fire Oct. 14 in the Tong-Shan coal mine, in Chi-Li Province, killed 422 Chinese laborers. There were 119 survivors. The explosion occurred in next to the lowest level, smoke causing most of the deaths. Railway shops and a large cement works near the mine lent their employees for rescue work. It had been known that there was firedamp in the mine and extra precautions had been taken to safeguard the miners against it. It is believed the explosion was caused by laborers tampering with the safety lamps.

Movement of Coal Through "Soo" Canals

Bituminous coal moved westbound through the "Soo" Canals during October, according to the report of the Bureau of Foreign and Domestic Commerce, amounted to 2,493,907 net tons; anthracite, 376,388 net tons. During the month of September, 1920, 2,040,774 net tons of soft coal and 177,123 net tons of hard coal passed westward through the canals.

Private Rail Control Costs U. S. $656,000,000 in Half Year

Private operation of the railroads for the first six months after the end of Federal control will cost the Federal government $656,000,000, according to figures made public Nov. 3 by the Interstate Commerce Commission. The railroads sustained a net deficit of $206,000,000 during the six months' period, and, besides this sum the Treasury must pay them $450,000,000, the amount of the guaranty provided in the Transportation Act. Part of the deficit is charged to increased wages.

Germany May Conscript Workers

A scheme for industrial conscription for both men and women on the Bulgarian model has been worked out fully by the German government. It is mainly the work of Professor Schuecking. Compulsory work for one year is advocated as a substitute for former army service, with a view to increasing the sense of discipline among the masses. This proposal meets with great opposition from the Socialist and Democratic elements in the country, while the Conservatives naturally are in favor of it.

Labor More Plentiful Now

A dispatch from Cleveland to the Philadelphia *Public Ledger* Nov. 3 states that industrial conditions have so changed with recent events that the surplus of labor is greater now than at any time this year.

Anthracite Operators Agree to Reduce Prices

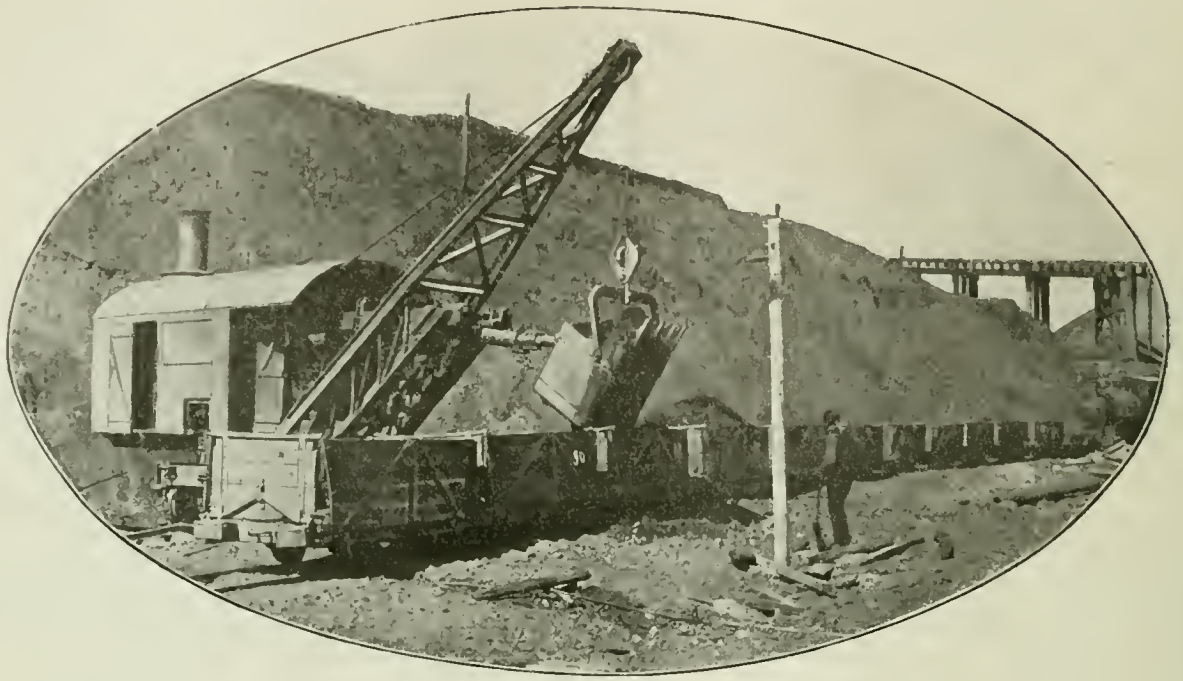
Anthracite coal operators pledged themselves in Philadelphia, Oct. 30, to co-operate with the Department of Justice in attempting to reduce "excessive prices of coal to the consumer."

Seventy-six Per Cent of World's Ships Are Coal Burners

According to Lloyd's Register, of the world's ships 16.3 per cent are oil burners, 76 per cent are coal burners, 1.7 per cent have internal combustion engines and 6 per cent use sail.

10,212 Ships Passed Through Panama Canal in Six Years

Commercial vessels which had traversed the Panama Canal since its opening in 1914 had reached a total of more than ten thousand at the close of the fiscal year ended last June 30. According to the canal record 10,212 ships had passed through. The average monthly number of vessels making the passage has risen steadily, except during a few months in 1915 and 1916, when landslides closed the waterways, until it reached 144.9 ships per month during the first half of the present year.



Reclaiming Culm with a Steam Shovel

Culm banks have often been referred to as the eyesores of the anthracite region. In the early days it was believed that coal smaller than about present stove size positively could not be induced to burn. Accordingly it was rejected and thrown on the dump together with other mine refuse. Some of these refuse heaps are today highly valuable on account of their coal content that is now marketable.

To reclaim the culm for preparation, various means have been employed. If the bank lies near a washery, a scraper chain or dragline may be used for this purpose, the culm being hydraulicked to the conveyor. Where it is necessary to transport the material more than a few hundred feet, it is advisable to put it on wheels—that is, haul it in cars.

The illustration shows a small steam shovel loading culm from a bank into mine cars for transportation to the washery or preparation plant. By this means, a few men are enabled to handle a vast amount of material. Consequently the cost per unit treated is comparatively low.

PANORAMIC VIEW OF PLANT OF NEW FIELD BY-PRODUCTS COAL CO.

In the center will be noted the hoist house, which accommodates the two hoists and the electric equipment. It lies midway between the coal shaft and the shaft which handles men and materials. On the extreme right is a building which contains the machine, carpenter and blacksmith shops and the supply room. Along the part of the structure in which supplies are kept is a platform for the receipt of materials by rail. On the left the town can be seen amid the trees.

New Field By-Products Coal Co.'s Plant One Of Largest in Pittsburgh Region

Compactness Sought in Laying Out Plant—Both Hoists and Electric Apparatus in One Building, Shop and Storehouse in Another, General Offices, Hospital, Lamproom and Washroom in a Third—Fan is Normally Steam-Driven but Electric Drive Is Provided

By D. J. Baker
Wilkinsburg, Pa.

THE plant of the New Field By-Products Coal Co. is located at Campbell Station, near North Bessemer, Pa. It is typical of the newer operations in the Pittsburgh district. The company, which is a subsidiary of the M. A. Hanna Co., is developing a 6,000-acre tract of the "thick" Freeport coal in northern Allegheny County. The coal at this time averages 84 in. in thickness, the bed being divided by a band of bone coal of varying width.

Several hundred feet below this bed is another which at some future time may possibly command the same attention that is now being given to the overlying seam. Years ago the Pittsburgh bed was worked on many sections of the property now leased by the New Field Company. At that time little thought was given to the measures which were below it. The Pittsburgh bed was under rather shallow cover and easily mined through drift openings.

Just as the "thick" Freeport is being mined now that the Pittsburgh bed on this property is gone, so we may expect thinner, deeper and less desirable measures to be worked in their turn when the Freeport is exhausted. The thick Freeport coal, however, is well and favorably known for quality and might well have been worked concurrently with the Pittsburgh had it not labored under the disadvantage that it could not be reached without sinking a shaft 300 ft. deep.

Buildings Solidly Built and Fireproof

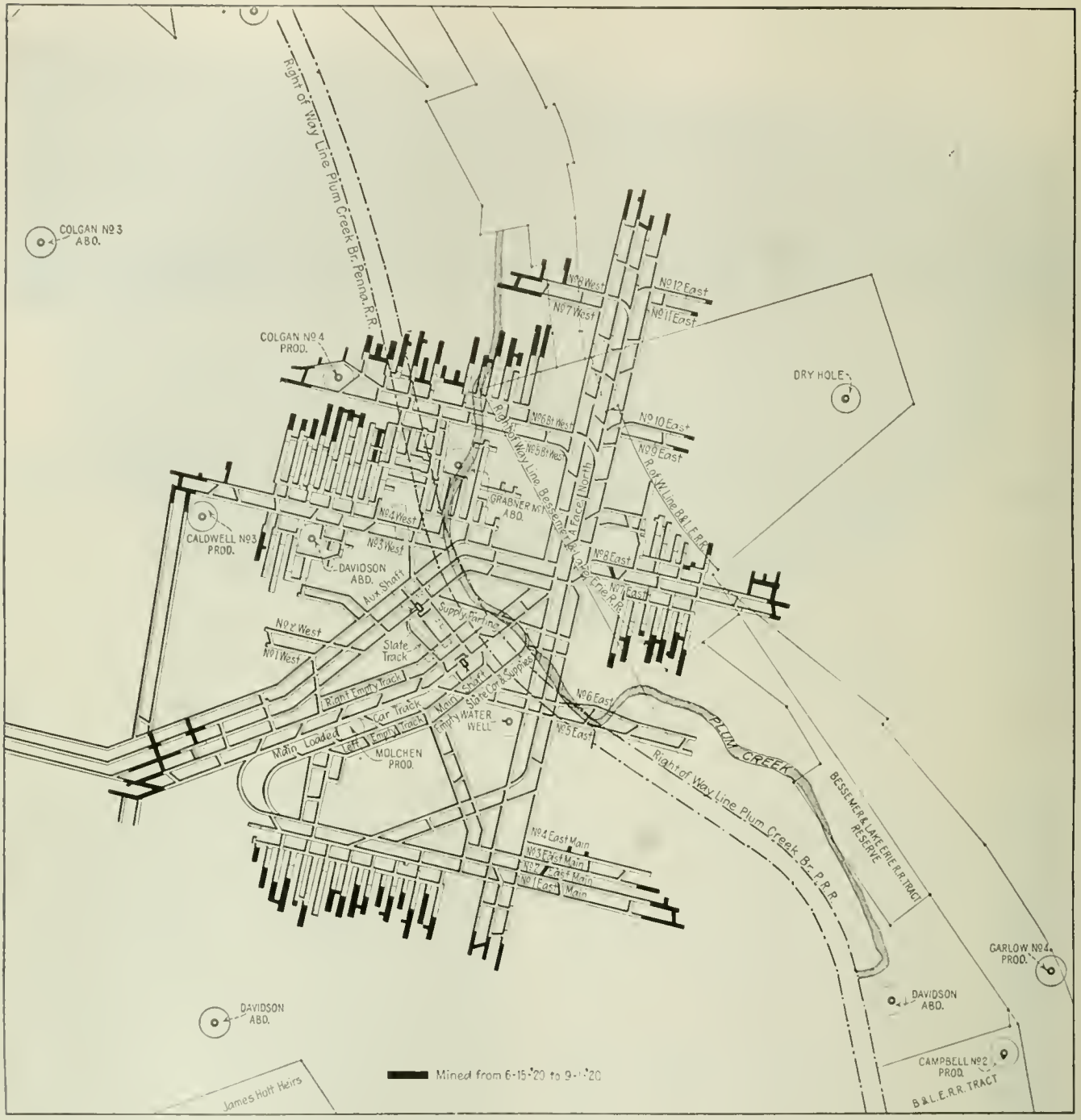
The operation near North Bessemer dates its initial period of construction back to February of 1917. In this respect it is similar to many of the new operations of the district which had their inception immediately prior to, or during, the early months of the recent war. The interesting features of the plant lie chiefly in the design of the surface buildings and their layout, for, in the main, no new methods of mining or of preparing the coal were attempted when the plant was built.

Solidity has been sought in the building of the various surface units, which, with the exception of the tipple, have all been constructed of brick and roofed with reinforced concrete block. Such a type of construction gives the plant a pleasing and neat appearance. The grounds around mine buildings may be kept clean and free from rubbish and worn-out equipment, and even grass may be induced to grow there; but something will be still lacking if the structures themselves are rough and unattractive.

Both Hoists Are Housed Under One Roof

At most bituminous mines separate buildings house the hoist for coal and the hoist for men and materials. Where there is much hazard from fire the arrangement still has its advantages, but at this operation both hoists are under one roof, which also houses the electrical generating equipment. The building measures 60 x 150 ft. The hoisting engines have been installed at opposite ends of the structure as the building has been so placed as to lie nearly equidistant between the two shafts.

This building is not divided into separate rooms. It is thus possible for the engine operators to see each other. The engineer in charge of the men-and-material hoist is naturally not kept as fully engaged with his



PLAN OF UNDERGROUND WORKS OF NEW FIELD BY-PRODUCTS COAL CO. CAMPBELL STATION, NEAR NORTH BESSEMER, PA.

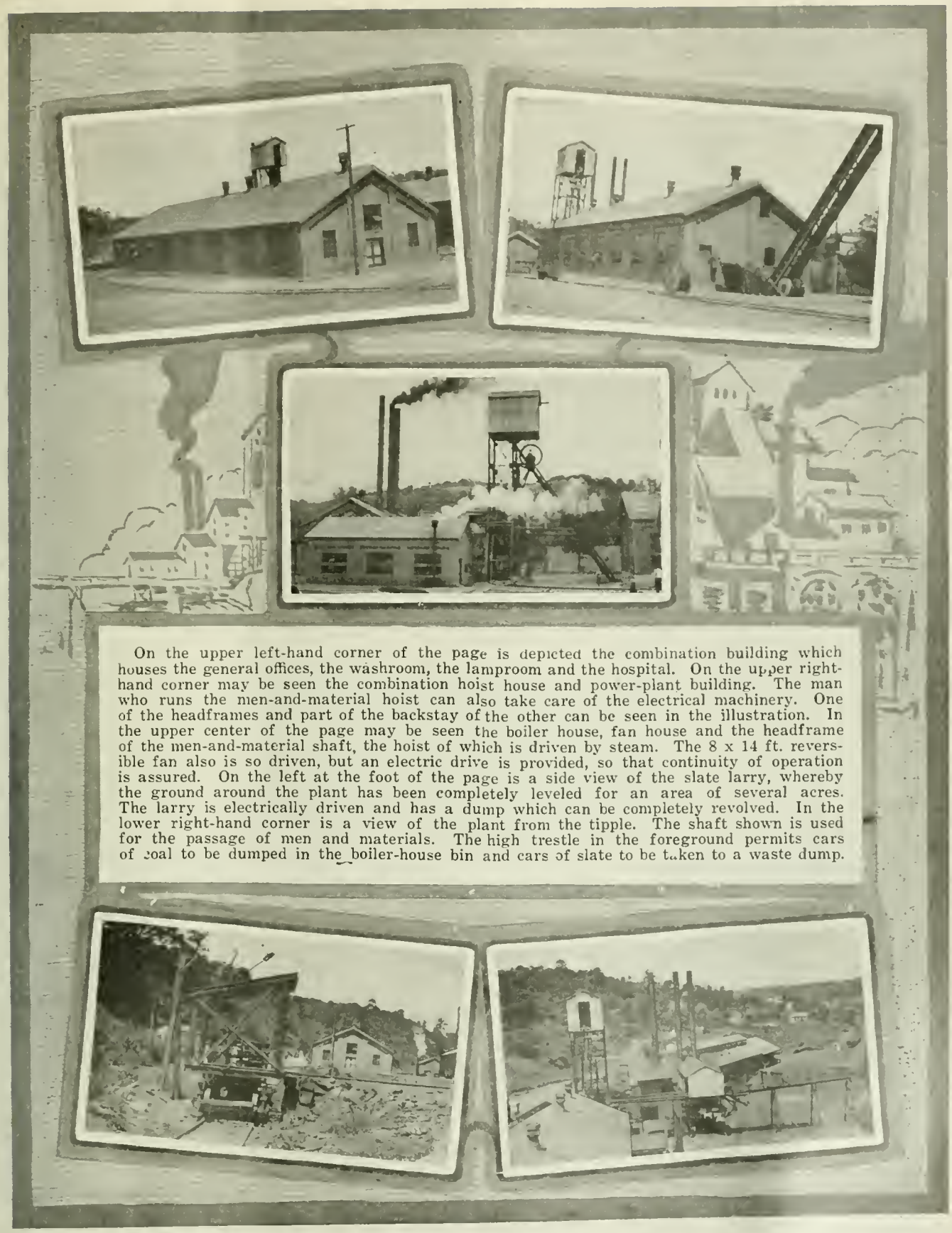
A few dry wells, a few abandoned and some producing, occur in this field. Care is taken to leave solid pillars around them. The mine is still small but it is equipped for a large daily production.

duties as his fellow operative at the other machine, and can easily find time to care for and keep in good repair the electrical generating units, which are located midway between the two hoist engines.

In the end of the building adjacent to the main hoisting shaft, a Nordberg hoist with a 6- to 11-ft. drum has been installed. This winds a 1½-in. cable and is geared to a 700-hp. Westinghouse motor. In the opposite end of the structure is placed a 24 x 36-in. twin-cylinder Vulcan steam hoisting engine. This unit has a capacity of 500 hp. and winds a 1½-in. cable on a conical drum varying from 7 to 10 ft. in diameter.

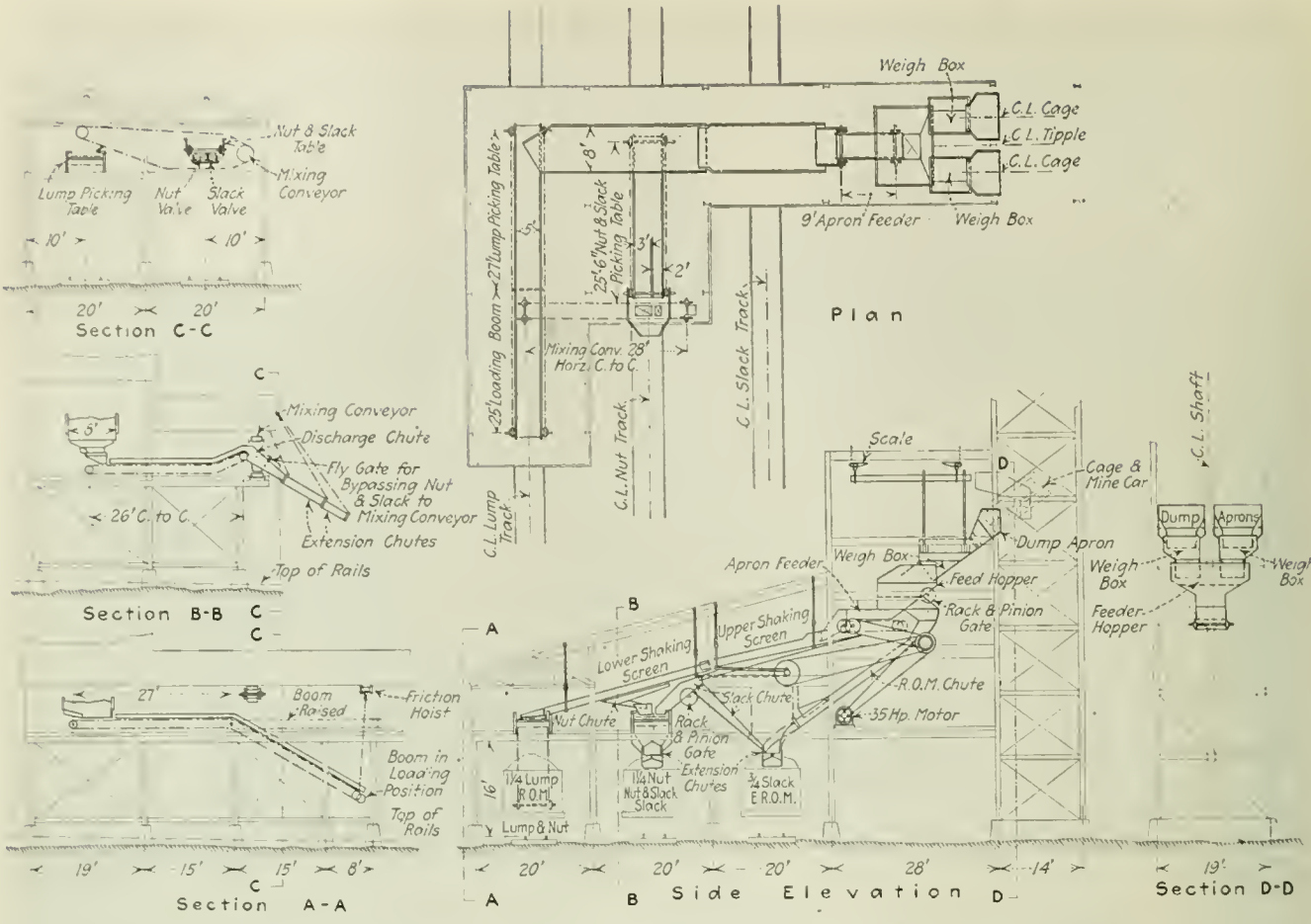
It is just as important that the men-and-material hoist be ready for operation at all times as it is that the ventilating equipment be kept in continuous operation. The sources of power of both should be equally certain. Though the New Field By-Products Coal Co. has endeavered to prevent an explosion by providing plenty of ventilation at all times there can be no absolute assurance that there will never be an accident which will necessitate the immediate removal of the men. In that event there should be no uncertainty as to the availability of the power to run the hoist. No matter what may be the advantages of purchased power, it can be said to be absolutely reliable. Hence, the New Field company has provided the man-and-material hoist with steam power.

The electrical equipment in the building comprises a



On the upper left-hand corner of the page is depicted the combination building which houses the general offices, the washroom, the lamproom and the hospital. On the upper right-hand corner may be seen the combination hoist house and power-plant building. The man who runs the men-and-material hoist can also take care of the electrical machinery. One of the headframes and part of the backstay of the other can be seen in the illustration. In the upper center of the page may be seen the boiler house, fan house and the headframe of the men-and-material shaft, the hoist of which is driven by steam. The 8 x 14 ft. reversible fan also is so driven, but an electric drive is provided, so that continuity of operation is assured. On the left at the foot of the page is a side view of the slate larry, whereby the ground around the plant has been completely leveled for an area of several acres. The larry is electrically driven and has a dump which can be completely revolved. In the lower right-hand corner is a view of the plant from the tipple. The shaft shown is used for the passage of men and materials. The high trestle in the foreground permits cars of coal to be dumped in the boiler-house bin and cars of slate to be taken to a waste dump.

300-kw. and a 200-kw. motor generator set, complete with switchboard equipment. The New Field company purchases all its electrical power from the Duquesne Light Co., of Pittsburgh. This is delivered to the plant on a high-tension line carrying 22,000 volts. The current enters a transformer station, situated outside the hoist house, where it is reduced to 2,200 volts through a bank of three 300-kva. transformers. A small 30-kva. machine takes one line from the large transformers and reduces the current still further to 440 volts, making it available to operate numerous small motors in shops and other plant buildings.



PLAN AND ELEVATION OF TIPPLE, SHOWING PICKING TABLES AND LOADING BOOM

The cage dumps the coal at a point about 60 ft. above the ground onto a dump-plate, from which it passes to a 5-ton weigh basket. A 9-ft. apron feeder carries the coal to the screens, which divide the coal into 1¼-in. lump and ¾-in. nut and slack; but provision is made so that the sizes can be mixed after preparation, if so desired.

A wing of the building, shown to the right of Fig. 10, has a fireproof interior and contains the oil switches. These are placed in a 10 x 12-ft. room. From the switchboard 1,500,000-cir.mil. armored cables lead the current to the interior of the mine through boreholes that connect with a small substation located near the main shaft bottom. Direct current only is used within the mine.

The tipple, which with the equipment within it was manufactured by the Link Belt Co., is designed to size and load 4,000 tons of coal in eight hours. It is of steel construction covered with corrugated sheet iron. The mine is served by the Plum Creek Branch of the Allegheny Division of the Pennsylvania R.R. Storage yards above and below the tipple will accommodate 75 empty cars and a like number of loads. Because of the irregularity of the car supply ever since the surface plant was completed, the tipple has never been tested to its full capacity. When this mine can be assured of a regular supply of cars, it will rank among the biggest producers in the Pittsburgh district.

Tipple Can Load Lump, Nut and Run of Mine

The self-dumping cages discharge the contents of the mine cars on to a dump-plate from which the coal passes into a 5-ton weigh basket. After weighing, the coal passes to a short apron-feeder conveyor leading to the screens. Only two screens are utilized in sizing the mine product, the outgo being a 1¼-in. lump or a ¾-in. nut. These screens are of the slotted type and are balanced. Three tracks are provided beneath the structure. Thus 1¼-in. lump, run-of-mine or lump and nut may be loaded on one track; ¾-in. nut, nut and slack, or slack on another, while ¾-in. screenings and run-of-mine may be loaded into cars on the third track. Should the screens happen to be out of order, it is possible to bypass the coal as it leaves the weigh basket and load nothing but run-of-mine.

A loading boom permits the larger size to be lowered into the car with a minimum of degradation. Coal is loaded on the other two tracks from extension chutes, which while not affording the coal the same freedom from breakage as is secured by the loading-boom method, is, nevertheless, able to deposit the product in the car without excessive degradation. A 35-hp. motor furnishes ample power to operate both the apron feeder and to oscillate the screens by means of eccentrics. The connection between motor and eccentric flywheel is made by belt.

Both lump and nut sizes are picked. The lump table, which is a section of the loading boom, is 5 ft. wide and 27 ft. long, while the nut table is of the same width and practically the same length. Between the nut and lump tables a mixing conveyor has been installed, thus rendering it possible to transport the coal from one table to the other, thereby combining the two sizes after cleaning so that picked run-of-mine may be loaded for the market.

The main hoisting shaft measures 12 x 22 ft., and the depth of the bottom of the coal is 312 ft. It has

In the upper left-hand corner of the page is the tipple with its three loading tracks. In the upper right-hand corner is the building that combines the functions of warehouse and shops and so saves much needless transportation of material. The newest form of economy is summed up in the slogan, "Save steps." The upper of the two pictures in the center shows the pump-room at the shaft bottom. The outdoor transformer station is shown in the lower center panel. In the lower left-hand corner is a car lift by which the empty cars are elevated so as to return under gravity to a point near the head of the load tracks. They first strike a kickback and then travel in the reverse direction on a 3-per cent grade. The right-hand lower corner is a view taken looking toward the main shaft bottom. Both the sides of the bottom are concreted. The empty car shown on the left is proceeding to the car-lift, which is located in the rear. The landing will hold 105 loaded cars.

two compartments, and is walled with concrete throughout its entire depth. The cages were supplied by the Connellsville Manufacturing and Mine Supply Co. A 4-ton car is used in the mines. Steadily operators are turning to the larger-capacity car as a solution of the many difficulties besetting transportation.

The cars in use at this operation were manufactured by the Fulton-Kenova Mine Car Co. and are characterized by a short wheel base, a single-link hitching and a short-radius bumper. With this type of construction the cars when made up into trips can readily traverse short curves. The long-radius bumper and multi-link

coupling are doomed, if for no other reason because cars of this construction clutter the haulageways with fallen coal. In starting a trip, the bump-bump-bump that precedes the setting into motion of each car results in the jarring of many loose lumps of coal from the car tops.

The man-and-material shaft has the same dimensions and general type of construction as the main shaft. It has been sunk the same distance to the coal and likewise has two compartments. The fan house, which adjoins it, is of the same type of construction as the other plant units. It contains an 8 x 14-ft. reversible Jeffrey fan capable of delivering 350,000 cu.ft. of air per minute. This machine is equipped with two drives,—a 400-hp. Erie Ball engine on one side and a 300-hp. Westinghouse, 2,200-volt alternating-current motor on the other.

Fan Normally Driven by a Steam Engine

The fan is normally operated by the steam engine, as it is contended that this is more economical than electric power so long as the auxiliary power house is situated close by, as at the mine being described. In the desire to purchase electrical power for the entire operation of a plant, the needs of the fan are sometimes overlooked. When this important piece of equipment is only operable through electrical energy, the mine is not as safe as it might be.

It is imperative that the fan be kept in operation at all times. If for financial reasons, the officials do not care to erect a boiler house as an auxiliary power plant, some other type of auxiliary drive must be furnished, or the men in the underground workings will not be given that guarantee of freedom from gas that is their due. Some operators are meeting this situation through the installation of gasoline engines. Others have provided engines operated by natural gas. Either means is good, but scarcely to be compared so far as reliability is concerned, with steam power. The recent disaster at Renton probably never would have occurred if the fan at that place had been equipped with an auxiliary drive.

To Use Bone Coal and Mechanical Stokers

The boiler house, which is actually the auxiliary power plant, measures 60 x 60 ft. and houses three 150-hp. Erie City boilers. Besides furnishing steam for the operation of the fan and the men-and-material hoist, a line is taken down the material shaft for the operation of a car-lift near the main shaft bottom. The boilers are hand-fired with coal delivered to the floor from a 125-ton bin that is filled from cars brought up the material shaft and transported over the light trestle shown in Fig. 12. This arrangement necessitates the installation of an additional pair of scales.

The trestle leading past the boiler house will eventually be used also for the handling of slate. As will be noticed in the general view, this plant was constructed in a valley. All the refuse from the underground development to date has been used as fill around the surface buildings. In the near future it is quite probable that crushing apparatus will be installed near the boiler house and an attempt made to burn the bony coal with mechanical stokers. Practically all the bony removed from the coal before it is brought to the surface, is now gobbed in the rooms in which it has been extracted. This does not appear to be an economical procedure, for the surface plant contains a boiler house and the bone possesses considerable value as a fuel—especially if mixed with good coal.

Another of the main surface buildings is the combined "shops" and supply house. This is 200 ft. long by 60 ft. wide. Within it is housed the blacksmith, carpenter and machine shops, while one end of the building is separated by a brick partition so as to allow space for two offices and a store room. This section is protected against fire from the other portion by fireproof doors.

In the machine shop are installed a pipe-threading machine, two lathes—either of which is large enough to turn down locomotive wheels—drill presses, a 10-ton traveling crane, and an automatic saw. Two 12 x 12-ft. rooms have been constructed in a corner of the machine shop. One contains an electrical repair shop, while the other houses a toilet with lockers for the accommodation of the workmen.

The blacksmith shop is equipped with two forges as well as two saws and drill presses. All motors that are used for operating the various machines are suspended from the roof of the building, the transmission or power being by belts which are all carefully guarded.

Four Separate Buildings Combined in One

The lamp house, hospital, bath house and general offices are all under one roof in a building measuring 50 x 160 ft. Collecting or grouping together these necessary operating units which at most bituminous plants are separate buildings, is only in keeping with the general air of compactness of design that pervades the entire works. The bath house, or "change room" as it might be called, has accommodations for the clothes of 300 men and is equipped with 24 showers and 6 toilets.

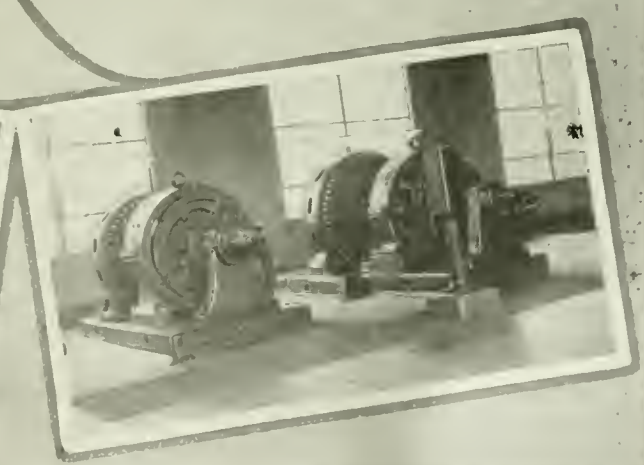
At present there is space for 200 additional clothes hangers. If a miner does not wish to take a bath at the end of the day, he may wash at any one of thirty-six separate spigots provided for that purpose. Water is delivered to the showers and hot spigots at a maximum temperature of 120 deg. F. so that it is impossible for a man to scald himself inadvertently. All of the hot water first passes through a thermostat located in the boiler house.

The hospital contains operating tables, bed and necessary surgical equipment for the performance of major operations. This section of the plant is under the management of a resident physician. No serious accidents have befallen any of the employees to date, but everything is kept in readiness in case an accident should occur. The nearest hospital is located within the city limits of Pittsburgh, nearly twenty miles distant by automobile. The relative remoteness of the city accounts for the care with which the room is equipped. This is one of the few mine hospitals in the western end of the state that is able to handle serious cases.

Electric Lamps and Breathing Apparatus

The lamp room contains standard apparatus for the holding and recharging of 400 Edison cap lamps. Five sets of Gibbs breathing apparatus are kept in this room for mine-rescue work. The firm has among its employees twenty men possessing first-aid certificates and ten qualified in mine-rescue work. Weekly classes are held for the diffusion of first-aid knowledge. By this means the company is assured that a competent corps will be present at the mine at all times.

In the upper left-hand corner is the steam hoist for actuating the cages in the men-and-material shaft. It has double 24 x 36-in. cylinders. The upper right-hand corner is occupied by an illustration showing the coal-shaft headframe and the tipple. The latter is built of structural steel and covered with corrugated sheet iron. A shed has been placed over the top of the headframe to protect the sheave during inclement weather. The central illustration shows the car lift in operation. It raises the cars 20 feet. It is operated by steam and works automatically. Most mines in the Pittsburgh district meet this situation with car hauls. In Illinois, however, the car lift has found more general application. This is one of the few operations in western Pennsylvania to prefer this method of elevation. In the lower left-hand corner will be found the coal hoist, which is geared to a 700-hp. motor. Double conical drums are used to shorten the hoisting time and reduce the strain on the cable, which is of 1½-in. diameter. The drums vary in diameter from 6 to 11 ft. In the lower right-hand corner are two motor-generator sets, which are under the same roof as the hoist engines and in plain sight of the hoist operators. The 250-volt direct current used in the mine is generated by this equipment.



At the bottom of the main hoisting shaft 105 loaded cars may be stored. These are caged automatically. As the empties come off the cage they gravitate for 60 ft. to enter a steam-driven Holmes car lift, by which means they are elevated through a vertical distance of 20 ft. At the top of the lift the cars run by gravity to a kickback, from which point they may be directed either right or left around the shaft bottom. The empty storage yards will accommodate 100 cars. Both run-arounds are on a 3 per cent grade so that the cars run to the head of the load tracks where they are within easy reach of the locomotives.

As can be noticed in the accompanying mine map, five headings have been driven westward, four northward, four eastward, and three southward for the rapid development of the company's acreage. The bottom layout is at present somewhat rudimentary, because much of the development work around the mine in general has been confined to construction and to the installation of surface equipment. In the future excavations will be made for a repair shop and other needed underground rooms. At the present writing, however, there is but a single room at the shaft bottom worthy of description. This is the pumproom, wherein two 8 x 10-in. Dean pumps of the triplex type are installed. Both of these pumps are operated by a single motor connected to them by means of a double belt transmission. The mine sump is at the bottom of the main hoisting shaft. Only one pump is kept in operation, the other being held as a spare.

Shaft Water Will Be Used in the Mine Village

When the main hoisting shaft was being sunk, much water came on one side. In order to divert this influx, a 20-in. borehole was drilled 20 ft. from the shaft, and the water was pumped from this point during sinking operations. Upon completion of the shaft, the borehole was piped, and the flow turned into the sump at the bottom. This water, which enters the sump at the rate of 250 gal. per min., has since been tested and has been found to be of such excellent quality, as to render it altogether desirable for town consumption.

Another pumproom with identical equipment to that described will shortly be excavated from which the borehole water will be pumped to the surface. It is planned to erect a 10,000-gal. tank on a hillside near the town and thereby furnish a means of delivering to the town the water which is now wasted. When this is done the inhabitants will have at their disposal better water than is at present available.

Shotfirers Load and Shoot Drill Holes

Twelve Jeffrey shortwall mining machines equipped with 7-ft. cutter bars are used to mine the coal. Only permissible explosives are employed in shooting. The miners drill the holes, after which they are tamped with clay and fired by competent shotfirers. Eight 6-ton Goodman gathering locomotives fitted with crab reels and cable gather the loaded cars from the rooms. The bed dips to the southwest on a gradient of 1½ per cent, and this grade makes it necessary to provide power for the moving of the loaded cars, for their great weight when loaded makes this essential. Thus far the gathering locomotives have also been used in hauling the trips to the shaft bottom. A 15-ton Goodman haulage locomotive has been ordered and will soon be in service.

Heavier Locomotives To Be Utilized

Other heavier machines will be utilized as the development of the mine proceeds. This development will be much hastened now that the surface units have all been completed. Assured of an adequate car supply the New Field By-Products Coal Co. will take its place among the leading producers of western Pennsylvania. H. A. Nelms is superintendent of the mine. With the few exceptions noted in this article, the plant was designed and laid out by the officials of the M. A. Hanna Co.

Keeping Down Dust by Sprinkling Empties

By E. E. Hughes
Benham, Ky.

BY SPRINKLING empty mine cars, the Wisconsin Steel Co., at Benham, Ky., helps to keep down coal dust. The sprinkler is located on the main entry and near a sump, about 2,000 ft. from the drift mouth. For the supply of water to the sprinkler it has been connected to the discharge pipe of a pump which has been installed for the purpose of forcing the water from this sump to the outside. The man who tends the pump

CAR SPRINKLER IN ACTION

turns the water on the sprinkler whenever an empty trip is passing. The water that misses the cars, falling between them and at the sides, flows back into the sump.

It has been found that the sprinkling of all empties works wonders in keeping dust down. Cars now enter the working places soaking wet and when dry coal is shoveled into them dust does not rise as it would if the coal were shoveled into dry cars having loose dust all over them. This method has another important advantage. Before the cars were sprinkled, the motion of the trips through the entries against the air current would blow the fine dust from the dry cars and deposit it on the floor. When the cars are well wetted, water drips from them as they travel and so keeps the entry moist. At the No. 2 mine of the above company the car sprinkler is located at the tipple.

From the excellent results secured by this method, I am convinced that by installing more of these sprinklers I shall be able to keep the mines moist enough to be free from dust in all working places, except possibly within rooms. It is true that the wet cars cannot sprinkle the top and sides, but all the dust that is kept out of suspension is not deposited on roof or rib, and therefore it will not now be necessary for men to go through the working places to wash down the dust as often as in the past. This method will, therefore, reduce the sprinkling cost as well as keep the mines in much safer condition.

In an answer to charges of the *New York Herald* that Government material was deteriorating at Raritan Arsenal the War Department says that the coal which it was asserted was dumped in a hollow and then filled over was placed there for storage, and that it has all been used for fuel.

Real Factors Determining Export Trade—II

An Answer to J. D. Davis' "Coal Quality a Factor in Export Trade"—Author Discusses Character of European Coals and What Should Be Done to Make Our Overseas Coal Business Permanent

By F. R. Wadleigh
New York City

CONTINUING the examination of J. D. Davis' article of Sept. 9 I am obliged to take exception to his statement that "the most important European coal regions include the Westphalian areas in Germany, the Welsh fields in Great Britain and the Pas-de-Calais district in France."

Why not include the Northern, Yorkshire and Scotch fields of Great Britain? The Yorkshire field has a larger production than the Welsh, the Northern practically the same and the Scotch not much less; a large export tonnage normally comes from each of them.

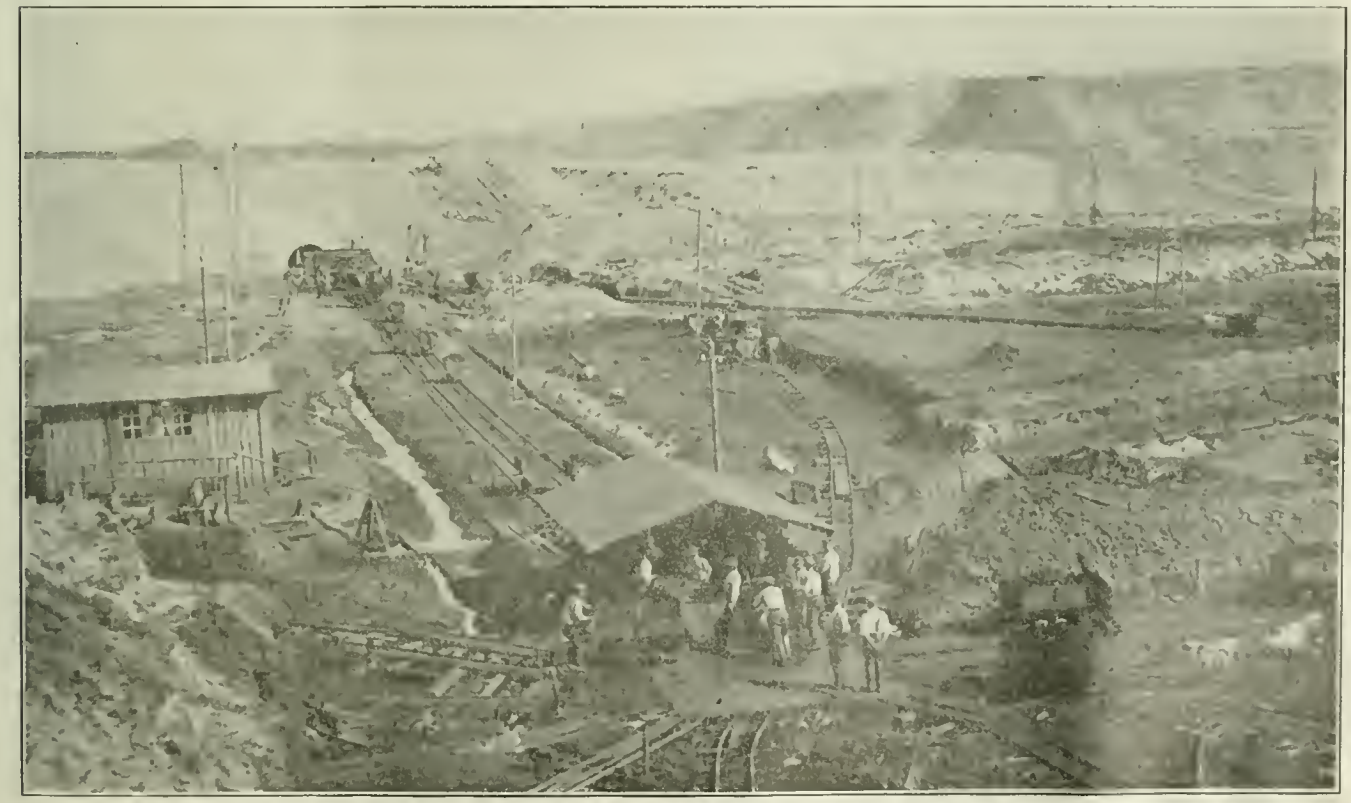
In regard to the Belgian and Holland fields the Davis article states that "the beds in both Belgium and Holland are thin and much broken by faults, making mining difficult and expensive." To one who was not familiar with output figures for those countries the above might seem to imply that, owing to the difficulties mentioned, their output of coal was small and not worth mention.

Yet, while coal mining in these countries is attended with the difficulties stated, the amount of output is all the more remarkable, although not quite sufficient, as Mr. Davis states, to fill their own requirements. Belgium in 1913 produced 22,841,590 net tons and in July was producing at the rate of about 106 per cent of that amount, a remarkable recovery; while Holland in the same year mined 1,986,000 net tons and in 1910 5,356,678 net tons, and, as also stated, they both imported and exported coal.

The Upper Silesian field of Germany also is important for other reasons than those given, namely, coal easily mined and beds thick.

Commenting on Russian coal resources, Mr. Davis says "there is quite a little coal in Russia, but as yet the development of that country's resources has been small." However, inasmuch as the report of the International Geological Congress published in 1913 estimates that the Russian coal fields in Europe alone contain about 60,118,000,000 tons, the statement just quoted does not seem to be quite sufficient. As regards Russia's output, in 1916 she stood fifth among the world's coal-producing countries, her output in that year having been 34,630,000 long tons.

"The following," Mr. Davis states, "may be given as fairly representative of the quality of the best coals of the fields referred to above," and then he gives a table which I will term Table I.



VIEW OF A STRIP-PIT IN THE LOWER LAUSITZ DISTRICT

Perhaps it is unfair to note that at the foot of the rope haul there are at least a dozen men who appear to be greatly in one another's way. There are also two men pushing a car to the dump. This was typical of German operations before the war and it would seem that Germany has not given up its prodigal use of labor. However, this may be only a temporary concentration of men normally widely scattered on the ten converging tracks.

TABLE I—REPRESENTATIVE ANALYSES AND HEATING VALUES OF EUROPEAN COALS (DAVIS)

District or Region	Moisture, Per Cent	Ash, Per Cent	Volatile Matter, Per Cent	Heating Value, B.t.u.
Saar fat coals	1.7	5.1	36.9	13,850
Ruhr steam coals	4.2	6.0	17.2	13,500
English Cardiff	1.0	7.0	15.0	14,050
French coals (steam)	5.4	11.5	26.9	12,140

I consider that the data given in this table are not accurate and greatly understate the quality of the best coals from the fields mentioned. Table II therefore is submitted as being more near the truth, all the data it gives having been taken from a number of unbiassed analyses of the coals listed.

TABLE II—REPRESENTATIVE ANALYSES AND HEATING VALUES OF EUROPEAN COALS (WADLEIGH)

District or Region	Moisture Per Cent	Ash Per Cent	Volatile, Per Cent	Heating Value B.t.u.
Saar fat coals	2.4	3.7	34.4	14,000
Ruhr steam coals	0.9	3.6	19.1	14,420
Welsh coals (Cardiff)	1.16	4.23	15.05	14,900
French coals (steam)	1.10	5.00	20.20	14,491

"Coal cost at the mine," according to Mr. Davis, is "lower in this country. Although labor is cheaper in Europe than in America, the cost of coal at the mine is normally less in this country," he continues. A true statement, but not altogether for the reasons given, namely, "deeper workings, faulted beds, gaseous conditions and quicksands; furthermore, there are the legal requirements in Europe that the thin beds as well as the thick ones must be worked."

There are plenty of "faulted beds" in the United States and the European mines have not by any means a monopoly of gaseous conditions, as compared with those in the United States. Likewise quicksands are not by any means a characteristic of European mines. Of course, the thin beds are worked as well as the thick ones regardless of legislation; in some districts because all of the beds are thin and in others because the thick beds are worked out. There is, I think, no uniform legislation in European countries requiring the working of thin beds regardless of modifying conditions.

Timbering One of Europe's Big Difficulties

One of the strongest reasons for the greater cost in the European mines is the much larger amount of timbering done, made necessary by bed and roof conditions or required by mining laws. Another reason is the more extended use of mining machines in the United States as compared with European countries—in 1918 55.9 per cent of the total output was machine mined, as against 12 per cent in Great Britain.

All the differences in mining conditions and methods result in a much greater output of coal per man in this country, which, of course, makes for lower mining costs. For instance, in 1913 and 1918 output figures were as in Table III.

TABLE III—ANNUAL OUTPUT PER PERSON IN FIVE COUNTRIES

Country	Tons per Year per Person 1913	1918	1919	1920
United States, bituminous	837	942	..	(6 mos.)
United States, anthracite	520	672		
Great Britain	265	240	197}	102.4
France	203		..	.....
Germany	300		...	.....
Belgium	157	125	..	.....

"The comparative cost of coal (before the war) at the mines in England, Germany and the United States," Mr. Davis states, "may be given as in Table IV."

TABLE IV—COST OF COAL, IN THREE COUNTRIES, BEFORE THE WAR (DAVIS)

	Per Metric Ton
United States	$1.00 to $1.50
England	2.00 to 3.00
Germany	1.60 to 2.25

For the United States the range given is not wide enough. In 1913 coal was being mined in more than one important district for 84c. per metric ton or less; in other districts for $2.25 and even more in some cases. In Great Britain mining costs in 1913 ranged from as low as $1.49 to $3.30 per long ton, these figures having been obtained from actual cost statements of mines in Northumberland and South Wales.

The comparative cost at port, f.o.b. ship, of coals of the three countries, according to Mr. Davis, was normally about as in Table V.

TABLE V—COST OF COAL AT PORT (DAVIS)

United States	$2.85 to $3.47
England	3.05 to 5.40
Germany	3.00 to 4.80

If by "normally" is meant before the war, in 1913, these figures are not quite accurate. Average f.o.b. costs at tidewater in that year ranged as in Table VI, per gross ton.

TABLE VI—COST AT PORT BEFORE THE WAR (WADLEIGH)

UNITED STATES

Pocahontas and New River Coals, f.o.b. Hampton Roads, $2.70—$2.85

ENGLAND

Welsh large	$5.22	North Country smalls	$2.43
Welsh smalls	2.49	Scotch, large	3.42
North country, large	3.72	f.o.b. ports	
f.o.b. Tyne ports		Scotch smalls	2.20

"Obviously the United States," Mr. Davis states, "is under an enormous handicap as an exporter to Europe in that the freight charges by water necessarily must be considerably higher than those for European producers owing to the much longer haul. In spite of this disadvantage (and freights are undoubtedly higher now than they will be in normal times) the United States exported to Europe during the last year four or five million tons of bituminous coal, whereas before the war exports to that continent amounted to almost nothing. This was accomplished, too, with war-time prices prevailing in the United States."

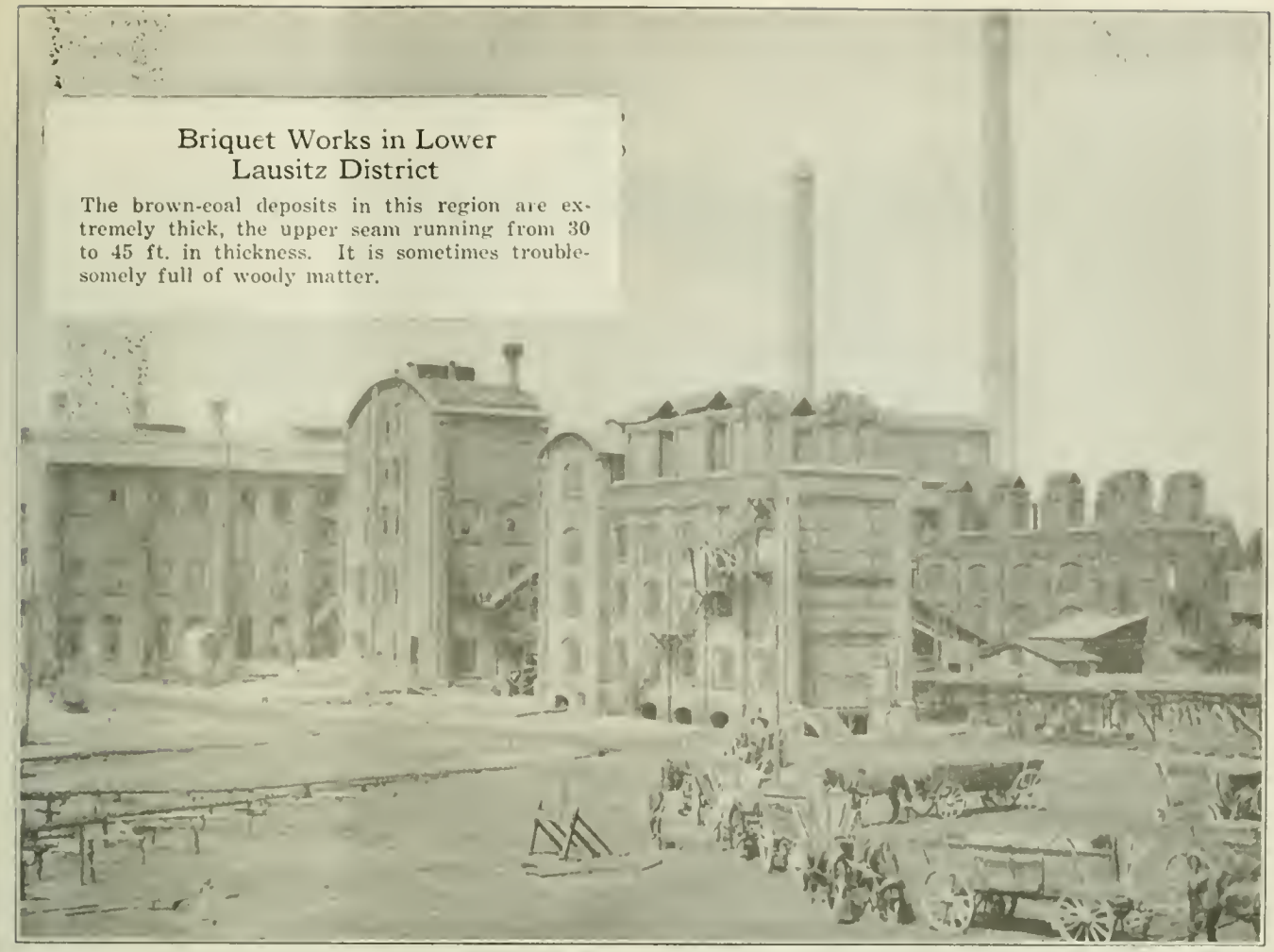
Low Cost Will Offset Freight Handicap

Freight charges by water are, of course, as stated, higher from this country. In 1913 the ocean freight rate on coal from Hampton Roads to Genoa was as low as $2.88, while the rate from Cardiff to Genoa averaged $1.70; but the "enormous handicap" was not so great if we consider the great difference in the f.o.b. tidewater cost of coal in favor of the U. S. coals.

Today the going rate from Hampton Roads to Genoa is $14.50, whereas from Cardiff it is $4.375 (figured with $3.50 as value of exchange), but the best Welsh coal is quoted *nominally* at $21 f.o.b. and best Durham and Northumberland at $26.25, both very scarce, bringing premiums above quoted price.

Actual market quotations at Genoa in August were: Welsh second, 635 lire; best Durham gas, 675 lire; U. S. steam coal, 630 lire; U. S. gas coal, 635 lire.

The main reason that we exported as much as we did (4,089,000 tons) to Europe last year was not that comparative costs or freights helped or hindered but that reduction of output and consequent scarcity of coal in



Briquet Works in Lower Lausitz District

The brown-coal deposits in this region are extremely thick, the upper seam running from 30 to 45 ft. in thickness. It is sometimes troublesomely full of woody matter.

the European countries forced them to come to us.

"In the autumn of 1919 English coals were selling at Rotterdam at $23 per ton," according to Mr. Davis' article, "while American coals were selling simultaneously at $29.50 per ton. This shows a decided advantage for the English coal, but there is little of this fuel on the market."

In October, 1919, United States coal was being quoted c.i.f. Rotterdam at $31, while the Welsh steam coals of the best grade cost $17 per ton, f.o.b. Cardiff, and the ocean freight to Rotterdam was $10. In that month only one cargo of British coal was loaded for Rotterdam.

Why Keep Coal and Ship Coal-Made Steel?

Mr. Davis believes that we should not try to export our coal and that we should conserve our fuel resources "for the upbuilding of our own industries." There is considerable room for argument on this question and his opinion differs from that held by many others well informed on the subject. It might be asked, why manufacturers should be encouraged to export finished goods and coal exports be discouraged when it takes coal to make the manufactured goods that are to be exported.

For instance, in the first five months of 1920 our exports of finished steel products averaged 374,890 gross tons per month, or at the rate of 4,498,680 tons per year. Now, to make this amount of steel would take, at the minimum figure, 8,277,570 gross tons of coal, an amount greater than our total overseas coal exports in any one year. Yet we have heard no complaints of our steel exports having been too large or that they should be curtailed or prohibited.

"We should endeavor to bring our selling standards up to those obtaining in Europe," Mr. Davis says. It would seem, however, that today there are no selling standards in Europe. They want coal and more coal and are not particular about standards, except as to coal being gas or steam or coking coal.

"The purchaser," according to Mr. Davis, "has no assurance that the coal he buys from an American pool is of the quality guaranteed." As a matter of fact, purchase of coal from any of the Tidewater Coal Exchange pools carries with it no guarantee of quality and is not supposed to do so; the only guarantee for which the Tidewater exchanges give certificates is that the coal purchased comes from the specified pool or pools.

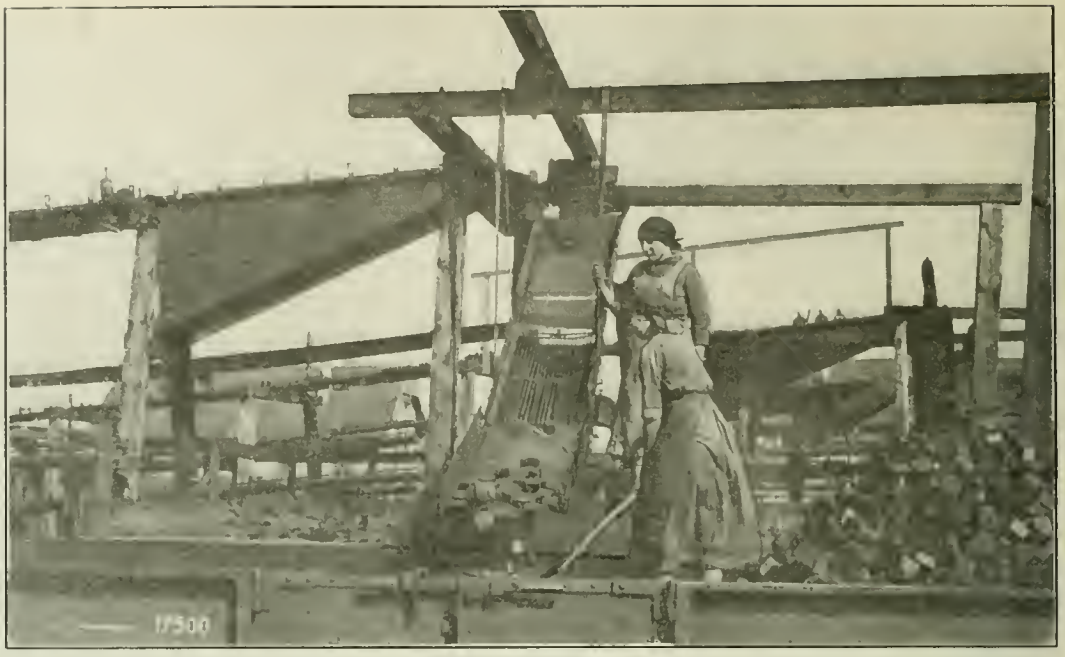
Some American Coals Have Bad Reputation

Preceding the above statement in Mr. Davis' article is the following: "American coals have the reputation abroad of being good fuels and of not being so well prepared as competing European coals." This statement should be qualified to the effect that *some* United States coals have the reputation abroad of being good fuels; others have the reputation of being, and have proved to be, very poor fuels. As regards preparation, there is no question but that competing European coals have been and still are, although not to the same extent as formerly, better prepared than are the United States coals—one reason for their higher cost of production.

Mr. Davis' remarks about Government inspection and analysis are interesting. A beginning has already been made in this direction by the Sewells Point Coal

Loading Briquets

Lower Lausitz district of Germany. Briquets in Europe are frequently of the shape shown and not of the egg, or boulet form, common in the United States. Note how the briquets even after being dumped in the car have to be shoveled into place. Labor is cheap in Germany and it needs to be, such uneconomical use is made of it.



Exchange, which has made a contract with the Bureau of Mines to reclassify its coals and make systematic analyses. The Government samples should not, however, be taken at the mines, as Mr. Davis says, but at Tidewater, as has been done for some years by the Government for its own purchases of coal for the Panama Canal coaling stations. Sampling at the mines is liable to encounter special preparation, while Tidewater sampling would be free from such liability. All *inspection*, however, should be at the mines.

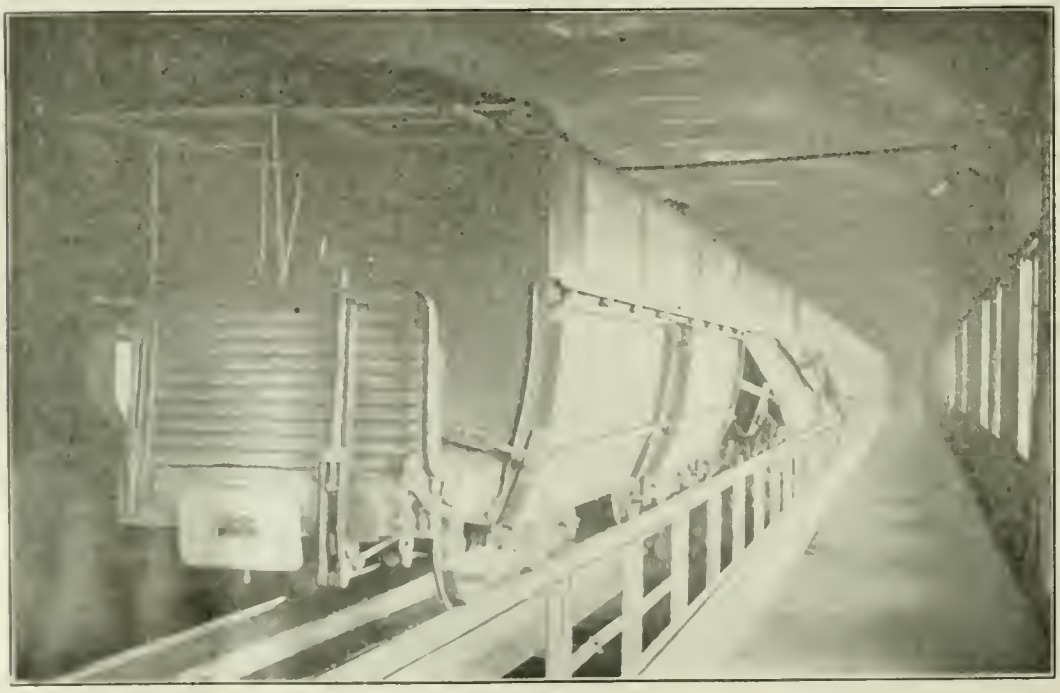
"In order to hold an export coal business with Europe, freight rates must be brought considerably lower than they are now," Mr. Davis warns. This does not go to the bottom of the question. Merely bringing down our freight rates will not answer, because our competitors' freight may also be brought down and undoubtedly will be. Other items must be considered—comparative costs of coal at Tidewater, supply and demand, loading facilities; later on, perhaps, service and quality also

Mr. Davis goes on to say that even with our advantages—somewhat better grades of coal (?), cheaper mining conditions, etc.—we will hardly be able to compete unless "return imports from Europe can be made to bear a considerable portion of the freight charges. Just now imports are not of sufficient importance to bring this about."*

It is true that a number of ships are coming to our coal ports from Europe in ballast, but our imports are nevertheless running at the rate of $514,000,000 per month (August), an increase of $207,000,000 over August, 1919, and the outlook for return cargoes in the future is promising, to say the least.

"Just now all kinds of American goods," asserts Mr. Davis, "find sale in Europe regardless of high cost and high freight rates." This statement is too general

*In justice to Mr. Davis it must be admitted that his paper was not published till sometime after its writing; meantime Europe has partly recovered from the effects of the war.—EDITOR.



Brown-Coal Transport Wagons

The material which is in the intermediate state between peat and lignite is loaded into large cars electrically propelled and taken to the top of the factory, where it is dropped into large bins.

and not strictly correct. All kinds of American goods do not find sale in Europe today, as some exporting houses have found out recently to their cost. Our exports showed a decrease in August of $72,000,000 as compared with July.

"Europe must needs look to America for fuel, even if the price is high," Mr. Davis continues. There are other countries besides America (United States), however, that are today supplying European countries with coal, in spite of high ocean freight rates—Australia, China, South Africa and India are all shipping coal to European countries.

It might have been well, in writing of our export trade in coal, to make some mention of our most logical future export coal market—South America. This market we have today and should keep if we desire to do so and if we will take such steps as are necessary for us to hold it.

What We Should Do to Hold Export Trade

If we decide, as a nation, to permit and foster our export coal trade, it will be necessary to observe the following:

(1) To prepare our coals for the foreign consumer as we would if we were to use them ourselves; a little better, possibly.

(2) To disseminate accurate and reliable data regarding our coals, their quality, the uses to which they are adapted and the manner in which they can be used to the best advantage.

(3) To acquire accurate knowledge regarding foreign markets, their needs, customs and usages, as well as of the cost, character and availability of competing coals from other countries.

(4) To make a closer study of the conditions under which ocean transportation is performed and of their effects on the coal trade.

(5) To establish satisfactory credit, financial and selling methods.

(6) To erect better and greater ship loading and handling facilities at Tidewater.

(7) To co-operate more closely with the railroads that haul coal to Tidewater.

(8) To place our export coal trade on a more honorable and stable foundation by getting rid of the pernicious mushroom growths, created and fostered by war and post-war conditions.

(9) To secure a scientific and accurate classification of our export coals, including systematic and current analyses, either by the Bureau of Mines or by a board of chemists employed by the National Coal Association.

At a Word Sprays Thoroughly Drench Every Square Foot in Anthracite Breakers

An Old-Style Breaker Is a Torch of Oily Pine—Sprays Are Used to Drench Not Only the Area on Fire but the Whole Building—Pipes Have To Be Kept Empty, as Water Is Corroding, but Either the Pump Runs Incessantly or the Water Tanks Are Kept Full

By Dever C. Ashmead
Wilkes-Barre, Pa.

Anthracite coal breakers are extremely inflammable, particularly those of the older type, which are constructed entirely of wood. As these buildings are filled with machinery, they soon become thoroughly soaked with oil, which makes the pine of which they are constructed as ready to burn as a match. The slightest fire will start them going and if they are once started it is practically impossible to save them. Consequently, it is necessary to provide adequate fire protection.

An ordinary stream of water has practically no effect on a fire in one of these breakers. As a result the only adequate protection lies in providing some system that will thoroughly drench the inside of the building. Even this is not always a sufficient protection, for breakers burn down even when thus equipped.

A Burned Breaker Means a Closed Mine

The breaker is the heart of any colliery. If it is destroyed the mine must close until such time as a new building can be constructed or until arrangements can be made whereby the coal may be sent to some other mine for preparation. The burning of a breaker means the loss of a large investment, for such a building costs anywhere from $10,000 to $1,000,000 and its destruction may throw from a few hundred to a thousand or more men out of work. Thus it can be seen that everything possible must be done to protect it from loss by fire.

In this article the means for fire protection employed by two of the largest anthracite coal-mining companies will be described. The methods used by these two firms will be found to be nearly the same as are employed at all breakers in the anthracite region.

Pump Kept Slowly Running at All Times

The newer breakers of the Lehigh Valley Coal Co., being built of steel, need no protection against fire, as there is nothing to burn except the lining of the coal pockets and the sides of the shaker screens, but in structures of the older type, conditions are different, as they contain little but what will burn, and consequently everything has to be carefully protected. Wooden breakers of this company are provided with a system of pipes that run through the building and have spray nozzles at regular intervals. These nozzles are so placed that they will completely wet down every portion of the breaker.

From a reservoir an 8- or 10-in. pipe is run to the fire pump, which is located near but not in the breaker. Usually this pump is placed at a safe distance, so that if the building should catch fire there would be no danger of the pumproom burning. This pump is kept continually running, though under normal conditions it discharges only a small stream of water. In case of fire the pump is speeded up and the main valve opened so that the water will be forced through the main pipe line to the breaker, the small discharge pipe being, of course, closed. Continuous running of this pump assures the engineer that it is in good condition and also saves the time necessary to start it if fire should occur.

Pressure Needed to Reach Upper Parts

The main pipe from the pump extends to the top of the breaker and at some of the mines runs above it. This insures a sufficient pressure of the water to spray the upper portion of the building. Fig. 1 shows an isometric projection of the pipe system as used in a breaker of the Lehigh Valley Coal Co. The small circles represent spray heads. At least once every month the spray system is tested thoroughly, and if after such a trial a dry spot is found in the breaker another spray nozzle is added, so placed that it will thoroughly wet this point. The idea is to drench every part of the building. A fire in a breaker spreads with great rapidity and consequently no time can be lost in fighting it.

In addition to the protection afforded by the spray system, fire hydrants are placed at convenient points around the whole plant. These hydrants are equipped with hose and nozzles, and they can be used as auxiliaries to the spray system either in fighting the fire itself or in protecting other buildings.

Sprays Wash Breaker and Lessen Rot

Testing out the fire system serves three purposes. In the first place, it shows whether the system is effective and in working order. Second, it cleans out the breaker by washing. This is advantageous as large accumulations of coal dust are formed in the preparation of the coal. Third, in case the breaker employs a wet preparation and is shut down for any length of time, it dries out thoroughly and as a result, the timbers are likely to rot rapidly, seriously decreasing the strength of the building. By employing such a system for fire protection it is possible during periods of shutdown to turn on the water, say once a week, and thoroughly drench the timbers. This serves as a protection against rot.

The Lehigh Valley Coal Co. has a special committee the duty of which is to see that the fire-fighting system is in working order and to test it from time to time, for no system is worth anything unless it is in working order. This committee is composed of various officials of the company.

Care is taken not only on the surface but also underground to prevent fire and to fight it. At each of the mines 2,000 ft. of 2-in. pipe is kept ready to connect to the mine pumps, also hose and nozzles. This pipe is to be used in case there should be a fire in the mine itself.

Size of Tanks Depends on Size of Breaker

At the mines of the Philadelphia & Reading Coal & Iron Co. a system of breaker protection similar to that at the Lehigh Valley mines is used, but this company has an advantage over the Lehigh Valley in that it is not put to the necessity of providing fire pumps to force the water into the standpipes, as the water may be made to flow directly from large tanks into the fire lines. The size of the tanks and their number depend on the size of the breaker to be protected. Fortunately, topographical conditions make it possible to place these tanks on the hillsides above the breakers,

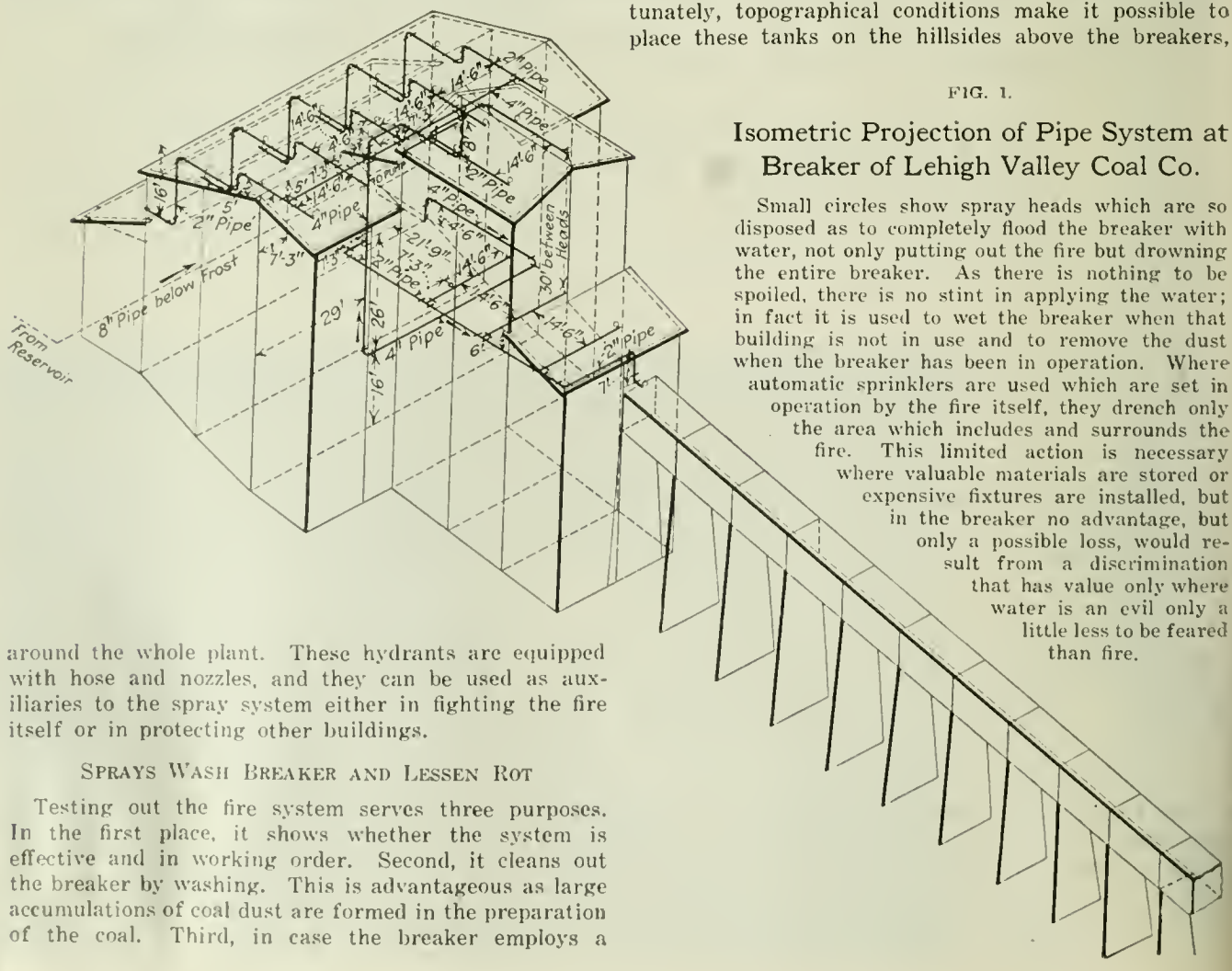


FIG. 1.

Isometric Projection of Pipe System at Breaker of Lehigh Valley Coal Co.

Small circles show spray heads which are so disposed as to completely flood the breaker with water, not only putting out the fire but drowning the entire breaker. As there is nothing to be spoiled, there is no stint in applying the water; in fact it is used to wet the breaker when that building is not in use and to remove the dust when the breaker has been in operation. Where automatic sprinklers are used which are set in operation by the fire itself, they drench only the area which includes and surrounds the fire. This limited action is necessary where valuable materials are stored or expensive fixtures are installed, but in the breaker no advantage, but only a possible loss, would result from a discrimination that has value only where water is an evil only a little less to be feared than fire.

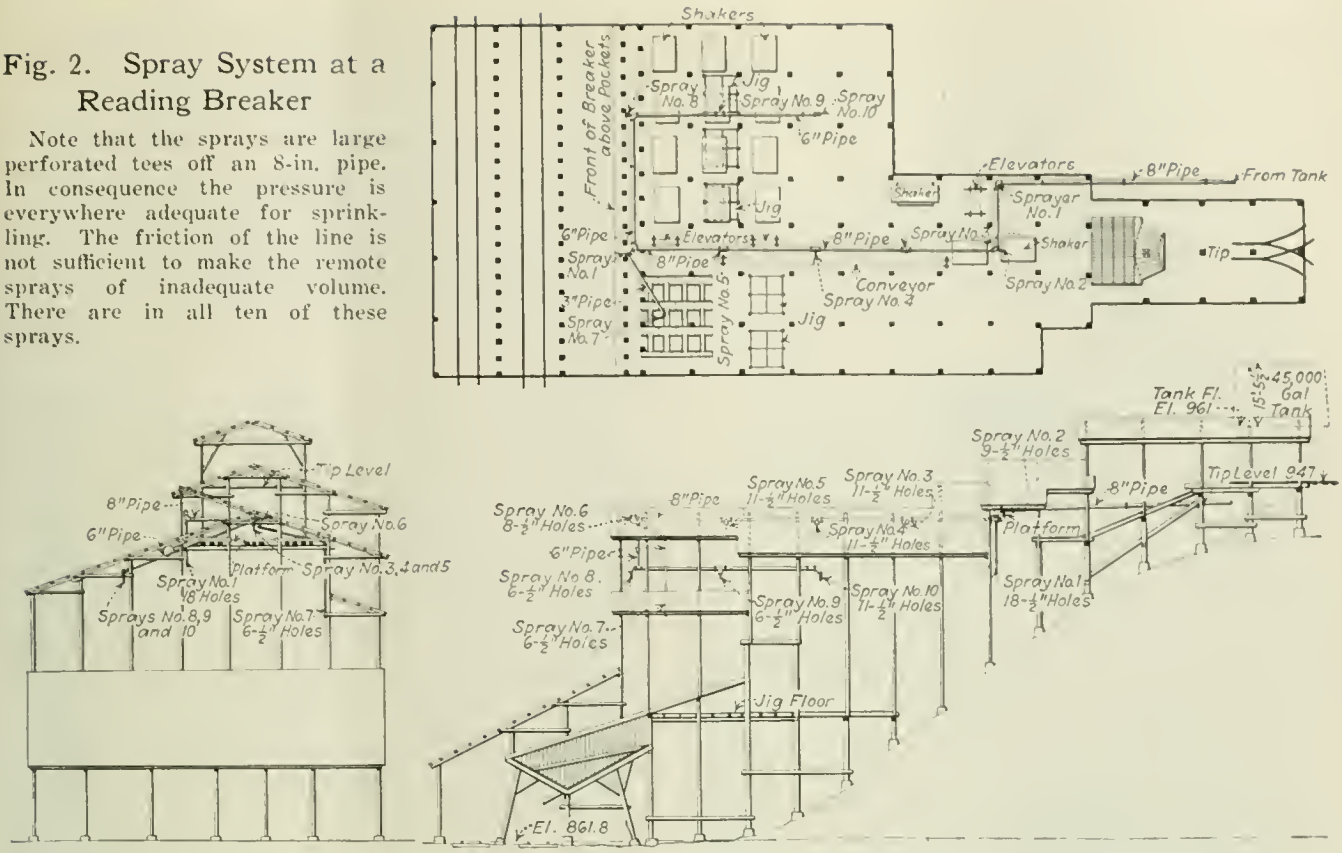


Fig. 2. Spray System at a Reading Breaker

Note that the sprays are large perforated tees off an 8-in. pipe. In consequence the pressure is everywhere adequate for sprinkling. The friction of the line is not sufficient to make the remote sprays of inadequate volume. There are in all ten of these sprays.

whereas in the upper region the land around the mines is so flat as to prevent such an arrangement being accomplished.

The water that is supplied to these tanks is either pumped there or flows into them by gravity. An 8- or 10-in. water main runs from the tanks to the pipe system in the breaker. This system of pipes is arranged similarly to that already described, as may be seen from Fig. 2, which shows the pipe arrangement in one of the Reading breakers.

Not a Single Plank Must Remain Unwetted

At the breaker illustrated a test was made for a period of five minutes, and it was found that the water level in the tank was lowered 22 in. or that 8,000 gallons had been discharged into the spray system in that length of time. This thoroughly soaked every inch of the interior of the building. Had this not been the case more nozzles would have been added so as to accomplish this result. Wherever possible the tank is placed at a sufficient height above the breaker to give a higher head of water than is shown in Fig. 2.

Some difference in the organization of the men for fire-fighting purposes exists between the two companies. The Lehigh Valley has a regularly organized fire department. It is the duty of the men in that organization to respond to any fire alarm and they have power to call upon any other man who may be needed to cope with the fire. At the Reading company's mines there is no fire department, but when the alarm sounds all work stops and all men assist in fighting the flames.

Varied Designs of Spray Nozzles Used

Various types of spray nozzles have been tried out by these two companies. Figs. 3, 4, 5 and 6 show some of these types. The first three are those used at the mines of the Lehigh Valley Coal Co., while No. 6 is used at the Reading and certain other operations. Fig. 5 is the latest and is by many considered the best pattern yet devised.

In laying out a spray system of this kind careful provision has to be made that little or no water remains in the pipes after it has been turned off, for, as at most plants water from the mine must be employed which is high in acid content, the pipe becomes corroded and filled with scale if the water is allowed to stand in the pipe. This corrosion will reduce the quantity of water that the pipe will carry.

The Lehigh Valley company is now considering the installation of a spray system in one of its collieries where there will be a vertical or approximately vertical drop from the end of the spray line to the bottom of the breaker. This would prevent any water from remaining in the pipe. If fresh water could be used the pipes could be kept full, and some one of the other standard systems of fire-fighting might possibly be employed.

Valve Arrangement Saves Time and Motion

At one of the Reading breakers recently a fire started, but it was immediately extinguished by a system of protection like that shown in Fig. 2. An interesting detail, worthy of note, is the construction of the valves in the bottom of the tanks. These valves are nothing more than large wooden plugs inserted in the ends of the pipes and provided with levers extending to the outside of the tank. When it is desired to open a valve, a pull of the lever instantly opens the pipe to its maximum diameter. There is thus no lost time or motion, and the water is fed directly upon the fire.

Here is an anthracite development that the bituminous-coal industry would do well to copy in its tipples,

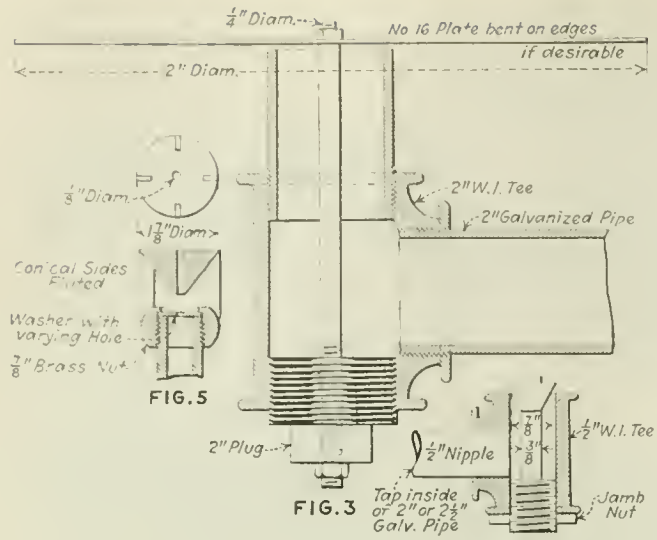
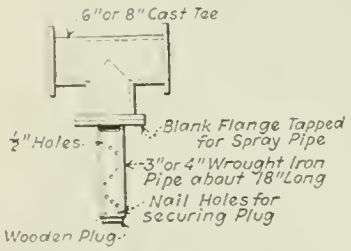


FIG. 5 FIG. 3 FIG. 4



Spray Pipe Detail
FIG. 6

Breaker Sprays

The spray marked Fig. 5 is that which is considered to give the best results. Fig. 3 shows the stream leaving a straight pipe and impinging on a plate 12 in. in diameter; Fig. 4, the stream escaping between a conical plug and a cylindrical pipe, and Fig. 5, the stream after leaving the pipe impinging on a fluted cone supported well above the orifice. Fig. 6 shows a Philadelphia & Reading Coal & Iron Co. spray.

its washeries and its other extensive surface works. A barrel and a bucket is an emblem of safety, not its accomplishment, yet it is all that only too many coal-mine plants can boast.

How Excessive First Cost and Inadequate Output May Make Mining Unprofitable

By E. Steck
Chicago, Ill.

CHARGES for interest, depreciation, taxes and insurance may be so large as to make profit in mining impossible if excessive amounts are expended in construction and if in return for the expenditure adequate production is not obtained. A mine may be so constructed that from the very first its operation is attended by loss.

By properly designing each part of the mine equipment in relation to the other, great savings can be made in the original investment as well as the operating cost. The best equipment in the way of pit cars, tipple, hoisting engine, etc., may be purchased, yet the capacity expected from the mine may never be reached. The fixed charges and operating costs may be excessive because of improper co-ordination of the various elements affecting the output of the mine.

A large mining company recently decided to spend $1,250,000 for top works, machinery, shafts and development of the bottom at a mine intended to produce yearly about 600,000 tons. Figuring 15 per cent per annum for interest, depreciation, taxes and insurance, this would amount to $187,500, or 31c. per ton. The proposed layout was investigated and it was found that the pit cars were too small, the top structure too large, the screens and picking tables were improperly designed in relation to each other; the hoisting equipment not sufficiently flexible and the electrical equipment of improper size. The mine as designed would yield yearly about 60 per cent of the desired output. This would raise the fixed charge from 31 to 52c. per ton. The operating costs would also have been excessive, due to some equipment being much larger than was required, reducing the efficiency and increasing the cost of repairs.

By properly co-ordinating the various elements in the mine the installation costs could be cut to $750,000 and the yearly output increased to 750,000 tons. This would reduce the fixed charges to 15c. per ton. This difference of 37c. per ton is more than sufficient to change the mine from a losing to a paying proposition. The savings referred to are not achieved through any sacrifice in operating conditions or by substituting inferior equipment. In fact, the cost reductions were made entirely by eliminating unnecessary equipment or through reducing that which was too large.

Another case recently came under my observation where a mining company was expecting to obtain an output of 2,500 tons per day. Buildings were erected and equipment installed to take care of this amount of coal. The mine was developed by temporary equipment while the permanent equipment was being installed. When the new pit cars arrived, it was found that they lacked 1,700 lb. of estimated capacity. The size of the shaft limited the length and width of the cars, while the height of the roof would not permit raising their sides. The result was that the desired capacity of the mine could not be reached without prohibitive charges.

From the foregoing, it can be seen that it is highly important that all conditions affecting operation be carefully considered and investigated before any permanent equipment is purchased or installed. For this reason it is often desirable to use temporary equipment in developing a mine so that the permanent equipment can be selected with due regard to actual working conditions.

Movement of Coal Improves

THE Car Service Division of the American Railway Association has issued a summary of general conditions as of Oct. 29, which indicates that in the United States the percentage of cars on line to their owners on Oct. 15 was 96.2 per cent, as compared with 100.2 per cent on the same day in 1919.

There is a heavy demand for box cars on account of grain loading and not all orders have been filled. Loading of ventilated box cars with dead freight is to be confined to points in direct line to home roads. The demand for auto cars has decreased, while the demand for stock cars is quite heavy. The necessity to move these cars onto the owning lines is emphasized. Refrigerator cars are still in great demand and all railroads are cautioned to move them promptly and in accordance with outstanding orders.

The production of bituminous coal will average during October more than twelve million tons per week, and a substantial improvement in the movement of coal is noted. The necessity of continuing orders regarding open-top cars so as to get a maximum use of them still exists. The demand for flat cars in the Southeast for lumber and log loading is in excess of the supply and prompt handling is solicited.

High Price an Incentive in Inculcating Thrift in the Use of Coal*

With Largest Users Lies Responsibility for Leadership in Economy—Average Steam Plant Practice Shown To Be One-Twelfth Efficient in Use of Fuel—Central Stations in First Half of 1920 Gained 16 Per Cent in Power Production with 8 Per Cent More Coal

By George Otis Smith†

COAL is the shortest word we have to express industrial power and domestic comfort. Even the rumor of a coal shortage simply demonstrates that this fuel is in reality the staff of life to the industrial world, and the temporary stoppage of any of the larger sources of supply threatens a nation-wide crisis. Shut down our coal mines, and the country becomes not only cold but idle and hungry.

The figures of our total coal resources, millions of millions of tons, or even the few hundred million tons of our annual output, are too large to be grasped, and it becomes necessary to express the facts in smaller quantities. Roughly speaking, 1,000 tons of coal is what a mine worker mines in a year—the measure of what he contributes to the world's work and well-being. This human measure of 1,000 tons also has the advantage of being easily visualized as a short train load (20 cars) of coal on its way to serve the varied needs of the consumer, and in our brief review of the subject we may well first note what are these needs—the principal uses of coal, among which this unit of 1,000 tons is divided. (See Fig. 1.) Broadly stated, the largest use of coal is in furnishing motive power and heat for our industries and public utilities, 350 tons out of every 1,000 tons mined going to the boiler house of factory, mill, shop or power plant. But next to these seven carloads of coal distributed throughout the country are five cars, or 250 tons of coal, which the railroads need for their own use. The domestic demand for coal comes next, 165 tons out of each 1,000 tons of anthracite and bituminous coal being used in the homes of the land for heating and cooking. The coke ovens require nearly as much as the homes, or 130 tons; and the balance of our miner's contribution includes the coal for export and bunker use, 60 tons; the 35 tons of coal used in operating the mines themselves, which of course does not make up a part of our train load; and the 10 tons that goes to the gas works.

Incumbent on All To Make Best Use of Coal

Even in this simple analysis of the uses of coal it would be difficult to establish any rigid scheme of priorities; we absolutely need coal for each of these uses, and this nation-wide dependence upon coal is so evident as to demand general attention to the subject of thrift in coal. Every citizen should do his part in making the best use of coal, but the responsibility of leadership in economy may with justice be placed upon the larger users.

The steel industry required in 1918 about 100,000,000 tons of coal, slightly more than two-thirds of it in the form of coke. So in dependence upon coal, this industry stands next to the railroads. At the bottom of the list of uses of coal, stated quantitatively, is blacksmithing, and the annual requirement of blacksmithing coal is less than a million tons. Contrast with the great steel plant, which consumes its 4 million tons of coal each year, the village smithy, which uses 50 pounds a day—and the question arises, Where is it of greater national concern that we begin to practice thrift in coal, at the little shop or at the big steel works? During the war the patriotic effort was made to save wheat and sugar in every home, however humble, and the aggregate results of such nation-wide thrift were most gratifying; yet with coal a different policy of initiating thrift seems warranted—the great industrial establishment or the superpower plant rather than the home is the place where saving will accomplish most.

We are on the threshold of fuel economy. Unprecedentedly high prices for coal have summoned American genius to the task of getting the full value out of the half billion tons of bituminous coal we burn each year; indeed, we have been too long content simply to burn coal rather than to use it. With coal at a dollar a ton the consumer was the profiteer, and profiteer-like he thought it paid him to disregard any claims except those of his own immediate gain. Now, the higher prices have opened our eyes to higher values in coal, and we begin to see the possibilities of profit in avoiding waste both in the mine and in the boiler room.

Coal Conservation a Paying Proposition Now

We do not have to recognize the claims of posterity for coal conservation, for we can see money in it for our own generation—to mine the coal that we have been leaving underground, to utilize every possible heat unit in what we burn, and especially to recover everything of value that the coal contains. When we indorse Mr. Hoover's characterization of the bituminous coal industry as the "worst functioning industry in the country," it is with no spirit of unfriendly criticism. The simple fact must be faced that the story of coal is a story of waste, all the way from the face of the mine working to the smokestacks of the boiler plant—waste of a natural resource, waste of human endeavor, waste of capital, waste of transportation capacity, and waste of energy—and of none of these have we enough, much less any to spare.

It is customary to express our coal resources in terms of

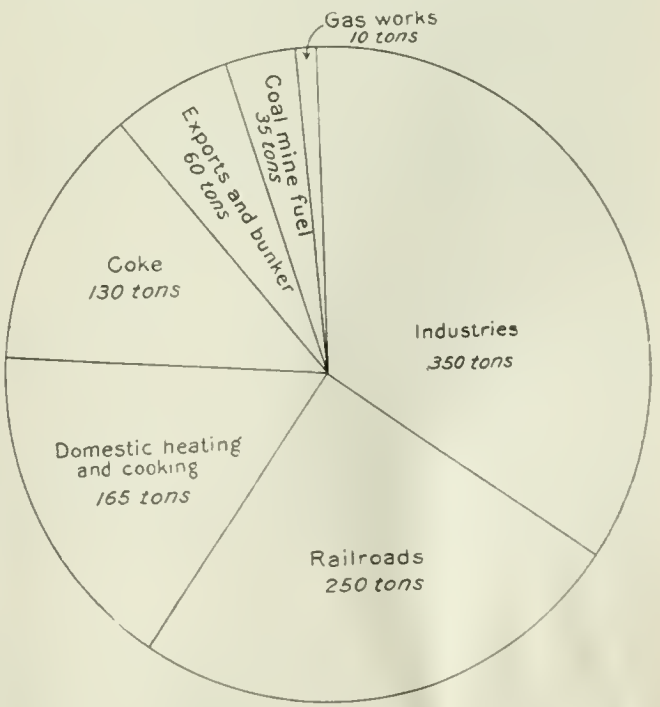


FIG. 1. WHAT BECOMES OF OUR COAL

Disposition of the miner's yearly output of 1,000 tons, including both anthracite and bituminous coal.

*From an address, entitled "Thrift in Coal," delivered before the American Iron and Steel Institute, New York City, Oct. 22, 1920.

†Director, U. S. Geological Survey, Washington, D. C.

tons in the ground, but how inflated such an inventory becomes when we realize that of the ton of coal "in place," where Nature stored it for the use of man, the amount converted into mechanical energy, under the average practice of today, is only 76 pounds. The accompanying diagram, Fig. 2, exhibits the distribution of the losses thus indicated, in the responsibility for which mining engineer, mechanical engineer and consumer must all share. This general indictment of "average practice" makes the question of thrift in coal a national rather than an individual problem.

The proportion of coal we leave underground is a sad commentary on our appreciation of the value of coal, and

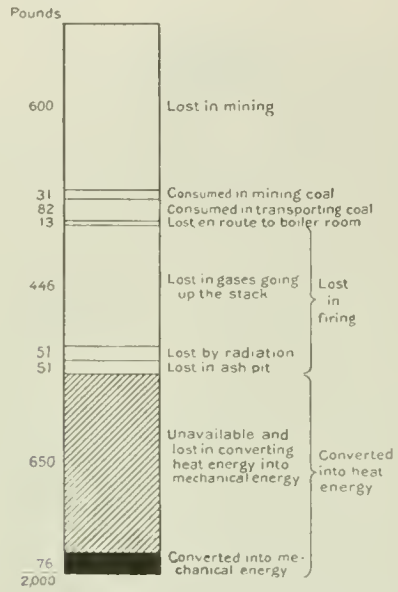


FIG. 2. EIGHT LOSSES IN COAL UTILIZATION

From data, furnished largely by the Bureau of Mines, showing what becomes of a ton of coal under ordinary conditions.

the margin between high recovery, which may be stated at 95 per cent, and the average recovery of 70 per cent or less shows to what extent we are still wasting our coal at one place alone and where the world does not see the waste. By increasing the average output of the mine worker, we have made a gain of 50 per cent in the last three decades, so that we are saving man power if not coal.

Not only is coal wasted in the mining, for no sooner does a ton reach the surface than 44 pounds of it is taken as toll for running the mine—indeed, in the anthracite mines, where often more water is raised than coal, the combined pumping, hoisting, and breaker operating cost expressed in coal has been stated as high as 200 pounds to the ton. But electrification of coal mines is gradually coming, with gratifying results in efficiency of operation and economy of fuel.

Consumer's Responsibility for Wastefulness

The consumer cannot evade his share of responsibility, because out of the 1,274 pounds of coal delivered at his boiler plant 548 pounds was lost in firing; he had been buying B.t.u.'s simply to throw away 40 per cent. Edwin Ludlow relates his observations at a large plant, where pride was taken in the fact that only the highest-grade coal was used, a standard of 15,000 B.t.u.'s being insisted on, but Mr. Ludlow called the attention of the company's executive officer to his boiler-room leaks, his steam results showing that he was obtaining only 11,000 B.t.u's from this high-grade coal. That coal user needed expert firemen more than chemists—better practice rather than more theory.

Another measure of coal waste in the generation of power, even where the conditions promoting efficiency are much more favorable, is afforded by the records of the public-utility plants of Massachusetts. During the month of June last the average coal consumption in all these plants was 2.29 pounds per kilowatt-hour, but at the largest plant of the largest company the average was 1.8 pounds—a saving in coal of more than 20 per cent, representing the difference between best practice and average practice.

How to save coal on a country-wide scale is the question. O. P. Hood, of the Bureau of Mines, has made the point that in a boiler plant construction, operation, and fuel are to a certain extent interchangeable. Skillful planning and careful operation can take the place of part of the coal; and on the other hand cheap coal has made possible careless firing of poorly constructed boilers without the wastefulness of the whole procedure being apparent on the books. Waste that can be seen only as a theoretical proposition does not appeal with the same force as waste that writes itself in red figures; and now that coal is no longer as cheap as dirt but has taken on the dignity that comes with high prices, we naturally begin to think of careful use. Just as we learned with foodstuffs during the war we are learning now that the higher value must be both given to coal and won from it. Thus the opportunity has arrived for the fuel engineer to teach us thrift in coal.

Advocates Wider Use of Electricity

Still more striking is the evidence that can be brought forward to show the coal saving possible through the larger use of electricity as the agency in applying the energy in coal to the aid of human labor. Again it is proper to note in advance that the steel industry is already motor-driven as probably no other industry is—indeed, the motors used by this industry aggregate nearly one-third of the power of all the motors installed in the United States. Without allowing for the great possible saving of coal by the full development of our water power, combined and co-ordinated with steam power in large systems of electrical generation and distribution, the contrast between

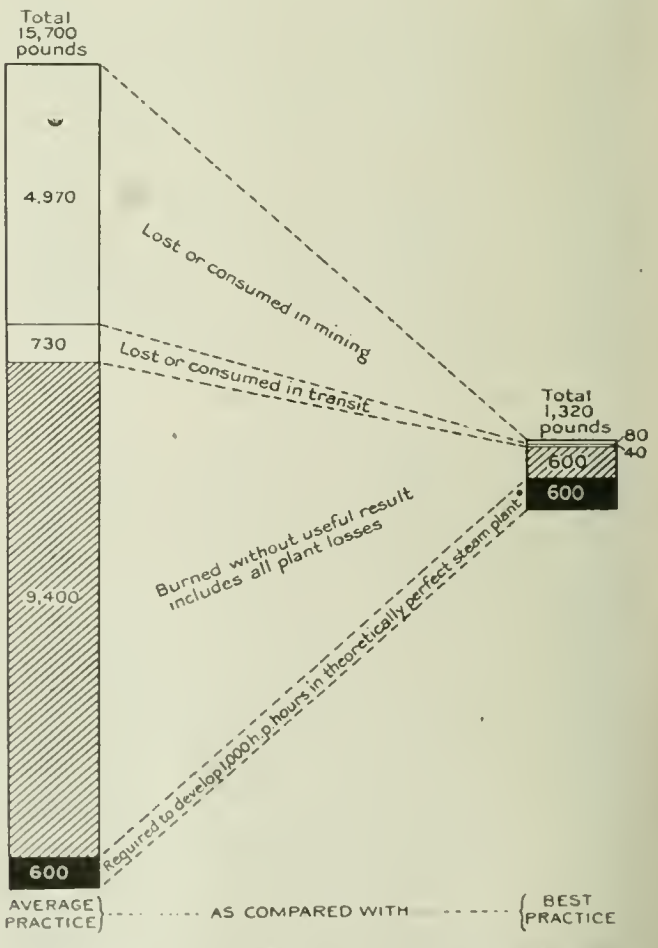


FIG. 3. AVERAGE AND BEST PRACTICE COMPARED

These losses in average practice are based on data from the Bureau of Mines and the Super-Power Survey, and are calculated as in Fig. 2, except that in this case allowance is made for the additional loss due to bad load factor.

present average practice and best practice in power generation is so great as to strain our confidence in the simple figures of coal waste.

The statistics of fuel consumption show that the average steam plant, which is a small one (about 200 hp.), uses eight times as much coal as is necessary in the largest central stations, where the profit payable to thrift is recognized — that is, assuming the same consumption as the average central station of the same size, our average-sized industrial steam plant would use 10 pounds per horsepower-hour. If to this initial saving of 7 pounds of coal out of 8 at the large electric power station are added the possible savings on the railroad and at the mine, the ratio between present average practice and present best practice becomes nearly 12 to 1. Even if this indictment of waste is discounted one-half, the power users of this country stand convicted of almost criminal negligence, for cheap power and plenty of it provide the only way to retain America's industrial leadership. For this reason both labor and capital are vitally interested in the power supply.

Wastefulness of Steam Plants Disclosed

This contrast between the wasteful and the economical use of our coal resources is set forth in Fig. 3, which like Fig. 2 was compiled by my associate, F. G. Tryon. Starting with the 600 pounds of coal that contains heat units equivalent to 1,000 horsepower-hours, we find that the big electric station, with its modern steam turbine equipment, uses along with the 600 pounds of coal another 600 pounds from which it derives no return. This seems wasteful enough, but the little steam plant, with its poor load factor as well as much less efficient equipment, losing heat units up the stack, in the ash pit, through the steam pipes, and in the engine, wastes 9,400 pounds of coal for every 600 pounds it really utilizes — nearly a 16 to 1 ratio in favor of the big plant. So too, if railroads and mines were electrified and only 5 per cent of the coal instead of 30 per cent were left underground, 120 pounds of coal would mine and bring to the big plant the coal burned in generating 1,000 horsepower-hours, instead of the 5,700 pounds now actually required in serving the average steam plant with the 5 tons of coal it burns to get the same product of useful energy. The total cost of 1,000 horsepower-hours in terms of coal resources is therefore about two-thirds of a ton with efficient use, and nearly eight tons under the average conditions of waste at the little plant.

It is cause for general satisfaction, then, that in the first half of 1920 we find the power output of the central stations of the country increased more than 16 per cent over that of the corresponding period last year, while the fuel used seems to have increased not over half that percentage. In these public-utility plants the trend is decidedly toward fuel economy.

Coke Making and Byproduct Ovens

The use of coal in America for making coke dates back some eighty years, but the operation of byproduct ovens covers only one-third of that period, and indeed only last year did the output of byproduct coke first equal that of beehive coke. The field is thus divided between the old and the new practice, but two advantages of the byproduct ovens over the beehive ovens alone show how much the full substitution will mean to our country. First, the yield of coke in the byproduct ovens compared with that in the beehive ovens is 23 to 25 per cent greater with the low-volatile coals and 7 to 8 per cent greater even with the high-volatile Pittsburgh coal; and second, the recovery of 7 to 15 gallons of tar, benzol, toluol, and other oils, 16 to 30 pounds of sulphate of ammonia, and the surplus gas constitutes a great resource by itself. The recent consolidation of five great chemical companies calls attention afresh to the value of these wasted constituents of coal, for not only will this consolidation go far in making America industrially independent in the matter of dyes and other coal-tar derivatives, but the new corporation, which is one of the largest units in American industry, is founded chiefly on the profitable utilization of coal smoke.

Already fuel economy has reached so high a mark in the largest steel plants that the present practice gives gratifying results. Take, for example, such a plant with an annual fuel consumption equivalent to perhaps 4½ million tons of coal, and we find there the best by-product coke practice with utilization of the by-product gas and tar for melting and heating throughout the plant; also the waste gases from the blast furnaces are used in gas engines to blow the furnaces and generate electricity to meet the extensive demand throughout the works both to operate cranes, machine shops, etc., and in motors to drive not only the smallest but also the largest of our rolling mills.

But to picture the extension of this thrift in the use of coal as planning on a national scale demands, we are forced to supply some conditions that are not yet realized. This use of coal first as a raw material and next only in part as a fuel means the extension of byproduct practice until in no home or public building or factory will we find raw coal burned, but in its place either coke or gas, the other products having first been extracted to furnish the fuel for our motor cars, the dyes for our clothes, the surface for our roads, and even the drugs for our aches and pains. Several new methods of carbonizing coal are now being developed with the purpose of increasing the yield of valuable oils and of obtaining coke residues better fitted for domestic use—all looking forward to this much more general use of coke.

Unwarranted Optimism as to Reserves

The fact that more than half of the world's coal reserves are believed to lie within the territory of the United States has led too many of us into unwarranted optimism. The captains of the great industries concentrated along the Atlantic seaboard will do well to think less of the millions of millions of tons of coal that are said to lie awaiting their need in various parts of this continent-wide country of ours, but rather to ask for details as to where this coal is and how available it is for the use of this and the next generation. The total tonnage involves strings of figures hard for us to comprehend, but the tonnage remaining in the great producing fields of the East is so limited as to compel us to foresee their exhaustion within periods of the same order of magnitude as those which executives figure as the expectancy of life for industrial enterprises.

For example, the Pittsburgh bed in western Pennsylvania was estimated forty years ago as good for thirty generations, but the rate of mining has so greatly increased that now we must measure the exhaustion of this largest bed in the Keystone State by the span of a single generation. This is not an exceptional illustration of the shortened life due to unexpected increase in drafts upon our coal resources, for in the Georges Creek field in Maryland this same bed, there called the "Big Vein," was believed forty years ago to have a life of at least 150 years, but today the field is regarded as almost worked out. Even if you turn to a less nearly exhausted field, such as the Pocahontas, the earlier optimistic calculations of an expectancy of life of four or five generations are now reduced to three or even two. The lesson is that no matter how carefully the tonnage estimate of the coal reserve is made, no one seems able to estimate the rate of increase in demand in this growing country of ours. Not yet do we show any signs of slowing down in our industrial progress.

Injudicious Mining Methods Also Used

Another fact to be set down is that the best and most accessible coal is mined first, and even now we are skimming the cream from our coal resources. The truth should be stated even more plainly—we are mining much of the best coal with such disregard of the thinner beds in the same fields that we may be justly accused not only of carelessly skimming off the cream, but of throwing away the skim milk beyond any possible hope of recovery. We must therefore figure on increasing costs in the future, due to greater depth and longer hauls to market. This is another reason for delaying the exhaustion of our Eastern coal fields by making full use of the coal we are now mining.

Discussion by Readers

Edited by
James T. Beard

Assistant Mine Foremen Are or Should Be Safety Inspectors

Where the duties of an assistant mine foreman are properly performed he is, in fact if not in name, a safety inspector and there would seem to be no need for another official under that name.

AFTER reading the two letters in *Coal Age,* Oct. 7, one by Ostel Bullock, page 755, and the other by Oliver Young, on the following page, I desire to take exception to the ideas they seem to express in respect to the relation of the work of an assistant foreman to that of safety inspection in mines. Before going further, however, I want it clearly understood that I am a firm believer in everything that pertains to saftey in the mines.

My idea of a safety inspector is that he should be charged with the duty of inspecting the entire mine, for the purpose of seeing that everything is done to properly provide for the safety and protection of life and property. He would be in no sense an assistant to the mine foreman. Where it is necessary to employ a safety inspector, and I think it is in a large mine, he should visit every working place and travel all roads and air-courses throughout the mine, after the manner of the mine inspector, only performing his duties more in detail than that official.

In other words, where a safety inspector is employed he would be a company inspector and would examine old gobs and abandoned areas and other places where a practical man might expect to find danger. Each day the safety inspector would make a verbal report to the mine foreman and advise in what way any dangers he has found can he best removed.

Where Trouble Starts

It frequently happens that mine inspectors go through a mine and make notes of what they find and, going home, write out a great spiel regarding certain assumed dangers and send the report to the superintendent. That official promptly takes the matter up with the mine foreman and there is every chance of friction resulting, because the inspector did not confer directly with the foreman at the time of his visit, as he should have done. When an inspector follows the latter plan there is little chance of a clash between him and the foreman.

The mining law of Pennsylvania requires that every working place in the mine shall be visited by the mine foreman or one of his assistants at least once a day while the men are at work. In order to comply with this requirement of the law, there should be appointed enough assistant foremen to thoroughly examine each section of the mine, in the same manner as if the work was performed by a safety inspector. Each assistant foreman must be a man who can be trusted, and there are hundreds of them.

Now, what I fail to understand is why it should be necessary to appoint another official—a so-called "Safety Inspector"—to follow up these assistant foremen, who are or should be safety inspectors in fact if not in name. Let me ask, Why not call them safety inspectors, if that would make assistant foremen perform their work with greater thoroughness.

In his letter, to which I have referred, Mr. Young has well defined the duties of an assistant foreman. I would say if any assistant covers the ground and performs the duties set forth in that letter, there is little need for a safety inspector in his mine. If an assistant foreman cannot be trusted to rightly perform his work in that position, he could not be trusted if raised to the position of a safety inspector.

In closing, let me add, it is a wrong idea to assume that the duties of an assistant foreman end with seeing that he loads what coal is expected of him. It is of even greater importance to see that the man is working in a safe place and performs his work in a safe manner. Indeed, every official employed in the mine should be a safety inspector.

THOMAS HOGARTH.
Starford, Pa.

Factors in Maintaining a Uniform Output of Coal

There are a number of things concerned in maintaining a uniform output of coal in a large mine, some seemingly unimportant; but the main thing is the tact and practical judgment displayed by the foreman.

REGARDING the question of keeping the daily output of coal uniformly regular in a mine, my opinion is that it is not a matter of a proper distribution of men, alone, as some would have it appear. Equally important is the perfecting of a good haulage system, such that the cars are kept moving and there is no waiting of drivers and motormen.

In one instance I recall, the mine foreman made out a requisition for fifty new mine cars, claiming that the shortage of cars was responsible for the frequent delays and consequent loss in daily tonnage. As usual in such cases, an investigation was ordered, and it developed that there was much delay in two sections of the mine where the motormen generally had to wait for the twenty cars they were accustomed to haul in a single trip.

Hauling Shorter Trips Avoids Delay

The result was that they were told to haul only 15-car trips, hereafter, in each of those sections, as the men working there could not load 20 cars in the time intervening between trips. This change corrected the trouble and there were cars enough to keep the men supplied working in other portions of the mine.

The point to be emphasized, in this connection, is that the percentage output of each section of a mine must determine not only the distribution of the cars; but must also regulate the size and number of trips hauled, in order to keep everything moving and no cars

standing idle, which will insure a steady output. Another important matter is to keep the tracks in good condition, which will mean less delay in haulage and fewer cars laid up in the shop for repairs.

Where two or more mines deliver coal to the same tipple a proper system of haulage and distribution of cars must be employed and nothing haphazard allowed. The trips must be run on a schedule, so that each trip will make its round in a certain time. Of course, at times, a disarrangement will occur but that will be quickly righted by the foreman whose duty it is to see that all cars are kept moving.

Good Living and Working Conditions Attract Labor to the Mine

The distribution and handling of men in a mine generally resolves itself into a geographical problem. Some mines having better living conditions and a better quality of coal are not as hard pressed by labor shortage as other districts where conditions are not as good; but in any event a mine foreman must use tact and judgment in the distribution of his men. It is well to keep the golden rule in mind, but men must be studied, and more especially so when a shortage of labor exists. In my opinion, the successful handling of men requires firm but kind treatment, fulfilling all promises, while not being too familiar, remembering the old adage "Familiarity breads contempt."

In the working of abnormal places, only efficient miners, men that you know can be trusted, should be given such places. In many mines it seems to be the practice to put new men in these abnormal places; but I have never seen the plan work successfully. After a few days, the new men will generally quit such places, and tell other miners what a poor show they had at such a mine, which is harmful, in many ways, to maintaining a uniform output.

In the working of low coal, miners accustomed to low coal make the best workers. Unless machines are used for cutting the coal, it is very hard for miners accustomed to high coal to learn how to put their shoulder on their knee and back up a shot to four feet deep.

In conclusion, let me suggest that only tried men, who you know to be good and steady workmen, be used in abnormal places. Men who move about from place to place are often too independent and not reliable.

New Castle, Colo. V. Frodsham.

Would Use the Room-and-Pillar System

The experience of this correspondent leads him to believe that the room-and-pillar system can be employed to work out the coal from a lower seam without damage to a seam, lying 250 ft. above.

THERE should be no great difficulty expected in working out the coal from a 42-in. seam lying 250 ft. below another coal seam. It is my belief that the lower coal can be worked safely and without affecting the seam above in a manner that would damage its future working.

Judging from the information given in this inquiry, which appeared in *Coal Age*, Sept. 16, p. 594, I assume that the intervening strata separating these two seams consists of the ordinary shales, sandstones and fireclays generally found in the coal formations. In this case, the coal being only 42 in. in thickness, it will be necessary to take down about 30 in. of rock over the roads so as to give the required headroom for the cars.

Assuming this is a good clean coal, my preference would be to employ the room-and-pillar system. Under similar conditions to those here described, I have used both the longwall system of mining and the room-and-pillar system, advancing and retreating. In this instance, however, I would consider it advisable to adopt the room-and-pillar system in working out the lower seam. I would drive the rooms on 50-ft. centers and take out 50 per cent of the coal in the first working when driving the rooms.

It is important to stow all refuse of the seam and the rock taken down from the roof on the roads in the waste space in the rooms as they are driven up. This will not only furnish a good firm support for the roof when drawing back the pillars, but will do much to avoid the breaking of the roof in case the overlying strata contains water. It will also reduce the tendency to creep if the bottom is a soft fireclay. Indeed, the entire work is made more safe and there is less loss of coal where proper care is taken in the stowing and building of the waste material.

My experience is that the adoption of the room-and-pillar system, in this case, will provide easy ventilation if the work is properly conducted. When robbing, in this method, I would advise starting the work at the extreme inby end and drawing everything back under the retreating system, which will leave all danger behind. I have found that it is best not to work too many places on one gangway, at one time.

Owing to the thinness of this seam, there is little to be feared from a possible breaking of the roof. In that case, the overburden will settle down firmly on the waste, and any fall in the open space will quickly choke itself and prevent the break from reaching the upper seam, which will not be harmed for the future mining of that seam. Robert Thomas.

Forty Fort, Pa.

Years in the Mine Do Not Always Make the Skilled Miner

The practical skilled miner is the man who recognizes danger and takes every needed precaution to avoid accident. The man who is willing to take a chance is not a practical or a skilled miner.

HOW many of us older miners have gone into men's places in mines and noted the conditions and remarked on coming out, "There's a miner who *is* a miner and knows his business. He is a regular coal hog, as the expression goes."

In my opinion, a practical skilled miner is a man who is able to see a danger and takes care to protect himself. He performs his work in the safest way, and is thorough in what he does. The props are set plumb with a good cap-piece over each post; the coal is spragged while being mined.

On the other hand, when one finds a place in bad shape, needing timber, or props set in a careless haphazard manner, and the miner at work under loose top or his coal not spragged, it does not require any wisdom to discover that the man working the place is neither a practical nor a skilled miner.

It makes little difference how many years a miner has worked at his calling; he may have mined coal a lifetime and yet not be a practical miner, because he has never learned how to plan and perform his work with skill and in a safe and an economical manner.

He fails to understand the real principles involved in the mining of coal and which are necessary to insure success.

There are miners who think that a few years' experience in mines gives them the privilege of taking chances. They will argue with a foreman who attempts to point out a danger that threatens them. They are a rule unto themselves. While they may use some precautions at a time when they look for the foreman to appear, they throw these aside the moment he has turned his back and left them.

Frequently it happens that a good miner has failed to observe a danger that is imminent; but starts at once to make himself safe when his attention is called to the matter. Such a man is a practical miner. He believes in dangers being always present and knows that safety depends on using every possible precaution to avoid accidents.

Old Experienced Miners Hardest to Handle

It has been my experience that the miners who give the most trouble are men who have worked long in the mines and come to feel that they know as much about mining coal as the boss can tell them and, perhaps, more. This is particularly true if the miner is somewhat older in years than the boss. I believe that five accidents out of every eight happen to men whose length of service in the mines should have made them experienced miners.

There is no hard-and-fast rule that will determine between the skilled and the unskilled miner. It is a question that must be answered by observation. Careless and shiftless habits do not mark a worker as skilled or practical in any calling or occupation and far less in the dangerous work of mining. As the Good Book says, "By their fruits ye shall know them."

The mining law of Pennsylvania clearly specifies that an inexperienced man can only be employed, in mines generating gas, when he is given in charge of an experienced miner who is made responsible for the man's safety. But experience and inexperience do not define the difference between the practical skilled miner and one who lacks these qualities.

Johnstown, Pa. Assistant Foreman.

Work the Lower Seam by Longwall

With a view to securing the largest extraction of coal in the working of two seams, the lower or underlying seam should be worked by the longwall system of mining, which has advantages that recommend that method particularly for the working of thin coal.

Referring to the inquiry of a Kentucky superintendent, *Coal Age*, Sept. 16, p. 594, who asked for the best method of working the coal in a seam lying 250 ft. below another seam, it is strange to me that there should not have been given more specific information regarding the total depth of cover and the inclination and character of the strata separating the two seams.

In this inquiry, the only information given is the thickness of the lower seam and that of the intervening strata, the former being 42 in. and the latter 250 ft. I often wonder how it is possible for many of the inquiries that appear in *Coal Age* to be answered intelligently when the inquirers fail to furnish important data bearing on their problems. In answering such inquiries, it is necessary to assume conditions that may or may not represent the case in hand.

In this instance, I agree with what the editor has said in his reply, in respect to employing the longwall method of mining the coal in the lower seam. For several reasons, the longwall method will prove the most economical and safest to adopt. First, the coal being only 3½ ft. in thickness, it will be necessary to take down 2½ or 3 ft. of top, or to lift the same amount of bottom. In most cases, I would prefer the former.

Again, this rock taken from the roads will furnish good building material for the packwalls, which can probably be made from 10 to 12 ft. in width on both sides of each road or gateway. These wide roadpacks will make it unnecessary to use much timber for building cribs on chocks, and if the packs are well built there will be little difficulty in keeping the roads open.

The amount of timber to be used at the working face will depend on the nature of the roof immediately above the coal, and the depth of cover as determining the roof pressure. It will be wise, however, to carry at least one row of props, set six, eight or ten feet apart, according to conditions. These posts should be withdrawn as the face of the coal is advanced, but not until a second row of posts has been stood nearer the face. No timber must be allowed to remain standing in the waste, as that will interfere with the uniform settlement of the roof and cause an unequal pressure to be thrown on the face of the coal. At times, it may be necessary to carry a third row of props at the face.

Important Items on Which the Success of the Longwall System Depends

The amount of refuse in a seam is always an important matter in working longwall. This refuse is stored in the waste. In Wales, it was customary to employ daymen to separate the refuse from the coal and throw it back from the side of the road, while the night shift was employed in bringing rock from other parts of the mine, or from roads where men were brushing the roof.

To my mind, the main issue, in mining a seam of coal of this thickness, is to make sure of providing and maintaining a good main haulage road. This is generally the main travelingway for men and mules in passing to and from their work, as it would be expensive to maintain a separate travelingway in longwall work.

The gateroads should be laid out on about 50- or 60-ft. centers. Two men should load coal on each gateroad, which would give 25 or 30 ft. of face to each man, on either side of the road. The coal is then either pitched to the side of the road with the shovel, or conveyed there in small sheet-iron boxes that can be lifted and dumped into the car by hand. In England these boxes are called "Curling boxes."

However, in my opinion, a system of mechanical loading could be used to advantage, as for example the scraper system that has been mentioned frequently in *Coal Age* and advertised in its pages (see Sept. 23, p. 63). Let me say that my experience with this kind of loader enables me to speak well of its utility where coal is mined on the longwall system.

In closing, it only remains to refer incidentally to what the editor has already emphasized regarding the necessity of leaving an ample shaft pillar. If this is done, I feel that no difficulty will be met later in taking out the coal when working the seam above.

Plains, Pa. Richard Bowen.

Inquiries of General Interest

Answered by

James T. Beard

Pay For Drawslate

Estimating the allowance to be made for handling drawslate in mine openings, by the thickness of the drawslate, in inches, per square foot of area of roof.

SOME argument has arisen here, in reference to the allowance made for drawslate that has come in when working a room 25 ft. wide. The measurement in question starts at a point 21 ft. from the face of the room. At that point the drawsalte is 12 in. in thickness. Seven feet nearer the face, the thickness of the slate is 9 in., and again seven feet nearer the face it is 6 in., while at the face the thickness of the slate is but 5 in. If the miner is to receive 2c. per inch of thickness, for an area 3 ft. long and 5 ft. wide, what payment should be made for the drawslate in this room?

Blanco, Okla. FRANK PATTERSON.

Estimated on a basis of inches, per square foot of area, the rate of pay is $2 \div (3 \times 5) = 2\ 15$ c. per in., per sq.ft. of slate taken down. The drawslate in this room is divided into three sections, each containing $7 \times 25 = 175$ sq.ft. The average thickness of the slate in the first section is $\frac{1}{3}(12 + 9) = 10\frac{1}{2}$ in. Likewise, the average thickness in the second section is $7\frac{1}{2}$ in., while that in the third section, next to the face, is $5\frac{1}{2}$ inches.

At the estimated rate, the total payment for drawslate, in this case, is $2\ 15 \times 175(10\frac{1}{2} + 7\frac{1}{2} + 5\frac{1}{2}) = 548\frac{1}{4}$ c., or $5.48.

Lighted Cigarettes In Gas

Though it is possible that a lighted cigarette may not ignite firedamp, the fact would not warrant taking a cigarette into a gassy mine.

HAVING recently overheard an argument between a mine foreman and his fireboss, as to whether a lighted cigarette would set off gas, I resovled to submit this question to *Coal Age*. It as a surprise to me that the fireboss claimed that gas could *not* be set off with a cigarette, while the foreman claimed that it could. The question referred to the glowing end of a cigarette, but no flame. Also, let me ask, Will a spark caused by a pick striking a sulphur ball or a hard rock set off gas if present? MINER.

Mount Carmel, Pa.

There is no recorded instance, as far as we know, that gas has ever been fired by the glowing end of a cigarette. To ignite gas requires the concentration of a sufficient amount of heat for a sufficient time, though the latter is but a fraction of a second, and depends on the intensity (temperature) developed. A familiar example is the failure of a smoldering taper to ignite the gas coming from an open jet.

The investigations of the Bureau of Mines, relating to the ignition of gas by the carbon filament of a broken lamp shows that the factors assisting the ignition of the gas are the size of the filament, the cooling effect of the inrushing air and gas, the temperature to which the filament has been heated by the current and the length of time that elapses before the filament is broken. Firedamp is more readily ignited in a still atmosphere than in an air current, owing to the cooling effect or dispersion of the heat when the air is in motion.

Putting these facts together indicates that while ignition is possible by a momentary spark of sufficient intensity, a longer exposure to a glowing ember, as the end of a cigarette, would probably fail to produce ignition. A spark produced when a sulphur ball or hard rock is struck with a pick, may have a high intensity, and there is every possibility that gas, if present, would be ignited by such a spark, though it last but the fraction of a second the same is true of a sparking commutator, the blowing out of a fuse, or the breaking of a live-wire conductor. In each case there is the necessary concentration of heat to produce ignition.

The temperature of ignition of pure methane mixed with air is practically 1,200 deg. F.; and, while the temperature of ignition of the carbon is given as low as 356 deg. F. (Fayal), it is important to note that the carbon filament of a lamp heated to incandescence has a far higher temperature but is not burned, owing to the absence of air within the bulb. It is this high temperature at the moment the bulb is broken that makes the ignition of gas possible under certain conditions depending on the size of the filament and the manner in which the bulb is broken.

Notwithstanding these facts, it goes without saying that cigarettes, lighted or otherwise, should never be permitted in a gassy mine. We shall be glad to have the opinion of others on the subject.

Coal Dust. Gas and Air

The fine dust of an inflammable coal held in suspension in the mine air is explosive, with or without the addition of gas.

IN ONE section of our mine, there is so much dust formed that the air on the road, at times, seems filled with a fine dust cloud. I want to ask what percentage of gas must be present in the air current to make this dust explosive, and can that proportion of gas be detected on the flame of a safety lamp?

Belleville, Ill. MINE EXAMINER.

Air charged with the fine dust of an inflammable coal is explosive whether or not any gas is present. All that is needed for the ignition of such a mixture of dust and air is a flame of sufficient volume and intensity. The ignition will not take place on an ordinary lamp flame. But, on the other hand, the flame produced by a blownout shot would be particularly dangerous in such an atmosphere. The danger is rapidly increased by the presence of the smallest percentage of gas. It is stated that less than 1 per cent of gas is unsafe in a dust laden atmosphere where naked lights are used.

Examination Questions

Answered by

James T. Beard

Mine Bosses' and Firebosses' Examination Indianapolis, Ind., 1920

(Selected Questions)

QUESTION—*Discuss the subject of mine ventilation, setting forth the purposes, mechanical devices and their uses, quality of air required and how determined, quantity of air and how determined, humidity and temperature and how determined, mine gases, how detected, their danger and how prevented. Give the law respecting mine ventilation.*

ANSWER—The purpose of ventilating a mine is to supply a sufficient quantity of pure air to dilute and sweep away the gases generated in the mine and make it healthful and safe for work.

In all up-to-date mines today, the air is set in motion by either a blowing or an exhaust fan. The latter type is best adapted to mines generating gas. In such mines the main haulage road is made the intake for the mine in order to avoid the use of doors on the shaft bottom, which would be necessary if a blowing fan was installed.

The quality of the air must be such that the oxygen content shall not fall below the normal, 20.9 per cent. This is best determined by the use of the Haldane flame test, which consists in burning a taper in a small tube $\frac{3}{4}$ in. in diameter and 7 in. in length. The taper burns less and less brightly as the oxygen content is decreased, and the flame is finally extinguished when the oxygen falls to about 18.8 per cent, owing to the presence of about 11 per cent of carbon dioxide.

The quantity of air in circulation must be sufficient to comply with the mining law of the state and keep the mine free from gas and safe. The quantity of air passing in an airway is ascertained by multiplying the sectional area, in square feet, by the average velocity of the current, in feet per minute, as indicated by the observed reading of the anemometer.

The best working conditions obtain when the relative humidity of the air ranges from 60 to 70 per cent and the temperature does not exceed 60 deg. F. In the working of a dry and dusty mine where the coal is highly inflammable and some gas is generated, it is generally advantageous to maintain a higher humidity of the air by spraying or by other artificial means to prevent, as far as possible, the formation of dust and its suspension in the air. The relative humidity of the air is determined by the use of the psychrometer and the temperature by the ordinary thermometer.

The common mine gases are methane or marsh gas (CH_4), carbon monoxide (CO), carbon dioxide (CO_2) and hydrogen sulphide (H_2S). Methane is determined by observing the cap formed on the flame of a safety lamp or the action of the flame when that gas is present in the air. Carbon monoxide is detected by observing its effect on caged mice or birds, which are prostrated by a far less percentage of the gas than affects the human system dangerously. Carbon dioxide is detected by the dim burning and final extinction of the lamp and by the headache and nausea produced in breathing this gas.

Methane is dangerous because of its forming an inflammable or explosive mixture with air. Carbon monoxide is extremely poisonous, less than 1 per cent of this gas often proving fatal when breathed but a short time. Carbon dioxide produces headache, nausea, prostration and death when a sufficient percentage of the gas is present in the air breathed. Hydrogen sulphide, though poisonous, and explosive when mixed with air, is seldom present in the mine in dangerous quantity. These dangers are all prevented by the thorough ventilation of the workings and careful inspection of the mine.

The Indiana Mine Law requires the circulation of 100 cu.ft. per min. for each man and 300 cu.ft. per min. for each mule employed in the mine, the air current to be conducted in such a manner as to keep the workings free from gas and safe for work.

QUESTION—*Discuss haulage tracks in mines, with respect to bed, gage, weight of rail, ties and nails, fishplates, curves, grades, switches, ballast, drainage and the law respecting wide entries and refuge holes.*

ANSWER—Haulage roads must be kept in the best possible condition, tracks well ballasted on a good roadbed, all curves and grades being as light as possible and the latter favoring the movement of the loaded cars wherever conditions permit. The roads must be well drained, switches carefully laid to prevent the derailment of cars. The size of rail employed will depend on the kind of haulage in use and weight of the motors and cars. All rails must be securely fastened to good ties with proper spikes and joined together with substantial fishplates. The gage of the track will depend on the size and capacity of the cars, weight of motor and character of the top and bottom of the seam as determining the width of the roadways.

Regarding width of entries, the Indiana Mine Law requires a two-foot clearance on one or both sides of a track where drivers are hauling cars. This space must be kept free and unobstructed by timbers, loose slate or other material. The act does not apply to mines operating in veins three or four, commonly known as the Lower and Upper Veins, respectively, in the block-coal fields of Indiana. Sec. 13 of the Indiana law provides for maintaining unobstructed refuge holes, 4 ft. wide and 3 ft. deep as measured from the side of the car. Such holes must be cut in the sidewall of all single-track haulways where power is employed for haulage, and on all gravity planes or inclines that persons must travel in going to and from their work, such holes to be not more than twenty yards apart. On roads where animal haulage is employed, except on entries where rooms are turned at regular intervals not exceeding twenty yards apart, the same refuge holes are required driven to a depth of $2\frac{1}{2}$ ft., unless there is this clearance between the side of the car and the rib.

News from the Capital

By Paul Wooton

Prosecutions Under Lever Act Not to Cease, Department of Justice Announces

IN A STATEMENT reviewing the work of the fair-price commissions, which were suspended Nov. 1, the Department of Justice refers to coal prosecutions as follows:

"Early in June, 1920, the departments began to receive complaints that bituminous-coal prices at the mines then ranged from $7 to $11 a ton, with further increases imminent in the face of an average price under Fuel Administration control, which had shortly before been suspended, of $4 at the mines.

"It was realized that this was not a mere sporadic condition, and peremptory instructions were forwarded to all U. S. attorneys to give special attention to the matter and seek indictments under the profiteering provision of the Lever Act where investigations disclosed that an unreasonable profit had been exacted.

"The principal bituminous-coal producing fields are in Alabama, Colorado, Illinois, Indiana, Kentucky, Missouri, Ohio, Pennsylvania, Tennessee and West Virginia. In five of these States—namely, Indiana, Colorado, part of Kentucky, Pennsylvania and Missouri—the U. S. attorneys were effectually precluded from taking any action to prosecute coal profiteers, since in those states the District Courts had held the law unconstitutional. Complaints were investigated even there, however, with a view to instituting prosecutions in the event the Supreme Court should uphold the law.

"In the other states, where the constitutionality of the law was upheld, hundreds of indictments have been found and substantial relief has been afforded the consumers."

The department says the abolition of the fair-price commissions does not mean a discontinuance of the department's activities in prosecuting violations of the Lever Act. A substantial portion of the appropriation has been held in reserve for this purpose. It says the fair-price commissioners were abolished primarily because their continuance meant a serious curtailment of profiteering investigations.

I. C. C. Orders Coal-Car Inquiry

FOLLOWING complaints of alleged graft in the matter of distribution of coal cars, the Interstate Commerce Commission on Wednesday, Nov. 3, ordered an investigation in the matter of distribution of cars for shipment of coal in interstate and foreign commerce. The commission will hold hearings in the matter at a date to be announced later, and will endeavor to ascertain if the charges are true, looking toward action in the case.

It has been reported, the commission stated, that certain persons and corporations have given money to the railroads and obtained unjust and unreasonable preferences in shipments of coal, subjecting other shippers to undue disadvantages.

Following is the notice issued by the commission:

General session of the Interstate Commerce Commission, held at its office in Washington, D. C., on the third day of November, A.D., 1920, *in the Matter of the Distribution of Cars for Shipments of Coal in Interstate and Foreign Commerce* (No. 11917).

The commission having under consideration the subject matter covered by the above title, and having received information from various sources that statements have been made, which, if true, tend to show that the law has been violated in certain ways, namely: That certain persons, firms and corporations have offered, granted and given money and other things of value to common carriers and their agents, and to others, for the purpose of obtaining, and that said persons, firms and corporations have obtained, unjust discriminations in their favor, and undue and unreasonable preferences and advantages, from said common carriers and their agents, and from others, in connection with the distribution of cars for use, and which have been used, in making shipments of coal in interstate and foreign commerce; that by reason of the premises certain other persons, firms and corporations have been unjustly discriminated against and subjected to undue prejudices and disadvantages, and that the aforesaid common carriers and their agents, and others, have solicited, accepted and received money and other things of value for the purpose and with the effect above set forth:

It is ordered that a proceeding of inquiry and investigation be, and the same is hereby, instituted into and concerning the several matters and things above mentioned and described, in order that the commission may keep itself informed and that it may hereafter take such action concerning said matters and things as it may determine upon and consider necessary, proper, or appropriate.

It is further ordered that this proceeding be set for hearing at such times and places, and that such persons be required to appear and testify or to produce books, documents and papers as the commission may hereafter direct; and that the investigation be carried on in the meantime by such other means and methods as may be deemed appropriate, and,

It is further ordered, that a copy of this order be served upon such common carriers and others as the commission may hereafter designate.

Coal Legislation and Government Control Studied as Session of Congress Nears

THE Cleveland meeting of the operators and the approach of the date for the assembling of Congress have occasioned lively speculations as to what will happen in the way of legislation this winter. It is taken for granted that Congress will review in detail the developments of the coal year. It is recognized that the authority of the states, under their police powers, to fix prices and regulate the coal industry is certain to come up for active discussion. It is fully expected that there will be some talk of nationalizing the coal mines.

There is no uneasiness among operators as to the probability of Congress approving such action as has been taken by the State of Indiana. Most certainly the nationalization idea will not be given a serious thought. It is known, however, that great pressure could be enlisted for legislation which would vest the President with power to fix coal prices during periods of emergency. Some are of the opinion that experience during this coal year has demonstrated that distribution cannot be controlled effectively unless price also is controlled.

It is admitted that recent events have made more likely a more favorable attitude on the part of Congress toward the Frelinghuysen Coal Commissioner bill. If there should be any thought on the part of Congress of vesting the President with permanent price-fixing powers, it is regarded as probable that Congress would make provision for a permanent official to whom the price-fixing power could be delegated in case of emergency. If a coal commissioner were authorized there would be plenty to occupy his attention during normal times. This would keep him in constant touch with the coal industry.

Detailed Costs of Coal Production During June Issued

Federal Trade Commission Report for 555 Operators Indicates Average Realization Per Ton of $3.34; Cost of Labor, $2.02; Margin, 74c.—Figures May Not Be Representative—June a Favorable Month

AVERAGE June sales realization for the 555 operators reporting to the Federal Trade Commission was $3.44. By regions the sales realizations ranged from $3.21 per ton in the Central Competitive "Interstate" Region (which produced 35 per cent of the total tonnage of the 555 operators) to $3.81 per ton in the Eastern Adjacent Region (which produced 20 per cent of the total). Next highest in sales realization was the Southwestern "Interstate" Region, which had a sales realization of $3.80. The average labor cost for the United States was $2.02 and, by regions, ranged from $1.83 per ton in the Central Competitive "Interstate" Region to $2.78 per ton in the Southwestern "Interstate" Region. The total average for supplies was 31c. and for general expense 37c., thus giving a total f.o.b. mine cost for 555 operators of $2.70 per ton. Margins ranged from 24c. per ton in the Southwestern "Interstate" Region to $1.09 per ton in the Eastern Adjacent Region. The average margin for the 555 operators in all the regions taken together was 74c. per ton. The commission states that June is favorable for production at low cost.

While figures are given in Table I for 2,482 operators in 1918, comparisons between these figures and those for the 555 operators reporting in June, 1920, should be made with much caution because of the difference in number of operators covered and difference between revised and reported costs and margins. Comparisons with 1918 are better made from Table II.

The sales realizations and reported costs of 448 identical operators for June, 1920, and the first quarter of 1920, with sales realizations and revised costs of the same operators for the year 1918 are shown in Table II. To facilitate comparisons of reported and revised costs and changes in margins, the actual amounts of revision found for these operators in 1918 have been shown in connection with the 1918 revised costs. Since identical operators are here covered, this table is especially adapted to show the changes of sales realizations and costs as between the three periods. While comparisons in the table are accurate for the 448 operators, it should be borne in mind that this is a relatively small proportion of the total number of operators and may not be representative of the trend in the industry at large.

TABLE I JUNE, 1920, SALES REALIZATION AND REPORTED COSTS OF 555 OPERATORS AND THE YEAR 1918 SALES REALIZATION AND REVISED COSTS OF 2,482 OPERATORS, BY GENERAL COMPETITIVE REGIONS

		June, 1920 — Reported Costs per Ton —						Year, 1918 — Revised Costs per Ton —					
General Competitive Regions		No. of Operators	Sales Realization per Ton	Labor	Supplies	General Expense	Total F.O.B. Mine	Margin per Ton*	No. of Operators	Sales Realization per Ton	Labor	Supplies	General Expense	Total F.O.B. Mine	Margin per Ton*
Central Competitive "Interstate"	(a)	158	$3 21	$1 83	$0 25	$0 29	$2 37	$0 84	265	$2 45	$1 39	$0 25	$0 26	$1 90	$0 55
Eastern Adjacent	(b)	144	3 81	1 95	0 33	0 44	2 72	1 09	966	2 81	1 45	0 28	0 32	2 05	0 75
Western Adjacent	(c)	37	3 30	1 95	0 28	0 32	2 55	0 75	138	2 75	1 75	0 26	0 26	2 27	0 48
Southern Appalachian	(d)	64	3 21	2 28	0 45	0 43	3 16	0 55	288	2 81	1 61	0 29	0 36	2 26	0 55
Southwestern "Interstate"	(e)	89	3 80	2 28	0 33	0 45	3 56	0 24	121	3 13	2 15	0 25	0 34	2 24	0 39
Rocky Mountain	(f)	63	3 25	2 05	0 32	0 32	2 24	0 51	154	2 23	1 63	0 26	0 30	2 19	0 54
United States		555	3 44	2 02	0 31	0 37	2 20	0 74	2,482	2 05	1 49	0 26	0 29	2 04	0 61

(*) "Margin" is *not* the same as profit.
(a) Includes all of Illinois, Indiana, Ohio, and the Southwest District of Pennsylvania.
(b) Includes all of Maryland, West Virginia, Virginia and the Central District of Pennsylvania
(c) Includes all of Michigan, Iowa, and District No. 1 of Kentucky.
(d) Includes all of Alabama, Tennessee, and Districts Nos. 2, 3, and 4 of Kentucky.
(e) Includes all of Missouri, Kansas, Arkansas, Oklahoma, and Texas.
(f) Includes all of Colorado, New Mexico, North Dakota, Montana, Wyoming, Utah and Washington.

TABLE II SALES REALIZATION AND REPORTED COST PER TON FOR 448 IDENTICAL OPERATORS, BY GENERAL COMPETITIVE REGIONS

		Year 1918					First Quarter, 1920						June, 1920					
General Competitive Regions	Number of Operators	Average Monthly Production, Tons	Sales Realization	Revised F.O.B. Mine Cost	Margin (a)	Excess of Reported Cost Over Revised Cost	Average Monthly Production, Tons	Sales Realization	Reported F.O.B. Mine Cost	Margin (a)	Decrease in Production Compared with Monthly Average in 1918	Increase of First Quarter, 1920, Reported Cost over 1918	Reported Cost	Production, Tons	Sales Realization	Reported F.O.B. Mine Cost	Margin (a)	Decrease of Production Compared with Monthly Average in 1918	Increase of June, 1920,	Reported Cost Over 1918 Reported Cost
Central Competitive "Interstate"	126	2,844,300	$2 17	$1 83	$0 34	$0 02	2,617,866	$2 42	$2 09	$0 33	8%	$0 24	13%	2,460,332	$3 20	$2 36	$0 84	14%	$0 51	28%
Eastern Adjacent	119	1,294,571	2 64	1 90	0 74	0 09	1,627,258	2 75	2 30	0 45	9%	0 31	16%	1,561,997	3 72	2 69	1 03	13%	0 70	35%
Western Adjacent	30	465,351	2 51	1 98	0 53	0 04	438,687	2 60	2 26	0 34	6%	0 24	12%	428,092	3 25	2 52	0 73	8%	0 50	25%
Southern Appalachian	49	833,535	2 75	2 26	0 49	0 07	800,878	3 05	2 79	0 26	4%	0 46	20%	295,320	3 93	3 03	0 90	5%	0 70	30%
Southwestern "Interstate"	69	511,134	2 98	2 59	0 39	0 06	423,520	3 35	3 04	0 31	7%	0 39	15%	412,594	3 63	3 43	0 20	19%	0 78	29%
Rocky Mountain	55	1,881,244	2 59	2 09	0 50	0 05	1,917,094	2 96	2 44	0 52	b2%	0 30	14%	1,700,226	3 25	2 75	0 50	10%	0 61	29%
United States	448	8,330,035	2 48	2 00	0 48	0 05	7,825,303	2 75	2 36	0 39	5%	0 31	15%	7,358,561	3 42	2 66	0 76	12%	0 61	30%

(a) "Margin" is *not* the same as profit. (b) Increase.

Day Wages Now Paid in West Virginia

IN the tables appearing below a comparison is made of the day wages now paid in the Kanawha, New River, Winding Gulf, Pocahontas, Tug River and Thacker coal fields Oct. 1, 1920.

WAGE OF INSIDE DAYMEN IN WEST VIRGINIA

Occupation	Kanawha	New River	Winding Gulf Max	Winding Gulf Min	Tug River	Thacker
Machine runners	$7 18	$7 18	$7 58	$7 58	$7 52	$7 52
Machine helpers	6 70		7 22	7 13	6 72	6 72
Motor runners	7 18	7 18	7 58	7 58	7 12	7 12
Motor brakemen	6 70	6 77	7 05	6 92	6 72	6 72
Trip riders	6 70	6 77	7 05	6 92		
Drivers, one mule	6 95	6 65	6 90	6 72	6 72	6 72
Drivers, two mules	7 11	6 77	7 05	6 92	7 12	7 12
Brattiemen	6 70	7 05	7 42	7 37	7 12	7 12
Brattiemen, helpers			6 83	6 64	6 48	
Track layers	7 04	7 05	7 42	7 37	7 12	7 12
Track helpers	6 76	6 65	6 90	6 72	6 48	6 48
Timber men	6 70	7 05	7 42	7 37	7 12	7 12
Timber helpers			6 83	6 64	6 48	
Drill runners	6 70		7 42	7 37		
Slate shooters	6 82	6 89	7 20	7 11		7 12
Slatemen	6 70	6 65	6 90	6 72		6 48
Trappers, men	5 02		6 83	6 64	6 48	6 48
Trappers, boys	3 65	4 00	4 27	4 29		
Inside car pushers	6 70		6 83	6 64		
Mine door repairer	6 70		7 42	7 37		
Pipe men	6 70	7 05	7 42	7 37		
Pumpers	6 70	6 70	6 96	6 80	6 48	6 40
Skilled wiremen	6 70	7 18	7 58	7 58		7 12
Wiremen, helpers		6 74	7 01	6 87		6 48
Bottom cagers		6 85	7 16	7 05		
Inside greasers, men	5 02	6 60	6 83	6 64		
Inside greasers, boys	3 65	4 00	4 27	4 29		
Inside car couplers, men	5 02	6 60	6 83	6 64		
Inside car couplers, boys	3 90	4 00	4 27	4 29		
Inside car droppers	6 70		6 83	6 64		
Miners taking day man's place	6 70		7 68	7 70		
All other inside day labor	6 70	6 60	6 83	6 64	6 48	6 48

The Kanawha and New River wage advance was effective Aug. 16 and the Winding Gulf, Tug River and Thacker wage advances Sept. 1.

WAGE OF OUTSIDE DAYMEN IN WEST VIRGINIA

Occupation	Kanawaha Max.	Kanawaha Min.	New River	Winding Gulf Max.	Winding Gulf Min.	Tug River	Thacker
Drum runners	$7 50	$7 00	$7 10	$7 48	$7 45		
Car dumpers	6 50	6 00	6 65	6 90	6 72	$5 36	$5 36
Hoisting engineers				7 87	7 94		
Top tipple	6 00	6 50	6 58	6 80	6 61	6 56	6 56
Picking table	6 00	6 50	6 50	6 70	6 48		5 36
Railroad-car trimmers	6 00	6 50	6 50	6 70	6 48	5 36	5 36
Railroad-car cleaners	6 00	6 50	6 50	6 70	6 48		
Railroad-car droppers	6 00	6 50	6 50	6 70	6 48	6 16	6 16
Blacksmiths	6 75	7 50	7 50	8 00	8 10	7 36	7 36
Blacksmiths' helpers	6 25	7 00	6 80	7 09	6 97	6 16	6 16
Car repairers	6 50	7 00	7 06	7 43	7 39	6 96	6 96
Greasers, men	6 25	6 50	6 50	6 70	6 48		
Greasers, boys	3 65	3 65	3 85	4 07	4 05		
Couplers, men	6 00	6 50	6 50	6 70	6 48		
Couplers, boys	3 65	3 65	3 85	4 07	4 05		
Electricians				8 00	8 10		
Electrician's helpers				7 35	7 29		
Mine mechanics				8 00	8 10		
Mine mechanic's helpers				7 35	7 29		
Machinists				8 00	8 10		
Machinist's helpers				7 35	7 29		
Armature winders				7 35	7 29		
Teamsters	6 50	7 00		6 70	6 48	5 76	5 76
Cart drivers				6 18	5 83	5 36	
Carpenter foremen				8 00	8 10		
Carpenters				6 70	6 48		
Floating gang	6 25	6 50		6 18	5 83	5 36	5 56

Anthracite Mine Workers Make Big Demand

AT a conference between anthracite mine workers and operators at the office of the Philadelphia & Reading Coal & Iron Co. on Oct. 26, the United Mine Workers of America on behalf of the employees at the anthracite mines made the following eight demands:

(1) Contract rates in the anthracite region should be increased an additional 13 per cent in order that the total increase may reach 31 per cent, which was the average increase received by the tonnage miners in the bituminous regions as a result of the award of the President's Bituminous Coal Commission.

(2) The minimum day rate should be more equitably fixed so as to conform to the amount of wages necessary to support an American family in comfort and decency. Equity would dictate that the minimum wage should not be less than $6 per eight-hour day.

(3) All classes of labor receiving rates in excess of the minimum rate in effect previous to the agreement of Sept. 2, 1920, should receive the same increase as applied on the minimum rate, in order that the differentials between the various classes of labor shall be maintained.

(4) The hourly rates of those receiving less than the minimum $1,515 should be increased to the same percentage or flat amount as that received by other employees.

(5) The rates paid to consideration miners should be increased an additional 11 per cent in order that they may receive the average increase of 31 per cent as provided for in the above paragraph concerning contract increase.

(6) Contract miners' laborers and consideration miners' laborers should receive the same increase per day as given to inside day men, with provision for the operators to assume responsibility for the increase above the percentage amount given to the contract miner. Contract miners' laborers to receive the full increase on their total rate of earnings received by them previous to the agreement of Sept. 2, 1920.

(7) Monthly men and men on a shift should receive the same increase as provided for those receiving above the minimum rate.

(8) Men working in excess of the eight-hour day should have their work day readjusted to the eight-hour basis.

The demands were received by the operators "without discussion." They promised they would be placed before other executives and that another conference would be held in Philadelphia, Friday, Nov. 5. The operators were W. J. Richards, president of the Philadelphia & Reading Coal & Iron Co.; S. D. Warriner, president of the Lehigh Coal & Navigation Co.; C. F. Huber, president, Lehigh & Wilkes-Barre Coal Co., and Frank H. Hemmelwright, vice-president of the Temple Coal Co., Scranton, Pa.

The meeting, which occurred on Nov. 5 and 6, as scheduled, was without result. The mine workers declared that the whole wage contract was open for consideration. The operators announced that inequalities within the contract alone were mentioned and that the differences between anthracite and bituminous wages were not an issue. The mine workers declared virtually that if the President's telegram did not say anything about the matter it should have done so. Did they not ask the President to include this matter in the scope of the inquiry? Another meeting is to be held today, and if this meeting does not have a more successful issue the mine workers will ask the President to write another telegram, which they hope will induce the operators to discuss every complaint of the mine workers.

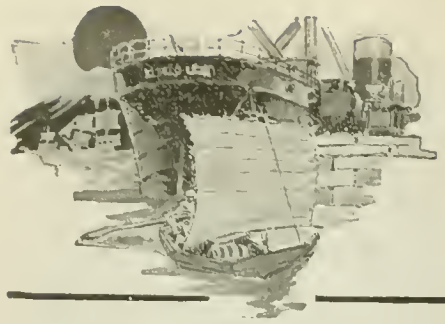
Calder Committee on Reconstruction Will Hold Hearings in the West

HEARINGS will be held by Senator Calder's Committee on Reconstruction in all important cities in the West and Middle West this month. It is understood that the itinerary includes a meeting in Cleveland, Nov. 8 and 9; Chicago, the 10th; Des Moines, the 12th; Omaha, the 13th; Denver, the 15th; Kansas City, the 17th; New Orleans, the 20th; Birmingham, the 22nd, and again in New York on the 24th. It is reported that those interested in the building industries will be heard and that special attention will be given to the subjects of coal and transportation. This series of conferences over the country will enable Senator Calder to enter the new Congress in December with the most up-to-date information on the subject of reconstruction, on which he is now one of the recognized authorities.

Missouri Operators to Fill Urgent Needs At Regular Circular Rates

ARRANGEMENTS have been made whereby all urgent needs for coal in southeast Missouri, and especially on the Missouri Pacific R.R., will be taken care of by the Franklin and Williamson County coal operators at their regular circular prices. These operators are nine-tenths of the operators in these fields and are not to be confused with the few who are asking the extreme prices. These shipments are for actual current needs, steam and domestic.

In making application consumers ar eadvised to state the size that they need, approximately urgent tonnage, or orders on hand, from whom they have been buying, or with whom they have orders, and any reasons they may know as to why they are not getting coal. They also must state if willing to have coal shipped C.O.D. if operator thinks it necessary.



Foreign Markets and Export News

Union Recognition Is Urged in Spain

Recognition of the miners' syndicate of Spain by employers has been proposed by Commissioner Palacios, who was sent by the Government into the Rio Tinto district to seek a solution to the miners' strike there. He also suggests that the employers make working contracts with the miners directly and that a definite pension system be established.

Other provisions of the proposed settlement are indemnification of the men for time lost during the strike and a wage increase of one peseta daily over the amount paid before the strike. Measures are further recommended to permit the men to be represented in all social institutions of the district, including co-operative stores, medical service, a pension scheme and educational establishments.

Silesia Coal Production Shows Great Decline

The report of Obersehlesische Berg und Huettenmaennische Verein, E. V., covering the year 1919, shows that in 1919 there were 63 anthracite mines operating in Upper Silesia, wherein 1,235 steam hoist engines were used and 388 electric motors were in use, as against 405 in the preceding year.

There was 35 per cent less coal produced in the mines in 1919 than in the previous year; 21,204,043 tons of coal were shipped from these mines in 1919, as against 36,113,360 tons in 1918 and 40,337,215 tons in 1913.

Spain Unable to Move Coal

The serious danger of a lack of coal in the cities of Spain during the coming winter is the subject of an editorial article in the *Imparcial,* of Madrid, which blames the authorities for neglecting the development of the railroad transportation system. The newspaper says the Austrian coal fields alone are capable of supplying the 7,000,000 tons needed for Spanish consumption, but that it is useless for them to produce coal when the transportation conditions make it impossible to carry the coal from the mines.

The *Imparcial* calls upon the government to take the question in hand immediately, as otherwise much suffering will ensue, especially when the season of snows begins in the northern mountain ranges.

Turkey Favors American Coal

Prior to the war the coal market of Constantinople, according to Trade Commissioner George Wythe, was controlled by Great Britain. At that time Cardiff coal was best known and most in demand. Belgian, German, and Russian coal also was known and used to some extent.

Turkish coal is of a poor grade and because of the great amount of sulphur in it was not used in any quantity for bunkering purposes.

Shortly after the Armistice, when England imposed an embargo, local importers began to look to America for coal.

American exporters have been shipping in Pocahontas screened coal, and it has in most cases given satisfaction and is becoming better and more favorably known by the local consumers.

At the present time the consumption of American coal is estimated from 8,000 to 10,000 tons per month, costing from $35 to $42 per ton c.i.f. Constantinople. American coal compares so favorably with the English coal and is so superior to the Turkish product that the consumer is gradually ordering more through local importers or importing agencies.

In the majority of cases American exporters demand payment in New York in full upon completion of loading. In some instances local importers have secured through London five or six months' credit to finance their coal purchases in the United States. Importers who complained in the past about the complexity of the banking situation now express their satisfaction at the establishment of an American bank in Constantinople.

Average Daily Coal Receipts at Italian Ports in Vessels Controlled by Italian Government

(In Metric Tons)

	May	June	July	August
Civitavecchia	1,062	1,300	775	1,068
Torre Annunziata	1,032	1,261	1,041	1,174
Naples	1,066	1,163	1,178	1,253
Leghorn	1,127	1,149	1,151	1,181
Trieste	..	1,002	926	1,571
Palermo	1,060	992	739	...
Spezia		978	1,175	...
Savona	1,005	932	934	1,168
Venice	784	830	789	692
Brindisi	970	792	840	802
Ancona	845	772	775	794
Messina		732	1,159	731
Genoa	886	676	724	1,105
Catania			754	
Reggio Calabria			547	575
Barletta			504	
Bari				775
Taranto				610
Cagliari				527

French Miners Ask 500 Per Cent Wage Increase

The French Government has arranged an agreement with the mine employers to meet representatives of the French National Federation of Miners in an effort to avert the threatened strike for enforcing the men's demands for higher wages and nationalization of the mines, it was reported in Paris Nov. 7.

The men are demanding that the maximum pre-war scale be multiplied by five, as the cost of living, they represent, has been increased more than six-fold.

The federation represents all the underground workers in the coal and other mines and in the quarries.

German Coal Production in the Ruhr District During September

The coal production of the Ruhr district in September was 7,590,000 tons, the production in the previous month 7,290,000 tons. The monthly production of this district in the years preceding the war was about 8,000,000 tons. The present production, therefore, is near the pre-war level.

Strike Cripples British Shipping

British shipping, according to Consul General Robert P. Skinner, London, is greatly curtailed because of the strike, coastwise trade being hampered; outward cargoes are practically stopped, but bunkers are supplied for vessels bringing back food and essentials. The practical effect of regulations is the return to the system of directed voyages, recently abolished.

Cardiff reports 245 vessels in port, only 2 loading; 1,500 coal trimmers out of employment; bunkering entirely ceased, shipments of export coal being delivered to inland destinations. Most shipping is lying idle throughout the Kingdom; unemployment among seamen and dock labor is becoming acute; seamen blame miners for unemployment. Southampton reports cross-channel service curtailed, channel island service now being once a week.

British Miners After Vote in Favor of Strike Return to Work

THOUGH the report of the executive committee of the Miners' Federation of Great Britain on Nov. 3 showed that there was a majority against the acceptance of the settlement of the general mine strike, the mine executives issued notices urging the men to return to work with the least possible delay, for under the rules of the Federation a two-thirds majority is needed for the continuance of the strike. The majority against a settlement was quite small, only 8,450. This is insignificant as compared with the large number of mine workers—nearly 700,000.

One man in four failed to vote. In sixteen districts the ballot proved favorable to the settlement, but the majorities in Lancashire, South Wales, Nottinghamshire and the Forest of Dean were so large that they dwarfed the small contrary majorities of the sixteen areas. The leaders of the South Wales and Lancashire districts sought to have the strike continued. They urged that the rule requiring a two-thirds majority did not apply in this case, but with that point of view the representatives of the other districts showed little sympathy. The strike began on Oct. 16, and completely closed the mines from that date till Nov. 3. On the day previous, when the miners were balloting on the settlement, the miners in the Charleroi district of southern Belgium went out on strike.

Production lost because of the British strike, which actually shut down the mines for three weeks, is estimated at 13,000,000 tons.

Coal Produced, by Districts, During First Nine Months of 1920

OF THE coal fields of the United States those in which demand presses most persistently on the heels of supply are the northern and middle Appalachians, comprising the States of Pennsylvania, Ohio, West Virginia, Maryland, Virginia and eastern Kentucky. Out of this area must be supplied not only the requirements of the industrial Northeast but also the great bulk of the exports both overseas and to Canada, the rail and water movement to New England, and the coal shipped via the Lakes to the Northwest. The experience of the war years and of the present coal year as well indicates that when a problem of distribution exists anywhere in the country it is likely to be in this northern and middle Appalachian region. Nor is this surprising in view of the fact that the region contributes from 60 to 63 per cent of the country's total output.

The Geological Survey, according to F. G. Tryon in his last weekly report, is now in a position to publish weekly statistics of the production in this critical region. As shown in the following table, the output in January, 1920, was 27,620,000 net tons, practically equal to the monthly average for 1917, and within one and a half million tons of the 1918 average. The effect of the switchmen's strike may be seen in the output for April, which dropped to 22,730,000 tons. Since then there has been a gradual recovery, reaching in August and September a total of over 30,000,000 tons per month.

PRODUCTION OF BITUMINOUS COAL ON THE NORTHERN AND MIDDLE APPALACHIAN REGION*

(In net tons)

1917 monthly average	27,665,000	1920:	
1918 monthly average	29,151,000	June	26,730,000
1919 monthly average	23,940,000	July	28,170,000
1920:		August	30,750,000
January	27,620,000	September	30,230,000
February	22,350,000	Week Ended:	
March	27,020,000	Oct. 2	6,775,000
April	22,730,000	Oct. 9	7,275,000
May	23,400,000	Oct. 16	7,185,000
		Oct. 23	7,225,000

* Figures for 1919 and 1920, subject to revision.

Production during October has averaged well above 7,000,000 tons per week, the indications being that the output for the month of October will again exceed 30,000,000 tons and will perhaps reach 30,800,000 tons.

In the following tables are given the best estimates which can now be made by the Geological Survey on the production of coal, by states, in the first nine months of 1920. As the estimates are based on railroad shipments it is sometimes difficult to apportion the tonnage of a road originating coal in more than one state, and the figures are therefore presented as tentative and subject to revision.

It will be seen that of the five major groups of fields shown, the Northeast and the Mountain-Northwest are farthest behind in comparison with the war years 1917 and 1918. Production in the Northeast has been at a rate equivalent to 91 per cent of the 1918 rate, as against 97 per cent for the Eastern Interior, 94 per cent for the Western Interior and southern Appalachians, and 92 per cent for the Mountain-Northwestern group.

PRODUCTION OF SOFT COAL, BY GROUPS OF STATES, 1917-1920

(In thousands of net tons)

Section	First Nine Months of 1920	Year 1920 at Same Rate as First Nine Months	1919	1918	1917
Northeast *a*	239,236	318,984	288,250	351,365	33,440
Southern Appalachian *b*	18,499	24,672	20,420	26,083	26,381
Eastern Interior *c*	94,689	126,252	94,600	130,768	122,953
Western Interior *d*	21,763	29,016	22,590	30,724	30,708
Mountain States and Northwest *e*	27,885	37,176	32,090	40,341	38,212
Total *f*	402,072	536,100	457,950	579,281	551,694

(*a*) Michigan, Pennsylvania, Ohio, West Virginia, Maryland, Eastern Kentucky and Virginia. (*b*) Alabama, Georgia and Tennessee. (*c*) Illinois, Indiana, and western Kentucky. (*d*) Iowa, Kansas, Missouri, Oklahoma, Arkansas and Texas. (*e*) Colorado, New Mexico, Utah, Wyoming, Montana, North Dakota and Washington. (*f*) Alaska, California, Idaho, North Carolina, Oregon and South Dakota not included.

Refuses to Advance Lambert Run Case; Definition of Coal Cars Modified

EVENTS bearing on the coal industry have happened thick and fast in Washington during the last week. Following are some of those of most significance:

The U. S. Supreme Court on Monday, Nov. 8, declined to advance for early hearing the case of the Lambert Run Coal Co. vs. the Baltimore & Ohio R.R., involving assigned cars.

On Saturday, Nov. 6, the Interstate Commerce Commission released about 25,000 cars from coal transportation by amending Service Order No. 20 to read: "The phrase coal cars as used in this order shall not include or embrace gondola cars with solid 'fixed' sides and solid 'fixed' flat bottoms, having sides 42 inches or less in height, inside measurements."

For the third time within a week, representatives of public utilities made a determined plea on Monday for assigned cars. Apparently the Interstate Commerce Commission continues to regard the situation as insufficient to revoke Service Order No. 21. The utilities asserted that they were receiving less than 60 per cent on their contracts with a large number of plants operating on meager daily requirements. The approach of winter with short reserves of coal, it was said, makes likely numerous cessations on the part of public utilities. The co-operative committee, composed of representatives of railroads, operators and utilities, is not meeting the situation, the commission was told.

Attorney General Palmer, instead of attending the hearing at Indianapolis before Judge Anderson in the coal cases, appeared on Monday in the U. S. Supreme Court in his usual seat, to hear decisions announced by the court, expecting decisions in the Lever law and other cases in which the Government is interested. The court, however, did not announce a decision in the Lever law case.

Wentz Defends Priority Orders at Calder Hearing

Ignoring of Operators' Early Requests for Increased Transportation Facilities Caused Acute Situation—New York Utilities Accused of Selfishness in Asking Assigned Cars—Secretary Tumulty Denies Influencing Commerce Commission

SENATOR CALDER'S position on the coal question was made quite clear in the hearing in New York City on Nov. 4 of the Senate Committee on Reconstruction, at which time Colonel Wentz, president of the National Coal Association, was the principal and only witness. Senator Calder inferred that the coal operators, railroad officials and the White House had been running the coal business, influencing priority orders during a period when transportation was denied to all industries and coal contracts had been broken on account of these priority orders. He said that from evidence submitted to the Reconstruction Committee the prices of coal had been outrageously high, the railroads of New England, for instance, having had to make an outlay of $18,000,000 extra per year, and the gas users of Massachusetts at the rate of $5,700.000 extra per year, and, according to the Senator, nobody has benefited by the issuance of these priority orders except the gentlemen who made or influenced their making. Coal exports have not been reduced, idle shipping has not been used and the Senator said it has been possible, according to the testimony of Mr. Willard, for anyone to buy a car of coal and ship it to a port and hold it there indefinitely for speculation by paying the regular public charge of $2 per day. He referred also to the announced intention of the bituminous coal operators, anthracite coal operators, wholesalers and retailers to get together to influence legislation and to prevent the issuance of contradictory figures and statements.

Colonel Wentz Resents "Influence" Charge

To the charge that the coal operators, railroads and the White House had been working together in handling the coal situation and had been influencing the issuance of service orders in order to excuse coal operators from fulfillment of their contracts Colonel Wentz said "I do not feel that it is a fair inference to make from the situation because I know neither Mr. Tumulty nor Mr. Alvord [the representative of Judge Payne, Director General of Railroads], nor the Commerce Commission had taken any action either directly or indirectly which would bring about or excuse the operators from fulfilling their contracts, and such an inference is unfair and improper."

Colonel Wentz further stated that he knew of no reason why the facts in connection with the coal industry should not be correctly and properly stated to any investigating body and he gave as his opinion that if an arrangement could be made which would bring the truth about the situation as it exists properly to the attention of any existing body, that would be a step in the right direction. This statement was in answer to Senator Calder's remarks regarding the proposed coalition of the operators, jobbers and retailers.

Senator Calder believes undoubtedly there are a number of honest coal operators and he will not assume that the great majority of them are not honest. In the course of the hearing he said: "I would assume that the great majority of them are honest, but a portion of them, by their manipulations of the shortage of cars and fuels, have left the impression in the mind of the public that they have profited abnormally this past year, and you, gentlemen, who are responsible men of the operators' association, have got your work cut out for you to convince the public that it has not been so, and that you and other honest men of the organization have not profited abnormally in your business." He characterized the situation as very serious. He said that the country is aroused by it almost as much as it was against the rent profiteers, and if coal should be difficult to get this winter and prices unusually high, almost anything may happen.

"When coal has been as high as $12 to $15 a ton at the mines, compared with $2.50 four or five years ago," Senator Calder said, "it is pretty hard to convince the public, when they have also added knowledge that coal operators in conjunction with the railroads have been responsible for the language of the priority orders, that there is not some scheme by which somebody has been doing these things with the knowledge of the authorities."

In reply to the inferences contained in Senator Calder's remarks Colonel Wentz reviewed the situation from early spring, stating that when there came a marked shortage of coal the operators asked that enough transportation be afforded to restore the normal rate of production, but no attention was paid to their request or to the figures the operators presented. It was only when the Governors, Senators and Congressmen from New England and the Northwest came to Washington and to the White House and said that unless coal was shipped to them in larger volume than they were at that time getting these districts would freeze this winter, that the White House naturally became disturbed and other governmental officers in Washington became disturbed, and finally the situation was recognized as acute. He stated that at this time he was told that the appointment of a Fuel Administrator was contemplated for the purpose of re-establishing Federal control of the industry and that, realizing as he did that no Fuel Administrator, no matter how able he might be, and even though he had sufficient funds, could gather together an organization in time to meet the situation, he took steps to have the operators meet the situation immediately.

When Senator Calder remarked that a Fuel Administrator might have fixed prices he replied that it took Dr. Garfield six months to work out a proper and equitable set of mine prices that would stimulate rather than throttle production and that under the program that had been adopted without a Fuel Administrator prices had now decreased to a point where he predicted that spot prices would be below contract prices by Dec. 1.

Dock Men Dissatisfied with Priority Result

Colonel Wentz explained the persistent efforts of the New York public utilities for assigned cars as resulting from their desire to have 100-per cent delivery on their contracts, irrespective of car supply and without regard to the delivery of coal to any other consumers, and he indicated that he did not believe the Interstate Commerce Commission would permit such discrimination. The Senate Committee read a statement from Mr. Groverman, secretary of the Northwest Coal Dock Operators' Association, to the effect that Lake priority orders had not worked out to their satisfaction and that they were short 25 per cent of the coal they needed. In answer to this Senator Calder was told that the dock people represent special interests who prefer to sell to the railroads of the Northwest and do not represent the whole Northwest. After the first three weeks, which were consumed in getting things in operation, Service Order No. 10 was fully effective and so much coal was diverted to the Lakes that a condition of congestion at lower Lake ports was approaching. The commission called upon the Governors and others of the Northwest for reasons why the Lake order should not be suspended and, no reply being forthcoming, the commission suspended the order.

Considerable stress was laid by Senator Calder on the subject of fulfillment of contracts and he was particularly anxious to learn why coal contracts had not been fulfilled. He said that the committee had received information that 90 per cent of the gas and electric companies of Massachusetts made contracts last spring for their year's supply at prices ranging from $3.50 to $4 per ton, but had been obliged to buy 50 per cent of their requirements at spot prices ranging from $14 to $15.

In a statement issued from Washington on Nov. 6, Colonel

Wentz denounced as false the statement of Franklin T. Miller, in the New York papers, that the bituminous coal operators had used, or attempted to use, persuasion with Joseph P. Tumulty, secretary to the President, to influence the Interstate Commerce Commission to issue priority orders so that operators could "dodge" contracts at lower prices than those prevailing in the open market, during the coal shortage.

"Any such statement is absolutely unfounded," said Colonel Wentz. "The operators of the National Coal Association, through their officers, kept Mr. Tumulty informed as to developments in the effort to overcome the serious coal shortage. That is all they sought to do and all that was done. Mr. Miller's insinuations are baseless and utterly false."

Mr. Tumulty, when his attention was brought to these statements, said "I never at any time conferred with or made suggestions to the members of the commission with reference to shipments of coal. There was no politics at any time in the matter of priority shipments of coal. I acted upon the representations made to the President which came from Republican Governors from all parts of the country. Mr. Alvord, acting for Judge Payne, advised the President with reference to the handling of this difficult situation."

Lifting of All Service Orders by End of Month Is Forecast

BEFORE Dec. 1, it is believed, the Interstate Commerce Commission will have cancelled all of its service orders. Exceptions may be the order of April 15, giving railroads authority to use assigned cars, and Service Order No. 18, which defines the commission's position in the matter of the extent of time that a contract is intended to cover. As the commission has had an exceptional opportunity during the last six months to become familiar with the evils and abuses arising from the practice of assigning cars, none will be surprised if these orders go down with the rest.

The last week has been characterized chiefly by the great pressure exerted by industries other than coal to obtain authority to use open-top cars. There are evidences that the commission regards these requests in a sympathetic manner. It is thought probable that an alteration will be made in Service Order No. 20, so as to provide a new dimension as to height of side of coal cars. A change of four inches in this dimension will release more than 20,000 open-top cars. The steel and constructional industries, along with the road builders, have been pressing this matter in the most active manner possible.

The consensus of opinion in Washington is that the slump in prices will not continue to disastrously low levels. Prices have already reached a point where consumers in no immediate need of coal are making contracts.

It is the position of the National Coal Association that the service orders should be continued until the deficit in coal production is made up. The serious shortage has been met by deliveries of coal in installments. This is especially true in the case of domestic coal. It has been an almost universal practice on the part of retailers to deliver only a small portion of customers' orders. For that reason it is regarded as advisable to maintain the present rate of production and distribution for some time to come.

It had been expected that, following the dissemination, to small way stations of the cars which were in the Lake trade, there would be considerable delay in getting the cars back to the mine owing to the longer time which would be required for their unloading. This apparently is not happening, for the need for coal is so great that retailers are unloading cars with unprecedented rapidity.

Another formal request was made last week by public utilities for the use of assigned cars. The commission made it clear that it does not regard the public-utility situation such as to justify the resort to assigned cars. The two committees looking after gas and electric utilities and the non-franchised utilities are continuing to meet emergency needs through co-operation between the operators and the railroads.

Judge Anderson Insists on Bringing Mine Workers and Operators to Trial

JUDGE A. B. ANDERSON, of the Federal court at Indianapolis, Ind., notified A. Mitchell Palmer, Attorney General, Nov. 4 that an investigation would be made in open court Nov. 8 of the Attorney General's connection with the conspiracy case against 125 bituminous coal operators and officials of the United Mine Workers of America which has been set for trial on that date. While no further information as to the reason for the investigation was given by Judge Anderson, it is understood that the investigation will proceed.

The investigation may also include an inquiry as to the statements made recently by the Attorney General that an agreement had been reached with Judge Anderson to the effect that no evidence arising from the miners' strike last November and the resultant court proceedings should be used in the conspiracy case brought against the miners and operators. It is expected that in order to arrive at the facts regarding a conference between Mr. Palmer, Mr. Simms and other officials in Judge Anderson's chambers last December, the court will place Mr. Simms, Mr. Slack, Mr. Van Nuys and possibly others on the witness stand to testify as to what actually took place in the conference.

"I am going to find out if an Attorney General has the power to suppress evidence in a contempt case in this court," said Judge Anderson in reply to a statement by the Attorney General that he did not known on what ground his connection with the conspiracy case against miners and operators is to be investigated.

On Monday, Nov. 8, C. B. Ames, former chief assistant to Mr. Palmer, testified in behalf of the Attorney General that the Government's orders had been misunderstood and that it was the intention to eliminate only the evidence that had been the basis of the contempt proceedings prior to the settlement of the strike, a year ago. Mr. Ames pointed out that the conspiracy charges now under trial were instituted at a date later than that covered by the alleged conspiracy that led up to the strike and that Mr. Palmer did not believe it fair to proceed criminally after having obtained the miners' compliance with the court order last December.

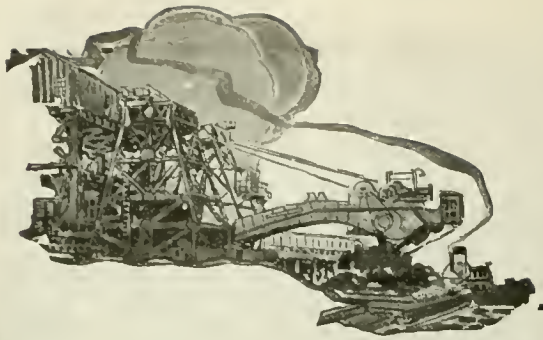
Judge Anderson stated that the Attorney General's conduct was "strangely close to the compounding of a felony" and also "dangerously near contempt of court." The court set Jan. 10, 1921, as the date for continuing the trial inasmuch as the Government's attorney advised him that the Government was not ready to proceed.

Colorado Lignite Miners End "Vacation"

FIFTEEN hundred miners in the lignite fields of Colorado, waging an unsuccessful strike for recognition of the union based on a 20-per cent increase in wages and a working agreement, have returned to work after having been on a so-called vacation of ten days. Union leaders said they could carry on negotiations with the operators just as effectively with the men on duty. The operators intimate that threatened prosecution of the strikers by the State Industrial Commission for law violation and the fact that outside miners were gradually taking the places of the strikers forced the policy committee of the union to unwillingly end the walkout. Both sides will present their grievances before the Industrial Commission Nov. 15.

Illinois Mine Workers Would Revise Scale

PETITIONS are being mailed to every Illinois local of the United Mine Workers of America by John Watt, secretary of subdistrict No. 4. The petitions request that a special meeting be called to consider a revision of the wage scale and such a rewriting of the state constitution as will return all powers to the "rank and file" in the union. If they are signed by a sufficient number of locals, the meeting will be called. Authorization for the circulation of the petitions was obtained at a subdistrict convention held in Springfield in October.



Production and the Market

Weekly Review

LIQUIDATION in bituminous coal has begun as it has already progressed in textile and other industries in the last few months. The bottom has not been reached and prices on all except the very best coal from such fields as Pocahontas and Pittsburgh are certain to continue the downward movement. The abundance of transportation in recent weeks has brought more coal to consumers and has loosened up the so-called "frozen credits" in industries wherein delivery of products had been delayed.

Operators Threatened with Government Control

Senator Calder furnished the sensation of the week in his charge that the coal operators and the railroads had influenced the Interstate Commerce Commission, through the White House, in getting priority orders that enabled coal men to avoid filling low price contracts. The National Coal Association and Mr. Tumulty have both asserted that these insinuations are baseless and false. The situation that has developed in connection with Senator Calder's statements is of considerable importance because accompanied by the threat that if the coal operators do not themselves reduce the price of coal by Dec. 1, when Congress convenes, the Senator will introduce legislation to control the industry. In answer to the statement that the price of coal is now rapidly falling and has already touched the contract price level, Senator Calder has published the record of a sale by the Raleigh Smokeless to the Boston Elevated of a part cargo on Oct. 26 at more than $12 per gross ton, f.o.b. mine.

Indications are that the Interstate Commerce Commission expects to go deeply into the alleged violations of its orders in connection with the use of open-top cars. Not only does it expect to ascertain whether graft existed in the furnishing of cars to certain consignees but it will probe into alleged abuses of the orders by public utilities and other consumers. The permits which have been issued also are to be closely scrutinized. It is alleged that many permits were raised and there are many sensational rumors as to the extent to which bribery was used during the period of greatest car shortage.

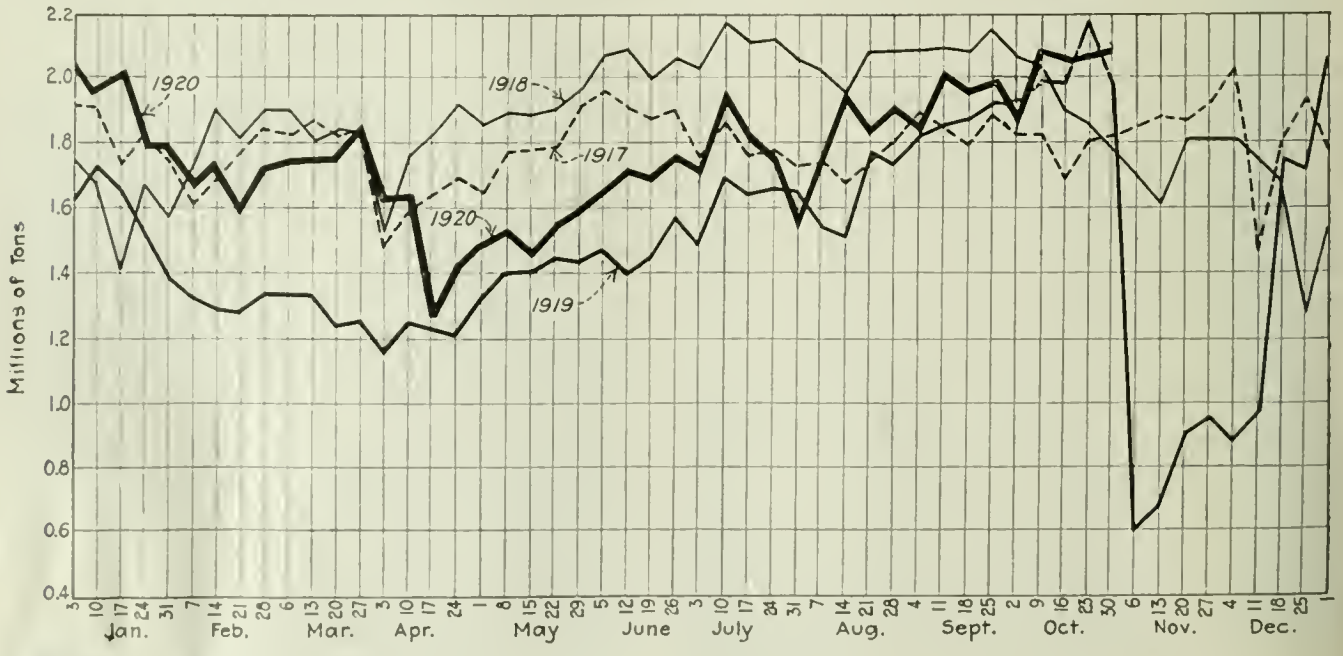
In view of better transportation and increased production, it is believed that the Interstate Commerce Commission will cancel, as of Dec. 1, the last ruling defining coal-car classification and providing priority for open-top equipment for use in the industry.

BITUMINOUS

Production during the week ended Oct. 30 rose to the maximum for the year. According to the Geological Survey, the total output is estimated at 12,338,000 net tons, an increase of 97,000 tons over the preceding week, which is the largest output attained in any one week since the Armistice, with the exception of a late week of October, 1919, just before the coal strike. The 1920 output is now only 7,000,000 tons behind that of 1917. Observance of religious holidays and election day had a decided effect on production for the week ended Nov. 6.

Transportation conditions are steadily improving. Gen-

Average Daily Production of Bituminous Coal*



*From weekly report of Geological Survey.

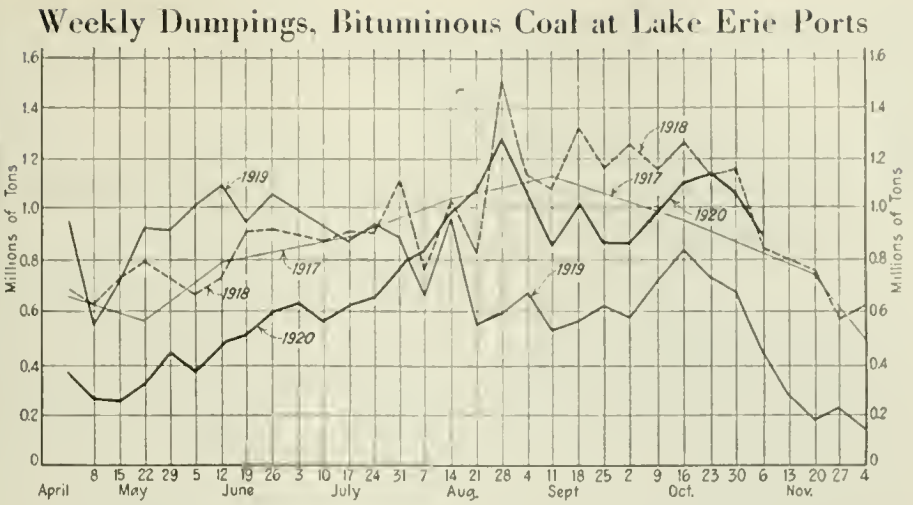
Lake Coal Dumped Season to Nov. 6

(NET TONS)

	1919	1920
Total	22,066,352	20,893,001

Week of Nov. 6, 1920

Cargo	807,594
Fuel	42,132
Total	849,726



eral increase is noted in car supply. The northern Appalachian placement was reported as nearly adequate, with the exception of the Fairmont section, where only a 50-per cent supply was available. The improvement was more noticeable on the B. & O. The supply fluctuated in the middle Appalachian region, all fields reporting a slight decrease. Midwest districts had about 75 per cent placement with indication of steady improvement. Kentucky operations are still crippled by inadequate supply, which during the week was running 26 per cent in the western section and even less in the southeastern part of the state. Alabama mines are obtaining all the empties necessary to load tonnage available in the strike zone.

Labor losses are still on the decline. The men are more disposed to give efficient service, and record production is resulting. Some labor shortage, however, is reported in the Winding Gulf and Tug River sections of West Virginia; eastern Ohio miners are working only in half-hearted fashion since the outlaw strike; Alabama miners have practically all returned, but are working irregularly. Colorado lignite workers who recently went on strike are returning. The Colorado State Industrial Commission states that a majority of the men did not vote for a strike and has set Nov. 15 for a hearing of union leaders.

Believe End of Decline Has Not Been Reached

Further declines in spot prices occurred during the last week of October. Railroad fuel is still in good demand, but purchases for industrial consumption are at a low ebb, apparently in the belief that the end of the decline has not yet been reached. Domestic demand is lowered by the unseasonable weather which has prevailed lately and also because of the absorption of considerable tonnage released by the suspension of the Lakes priority order.

Fairmont quotations are lower—line trade $6, export $10 and Lakes $5@$5.25. Pittsburgh district spot prices range $5@$7, with new contract figures seen at $4@$4.50. Pittsburgh No. 8 is down, $5.25@$6. The Midwest section reports a slump in all demands with southern Illinois $5.25@$6; Springfield $4.25@$5; northern Illinois $4.75@$5.75. Indiana prices inside the state generally conform to rulings of the state commission; outside deliveries are, Fourth Vein $5@$5.75 and Fifth Vein $4.75@$5.25. Western Kentucky steam is firm, $5@$6.50, with a brisk demand caused by lowered production and territory opened up by new competitive rates. Boston market is much weaker with practically no steam demand of any volume; Pool 10, 11 and 14, $5.50@$6.25, Pool 71, $7@$7.50. The New York market broke sharply, and the export demand also fell off; Pools 1, 9 and 71, $8@$9; Pool 10, $6.50@$7.50; Pool 11, $5.75@$6.50; Pool 34, $6@$7; Pool 44, $5.50@$6; Pool 18 and unclassified coals, $5@$6. A like slump is reported in the Philadelphia and Baltimore markets, where spot quotations in some instances are running even less than prices on contract for December and January deliveries. The Detroit market is off $2 on steam grades with Hocking $6 and West Virginia $7. Birmingham reports steam trade as barely absorbing spot tonnage, prices weakening to $4.25@$5 for medium coals, and $5.50@$7 for the best grades.

According to the Geological Survey, the coal handled over Tidewater piers for the week ended Oct. 30 amounted to 1,207,000 net tons, or a decrease of 168,000 tons when compared with the preceding week. Exports declined slightly, as did New England and the bunker trade. The tonnage handled was destined as follows:

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Total
Coastwise to New England	60,000	11,000	28,000	66,000		165,000
Exports		100,000	174,000	361,000	5,000	640,000
Bunker	74,000	20,000	17,000	114,000		225,000
Inside capes		25,000	23,000	6,000		54,000
Other tonnage	122,000				1,000	123,000
Total	256,000	156,000	242,000	547,000	6,000	1,207,000

For the first time in several weeks the all-rail movement to New England fell below the 5,000-car mark, when in the week ended Oct. 30 the movement through the five rail gateways numbered 4,854 cars.

Lake dumpings for the week ended Nov. 6 declined to 849,726 tons as compared with 1,081,275 for the preceding week. Docks are well up on steam sizes and are taking mostly lump shipments on contracts, generally refusing to pay the higher current prices.

ANTHRACITE

Production during the last week of October amounted to 1,696,000 net tons or a decrease of 11.5 per cent as compared with the preceding week. The decrease is attributed to a labor shortage caused by the men commemorating the settlement of the great anthracite strike of 1902 by observing the Mitchell day holiday of Oct. 29. The better rate of production that has been maintained recently has caused a less panicky demand for domestic, although the supply is still far short of tonnage requested by dealers. Steam trade continues very brisk.

Miners are showing some uneasiness about the results of the recent wage hearing in Philadelphia. No announcement has been made, although some is expected from the meeting scheduled Nov. 11. The Interstate Commerce Commission has taken under advisement the matter of establishing priorities for domestic shipments to the District of Columbia and New York City. The matter has also been placed before the Anthracite Bureau in an endeavor to secure the assignment of tonnage to these points. The fair price movement throughout the country has been adopted by representative anthracite operators who have formed a committee to discourage unwise practices.

COKE

Beehive coke production showed an increase of 8,000 tons over the preceding week when 399,000 tons were produced the last week in October. Coke prices continue their decline in the face of a sluggish market, although recession in the past week was not so sharp as that characterizing the preceding week. Connellsville spot quotations are: Furnace, $9; foundry, $11@$12.

Reports From the Market Centers

New England

BOSTON

Extremely Light Demand for Steam—Gas Coals Also a Drug—Prices Slump—Coastwise Receipts Fall Off Materially — Anthracite Domestic Sizes Come Forward Slowly—Weather Helping the Situation — No Spot Demand for Steam Sizes.

Bituminous—The current spot market is lifeless. Aside from a few straggling buyers whose requirements are exceptional there is no present interest here in prices. It is now conceded that New England steam-users have in stock 90@120 days supply at the present rate of consumption. This is based upon the present general curtailment in most lines of manufacturing.

There is no prospect today that business will be stimulated within the 3 or 4 months for which steam coal is now in hand. There are doubtless a great many individual plants whose reserve is less than 4 months, but in such cases continuing deliveries are being made on contract and will be made through the season to April 1.

With the termination of certain priorities in other directions shipments of high volatiles are coming forward in better volume on contracts. Prices receded more than $2 within a week, and new low levels are heard from day to day. In the Fairmont district contracts have been made for railroad fuel at less than $5 per net ton for delivery to April 1 and there have been a few sales at less than that for spot shipment. The low sulphur grades, however, are being maintained at around $6.50.

On certain medium grades from central Pennsylvania there have been offers of less than $5 with counter offers from buyers down as low as $4.25. There has been any quantity of fair grade coal, Pools 10, 11, 14, etc., at a range of $5.50@$6.25, with Pool 71 hanging around $7@$7.50. By water there has not been the corresponding decline in spot prices. Due largely to high tariffs all-rail the small tonnages available for inland distribution have been quietly absorbed on this contract basis of $4.75 @$5. Plus charges these prices mean delivered on cars at Boston, Portland, or Providence a range of $13@$14. Whether further slumps will take place in the all-rail market remains to be seen; it is evident, however that we are in for a dull market until there is some striking industrial change.

Coastwise shipments show a material falling off, as indeed does the movement through the Hudson River gateways all-rail. There are occasional cases of demurrage on ships at the Hampton Roads terminals but they do not occur so frequently as 30 days ago. Car-supply is better on the Southern roads and the operators are less hampered by mandatory shipments West. In other words, the whole bituminous situation is clearing up and all the interests will have a breathing spell through the winter.

Current quotations on bituminous at wholesale range about as follows:

	Cambrias and Clearfields	Georges Creeks
F.o.b. mines, per net ton	$4 75@ 6 25	$5.25@ 7.50
F.o b. Philadelpbia, per gross tons	7.95@ 9.65	8.55@11.00
F.o.b. New York, per gross tons	8 50@10.15	9.00@11.50

Anthracite—There continues general complaint of the extreme slowness with which shipments are being made. All the domestic sizes seem equally hard to secure and retailers in most communities are at their wits end to handle the public demand. In a few cities there are signs of an easier demand, but much depends upon the weather the next 30 days.

Sizes like No. 1 Buckwheat are in much less demand than a month ago. Steam sizes are only in very light demand. Shipments now going forward are on contracts in most cases, although the interest in patent stokers is observed to be growing.

Tidewater

NEW YORK

Bituminous Prices Break Sharply — Export Demand Declines — Anthracite Production Is Recovering — Domestic Situation Is Better — Steam Sizes in Good Demand.

Bituminous—The market is experiencing quite a slump. It began about a week ago and has continued with increasing momentum during the present week. Early in the fall prices receded two or three dollars a ton in the course of several weeks; now they have gone down as much or more in about 10 days.

Several things have played a part in breaking the market. The suspension of the Lake priority order released tonnage for the Eastern trade and was perhaps the immediate cause of a surplus developing. Production in the sea-board territory has been increasing for weeks, while at the same time consumption was on the down grade.

This year the tendency has been to accumulate good-sized stocks, for until recently buyers were in a more or less panicky state of mind. But of late they have adopted a waiting policy for lower prices. A great many consumers seem to have reached the same conclusion, for not only did demand fall off but a flood of cancellations made their appearance.

One other thing making for the fall is that many small operators have been running on spot orders. With no contracts on which to apply their tonnage they must now sell it from day to day at the best price obtainable, which results in all sorts of quotations being heard, varying as much as a dollar a ton.

The market may be quoted, roughly, as follows: Pools 1, 9 and 71, $8@$9; Pool 10, $6.50@$7.50; Pool 11, $5.75@ $6.50; Pool 34, $6@$7; Pool 44, $5.50@ $6; Pool 18 and unclassified, $5@$6.

A factor in depressing prices at Tidewater is the recent falling off in export demand, the bulk of the tonnage now moving on old orders and contracts.

Anthracite—After a series of holidays and semi-holidays which resulted in collieries being idle or short-handed for a week or so, production is again recovering. These shutdowns occur every year, but this year they came all together and at a time when demand for domestic sizes was much greater than usual.

The effects will be felt at Tide well into the next week, as there was a comparatively small tonnage shipped from the mines during the first half of this week, but the prevailing mild weather helped considerably and gave dealers an opportunity to catch up to some extent. Orders on the books represent a large tonnage but dealers state that they are mostly from consumers who already have some coal on hand. Those who had no coal at the beginning of the month were for the most part those who have been waiting for a particular size. Consumers who already have some coal on hand are anxious to secure more, and no doubt they have placed orders with two or more dealers in many cases. Duplication of orders is not much of a factor in the wholesale trade, for the reason that the companies and the large independent operators have opened very few new accounts this year. The retailer who is unable to secure his usual tonnage from his established source could not as a rule get an order accepted by any other producer selling at or near the circular price. Such extra tonnage as may have been obtained was bought from small independent operators at high prices—the smaller independents still being able to dispose of their output at prices ranging up to $15.

Very few of the dealers in this city and vicinity are paying high premiums as most of them are getting company tonnage and some moderate priced independent coal sufficient to enable them to care for their regular trade.

Steam sizes, with the exception of barley, keep in good demand at prices that show little change. No. 1 buckwheat is quoted $6@$6.50; rice, $4@ $4.50 and barley $1.25@$2.25.

PHILADELPHIA

Anthracite Receipts at Low Ebb—Mild Weather Holds Down Consumption—Holidays Cut Production—Steam Sizes Ease Off—Bituminous Takes Sharp Drop—Consumers Are Buying Little—Freer Export Permits Expected—Production Near the Top.

Anthracite—Receipts have been close to the zero point all week and the immediate outlook is not at all encouraging. Many mines have lost time due to the religious holiday last Friday running over into election day.

The companies report much restlessness among their men due to the discussion of the increased wage. It can be taken for granted if the increase is refused there will be trouble.

Even though the retailers are pressing their shippers for more coal, they will generally admit that it will not take a very heavy tonnage to satisfy them, especially in the face of the extremely mild weather so far this fall. There is no question that the tonnage lost by the three weeks lay-off of the miners has about been made up in this way, and with the cellars of thousands of consumers containing an entire winter's supply, some interests are freely predicting a break in the market by the first of the coming year.

One of the big shipping companies this week continued its process of equalizing prices as compared with other large producers. This time the price of egg coal was increased 15c. making the mine price per gross ton $7.75. It also made a price of $4.25 on buckwheat as compared to $4.10 previously in effect.

There has been some easing in the steam trade and while the big companies are still pressed to meet their buckwheat obligations, the smaller concerns are finding it most difficult to exact the top premiums on this size. The price for individual buckwheat recently has been close to $5. Rice is moving fairly well with the big shippers and moderately so with the independents. Barley is to be had freely, with very little likelihood of any strengthening over the $2.25 price.

Bituminous—For a time during the past week it seemed as though the bottom had gone entirely out of the market. There was a great dearth of buying. Manufacturing interests seemed to take the stand that with prices falling it was better judgment to wait, particularly since they were not in urgent need.

With Pool 10 offered at $7.50, the market is fast becoming favorable to the buyer. There was also plenty of Pool 11 at $6@$6.50. The real condition was shown by the fact that the high grade coals, such as Pools 1, 9 and 71 actually came upon the spot market, after having been practically unobtainable for a year or more. Some of the very best coals were offered at $8.50. Under the classification of Pool 18 are many inferior fuels that in ordinary times rarely get on the market, and in an effort to move them, prices were quoted from $5.50 down to $4, mines.

The above quotations are all for coal originating on the Pennsylvania R.R. Coal coming off the New York Central was inclined to sell a little less. As an instance, $7 was freely quoted on Pool 10 originating on the N. Y. C. and for Pool 11 the price was $6@$6.25.

Fairmont coals also sold off. Pool 34 was $6.50@$7. Another indication of the softening market was to be found in an offering of screened coal in limited lots being quoted $7.25, and slack at $6@$6.25.

Various explanations are offered for the change, the principal one being that Tide permits have so restricted movement over the piers that coal has jammed up and producers were compelled to sacrifice prices. It is a fact that the piers are pretty well cleaned up at this time and some people are predicting that prices will stiffen somewhat, as there are intimations that permits will be given more freely in a few days. The fact remains that production is well up and there is more than enough coal to go around.

BALTIMORE

Slow-Down Expected in Exports After Record-Making Month — Prices Fall Under 100 Per Cent Car Supply—Hard Coal Is Scarce and Dealers Are Apportioning.

Bituminous—Reports at Tide show a distinct slow-down in the number of ships reporting and being loaded as compared with the recent record performance that made October the most exceptional month in the history of the export trade here.

During October there was loaded on foreign delivery account a total of 118 ships, carrying 653,762 tons of export and 39,567 tons of bunker fuel. This was a cargo excess of 159,854 tons above the best previous record, made in September. In August, 490,930 tons of export cargo coal was loaded, so that the total for three months sent to foreign ports reached the remarkable figure of 1,638,495 tons.

Many ships loading cargo coal here are taking fuel elsewhere for bunkers. The bunker business has been somewhat of a disappointment lately. Bunker prices have slumped to about $13 a gross ton f.o.b. piers.

The fine car supply at present is a big factor in the cut in spot prices for line trade. Some of the regions are getting 100 per cent since the release of cars from the Northwest, and best coals such as run to Pools 9 and 71 are offering at $7@$8 a ton f.o.b. mines. Less desirable coals are running at $5.50@$6. This does not apply to contract in considerable amounts, the figure for less desirable coals for delivery over December and January being around $7 and for best coals $8.50@$9.

Anthracite—While vastly aided by the continued mild weather, the hard coal situation is not entirely relieved Under a general policy of dealers to deliver small lots only to customers without coal there has been a fairly wide distribution. Still there are hundreds of homes without coal and some with only enough to last a week or more before more fuel will be needed.

Dealers say that producing interests, which had promised that November would see a big movement following the period of light deliveries, can not ship much for the balance of this month. The dealers are standing by their plan to buy only company or reasonably priced premium coal, and no one has followed the lead of one large company here which raised prices $1.50 a ton to take care of coal bought at a fancy figure.

Lake

BUFFALO

Bituminous Still Slumps—Prospect of Continued Weakness for Some Time—Consumers Hold Off—Cars Are Plentiful—Anthracite Scarce—Coke Declines Sharply.

Bituminous—Decline in the price of bituminous coal continues. Consumers appear to have all they want and will no longer pay previous prices. Operators seek jobbers for orders, some of them signifying that they will accept any price that it offered.

The weather has favored light consumption right along till the surplus production seems likely to take care of winter heating without any stiffening of price.

Already the lowered price must be hitting the mines that have paid wages in excess of the union scale and the question is what they will do when another reduction takes place. It is not easy to say what bituminous prices are, but a leading jobber quotes $8.50 for Youghiogheny gas coal, all sizes; $7.50 for Pittsburgh and Allegheny Valley steam lump, $6.50 for mine run and $5.50 for slack; $12 for Lilly smithing. Slack is mostly strippings and hard to get. Add to these prices $2.36 on Allegheny Valley and $2.51 for Pittsburgh and Youghiogheny as freight charges.

Anthracite—The demand for house coal is about as great as ever and the supply remains scant. The weather is favorably warm but the retailers are still pushed for deliveries. The Public Service Commission has ordered all natural gas out of furnaces that can burn coal, but considering the state of the weather and the gas supply it is not believed that this will always be insisted upon.

An effort is being made to meet immediate needs by delivering only a ton or two on an order. It will be nearly a month before the Lakes close and then coal will immediately become plentiful. This state of things promises to happen every fall unless some better summer system of delivery is adopted.

Anthracite prices to the curb are regularly $13 for furnace sizes and $13.25 for stove and chestnut. Independent operators are asking as high as $17 at the mines.

Lake—Shipments for the week were 122,100 net tons, of which 73,100 cleared for Duluth and Superior, 15,100 for Milwaukee, 10,000 for Fort William, 7,500 for Escanaba, 6,900 for Chicago, 6,200 for Washburn, 2,500 for Marquette and 800 tons for the "Soo." The mining suspension cut down late receipts.

Freight rates remain at $1.50 to the Soo, 85c. to Chicago, 75c. to Milwaukee and Escanaba, 60c. to Duluth, Fort William, Washburn and Marquette.

Shipments to Nov. 1 were 2,949,761 tons, as against 3,505,418 tons last season to the same date. October shipments were 537,000 tons, as against 664,400 tons in October last season.

Coke—The market has weakened faster than for bituminous coal. Jobbers find the supply about as scant as ever, with prices much reduced and still declining. The demand is light and very unsteady. Quotations at the ovens are $15 for 72-hour Connellsville foundry, $13.50 for 48-hour furnace and $11 for offgrades and stock, with a moderate amount of domestic sizes, $9.50@$10. Add to this $3.64 freight for Buffalo delivery.

MINNEAPOLIS

Priority Suspension Was Natural Outcome of Prevailing Situation — Northwest Must Depend on All-Rail Coal — Purchases of Illinois Coal Reduce Shortage.

With the piling up of coal directed for the Northwest under the priority order, caused by the refusal of the trade to buy, the quick suspension of the order was to be expected. With hopes of lower prices, consumers could not see the wisdom of paying the top of the market.

Yet the situation is most unfortunate. The close of navigation is but a few weeks away and after that all supplies must come all-rail. When cold weather and winter storms add to the difficulties of railroad work, there may be a serious handicap to moving any great quantity of coal. The dock supply is short a full 4,000,000 tons. This is almost wholly on soft coal, for the figures on anthracite are close to those of a year ago, and the mild weather has held down that consumption materially.

A shortage of such quantity is not readily made up. However, several railroads of the Northwest have increased their contracts for Illinois coal and diverted their use of fuel from dock supplies. The orders amount to 3,000,000 tons, which are probably at least double the former orders. Some gas and electric light concerns have also gone into the Illinois field for a considerable amount of coal, which further reduces the shortage. The tendency to hold down on buying manufactured goods because of expecting lower prices, will also cut down industrial consumption.

While it is not possible to figure at all closely on the showing here made, yet it seems that the shortage is cut in half. With the improved situation developed by the railroads speeding up, it seems likely that it becomes a question of production. Even the deliveries during the month to come over the docks may show up better because there will be less competition elsewhere when the urgency seems more remote.

The difficulties of the Northwest are far from solved. Should the car situation fail to stand up when severe weather is at hand, it will speedily make things look bad. The dock stores are short and it will not take long with a heavy demand to get them down to the vanishing point.

MILWAUKEE

Suspension of Lakes Priority Order Causes Uneasiness — Railroads Must Be Depended Upon During Coming Winter—State-Wide Coal Investigation Inaugurated.

A quiet market prevails, but there is an undercurrent of uneasiness because of the suspension of the Lakes priority order. The supply of hard coal is nearly exhausted and it is difficult to get domestic grades of Eastern bituminous. Milwaukee is well supplied at present with Western steam coal.

Suspension of the priority order dissipates all hope of securing a reasonable stock by the time navigation closes, and the future will have to depend upon the efficiency of the railroads. There is a fair movement by Lake at the present time and rail conditions have been unusually satisfactory.

A state-wide coal investigation has been inaugurated by Attorney-General John J. Blaine in order to determine the truth of charges that coal supplies have been held up at port cities so that Inland distributors might profit. One dealer has testified that it was utterly impossible to secure hard coal for his trade and that in order to get bituminous he was compelled to deal with jobbers in Illinois who charged a commission of nearly $3 per ton. Complaint is also made that high-priced coal is of inferior quality. Some state institutions report as high as 30 per cent ash and low heat value.

Hearings will be held at Milwaukee Nov. 10, Racine Nov. 12, Sheboygan Nov. 18 and Ashland Nov. 20. Other cities will be included before the investigation closes.

CLEVELAND

All Grades Decline—Receipts Improve —Market Weakens Steadily — Suspension of Lakes Order Beginning To Be Felt — Fair-Practice Commission Is Functioning.

Bituminous—Steady increases in the supply of fuel and continued decline in demand for industrial coal, together with softening prices, are the outstanding features of this market. The Fair-Practice Commission formed recently is now functioning. It is acting as a bureau to strike at profiteering and unfair dealing in any phase of the coal trade. The committee has announced it would receive complaints regarding any cases of unreasonable prices, and will co-operate with the United States district office.

So far, suspension of the Lakes priority order has had no pronounced effect upon coal receipts or prices. It is beginning to be reflected, however, and as the receipts increase, prices are expected to continue to drop. In the meantime, dealers have coal in their yards which was purchased at high prices and are not inclined to take a loss on it. The policy now being employed is to average the high price coal and the cheaper fuel now obtainable. Should demand fall suddenly, however, quotations might tumble. Plant idleness in this locality is spreading surprisingly.

Coal is coming in at a better clip than for many weeks. The Pennsylvania lines furnished mines nearly 100 per cent car supply for a number of days last week. Other lines, however, are not running above 65 per cent. Prices for mine run No. 8 range $3.50@$5 against a maximum of $8 a few weeks ago.

Pocahontas and Anthracite — All grades show concessions of 50c.@$1 a ton. Dealers' yards are not heavily stocked and supply is said to continue nearly 50 per cent under the demand.

Lake—Coal is still moving forward to the Northwest on contract, but buyers are withdrawing from the market, awaiting lower prices. Soon the greater portion of the movement which has been going up the Lakes will be available for use in this district and when the season closes in a few weeks this supply will be augmented.

Retail prices of coal delivered in Cleveland follow:

Anthracite—Egg, chestnut and stove, $15.
Pocahontas—Shoveled lump, $11.75; mine run, $11.25.
Domestic Bituminous — West Virginia splint, $11.75; No. 8 Pittsburgh, $9.50; Cannel lump, $15.
Steam Coal—No. 6 and No. 8 slack and mine run, $10.25; No. 6 3-in. lump, $10.25.

Inland West

DETROIT

Slowing Demand for Steam Causes Price Reduction — Domestic Market Continues Firm — Better Bituminous Receipts — Anthracite Conditions Are Not Improving.

Bituminous—Various conditions have brought about a less active demand for steam coal. This is in part due to a curtailment of industrial activity because of the unsettled state of trade, and is also the result of the expectation among some of the buyers that reductions are likely to be made in prices of coal. With this belief, buyers are operating more cautiously, limiting purchases to quantities sufficient to meet current requirements, as they are unwilling to risk the chance that competing industries, by delaying their buying until later, might obtain an advantage in future cost computation.

There is still, however, a considerable volume of business in steam coal and

jobbers and wholesalers say no free coal is to be found on terminals in Detroit.

This is all offset by an increasing activity in the domestic market, which is stimulated by lower temperatures prevailing the last two weeks. With the available supply limited, some dealers are taking stock usually regarded as better adapted for steam than for domestic purposes.

Reductions of approximately $2 a ton are reported on steam prices, while the domestic sizes hold at about the same level as heretofore. Hocking mine run is quoted at $6, slack at $5.75 and lump at $8. West Virginia mine run is $7, with slack about $6.75 and lump $8.50.

Suspension of the Lakes priority is reflected in a better movement of bituminous to Detroit. Ohio mines are supplying a larger proportion of the shipments and more coal is coming also from West Virginia. Smokeless is still almost unobtainable.

Anthracite—Little if any improvemen is reported. Receipts are small and shipments irregular. Retail dealers have been unable to accumulate reserves or get sufficient stock to fill the orders of waiting customers.

MIDWEST REVIEW

All Prices Decline—Steam Stocks Are Heavy and Market Dull — Domestic Calls Are Stronger — Labor More Inclined to Work — Outlook Is Greatly Improved.

During the last week or 10 days the coal situation again moved nearer to normal. The weather continues very mild and this doubtless has helped in putting an end to the wave of hysterical buying that swept the public four or five weeks ago. Those purchasing agents who were most frantic in bidding against each other are now assuming a most aloof position and refuse to buy anything but the best grades and those only at what they consider a tempting price.

The market on domestic coals keeps up just as strong as ever. However, prices on domestic are decreasing. Steam coal is more plentiful than it has been since last May. The average manufacturing plant during the early part of the season was frightened into placing big orders at high prices and consequently has an accumulation in its bins.

There has been very little work for the Fair Price Committee to undertake, as practically everyone is convinced of the mistake of trying to sell coal at abnormally high prices. As a result, prices have been readjusted to more normal levels Another factor is that all of the big purchasers have come to the conclusion that coal prices will be reduced along with other commodities. For this reason some of the largest industries are buying only current needs.

The weekly car supply for the mines in Indiana and Illinois will probably average between 70@75 per cent, a slight decrease when compared with the preceding week. The labor situation is considered satisfactory, as the men are showing a willingness to work and are not looking for excuses to strike over trivial details the way they were two or three months ago.

It is freely predicted that with a continuation of present conditions the coal market will move back still more toward normal.

Current mine prices quoted on the open market are:

SOUTHERN ILLINOIS

(Franklin, Saline and Williamson Counties)

Prepared sizes	$6 00@$7 00
Mine-run	5 25@ 6 00
Screenings	4 15@ 5 25

SPRINGFIELD DISTRICT

Prepared sizes	$6 00@$6 75
Mine-run	4 25@ 5 00
Screenings	3 25@ 3 50

NORTHERN ILLINOIS

Prepared sizes	$6 00@$7 00
Mine-run	4 75@ 5.75
Screenings	4 00@ 4.75

INDIANA

(Current prices on coal sold both in the state and outside).

	State	Outside State
Clinton Field, fourth vein:		
Prepared sizes	$3 45	$6.75@$7 00
Mine-run	3 20	5 00@ 5 75
Screenings	3 00	4.00@ 4.75
Knox County, fifth vein:		
Prepared sizes	$3.25	$5 75@$6.75
Mine-run	3.00	4.75@ 5.25
Screenings	2.80	3.50@ 4.25

CHICAGO

Market Is Sluggish — Steam and Domestic Well Stocked — Anthracite Receipts Improved — Conditions Fast Approach Normal.

This market lately has been very sluggish indeed. Retailers are not buying nor are the manufacturers, as both classes have sufficient coal on hand to give them a feeling of comparative independence, especially when compared with their situation of a few weeks ago.

Dealers have succeeded in catching up on their orders and find that they have a satisfactory tonnage still left in their bins. Householders in some cases have cancelled their orders in the hope that prices will be lowered as the season advances. It is very doubtful, however, if this proves to be the case.

The Chicago manufacturers are staying out of the market in a deliberate attempt to bring prices on steam to still lower levels. But little coal has been burned so far this season for heating purposes.

Anthracite is moving into Chicago in larger quantities than at any time during the past season and those who placed orders early in the spring are now receiving shipments on their coal.

High grade Eastern fuels like West Virginia splint and southeastern Kentucky block are coming in almost normal quantities. It has been reported that there is enough coal at the Head-of-the-Lakes, so shipments which heretofore have been moving to Lake ports are now diverted to the retail trade in Chicago.

If existing conditions keep up for two or three weeks more, the coal market will be just about normal.

INDIANAPOLIS

Operators in General Observe Commission Rulings — Uncertain Feeling Reigns — Better Car Supply Makes for Quiet Market.

The coal situation in Indiana is still in a precarious condition because of the uncertainty on the part of operators as to just what will happen in the litgation now pending against the special coal commission created for the purpose of fixing prices and other functions. There can be no doubt that coal prices inside the state for Indiana coal have slumped because of this uncertainty.

Indiana mined coal selling inside the state is bringing a price about 60 per cent lower than before the commission took active hold of the situation. For the most part, Indiana operators appear to have a desire t ocomply with most of the rulings of the commission. One fault to be found is with contract coal —many contracts having been made before the law went into effect.

Foreign coal appears to be at the same level as formerly, the Indiana commission having no jurisdiction over this. However, domestic consumers, because of the vast difference in price between domestic and foreign fuels, are showing a sudden disposition to see if their furnaces can not be made to burn Indiana coal instead of the West Virginia, Kentucky and Pocahontas products, formerly the popular domestic grades.

Taken over a period of weeks, the car situation appears to have improved considerably. Another thing that has kept the market somewhat quiet is the unusually warm weather for this season. A bitter cold wave would, it is thought, liven up the market.

COLUMBUS

Domestic Remains Firm—Steam Grades Are Weaker—Production Is Generally Good As Car Supply Improves — Lake Trade Is Still Active.

Dealers are now flocking in the market since the removal of the Lake priority order and as a result, domestic trades continue strong. Dealers' stocks are still light. Some of the smaller dealers are not disposed to enter the market because of belief of lower prices, but pressure from customers is compelling them to buy. Production of lump is limited by the fact that screenings are becoming a drag on the market.

Retail prices are rather firm at former levels, although there is a tendency to decline in sympathy with lower prices at the mines. Hocking lump retails $9@$10.50, mine run, $8.75@10. West Virginia splints are $10.50@ $11.50 and Pocahontas $12.50@$15.

The steam trade is still showing some weakness, although prices have not declined materially during the past week. Demand is still about equal to the supply. Steam users have now succeeded in laying in a comfortable surplus. The stoppage of many industrial concerns

has resulted in a heavy falling off in demand. Railroad call is still fairly good.

Lake trade is progressing satisfactorily with a good tonnage still moving. Prices for Lake tonnage remain strong around $6@$6.50. The H. V. docks at Toledo during the week ended Oct. 30 loaded 178,779 tons as compared with 208,531 the previous week. The T. & O. C. docks during the same week loaded 92,854 tons as compared with 95.934 the previous week.

Production has shown up quite strong despite the interruptions of election. Eastern Ohio is now better supplied with cars and output is estimated at 70 per cent. The Hocking Valley and Pomeroy Bend districts produced about 75 per cent and the same is the report from Cambridge and Crooksville.

Prices of the principal coals used in central Ohio are:

Hocking lump	$6.25@$7.00
Hocking mine run	5.00@ 5.50
Hocking screenings	4.50@ 5.25
Pomeroy lump	6.50@ 7.25
Pomeroy mine run	5.00@ 5.75
Pomeroy screenings	4.50@ 5.25
West Virginia splints, lump	6.75 @ 8.00
West Virginia mine run	5.25@ 6.25
West Virginia screenings	4.50@ 5.50
Pocahontas lump	7.50@ 9.00
Kentucky lump	6.50@ 7.25

ST. LOUIS

Prices Continue To Ease — Supply Is More Plentiful on All Sizes—Car Supply Is Short—Steam Demand Easy.

The local market has toned down considerably in the last week or 10 days. Standard lump, which was strong at $7 a week ago, is now $5.50@$6 and screenings are as low as $3, with mine run about $3.50@$4. There seems to be a general easing up in the steam demand with the exception of railroad coal. This tonnage is on the increase as the roads are trying to get a little storage ahead.

Conditions in the Standard field are more tranquil than for some time past. It is understood at the recent operators' meeting that the producers who are paying a bonus would continue to do so and would use every effort possible to induce the miners to work on Saturdays.

At the meeting of the Fifth and Ninth Bureau to discuss action of the operators' conference at Cleveland, a committee was appointed to report later. The easing up of the local prices may be indirectly the result of this meeting.

The weather here is extremely mild. Up to the present very little domestic has been consumed. The Standard field car supply is about 50 per cent on commercial, with nearly all mines taking on as much railroad tonnage as possible.

In the Mt. Olive field better working time is experienced, with heavy railroad tonnage and prices ranging locally $4@$5.50.

Fairly good working time is reported from the Carterville field as well as the Duquoin section. The larger operators are selling from $4@$5, while independents are getting as high as $7.

Car shortage is serious on the Missouri Pacific and Illinois Central. Other roads show satisfactory placements.

South

LOUISVILLE

Dull Industrial Demand — Production Cut by Continued Car Shortage — Domestic Demand Is Brisk and Prices Firm.

Demand in the eastern Kentucky fields has been a little light for the past two or three weeks, as a result of dull industrial market. Some operators believe that the country is in for a quiet spell, and that after election business will be on a par with normal times, with a gradual slackening in demand toward the end of the year.

Right now all tonnage is eagerly sought, but if there were anything like a full car supply it would be necessary to hustle to keep up. Records show the eastern Kentucky field with a car supply around 35 per cent, which means that the limited production is easy to sell.

There is still some movement to the Lakes, and a little demand for gas and byproduct. Public utilities are again buying and there is some export movement, with a fair Southern market.

Stocks are light and orders are coming in better, with the result that deliveries are taking all the coal that can be secured. Warm, mild weather is making things easy for the retailers.

Locally there is a steady industrial demand, although the general postponement of buying of various lines of merchandise and the tight credit situation is beginning to tell.

Eastern Kentucky coal is being quoted at $6 by most of the larger operators, who are endeavoring to keep out of hot water. A few are getting up to $8 for mine run.

Retailers are quoting for eastern Kentucky $11.50 on lump; $11 for mine run; $10.50 for screenings; western Kentucky lump, $10.50; mine run, $10; screenings, $9.50.

BIRMINGHAM

Steam Market Barely Absorbs Offerings—Prices Decline Further—Domestic Supply Improves — Car Supply Is Adequate for Available Labor.

The past week has witnessed a further depression in the steam coal market and the demand for commercial coal is now very weak and hardly sufficient to absorb the output. There is a surplus of the lower and medium grade coals and Black Creek and Cahaba is obtainable in limited tonnage in the spot market.

With a good car supply the movement of coal against contracts has been steady and heavy for the past several weeks and pressure of contract consumers on the spot market has been removed, which accounts in part for the present weakness. Coals which readily moved at $8.50 three weeks ago are now being offered in quantity at practically half that figure. Prices range $4.25@$5 for Big Seam Jagger, Mt. Carmel and the like, while Cahaba and Black Creek are quoted $5.50@$7.

Domestic coal supply is somewhat improved over the past few weeks and all current demands are being met, though the market is still strong, some mine run coal moving for domestic consumption. Coal men are of the opinion that considerable mine run will have to be diverted to domestic channels to properly supply all requirements through the winter. The vast majority of consumers buy only in sufficient quantity to meet immediate needs and little progress has been made in stocking up retail yards. Based on a schedule fixed by the State Fuel Administration Big Seam lump will retail for $8.50, Carbon Hill $9.25 and Black Creek and Cahaba $9.50.

Working organizations at all mines will now probably average 90 per cent normal and coal production for the week ended Oct. 23 was approximately 271,000 net tons. Labor is not working regularly and the average output per man is under normal. Car supply is sufficient to meet requirements.

West

DENVER

Fair Practice Committee Favored — Lignite Strikers Gradually Returning — Industrial Commission To Force Hearing—Prices Are Steady.

Bituminous coal operators in conference in Denver recently went on record in favor of the appointment of a fair practice committee, following the Cleveland conference of operators. The Colorado operators condemned "unreasonable prices for all products, including coal," and asked that a committee be appointed with instructions to investigate prices, and by the use of proper and lawful means to secure a reduction of any unreasonable prices, if there be such, on coal mined within the state; and to co-operate to the fullest extent with the Department of Justice.

Striking miners in the lignite fields are gradually returning to their places, following the failure of union leaders to appear before the Colorado State Industrial Commission Nov. 4 and face the arguments against proposed union recognition prepared by operators.

The operators were ready to show that hardly a majority, if a majority, of the miners had voted to take a "vacation" in the last week of October, forcing 2,000 miners out of work. The commission, determined to bring the union leaders into a hearing of the issues, postponed the case until Nov. 15.

Bituminous mines are supplying Denver with coal sufficient to prevent hardships. Prices remain steady.

News From the Coal Fields

Northern Appalachian

PITTSBURGH

Lake Shipments Decreasing — Spot Market Continues To Soften — Predictions as to Contract Price.

Of the 4,000 cars engaged in the Lake trade, practically in shuttle service between lower ports and the various mining districts, 1,500 have been and the other 2,500 will be laid off within the next fortnight.

As long as the original priority order in favor of coal mines continues in effect these cars must remain in coal service, so that supplies for line trade are increasing. Report has it that the Interstate Commerce Commission will shortly rescind the priority order, the only one of the group of orders relating to coal distribution remaining in force, as of Dec. 1.

Industry consumption has decreased further and this may be one of the influences in the market, but evidently the chief influence is a sentimental one, arising out of realization on the part of many buyers that coal is not scarce, and that it may be very plentiful for a time, after the Lake season ends and before winter weather makes fresh transportation difficulties. Even in conservative circles a more or less severe car shortage is expected for the winter.

The spot coal market has continued to soften and prices are still but poorly defined, though they are clearly lower than a week ago. In general, the market may be quoted $5@$6 for steam, $6@$7 for gas and $6@$6.50 for best grades of byproduct.

Price prospects for the future are being canvassed eagerly, but as yet there is no clearly defined opinion. In well informed circles, however, it is predicted that the contract price for steam will be developed at not under $4 nor more than $4.50, the spot market hovering around this level except as car shortage at one time or another may bring about higher prices.

CONNELLSVILLE

Spot Market Declines More Slowly—Conjectures As to Eventual Prices—Furnace-Oven Production Increases—Demand Is Weak.

The spot furnace coke market has continued to decline, but at a much slower rate than formerly, the market being now $9 against $10 a week ago, while in the fortnight preceding there had been a decline of $7.

This decline, as previously explained, was brought about chiefly by a number of furnaces banking or blowing out, and thus suspending shipments on their requirement contracts. Whether the slowing down in the rate of price decline is due to figures nearing their eventual bottom or is due to resistance on the part of some operators to a decline below $10, on account of costs, is yet to be determined.

Some operators have been trucking coal to leased ovens, located over worked-out coal, their cost being about $10, while the cost for well-positioned operators is about $5. As the special production under emergency conditions can hardly have been large, the decrease in coke consumption by furnaces is likely to cause the decline to continue.

While coal market prospects are somewhat uncertain, the belief is that coal will bring a good profit right along, and if so it is doubtful if coke will sell below a relation to coal value. In some quarters it is reasoned this will mean a coke price of $6@$8 on contracts for the first half of next year, as well as for spot with foundry coke perhaps a dollar a ton higher. Thus far foundry has not declined all the way to a relation with furnace. We quote spot coke at $9 for furnace and $11@$12 for foundry.

The *Courier* reports production in the Connellsville and lower Connellsville region in the week ended Oct. 30 at 224,295 tons, an increase of 15,655 tons, the increase being entirely on the part of the furnace ovens.

FAIRMONT AND PANHANDLE

Sharp Break in Fairmont Prices — Car Placement Declines Further—Panhandle Output Grows With Better Car Supply—Labor Is More Active—Prices Soften—Lakes Shipments Decline.

FAIRMONT

The last week of October was featured in the Fairmont and other northern West Virginia regions by a sharp break in prices and a scarcity of cars. By the middle of the last weekly working period of October Lake prices had declined about 75c. to $5.25 and in some cases $5. There was even a break of 25c. in the price of export for Pool 34, the average price by Wednesday being $10. General line shipments were hovering around the $6 mark.

It was apparent that there was a general drive on high prices and producers themselves have had much to do with the lowering of prices. Another factor has been the large volume of coal which has piled up at the Lakes. Embargoes also on some of the roads out of the northern part of the state have played a part in forcing prices downward.

There were not more than 800 empties on the Monongah Division of the B. & O. on Tuesday and on the Charleston division of the same road the supply was limited to about 50 per cent. On both the Monongahela and the Western Maryland railroads, however, there was a better run of cars, such a supply being maintained during the better part of the week, though many of the cars on the Monongahela were assigned for New York Central fuel loading.

Lake deliveries appeared to be on a smaller scale than during preceding weeks. While the week opened with a comparatively large tonnage flowing to

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

BITUMINOUS COAL

	1920		1919	
	Week	Calendar Year to Date	Week	Calendar Year to Date
Oct. 16*b*	12,110,000	428,325,000	11,829,000	376,511,000
Daily average	2,018,000	1,742,000	1,972,000	1,531,000
Oct. 23*b*	12,241,000	440,566,000	13,140,000	389,651,000
Daily average	2,040,000	1,749,000	2,190,000	1,547,000
Oct. 30*c*	12,338,000	452,904,000	12,111,000	401,762,000
Daily average	2,056,000	1,756,000	2,019,000	1,558,000

ANTHRACITE

Week Ended	1920	1919
Oct. 16	1,855,000	1,916,000
Oct. 23	1,915,000	1,992,000
Oct. 30	1,696,000	1,475,000

BEEHIVE COKE

United States Total

Week Ended Oct. 30*c* 1920	Week Ended Oct. 23*b* 1920	Week Ended Nov. 1 1919	1920 to Date	1919 to Date*a*
399,000	391,000	347,000	17,665,000	16,199,000

(*a*) Less one day's production during New Year's week to equalize number of days covered for the two years. (*b*) Revised from last report. (*c*) Subject to revision. All figures in net tons.

Tidewater it seemed to diminish in volume as the week progressed.

NORTHERN PANHANDLE

Conditions in the Northern Panhandle were more favorable to a large production. A better car supply was mainly responsible. During the last few days of October mines served by the B. & O. were getting out a larger volume of coal than for some time past.

Labor conditions were more conducive to larger loadings, miners showing more inclination to work, being encouraged to some extent by the better car supply. There was also an excellent rail movement.

If anything, there was a further softening of prices, with the demand for line shipments rather inactive. The general price on mine run was $6 a ton, though in some instances it was lower. There was an absence of urgent demand for Lake shipments and prices for Lake coal were hardly on a par with those covering Inland market deliveries.

CENTRAL PENNSYLVANIA

Operators Form Fair Practices Committee — English Shortage Forecasts Trade Stimulation.

It is the general belief of operators in the district that the law of supply and demand will have considerable to do with prices of coal during the winter in spite of the pledge of support by the National Coal Association to Attorney General Palmer in his efforts to eliminate unreasonably high prices. Coal operators of this district are unwilling to predict a decided drop in prices, although they generally agree that a fair price fixed for fuel would be a good thing.

Local operators say that while the effect of the English walkout has not been felt in America as yet, the big strike will tend to boost prices. The strike has meant a big loss in tonnage and English consumers will look to America for supplies, which means an increased demand and will be bound to stimulate the upward trend of quotations.

The Central Pennsylvania Coal Producers' Association has passed a resolution pledging operators not to ask unreasonably high prices. This action was taken to support the measure approved in the recent Cleveland meeting.

EASTERN OHIO

Car Supply Is Unchanged—Production Limited by Indolent Labor — Domestic Trade Now Getting Adequate Supplies—Prices Are Firm.

Production has not increased as anticipated at the time the recent outlaw strike was ended. Figures for the week ended Oct. 30. show a production of approximately 350,000 tons.

This falling-off is partly due to insufficient car supply, which has not been better than 75 per cent during this period, but operators report that the men do not seem inclined to work more than about half time. It is, therefore, somewhat doubtful whether 100 per cent supply based on mine ratings could be loaded at this time.

Suspension of Service Order 10 by the Interstate Commerce Commission has enabled many operators to divert their production to local trade in the immediate territory. It seems that those interests which have been fearful that a supply of coal would not be available for this winter, are in this way assured, and retailers and consumers report that they are able to get all the coal they want or can handle.

Prices range $5.50@$6 for lump coal and $5@$5.50 for slack. Railroads continue to take over 30 per cent of the output.

Middle Appalachian

LOW-VOLATILE FIELDS

Production Drops With Poor Car Supply—Prices Are Fairly Firm—Heavy Demand From All Markets—Some Labor Shortage—Tide Shipments Are Large.

NEW RIVER AND THE GULF

Not more than half the full car supply available in the New River field on Monday was utilized on that day, the mine workers being absent in order to hear the speeches of a candidate for the presidency. As there was a large number of cars left over, the Tuesday placement was ample to meet all requirements of the mines. Subsequent to Tuesday, however, there was a scarcity of cars; indeed, it is doubtful if the placement for the week was equal to more than 50 per cent of requirements, so that there was about a 10 per cent loss as compared with preceding weeks.

Free from any restrictions as to shipment there was an excellent market for New River fuel. The larger part of the output was being transported to Tidewater and Inland East points, there being a gratifying demand in evidence in such markets with prices fairly well stabilized. Consignments of single car orders to Inland West markets were also numerous, this coal being largely for domestic use.

Winding Gulf production dropped down a peg or two both because of an inadequate car supply and because of a series of political meetings on Monday. The principal obstacle to greater production was a marked shortage of empties on the Chesapeake & Ohio, mines on that road not being able to operate more than half the week. Placement on the Virginian Ry. was better. A labor shortage was still somewhat of a factor in reducing production.

Dumpings at Tidewater continued on the same large scale, boats being sufficient to handle the coal consigned to Sewells Point.

POCAHONTAS AND TUG RIVER

Both fields were far short of attaining maximum production during the final week of October largely because cars were harder to secure, the transportation situation failing to show any improvement. There was a fairly heavy demand for all smokeless coal in both Eastern and Western markets.

Diminished car supply curtailed production in the Tug River field. The scarcity on the Norfolk & Western was entailing a loss of at least 25 per cent. This was because of the difficulty of getting cars back from Western connections, as there was a comparatively prompt movement between the mines and Tidewater. Production was also suffering to some extent from a labor shortage.

Prices for Tug River coal were showing less fluctuation than was the case in other fields. The export demand was rather brisk though not urgent.

Slump in production in the Pocahontas region was still in evidence in the last week of the month, when the output still hovered around the 300,000-ton mark, with a car shortage figuring to the extent of approximately 100,000 tons. It was a lack of cars from the West which was causing a diminishing supply, there being much Pocahontas coal remaining unloaded at the Lakes.

Conditions were favorable to a large production as the Pocahontas market was very much more active than was the case in high-volatile fields. Tidewater shipments were large though Inland West markets were getting their share of coal, the domestic demand being much more active.

HIGH-VOLATILE FIELDS

Car Supply Declines Slightly—Thacker Labor Situation Is Unimproved—General Price Recession With Weaker Markets — Committees Forming to Function Along Lines of Resolutions Adopted at Cleveland Meeting — Domestic Situation Being Met.

NORTHEAST KENTUCKY

There was marked uncertainty as to car supply in the northeast Kentucky field from day to day because of the constant fluctuation in placement. The largest production was on Monday, when the output was not far short of 30,000 tons. During the week as a whole, however, not much more than 110,000 tons or just about half of potential capacity were produced. The last week of the month saw continued heavy Lakes shipments.

Prices appear to be sinking to even lower levels than have heretofore prevailed, no doubt because of the action recently taken at Cleveland. The average price for mine run is clinging to the $6 mark and wherever coal is being sold below that figure it is believed such a price will not be permanent.

A glutted Lake market has tended to depress the price of coal for that movement. There is a very active domestic demand and interstate markets are receiving a larger tonnage than was the case not so long ago.

KANAWHA

Distribution was once more restricted to Western markets during the greater part of the last week of October by a

reimposition of the Tidewater and general Eastern embargo on the Chesapeake & Ohio, which covered everything except loads in 70-ton cars, even the movement of such cars being limited to points on the C. & O.

For a time during the preceding week mines were required to ship only 10 per cent of mine rating to the Lakes, but just prior to the suspension of Order 10 the quota was back at 20 per cent for mines on the Chesapeake & Ohio. A declining Lake demand was reflected in rather weak prices. The market price for Tidewater was about $11 and was softening. Steam coal for Inland points was selling about $6.50, and that demand was also showing signs of weakness. On the other hand, there was a brisk and growing demand for domestic.

The car supply was less encouraging, for although there was a full run of cars on Monday later placement was down to 72 per cent, with many assigned and private cars.

Virginia

Production in southwest Virginia at the end of October was being maintained on recent levels, although increasing losses from car shortage were becoming apparent. Such losses were partly counteracted, however, by greater regularity in the working time of men. In other words, while labor shortage losses were sliding downward car shortage losses on the Norfolk & Western and one or two other roads were climbing. On the whole, October production was in excess of that for September.

Prices were seeking lower levels according to information generally available. As in previous weeks operators were making a special effort to supply home consumers, even though called upon to forego more attractive interstate business.

According to information at hand, the first week of November will see the formation of a special committee to hear complaints of consumers and otherwise function along the lines suggested in the resolution adopted at Cleveland.

Logan and Thacker

An unusually large production on Monday reached 61,350 tons—as large as has been witnessed during the year. A growing shortage on the Chesapeake & Ohio, however, materially reduced the Logan output later in the week.

Though a large percentage of the Logan output was going to the Lakes, the limited production of course cut down these shipments. The Lake market was not particularly active and was responsible in some degree for shaded prices. In the steam trade buyers were withholding orders so that steam was still on a $6 level. A better price was obtained, however, for domestic lump, which ranged $7@$8. During the first part of the week Tidewater was cut off owing to the Chesapeake & Ohio embargo.

Production in the Williamson field was in the neighborhood of 75,000 tons. While a car shortage loss had been decreased slightly there was still a shortage even for this field, where not all the mines are working because of a strike. Labor shortage losses were slightly increased as was the loss charged to the strike, which amounted to about 47,000 tons. However, producers felt sanguine as to the final outcome of the strike although anticipating trouble whenever the Federal troops were withdrawn. A large percentage of the output was going to Western markets at prices about equal to those prevailing in other high volatile fields.

Middle Western

DUQUOIN

Car Supply Decreases—Prices Soften—Demand Is Lighter—I. C. R.R. Orders New Equipment.

Conditions during the past week have taken a marked change. The demand seemed to drop off slightly and was most noticeable on the screened sizes. The market in the region of Memphis, where much of the coal from this district is shipped, was not so strong as for the last few weeks. The usual steady trend of coal moved northward into Chicago, Milwaukee and other large industrial centers.

It has been estimated that the Illinois Central Railroad carries over 70 per cent of the coal shipped north from the southern Illinois field, which probably accounts for the road recently ordering 25 new locomotives for use in the field.

For the first time in several weeks the mines were forced to "blow off" two or three days during the week, due to an inadequate car supply. However, the shortage seemed to have had no effect on the softened price. During the week prices ranged on screenings, $3.90@$4.25; lump, $5@$5.50; mine run, $4@$4.25.

WESTERN KENTUCKY

Demand Good with Prices Well Maintained—Poor Car Supply Continues—Competitive Rates Are Being Secured.

Operators report a very steady and good demand for coal, with movement continuing good into the Southern cities, Cincinnati, Detroit, and some other markets. Steam demand is showing steady improvement, while production of lump is eagerly sought.

Operators of the field, through the West Kentucky Coal Bureau, are steadily working for better traffic rates to fields that are tapped by the southern Illinois section and other producing districts, and are securing competitive rates which enable movement into wider territory.

Car supply for the past months has been showing a decline in western Kentucky, while other sections have been experiencing come improvement. Supply on the L. & N. lines has been down to around 26 per cent for two weeks or more, while on the I. C. lines it is about 40 per cent.

Average prices for the week ended Oct. 30, as taken from records of sales, show prepared sizes, $6.09 a ton; mine run, $5.11; screenings, $4.12. On the spot market some lump is selling up to $7@$7.50, with mine run as high as $6.50, and screenings $5.50.

Western

UTAH

Labor Conditions Are Fair—Car Situation Is Serious — Price Increase Is Seen.

Labor conditions at the mines are satisfactory on the whole. The car situation continues serious, however, and losses are mounting daily. An official of one of the leading producing companies says the mines are working 50 @55 per cent of their capacity and he does not look for any immediate relief. The feeling prevails that prices will have to go up at the mines if the car supply becomes any worse.

While retailers do not report large stocks in the yards, they do not, as yet, seem to be feeling the car shortage. This is partly due to the fact that the weather has not been severe so far, and partly because consumers have secured their supply during the summer. If the present car shortage grows any worse, however, retailers may be hard pressed.

The dispute between the Utah Public Utilities Commission and the Interstate Commerce Commission regarding the proposed increase of freight rates in Utah, as in other states, has not been settled yet.

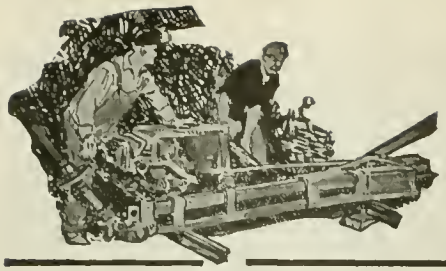
The curtailed output is reducing the trade in Utah coal at the coast.

Southern Appalachian

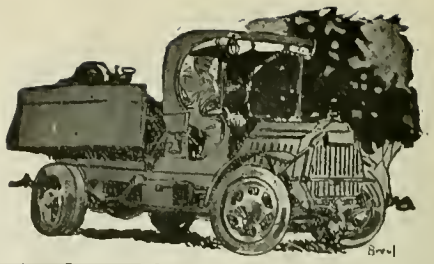
SOUTHEASTERN KENTUCKY

Car Supply Is Worst on Record — Prices Being Forced Up — Practically No Spot Tonnage Available.

Production has suffered a severe slump, due to the extreme local shortage of cars which is the worst yet experienced. Mines are not averaging more than one day per week with demand for all grades so strong that prices are slowly being forced beyond the maximum of $6. The executive committee, charged with the enforcement of Service Order No. 21 seems to be entirely ignorant of the true situation in this field, for they state to applicants for assigned cars that the supply is so good that they should get coal without difficulty. Practically all production is going to fill contracts with the domestic trade getting all the surplus.



Mine and Company News



ALABAMA

Articles of incorporation have been filed in the probate court of Jefferson County by the **Hercules Coal Co.**, Birmingham. J. Molton Smith is president; Fleetwood Rice, vice-president, and J. B. Robinson, secretary-treasurer. The company is capitalized at $50,000.

COLORADO

Articles of incorporation have been filed with state officials for the **People's Co-operative Fuel Co.** for the purpose of mining and selling coal and other fuels in any county in Colorado. Capital stock is $500,000. Directors are Homer Vinsonhaler, F. H. Rose, F. B. Meek, Edward Tadlock and O. T. Vinsonhaler. L. Y. Yowell, Lamar C. Puett, J. E. McCall, A. O. Walde and J. L. Jewett are incorporators.

IDAHO

The discovery of a vein of coal in the Jerusalem hills, east of Gardena station, recently, by the **Idaho Oil & Gas Co.**, is believed by the residents of Boise County and the Jerusalem valley to be the forerunner of other important discoveries in that section. The vein just found was tapped at the depth of 12 ft. The top is composed of low grade lignite coal, common to that part of the country, but as the vein goes down it develops into a high grade coal that burns to a clean ash.

ILLINOIS

The Citizens Coal, Coke and Mining Co. has been formed in Springfield recently and will handle the entire output of Mine A and Mine B of the Citizens Coal Mining Co. of that city.

A new proposition is now under way in Duquoin whereby in the neighborhood of fifty modern residence houses will be built within the next eight months. The purpose of the plan is to draw more miners to the city, and is backed by the largest coal operators in the vicinity.

The detail of the plan is to raise about $125,000 to start with and employ some construction company from Chicago to commence at once to build the houses, and as soon as they are finished sell them at cost price to miners and allow them to pay by installments.

There are forty-five men working at the **Rutland** coal mine, thirty below and fifteen on top. The mine is working full time with the men they have and would work 100 men below if they could be secured. Very little coal is shipped from this mine as the local town and farm trade use most of the output. Coal is selling at the mine at $7 per ton.

The Mitchell Hopkins Coal Co., Rock Island, has been incorporated to deal in coal and other fuels, with capital of $25,000.

For the first time in three months the coal car equipment of the Chicago & Alton R.R. was marked up 100 per cent efficient in Springfield recently. The 150 available cars were sufficient to care for the demands of the shippers.

A new coal mine has been opened on the land owned by Dr. W. F. Myers, three miles southwest of Coal Valley. Messrs. Sauerman and Butterfield of Rock Island, Ill., are interested parties.

Operations are to be begun at once by the **Jewel Coal Mining Co.** on a new mine west of Duquoin. The daily output of the mine is expected to be between 1,000 and 1,200 tons.

IOWA

"Coal prices in Iowa are unreasonably high," says Horace G. Larimer, of Chariton, state fair price commissioner. "This is in part due to excessive profits by certain coal operators, some of which are charging retailers of coal from $6@$7.50 a ton, while coal of a like quality from Iowa mines is being sold to railroad companies at from $3.40@$3.60 a ton, and in some instances for as low as $2.85 a ton to large industrial plants.

"Large coal operators in Illinois, owing to labor troubles, are unable to fill their larger contracts for coal at less than from $4@$1.25 a ton, and, therefore offer but little competition to Iowa coal operators. It can, however, be said in mitigation of the prices charged by some of the small operators that these high prices have enabled them to work mines of shallow veins.

"The cost of producing this coal is perhaps from $4@$5 a ton."

While coal is not listed among the commodities, Mr. Larimer is empowered to interfere with them when he deems their prices excessive.

KENTUCKY

The Hamilton-Elkhorn Coal Co., Harold, recently organized, has had plans prepared for the erection of a new steel coal tipple to include equipment for all features of operation. A housing development will also be established for miner's homes.

A. F. Parsons, Hazard, and associates, have leased coal property in this locality and are having plans prepared for its development.

The Devon Coal Co., Pineville, capital $100,000, has been chartered by R. I. Cawthorne, P. K. Salsburg and H. B. Mitchell.

The Kentenia Coal Co., Pineville, has increased its capital from $100,000 to $200,000.

Among new corporations and fresh charters filed by companies doing coal business in the state of Kentucky are a number of fair sized companies. High prices asked for fuel coal today are said to be influencing many new companies into starting into business, although there are cars sufficient for those operating. The new charters are:

Rockhouse Coal Co., Hazard, Ky., increasing capital from $150,000 to $250,000.

Hays-Elkhorn Coal Co., Shelby, $25,000, O. C. Hays, T. J. Chandler and A. L. Prater.

Dixie Block Coal Co., Somerset, $1,500, Ward Fulkner, H. L. Baisley and Tom Hughes.

Holt Brothers Mining Co., Central City, $200,000, E. W. Holt, B. B. Holt and Mary C. Holt.

Looney-Justice Coal Co., Regina, $20,000, Alexander H. Rooney, S. E. Looney and W. P. Haynes.

Hamilton-Elkhorn Coal Co., Harold, $3,000, Emmett Hamilton, Jr., J. O. Flanery and John N. Hamilton.

Wade Coal Co., Pikeville, $25,000, W. P. Pinson, Monroe Gooslin, W. P. T. Varney.

Millers Creek Kentucky Mining Co., Louisa, $20,000, T. B. Lane, M. F. Conley and N. B. Conley.

The Ashton Coal Co., Ida May, Ky., $2,000, M. V. Abston, G. B. Smith and Hiram Begley.

Benewitz Coal Co., Greenville, Ky., $20,000, Louis Benewitz, L. Z. Kirkpatrick and Carlisle Kirkpatrick.

Ruby Coal Co., Middlesboro, $20,000, James Lawson, I. K. Wilson and John Howard.

Pine Knot Cannel Coal Co., Morehead, $30,000, W. D. Johnson, Drew Evans, H. M. Collins.

Vinson-Harlan Coal Co., Louisville, $100,000, Conrad Kolb, R. E. Bowen and Guy Vinson.

Premium Cannel Coal Co., Mt. Sterling, $50,000, Lewis Apperson, E. W. Apperson and M. M. Apperson.

The Dudley Park Coal Co., Heidelberg, $10,000, J. C. Short, James S. Farley and Pryse Wilson.

Elk Ridge Coal Co., Morehead, $30,000, W. D. Johnson, Drew Evans and H. M. Collins.

MISSOURI

The Missouri Public Service Commission, Jefferson City, has issued a statement in regard to the coal shortage in that state, in which every consignee of coal is urged to hasten the work of unloading coal cars and see to it that no cars are detained in excess of twenty-four hours. "One of the principal necessities of an adequate supply of coal," says the statement, "is a sufficient supply of empty cars, and this can be materially increased by shippers promptly unloading cars.

A few days ago the members of the commission, the Attorney-General, representatives of the railroads and coal operators met in conference in St. Louis to devise means for securing a better supply of coal from the Illinois mines, and a committee was appointed with this end in view, of which Henry Miller, president of the Terminal Railroad Association, was made chairman.

In its last statement the commission says that it had decided to give preference to Missouri shipments which are intended for householders' use and requests for emergency supplies may be addressed to the committee at Room 300, Union Station, St. Louis. "The coal situation in Missouri is reported to be acute," says the report, "and it is stated that unless prompt action is taken to secure an increased supply from the Illinois district, there will be much suffering in Missouri the coming winter."

OHIO

In the question of increasing the rate for natural gas, which has been pending in the city council of Columbus for some time, a resolution was adopted in which the public was advised to use coal for major heating operations during the coming winter in view of the scarcity of natural gas. It is urged that natural gas will be too scarce for the heating of dwellings but should be conserved for cooking purposes and heating water and small rooms.

The Herrold Coal Co., Columbus, has been chartered with a capital of $10,000 by D. A. Evans, R. B. Cuthbert, H. H. Long, E. M. Marquand and E. H. Davis. The concern has taken over a small mine near the brick plant of the Hocking Valley Brick Co., to supply the plant with fuel.

The East Canton Coal Co., Canton, has been chartered with a capital of $25,000 by G. F. Whittemore, J. A. Baum G. E. Osborn, E. M. Edwards and E. D. Carey.

The Frontier Coal Co., Toledo, has been incorporated with a capital of $20,000 by C. W. F. Kirkley, H. L. Christopher, R. M. Marks, E. M. Bushman and C. J. Smith.

The Broad Run Coal Co., Columbus, has been chartered with a capital of $200,000 by J. W. Quillan, A. U. Quillan, L. D. Johnson, R. Coffman and J. W. Durnell. The company has taken over a coal mine in West Virginia near Huntington.

Mines No. 22 and 22 of the **Hisylvania Coal** Co., Gloucster, located on the T. & O. C. RR. have been completely flooded by water from old workings which were recently tapped. Unfortunately, the levels of the two mines are below that of adjoining workings and when the walls were broken the mines were rapidly filled up.

The **Ohio River to Lake Erie Waterways Association**, of which Henry A. Williams of Columbus is president, held a meeting with the board of U. S. Army engineers recently in Columbus, when arguments for locating the proposed canal through central Ohio were presented. It was argued that Portsmouth is on the 83rd meridian, so is Columbus and so is the west end of Sandusky Bay on Lake Erie.

OKLAHOMA

The Shamrock Coal Co., Henryetta, recently incorporated, is perfecting plans for the development of 320 acres of coal property. Electrical equipment will be installed at an early date. J. W. Hinton heads the company.

PENNSYLVANIA

The Gilmore Coal Mining Co., has been incorporated with a capitnl of $100,000. E. L. Morris, Pittsburgh, is treasurer.

Work has begun from the Catawissa side on the drainage tunnel, which will tap the water from the lower levels of the **Lehigh & Wilkes-Barre Coal Co.'s** workings at Green Mountain.

WEST VIRGINIA

While their identity has not been disclosed it is learned that Pittsburgh people have acquired a small though valuable tract of land at Round Bottom, Marshall county from the **Chestnut Hill Sand and Coal Co.** there being about 165 acres in the tract for which the new owners are said to have paid a price of $40,000. It is understood tho the new owners will begin at an early date the work of sinking a shaft to the six-foot seam of Pittsburgh coal which underlies the tract.

The Weirton Coal Co., Weirton, recently organized with a capital of $25,000, has acquired 268 acres of coal lands and are planning for the early development of the property, with a daily capacity of from 300 to 500 tons. Complete mining machinery and equipment for all features of operation will be installed. R. B. Jester is president-manager and John Cutoae, treasurer.

Fairmont coal people are behind the **Westwood Coal Exchange** just organized with a total capital stock of $50,000, general offices of the company being at Fairmont, W. Va. Among the coal men so interested are : H. W. Showalter, Brock Showalter, E. M. Showalter, S. D. Brady and A. P. Brady.

Development work in Raleigh county will be undertaken by the newly organized **Raleo Coal Co.** of this city which has a capital of $25,000. Back of the new concern are M. B. Hoffman, A. P. Grass, B. H. Ashworth and W. A. James, of Beckley; W. E. Davenport of Lester, Raleigh county.

Thomas Love and associates, well-known Connellsville coal people, have formed the **Thomas Love Coal & Coke Co.** which will operate on a very large scale in the Fairmont region as indicated by the large capitalization of $400,000.

C. M. Lilly and associates of Beckley, who recently figured conspicuously in the deal under the terms of which the **Lenark Coal Co.**, operating on Piney was acquired, have ushered into existence the **Four Vein Coal Co.**, which has a capitalization of $200,000.

Mining operations will be conducted in Mingo county by the **Tug Fork Coal Co.**, newly organized by Williamson people including James Damron and others. The concern is capitalized at $25,000. General headquarters of the company will be at Williamson.

The W. & C. Coal Co. will operate in McDowell county, having been organized with a capital stock of $25,000, with McDowell county business men largely interterested as follows: W. W. Wood, G. L. Wood and L. M. Rich, all of Kestoae; W. D. Carter and I. R. Carter of Northfork Offices of the company will be at Keystone.

Because of the sanitary arrangements made by the **Consolidation Coal Co.** in the various towns in which it operates in West Virginia, health conditions in such communities are above the average. For instance, in the 29 mining towns in which it operates in West Virginia there has not been this year a single case of typhoid fever, although there are 37 mines in the towns mentioned and fully 5,000 miners are employed, total population being estimated at 15,000.

The death toll in West Virginia mines for September was thirty-one, according to a report of the **West Virginia Department of Mines**, fifteen—or nearly half—the casualties being due to fall of roof and coal, although five met death in mine car accidents, two through mining machine accidents, one in a motor accident, two through electrical shock and one in a premature explosion. There were only two outside accidents of a fatal nature

The largest number of fatal accidents was in McDowell county where there were five; but Logan and Raleigh counties had four each, with Kanawha next with three. In the counties of Clay, Fayette, Harrison, and Wyoming there were two fatal accidents each and Brooke, Marion, Mercer, Mingo, Randolph, Tucker and Upshur each had one fatal accident.

Wagon mines on Deckers Creek in the Monongalia field will load their coal over tipples. Two tipples will be built immediately and later on three other tipples will be built so as to provide a convenient means for the speedy loading of cars. By building the tipples wagon mine operators will be able to get their pro rata of cars, something they have so far been unable to do.

While the **Penn Coal & Realty Co.** of this city was organized several months ago it was not until about October 9 that the company consummated negotiations for a tract of 1,700 acres of coal and timber land in Clay county, W. Va., which will be developed on a large scale.

Just what was paid for the tract secured has not been made public, though the consideration is believed to have been large.

WYOMING

Greater coal tonnage for the state is apparent through the activities of the industry, which reports that first shipments have been made from the **Rock River Coal Syndicate**, with mines near Rock River on leased school land. It is estimated there are 10,000,000 tons of coal on this lease, valued at $6,000,000.

The Independent Coal & Coke Co., operating in western Wyoming, has increased its capitalization by $1,350,000, making a total of $2,500 000

The state produced 919,000 tons in August and 6 436,000 tons during the first 8 months of this year.

BRITISH COLUMBIA

Coal production of British Columbia for the month of September was:

	Tons
Crow's Nest Pass Field	
Crow's Nest Pass Coal Co., Coal Creek	36,611
Crow's Nest Pass Coal Co., Michel	21,086
Corbin Coal & Coke Co., Corbin	15,381
Total	73,078
Nicola-Princeton Field	
Middlesboro Collieries, Middlesboro	7,445
Fleming Coal Coal Co., Merritt	2,143
Coalmont Coal Co., Coalmont	1,141
Princeton Coal Co., Princeton	1,952
Total	12,681
Vancouver Island Field	
Canadian Western Fuel Co., Nanaimo	56,775
Canadian Collieries (D) Ltd., Comox	42,005
Canadian Collieries (D) Ltd., South Wellington	8,461
Canadian Collieries (D) Ltd., Extension	14,545
Pacific Coast Coal Mines, Ltd., South Wellington	7,088
Nanoose-Wellington Co., Nanoose Bay	5,456
Granby Cons. Mng. S. & P. Co., Cassidy	16,477
Total	150,807

Traffic News

The I. C. C. has suspended until March 1, pending consideration as to their reasonableness, proposed increases averaging 3½ to 5½c. per gross ton for dumping, skidding, trimming and leveling coal and coke trans-shipped to vessels at Lamberts Point, Norfolk, Sewalls Point and Newport News, Va., by the Chesapeake and Ohio, Norfolk and Western and Virginian Railways. The commission has also suspended for a like period wharfage, handling and storage charges at municipal terminals, Norfolk, Va., on incoming and outgoing export and coastwise freight.

In the case before the I. C. C. of the **Lodwick-White Coal Co.**, et al, v. Director General, Chicago, Burlington & Quincy R.R. Co., et al., a supplemental report has been adopted by Division 1 of the commission, which considers the commission's previous report as well as its report in Increased Rates, 1920, and finds that the present rates on coal from complainants' mines on the Iowa Southern Utilities Co. in the southern part of Iowa to St. Joseph and Kansas City, Mo., and to Kansas City, Leavenworth and Atchison, Kan., and points in Missouri intermediate to the Missouri River points, subject complainants' mines to undue prejudice and disadvantage and unduly prefer the mines of their competitors in the Centerville group to the extent that the rates from complainants' mines exceed those contemporaneously maintained from Centerville and Trask, Iowa, to the same destination by more than 13½c. per ton. A further finding is made that out of the joint through rates to be established in accordance with these findings, while the rates remain upon a level 35 per cent higher than those with which we previously dealt the Utilities company will be entitled to a division on coal in carloads of 27c. per ton; and to a like division on all shipments to Omaha, Neb., and points on the lines of the Burlington & Rock Island west of the Missouri River, named in the tariffs referred to in previous report.

The I. C. C. has authorized the Illinois Coal Traffic Bureau to intervene in the case of the **West Kentucky Coal Bureau** vs. the Illinois Central Railroad.

In a complaint to the I. C. C. the **Hydraulic Press-Brick Co.**, of St. Louis, attacks as unreasonable the rates on coal from the Clinton district in Indiana to Brazil, Ind.

In a tentative report to the I. C. C., an examiner recommends that the rates on bituminous coal from Belleville, Benton, Duquoin, Murphysboro and other southern Illinois points to Springfield, Mo., be declared unreasonable,

In another case an examiner recommends that the rates on bituminous coal from Quinnimont, W. Va., and Lilly, Pa., to Springfield, Mo., be declared unreasonable.

A reduction in the freight rates on coke in Minnesota has been asked by the Koppers coke concern in St. Paul, which claims them to be higher than hard coal rates.

Colorado Rates.—Coal rates have been reduced 17 per cent between the Erie and Frederick mining district and Longmont, Col., by the Union Pacific and Chicago, Quincy & Burlington R.R., in a new schedule of rates filed with the state public utilities commission.

New Tariffs.—Rate sheet of new tariffs on bituminous coal from mines in West Virginia, Kentucky and Pennsylvania to various destinations in the East and Middle West has been published by the West Virginia Mining News, 110 Hale St., Charleston, W. Va.

Secretary B. F. Nigh of the **Michigan-Ohio-Indiana Coal Association** is receiving a large number of letters congratulating him on the success of the fight he lead to secure a better car supply for the movement of domestic tonnage in Ohio, Michigan and Indiana. While the full benefit of the recent order allotting 800 cars daily to Ohio for the transportation of domestic coal is not yet apparent, a better supply has resulted and it is believed that the full quota will soon be provided. The order was issued Oct. 15 to start at once. He was recently in conference with F. G. Robbins, director of the bureau of car service of the Interstate Commerce Commission, with reference to carrying out the recent order giving Ohio 800 additional cars for the movement of domestic coal.

Trade Catalogs

Power Transmission Machinery. The A. & F. Brown Co., Elizabethport, N. J. Catalog 66. Pp. 129; 5 x 8 in.; illustrated. Contains prices, cuts and data on manufacturer's products.

Small D-C Generators and Exciters, Type ML. General Electric Co., Schenectady, N. Y. Bulletin 40,017A. Pp. 4; 8 x 10½ in.; illustrated. Describes line of small, belted, direct-current generators, ML type.—Advertiser.

For the Mine. The Cutler-Hammer Mfg. Co., Milwaukee, Wis. Publications 836. Pp. 48; 8½ x 11 in.; illustrated. Describes C-H products used extensively in the mining industry.—Advertiser.

Coming Meetings

Illinois Mining Institute will hold its next meeting on Nov. 20 at Springfield, Ill. Secretary Martin Bolt, Springfield, Ill.

Coal Mining Institute of America will hold its annual meeting Dec. 8, 9 and 10, 1920, in the Chamber of Commerce Auditorium, Pittsburgh, Pa. Secretary, H. D. Mason, Jr., Chamber of Commerce Bldg., Pittsburgh, Pa.

American Mining Congress will hold its annual meeting at Denver, Col., Nov. 15 to 19. Secretary J. F. Callbreath, Munsey Building, Washington, D. C.

The American Society of Mechanical Engineers will hold its annual meeting Dec. 7, 8, 9 and 10 in the Engineering Societies Building, 29 West 39th St., New York City.

American Gas Association will hold its annual convention Nov. 15 to 20 at the Hotel Pennsylvania, New York City. Secretary, Oscar H. Fogg, 130 East 15th St., New York City.

The American Petroleum Institute will hold its annual meeting Nov. 17, 18 and 19 at the New Willard Hotel, Washington, D. C. General secretary, R. L. Welch, 15 West 44th St., New York City.

CURRENT PRICES—MATERIALS & SUPPLIES

IRON AND STEEL

STRUCTURAL MATERIAL—The following are the base prices, f.o.b. mill, Pittsburgh, together with the quotations per 100 lb. from warehouses at the places named:

	Mill Pittsburgh	New York Current	New York One Year Ago	St. Louis	Chicago
Beams, 3 to 15 in.	$2.45@$3.10	$4.30	$3.47	$4.04	$3.97
Channels, 3 to 15 in.	2.45@ 3.10	4.30	3.47	4.04	3.97
Angles, 3 to 6 in., ¼ in. thick.	2.45@ 3.10	4.30	3.47	4.04	3.97
Tees, 3 in. and larger	2.45@ 3.75	4.35	3.52	4.09	4.02
Plates	2.65@ 4.00	4.50	3.67	4.24	4.17

BAR IRON—Prices in cents per pound at cities named are as follows:

New York	Pittsburgh	Denver	St. Louis	Birmingham
4.75	4.75	4.95	3.57@4.50	5.00@6.50

NAILS—Prices per keg from warehouse in cities named:

	Mill Pittsburgh	St. Louis	Chicago	Denver	Birmingham	San Francisco
Wire	$4.25	$3.35	$4.45	$5.40	$6.00	$6.45
Cut		None	8@11	....	....	8.95

TRACK SUPPLIES—The following prices are base per 100 lb. f.o.b. Pittsburgh for carload lots, together with the warehouse prices at the places named:

	Pittsburgh	Chicago	St. Louis	Denver	San Francisco	Birmingham
Standard railroad spikes ⅝-in. and larger	$4.00	3.40@4.00	$5.34	$5.50	$7.75	$6.00
Track bolts	6@6.50	4.60@5.80	7.00	6.75	8.75	8.50
Standard section angle bars	3@4	2.75@3.40	2.00	5.05	5.30	....

COLD FINISHED STEEL—Warehouse prices are as follows:

	New York	Chicago	Cleveland
Round shafting or screw stock, per 100 lb. base	$6.36	$5.90	$6.00
Flats, squares and hexagons, per 100 lb. base	6.86	6.40	6.50

HORSE AND MULE SHOES—Warehouse prices per 100 lb. in cities named:

	Mill Pittsburgh	Chicago	St. Louis	Denver	Birmingham
Straight	$5.75	$7.00	$7.00	$8.15	$7.25
Assorted	5.85	7.15	7.15	8.40	....

STEEL RAILS—The following quotations are per ton f.o.b. Pittsburgh and Chicago for carload or larger lots. For less than carload lots 5c. per 100 lb. is charged extra:

	Pittsburgh Current	Pittsburgh One Year Ago	Chicago Current	Chicago One Year Ago
Standard Bessemer rails	$55.00	$45.00	$45.00@$55.00	$45.00
Standard open-hearth rails	57.00	47.00	47.00@ 57.00	47.00
Light rails, 8 to 10 lb.	2.88@3.63¾*	2.585*	2.45@ 3.50*	2.835*
Light rails, 12 to 14 lb.	2.84@3.59*	2.54*	2.41@ 3.34*	2.79*
Sight rails, 25 to 45 lb.	2.75@3.50*	2.45*	2.32@ 3.25*	2.70*

*Per 100 lb.

COAL BIT STEEL—Warehouse price per pound is as follows:

New York	Cincinnati	Birmingham	St. Louis	Chicago	Denver
$0.10	$0.16½	$0.18	$0.12	$0.16½	$0.18

DRILL STEEL—Warehouse price per pound:

	New York	St. Louis	Birmingham	Denver
Solid	12c.@14c.	18c.	20c.	....
Hollow, ⅞ hex	17c.@20c.	27c.	....	21c.

WIRE ROPE—Discounts from list price on regular grades of bright and galvanized are as follows:

	New York and St. Louis
Hercules red strand, all constructions	20%
Patent flattened strand, special and cast steel	20%
Patent flattened strand, iron rope	5%
Plow steel round strand rope	30%
Special steel round strand rope	30%
Cast steel round strand rope	22½%
Iron strand and iron tiller	5%
Galvanized iron rigging and guy rope	+12%

Western and California territory—20%, plow steel; 22½%, galvanized rigging and guy rope.

CONSTRUCTION MATERIALS

ROOFING MATERIALS—Prices per ton f.o.b. New York and Chicago:

Tar felt (14 lb. per square of 100 sq.ft.) per roll	$3 55
Tar pitch (in 400-lb. bbl.) per 100 lb.	2.25
Asphalt pitch (in barrels) per ton	56.50
Asphalt felt (light) per ton	132 00
Asphalt felt (heavy) per ton	138.00

Common Brick—Per 1000:

Denver	$15.00
Chicago	15.00
St. Louis	17.00

LUMBER—Price of pine per M in carload lots:

	1-In. Rough 10 In. x 16 Ft.	2-In. T. and G. 10 In. x 16 Ft.	8 x 8 In. x 20 Ft.
St. Louis	$.....	$.....	$56.75
Birmingham	28.00	35.00	33.00
Baltimore	$2.50@60	54@60	72.50

EXPLOSIVES—Price per pound of dynamite in small lots and price per 25-lb. keg for black powder:

	Low Freezing 20%	Gelatin 40%	Gelatin 60%	Gelatin 80%	Black Powder
New York	.....	$0.3325	$0.3625	.....	$2.30
Boston	.....	.28	.31	.34	.....
Kansas City	.2475	.27	.30	.34	2.40
New Orleans	.265	.295	.325	.3925	2.90
Seattle	.18	.205	.225	.2925	2.60
Chicago	.2175	.2525	.2975	.34	2.45
Minneapolis	.2272	.2629	.2935	.....	2 90
St. Louis	.25	.285	.315	.3575	2.60
Los Angeles	.22	.27	.31	.....	2.95

MISCELLANEOUS

BABBITT METAL—Warehouse prices in cents per pound:

	New York Current	New York One Year Ago	Cleveland Current	Cleveland One Year Ago	Chicago Current	Chicago One Year Ago
Best grade	90.00	90.00	61.00	80.00	60.00	75.00
Commercial	50.00	50.50	21.00	18.50	15.00	15.00

HOSE—Following are prices of various classes of hose:

	Fire	50-Ft. Lengths
Underwriters' 2½-in.		85c. per ft.
Common, 2½-in.		30%

	Air First Grade	Air Second Grade	Air Third Grade
¾-in. per ft.	$0.60	$0.40	$0.30

Steam—Discounts from list

First grade	20%	Second grade 30%	Third grade 45%

LEATHER BELTING—Present discounts from list in fair quantities (½ doz. rolls):

Light Grade	Medium Grade	Heavy Grade
30%	25%	20%

RAWHIDE LACING—For cut, best grade, 25%, 2nd grade, 30%. For laces in sides, best, 79c. per sq. ft.; 2nd, 75c. Semi-tanned: cut, 20%; sides, 83c. per sq. ft.

PACKING—Prices per pound:

Rubber and duck for low-pressure steam	$1.00
Asbestos for high-pressure steam	1.70
Duck and rubber for piston packing	1.00
Flax, regular	1.20
Flax, waterproofed	1.70
Compressed asbestos sheet	.90
Wire insertion asbestos sheet	1.50
Rubber sheet	50
Rubber sheet, wire insertion	.70
Rubber sheet, duck insertion	.50
Rubber sheet, cloth insertion	.30
Asbestos packing, twisted or braided, and graphited, for valve stems and stuffing boxes	1.40
Asbestos wick, ½- and 1-lb. balls	1.10

MANILA ROPE—For rope smaller than ¼-in. the price is ¼ to 2c. extra; while for quantities amounting to less than 600 ft. there is an extra charge of 1c. The number of feet per pound for the various sizes is as follows: ⅛-in., 8 ft.; ¼-in., 6; ⅜-in., 4½; 1 in., 3½; 1¼-in., 2 ft. 10 in.; 1½-in., 2 ft. 4 in. Following is price per pound for ½-in. and larger, in 1200-ft. coils:

Boston	$0.32½	Birmingham	$0.36
New York	.29	Denver	.30
St. Louis	.26½	Kansas City	.30½
Chicago	.27½	New Orleans	.28½
Minneapolis	.29½	Seattle	.28
San Francisco	.27	Los Angeles	.31

PIPE AND BOILER COVERING—Below are discounts and part of standard lists:

PIPE COVERING Pipe Size	Standard List Per Lin.Ft.	BLOCKS AND SHEETS Thickness	Price per Sq.Ft.
1-in.	$0.27	½-in.	$0 27
2-in.	.36	1 -in.	.30
3-in.	.45	1½-in.	.45
4-in.	.60	2 -in.	.60
6-in.	.80	2½-in.	.75
8-in.	1.10	3 -in.	.90
10-in.	1.30	3½-in.	1.05

85% magnesia high pressure ..... List +5%

For low-pressure heating and return lines: 4-ply .... 50% off; 3-ply .... 52% off; 2-ply .... 54% off

COAL AGE

The Weekly Journal of the Coal and Coke Industries

Volume 18 NEW YORK, THURSDAY, NOVEMBER 18, 1920 Number 21

A Real Test of Good Faith

DOES the coal operator really object to having made public the cost of producing coal and the profits of doing business or does he just object to the activities of the Federal Trade Commission in this regard? Almost simultaneous with the statement of Colonel Wentz that the National Coal Association would attempt to collect data on investment, cost of production and selling and sales realizations for this year, by months, from coal-operator members of the association comes the announcement of the Federal Trade Commission that until the matter of its legal power has been finally determined by the Supreme Court no further attempt will be made on the part of the Government to obtain statistics of that nature.

The response of the coal operators to the announced program of their national officers for these statistics will therefore be a real test of the good faith and the public expression of their asserted policy to lay their cards on the table. So far the Government reports have shown no startling figures of profits in the production of coal, but the number of coal operators who have volunteered these data was so small in the second quarter of the year that no one can truthfully say they represent the industry.

It is entirely possible for the National Coal Association to get cost and sales information representing two-thirds of the total production, or a practical majority of the coal marketed commercially. Such data, while perhaps not carrying with the public the weight of Government figures, will do much to answer the critics who, knowing only of $10 coal, imagine all producers are reaping profits of $5 or more a ton on their product.

Whether these reports are made through local associations or direct to the Washington office of the National Coal Association, they should be comprehensive, complete and prompt.

What Will Congress Do?

ARE Senators Calder and Edge bluffing when they say that they will introduce legislation to control the price of coal if it does not fall sufficiently to suit them by the time Congress convenes? What is their idea of how low the price should be? What form will this legislation take? Is Senator Frelinghuysen coming back this session with his coal commissioner bill? What are the prospects for regulatory legislation at this Congress and at the special session that it seems likely will be called after March 4?

This is the general tenor of the questions that are going the rounds as Dec. 1 approaches. The very fact that the coal man is asking these questions is an admission that the conduct of the coal business this year has been such as to warrant such expectations. The coal industry has laid itself open to the serious charges of profiteering and wilful disregard of contract obligations. The fact that all have not been guilty does not remove the reproach, but makes harder the position of those who have travelled most carefully the straight and narrow path of reasonable prices and careful observance of their contracts.

It is unavoidable that the question of high prices for coal should be aired on the floor of the next Congress. Our nine-foot shelf of printed hearings on coal before congressional committees will be materially added to as the winter progresses. What will be said will not all be purely for political effect, for there are those who have readily come to the belief that the public needs Federal protection from the coal man and others will be heard whose grievance is that for the time they have lost the strangle hold they had for years on the coal industry and will seek to re-establish conditions wherein they could dictate the price they paid for coal.

It is important not to appraise too lightly the possible effect of that kind of thinking which believes the way to correct abuses in the marketing of coal is to pass laws. There are two ways to meet this sort of proposal: the Indiana way and the Alabama way. When state legislation inimical to the coal man was proposed in Indiana it was fought and is still being fought by every means at the command of the industry. In that state the issue is plainly defined and nothing but the word of the court of last resort will satisfy either party and end the controversy. In Alabama the operators sensed the temper of the people and the Governor, and recognizing the elements of justice in their beliefs met them more than half way. What the people of Alabama wanted was not legislation but coal at reasonable prices, and the coal men have co-operated in giving them what they asked. It is true that legislation was adopted in Alabama as stringent as that adopted by Indiana, but the officials in the Southern state have never been obliged to use it and the relations between the coal industry in that state and the public have been maintained on an amicable basis.

It is our present belief that Congress will do a great deal—of talking and investigating. The solid men of this country do not want more, but less, of Federal interference with private business, and common sense will prevail. What is needed is not prices fixed by the Government, but a better code of business ethics fixed by the industry itself. Interest in legislation hostile to the coal industry will lag in proportion as the need for it decreases—as prices go down and supply becomes better. Therefore the "if" in Senator Calder's threat. We believe the coal industry is going before the several congressional investigating committees this winter and admit the abuses that have stained its record in this and past years and is going to say to Congress, "These things are true. A majority of the trade have been square; a few have not. Do not judge

us by their actions, but rather ferret out those who have been guilty and publicly brand them. We cannot defend them."

Unless the coal industry goes before the public through its Congress next year with all cards laid on the table and meets Congress more than half way the result will be more than an investigation. It may be anything from what in itself is innocuous—a "coal commissioner" bill—to a coal controller.

Enlightening the Domestic Consumer

ANTHRACITE prices have been added to the list of those that will be governed by fair-price committee action. It is reported that J. F. Bermingham, president of the D., L. & W. Coal Co., will direct the move to induce to be more reasonable in his charges the producer or shipper who has been selling anthracite to retail dealers at such prices as make it cost the consumer $16 to $20. When the retail dealer passes on such high prices to the householder more damage is done the coal industry than any sales at high prices to steam-coal users. In the East, where there are more representatives in Congress to the square mile of state than in the West, anthracite is almost the only domestic fuel, and the majority of newspaper readers associate stories of coal robbers and profiteers with anthracite.

It appears that the large companies have descended from their aloof position and are taking an active interest in helping to put down the price the other fellow is charging. It is always difficult to keep the laymen clear on the different phases of the coal question and Mr. Ordinary Citizen is somewhat puzzled by what appear to be conflicting statements of the National Coal Association, that price is going down, and of his coal dealer, that he cannot get coal at any price.

The production and the price of anthracite are not and have not been dependent on car supply. Therefore the improvement in railroad movement that has made possible increased production and decreased price of bituminous coal has in no way altered or affected the supply and price of anthracite.

Conservation in Equipment

A PROSPEROUS country is that one that cannot show any machinery that has been in operation for as long as fifty years; a more prosperous one would be a country that discards its old equipment every twenty years. Every nation should have a museum as an old ladies' home for the reception of historic machinery. The wrong place for such relics is the factory or the mine, unless the relics of the past are allowed to acquire a mantle of ivy or a protecting coating of moss.

Too often a historic, or near-historic, machine is kept at work, destroying efficiency, wasting energy and requiring frequent repair. Perhaps it is fortunate that spare parts are no longer obtainable for these monuments of antiquity. The practice of manufacturers of destroying their patterns after the machinery for which they are made is out of date is as valuable in preventing wasteful adherence to antiquated models as the statute of limitations is in preventing the keeping of moldering files. The slow past is dead; let it die. New men, new models, new methods now rule the world.

The old equipment does the work perhaps, but how? With loss of time, as a constant source of worry, inefficiently, unprofitably, uncertainly, inadequately. The thousands of mules, the ancient mine cars—heavy yet unsafe, cumbersome but of inadequate capacity—the puny steam shovels, and the small-capacity dump cars are all evidences that we break slowly with the past just to save the expense of purchasing, or because we dread to face boldly an unwelcome issue. Many a concern has yearly deficits and believes itself unable to operate profitably, when by the practice of modern methods it could set itself in the list of dividend payers in both fortunate and unfortunate trade periods.

Railroad Fuel Again

IT IS surprising how diverse may be the achievements with different individuals under the same set of conditions. The first public admission of an emergency in coal this year was the decision of the Interstate Commerce Commission on April 15 that the situation had become so critical that assigned cars were necessary to enable the railroads to obtain their supply of fuel coal. More recently the commission issued Service Order No. 18, which provides assigned cars for railroad fuel only in those instances where the contract between the railroad and the coal-mine operator covers the entire output of a mine or mines from Nov. 1 to April 1 or for any six-months period. Irrespective of the theoretical merits of the assigned-car practice the operators and the railroads promptly rearranged their contracts on this new basis.

An opinion as to whether or not an emergency exists today which warrants the exercise of emergency provisions in the Transportation Act in order to protect the fuel supply of the railroads depends upon whether or not one is judging the case by the policy of the B. & O. or of the New Haven, to cite but two examples. At various times in the last two weeks the B. & O. has confiscated for fuel as many as fifty cars of coal per day at the mine, prior to billing. Officials of this road are reported to have declared that this action was necessary because they could not obtain coal otherwise and they prefer to confiscate before billing in order to leave with the operator the responsibility of deciding which of his contract customers should be curtailed. All of which would indicate that an emergency exists so far as the B. & O. fuel coal supply is concerned.

On the other hand, it is reported that officials of the New Haven R.R. have quite recently advised some of the producers of coal with whom they have contracts providing for assigned cars under Service Order No. 18 that they will not require the coal. The inference is plain enough that the New Haven overbought and is now picking and choosing in order to release off-grade or high-priced coal.

Between the two extremes are such roads as the New York Central, regarding which seldom, if ever, is there any question raised regarding its fuel coal supply, either by purchase or confiscation. Years ago in the Middle West the railroads and the coal operators worked out mutually satisfactory arrangements by which all share alike in the burden and responsibility when there is such, and the benefit at other times of railroad fuel business. When all the fuss over the railroad-fuel problem is sifted down it is found to be of quite local dimensions. A few railroads and comparatively few operators have been injecting the problems of their business relations into the national fuel situation.

State Coal Mine Is Shipping 200 Tons Daily

The Claremont mine, purchased last summer by the State of South Dakota upon recommendation of the committee appointed to investigate the advisability of the state entering the coal-mining business and thus protecting as far as possible citizens of the state against coal shortage, is now shipping coal to South Dakota points at the rate of approximately 200 tons daily.

Coal Operators Open Ellis Island Office to Get Labor

Pennsylvania coal operators are so anxious to get some of the Spanish and Portuguese labor that is arriving in the United States now that they have established an office on Ellis Island to give information about the wages and conditions of working in the coal mines to newly-arrived aliens.

Traffic League President Asks Railroads to Play Fair

W. H. Chandler, of Boston, president of the National Industrial Traffic League, speaking at a meeting of the traffic group of the National Retail Dry Goods Association, said that the success of the railroads under private ownership was the wish of all business interests. "But," he added, "we don't want to be knifed while acting as friends. There are plenty of cars in the country to carry all of its business if they are handled properly. It isn't fair to charge the shipper demurrage on one hand while the railroads themselves on the other, reserve the right to hold the car on side tracks for thirty days."

Mining Society Makes Annual Presentation of Medals

The annual dinner and medal presentation of the Mining and Metallurgical Engineers Society of America was held at the Hotel Commodore, New York City, Nov. 10. The gold medal of the society was awarded to E. A. Cappeles Smith for distinguished service in hydrometallurgy. More than 150 members and their guests attended the dinner, which was presided over by E. P. Matthewson. The speakers in addition to Mr. Matthewson were Dr. Arthur L. Walker and Harry S. Guggenheim.

Illinois Coal Men Denied Injunction in Conspiracy Case

Illinois coal men, defendants in the coal conspiracy cases in the U. S. court at Indianapolis, lost their case in the Federal Court at Peoria, Ill., Nov. 8, in which they sought to enjoin officers of the Government from removing and prosecuting them in Indianapolis, on the ground section 9 of the Lever Act was unconstitutional. Judge Louis Fitzhenry filed his opinion in the case of the Hillsboro Coal Co., where Rice Miller and Herman C. Perry, two of the Indianapolis defendants, are affected, holding that section 9 of the act is constitutional and valid and that the Attorney-General and U. S. Attorneys are acting within their powers. He also holds that this statute is aimed at all conspiracies to enhance the price of coal within or without the coal industry.

B. & O. to Lay Off More Men

That about ninety men were to be laid off at the Mount Clare shops of the Baltimore & Ohio R.R. by Nov. 16 was decided Nov. 8. Nearly 150 men were discharged a week previous. The layoff, it is said by officials, is due to a natural dullness, which may last but a short time. Much of the equipment that was in bad condition following wartime operations has been put back into first-class shape and the shops now have to deal only with routine repairs.

NEWS BRIEFS

Terse Items Chronicling Events of Interest to the Industry

Delays Trial of Tennessee Coal Operators Under Lever Act

Federal Judge E. T. Hanford, of the Federal District Court of Tennessee, announced Nov. 8 that he would not try any case arising under the Lever Act until the Supreme Court upheld its constitutionality. This is construed to mean that east Tennessee coal operators whom the Government has caused to be indicted for alleged profiteering will not be tried at this term of court.

Ingot Production During October Close to Record

Production of steel ingots during October, as reported by companies making 85 per cent of the total production of the country, was 3,015,982 gross tons. This is the largest of any month this year with the exception of March, when production was 3,299,049 tons. The September production was 2,999,551 tons. The total for the ten months ended with October is 29,453,217 tons.

W. B. Colver Condemns Bad Trade Practices

William B. Colver, of Washington, former member of the Federal Trade Commission, in an address at the annual convention of the National Coffee Roasters' Association at St. Louis Nov. 11, attacked "commercial bribery," asserting that its abolition would effect a saving to the distributer, and consequently reduce prices or make advances unnecessary. This practice, which he described as paying specified percentages of the purchase price of commodities to employees whose recommendations practically controlled the buying for their firms, "has been and is still deplorably prevalent in some industries," the speaker asserted.

I. C. C. Chairman Says Rail Control Will Continue

America will never again have private control and operation of railroads unaccompanied by state and federal regulation, Chairman Clark of the Interstate Commerce Commission declared Nov. 9 in an address to the National Association of Railway and Public Utilities Commissioners. "Even if we shall come to government ownership and operation," added Mr. Clark, "the necessity for a separate tribunal with jurisdiction to determine questions of reasonableness of charges and alleged discriminations will be present."

Stolen Securities in Coal Car

In clearing out an empty coal car at Terre Haute, Ind., prior to reloading at mines sacks were discovered which contained $62,000 worth of bonds, checks, notes and other papers stolen recently from the Farmers' State Bank at Newark, Ill. The papers were taken on Oct. 13 and the contents of the bags were badly rainsoaked when found.

Uniform System of Accounting Sought for Utilities

Many important problems growing out of the public regulation of utilities were reported upon and discussed at the thirty-second annual convention of the National Association of Railway and Utilities Commissioners which met in Washington Nov. 9. James Blaine Walker, secretary of the association, said that the association had been at work for several years to obtain a standard form of accounting for all of the utilities of the country, and that O. O. Calderhead, head of the Committee on Statistics and Accounts, had evolved a uniform system of accounting for gas and electric companies which will become the standard if the convention adopts it. Car service and demurrage also were scheduled for discussion.

Hand Picking the Larger Sizes of Anthracite

Although mechanical contrivances—jigs, spirals, and various "pickers"—have done much to decrease the labor employed in anthracite preparation, yet hand picking still survives at certain points. The illustration here presented shows the pickers at work at the top of the breaker removing slate from the larger sizes after the first screening.

Of course the proper place for slate is in the gob, and it is the constant effort of miners and mine officials, at least in the more gently pitching seams, to prevent it from reaching the light of day. Some of it, however, unavoidably finds its way to the breaker. If the coal and slate were not separated and the entire mine product sent to the rolls, it would be necessary to pass the entire product through the jigs. The slate and combined coal and slate is accordingly carefully removed, the former going to the rock dump or being crushed for flushing, while the latter is crushed, jigged and otherwise prepared separately from the clean coal which is merely crushed and sized. This results in much economy of power and a cleaner product than would be the case were hand picking not practiced.

The old type of breaker boy—that picturesque, incorrigible, happy-go-lucky urchin that for a hundred years or thereabout was characteristic of the anthracite region—is now almost extinct—and no one mourns his disappearance. While hand picking is still practiced it is performed by men and young men while boys of the age that formerly infested the breaker and made life miserable for the unpopular foreman are in school where they belong. The foreman has "passed the buck" to the school mistress.

As Stripping Saves Coal, Deep Pits Should Be Favored by Lower Royalties

Deep Strippings Are Expensive and the Operator Who Makes Them Should Be Rewarded with at Least Some Part of the Saving in Coal They Effect, or Operators Will Feel Debarred from Engaging in Such Unprofitable Undertakings

By Dever C. Ashmead
Wilkes-Barre, Pa.

IT IS always difficult to determine whether a piece of shallow coal should be mined from the strip pit or by underground operations. The thickness of the coal and its relation to the overburden are ordinarily the determining factors in making calculations upon the advisability of stripping. Of course, other conditions must be taken into consideration, such as the character of the overlying measures and the condition in which they are found—that is, whether they are of solid rock, clay or gravel or some combination of all three.

In the beginning careful and accurate figures must be procured as to the character of the measures. These normally can be ascertained only by making cross-sections of the area in question. The Locust Mountain Coal Co., at its property near Shenandoah, Pa., made cross-sections approximately every 300 feet. It was considered that these were sufficiently close for any decided change in the character of either the measures or the overburden to be readily determinable.

Diamond Drillholes Test New-Found Deposit

Along each of these section lines diamond drillholes were sunk, the interval between them varying from 200 to 300 feet. These holes were put down to such a depth that they went through the lowest of the coal measures. Careful records were kept of the varying character of the rock that was pierced by these holes. In addition to the diamond-drill cores thus obtained other holes and test pits were sunk through the overburden down to the rock and the character of the drift was exactly determined.

Calculations were then made of the area that could be stripped at that time, still leaving a reasonable profit to the coal company. The area thus accurately determined is shown in Fig. 1 by heavy hatching. It is also shown in the cross-section, Figs, 2, 3, 4, 5 and 6, taken transversely across the proposed stripping. It will be noted in all of these sections that the measures dipped toward the south, becoming deeper and deeper in that direction. The problem presented was the determination of the depth to which these beds could profitably be stripped.

Royalty Considerations Add to Problem

Had nothing but the character of the measures themselves and their overburden been taken into account, the calculation would have been finished at this point. This was, however, by no means the only consideration, for the question of royalty then entered into the problem. It is a well-known fact that by stripping almost complete recovery of the coal bed is obtained, whereas if the same bed were mined by underground methods the recovery would not be complete.

The actual loss thus incurred depends upon a number of factors, such as the thinness of the bed, the character of the coal, the amount of water to be handled, the liability to squeeze, etc. The Locust Mountain Coal Co. considers that an 85-per cent recovery of all the coal in a bed is a good average for underground mining. Consequently the lessors would receive a greater aggregate return from the property if the coal were stripped than if it were recovered in the ordinary way.

The amount of coal recoverable at the Locust Mountain stripping at normal expense by stripping methods was determined to be 367,855 tons, necessitating the removal of the overlying strata and the measures between the Buck Mountain and the Little Rock Mountain beds, which amounted to 870,108 cu.yd. On this the lessee would receive ordinary profit such as has been realized from other strippings. The next step was to show how much more could be recovered if those portions of the bed were stripped that would cost no more for recovery than would ordinary underground mining. Had this other portion of the property been stripped under existing conditions the operator would have lost money, as the present cost of mining by that method would not permit him to make a profit on the coal mined from this property.

Depth Limits of Profitable Stripping

The area thus determined shows that together with the previous area a total of 468,399 tons of coal could be recovered by stripping, and that in order to recover this it would be necessary to remove 1,376,369 cu.yd. of overburden. In the first case it would be necessary to remove 2.35 cu.yd. of overburden for every ton of coal* recovered, but in the second, 4½ cu.yd. would have to be stripped for each additional ton of coal obtained. This large operation was quite within the bounds of reason, but, as has been stated above, it would entail a slight loss. The additional area is shown on both the map and the cross-section by light hatching.

The recovery by stripping over these two areas would amount to 468,399 tons, whereas that obtained if underground mining were followed in the second area would be only 394,441 tons. Thus 73,958 tons would be lost. The lessors would, of course, gain by having the whole area stripped, but the mining company could not do this, as it would involve a financial loss. If, on the other hand, the lessor would consent to reduce his royalty to such a point that the lessee could afford to strip the area, the owner of the coal would still make money through the stripping of the entire area, though

*Throughout this article it must be remembered that the reference is to "remove stripping," in which the overburden is removed from the pit, in contradistinction to "casting stripping," where the shovel merely casts the overburden to one side.

he would realize a reduced royalty per ton. He would thus in a way divide up some of his profits with the coal company.

Calculations in this case were carried still further. The lessee determined another area shown by broken-line hatching in the map and cross-sections. This included the region that could be stripped if the lessor were willing to reduce the royalty to such a point that his net return from the whole area would be the same as if it were operated by ordinary stripping and underground-mining methods. It was found that within this additioanl area 162,129 tons of coal would be recovered by stripping and that for every ton thus recovered it would be necessary to remove 5 cu.yd. of overburden. This coal could be recovered only by stripping at a loss if the present rates of royalty were maintained. If, however, the coal was mined from underground, a loss of 25,599 tons would occur in this area alone. Taking together the three areas above described, there would be recoverable by stripping 625,528 tons of coal, as against 535,971 tons if underground-mining methods were pursued in conjunction with normal or ordinary stripping.

All Would Gain by Royalty Concession

It can be readily seen that the lessor can well afford to reduce the rate of royalty on a portion of any given tract of coal in order that a greater recovery may be obtained. He would lose nothing by thus reducing his royalty, as the increased tonnage would be more than sufficient to make up the loss incurred on the decreased rate of royalty. Furthermore, this decrease would be an advantage to the coal company, as it would permit it to mine at a small profit a body of coal which, if worked with normal royalty, would mean a financial loss. Thus a small reduction of royalty makes a difference between operating at a profit and operating at a loss.

Not only would lessor and lessee profit by such an arrangement as that above outlined but the public also would be a gainer, inasmuch as there would be recovered approximately 100,000 tons of coal that otherwise would be wasted. Once a property is mined, the recovery of any coal left in the pillars becomes extremely difficult. The minable areas of anthracite in this country are not sufficiently extensive to warrant the abandonment of any such amount of coal nor is it fair to make the lessee mine coal at a loss when the lessor could, without any loss whatever, reduce his royalty to a point where he would receive the same net income from his property as when mined by either method.

The balance of the coal shown on the cross-sections of the measures in this end of the property cannot be stripped, as it lies too far beneath the surface. It probably could not be profitably worked by stripping, no matter how far the lessor might reduce the royalty.

Coal-Land Owner Can Strip Heavy Cover

Some other figures in connection with this stripping may be of interest. This is particularly true of ratios existing between the coal and the amount of overburden. In the heavily-hatched area the company can afford to strip, as the relation between the overburden and the coal is two and one-half to one. This is a paying proposition. The critical or dividing point between stripping and underground mining, so far as the stripper is concerned, is the condition where the ratio of total overburden to coal is about three to one. This is the condition reached in the combined areas

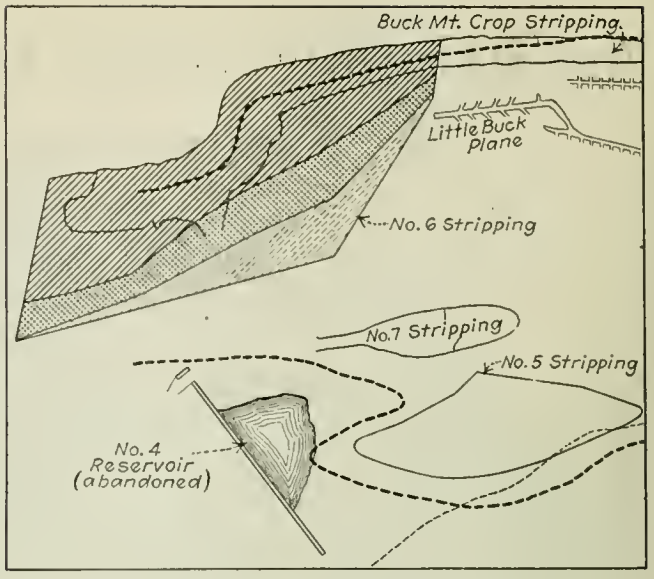


FIG. 1. PITS NOS. 5, 6 AND 7 AT WEST END OF LOCUST MOUNTAIN COAL CO.'S PROPERTY

No. 6 is the largest of the three. The heavy hatching on the north, or, as shown on the plan the upper part, of the stripping shows the area which it will pay to strip. The area which is lightly hatched is that which will produce coal at the same price as it would cost to mine it by underground methods. The broken-line hatching in the southwest corner of No. 6 pit is coal that could be extracted by stripping, if the lessor would consent to figure the tonnage of coal obtainable by underground mining from that and the adjacent area, multiply it by the royalty rate and divide by the amount of coal the stripping of those areas would give and make a new royalty rate based on that figure. The new royalty would make profitable the stripping of all the coal areas hatched, either with heavy, light or with broken lines.

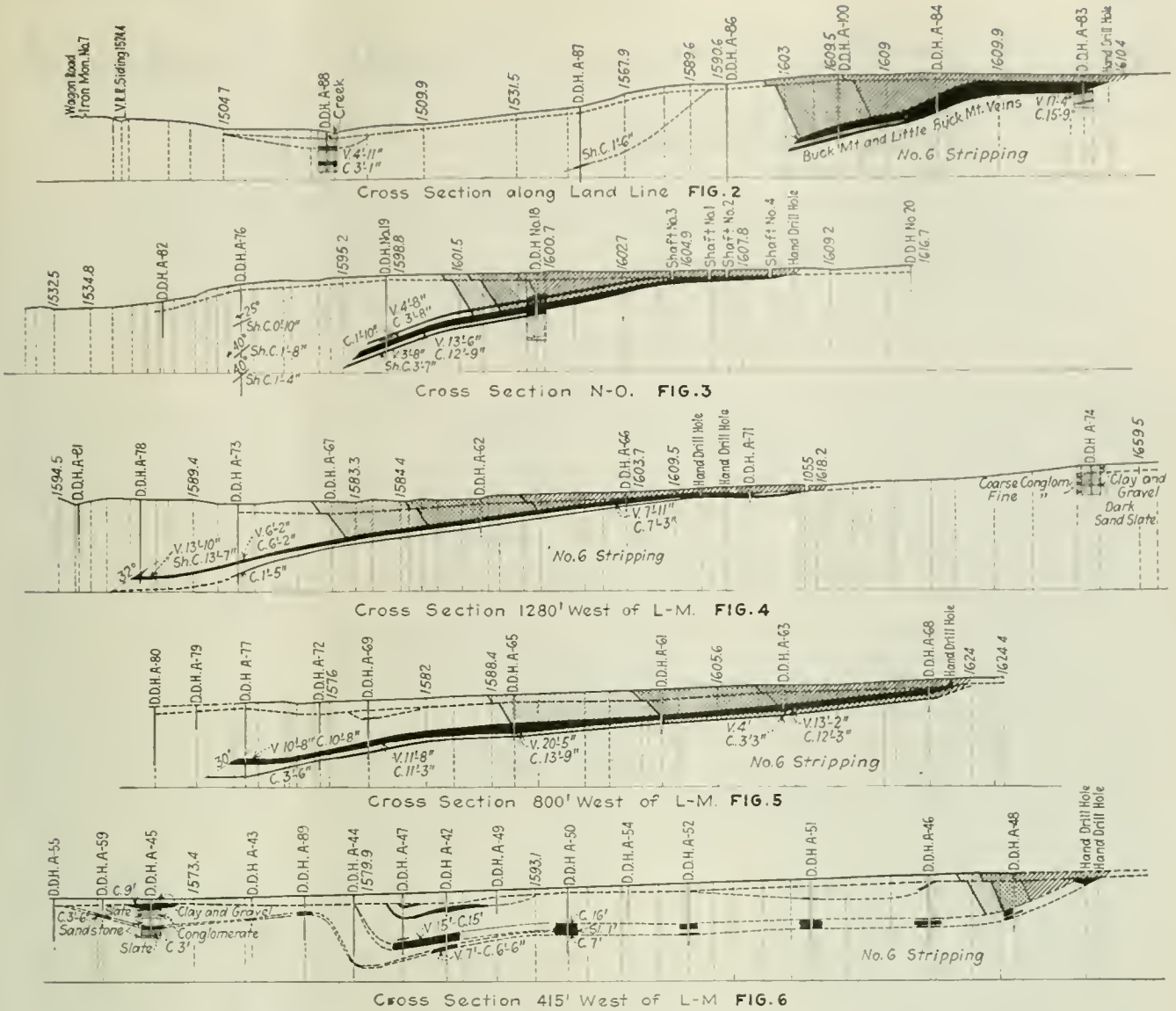
shown by heavy and light hatching lines. The lessee, however, could not afford to strip the average of the three areas shown by the heavy, the light and the broken-line hatching unless some reduction was made in the royalty rate.

As has been previously stated, the overburden in the area represented by the light hatching was four and one-half to one, while in the broken-line hatched area the ratio was five to one. Neither of these areas could be stripped independently, but when taken together with the first, where the ratio is two and one-half to one, they could be profitably worked by this method, providing the arrangement outlined in reference to royalty could be made with the lessor.

It is obvious that unless there is some modification in royalties, lessees will not attempt to make the deeper strippings and that work will be left to those companies that own their own coal. Stripping has been commenced on this property, and Fig. 8 shows a No. 35-B Bucyrus caterpillar shovel at work. Already 62,781 tons of coal have been recovered and 276,553 cu.yd. of overburden have been removed. Only two beds of coal will be recovered from this portion of the operation, these being the Buck Mountain and Little Buck Mountain measures.

Pit Will Be 150 Ft. Deep at Lowest Point

On this property, besides the stripping above described, the chief interest in which centers in the methods employed to determine the practicability for the removal of coal by the stripping method, there are two other stripping operations that will be opened up soon. These are shown as strippings Nos. 4 and 5 in Fig. 1. No unusual problem will be presented by either of these latter operations, as the determination of the question of royalty will not enter into the proposition and all the overburden can be removed at a profit without any reduction in the royalty charge.



FIGS. 2, 3, 4, 5 AND 6. CROSS-SECTIONS SHOWING WHAT WORK IS LIKELY TO BE STRIPPED AND WHAT A ROYALTY REDUCTION WOULD MAKE STRIPPABLE

The slowness with which the bed sometimes dips makes the area that can be profitably mined, given a slight reduction in royalty, quite an important matter to the lessor, the operator and the public. Especially is this true in Fig. 5 where the coal thickens as it enters the third zone.

The maximum length of the largest stripping is 2,400 ft. and its maximum width about 1,000 ft. The greatest depth attained in this pit will be 150 ft., and the greatest thickness of coal will be 25 ft. 11 in. This is shown in Fig. 2, where the two Buck Mountain beds come together. In regard to size this stripping does not compare to that in the main, or east, basin, nor can it compare to several other pits in the anthracite region. The methods employed in underground mining at this property are in many ways unique, and it is hoped that soon another article will appear dealing with the problems that it involves.

Washington Wonders If It Is Short of Coal: Seeks Help in Getting Some

UPON representation of a coal committee of the District of Columbia that the coal situation in the national capital requires special consideration, due to the shortage of fuel for domestic use, the Interstate Commerce Commission has taken up with Dr. E. W. Parker, director of the Anthracite Bureau of Information, at Philadelphia, the matter of shipment of coal to Washington. Information will be sought as to whether the figures on receipts of anthracite coal in Washington correspond with those of shipments by operators, and the anthracite bureau will be requested also to outline a concrete program for getting coal shipped to the capital.

Coal Preferred for Gas Making: Present Not Auspicious Time to Install Plant

COAL as a factor in the production of gas for domestic use was considered by the Public Utilities Commission of the District of Columbia in a hearing last week on the application of the local gaslight company for an increase in the gas rate. Leon B. Eichengreen, an expert of the United Gas Improvement Co., of Philadelphia, was questioned by the commission as to the costs of making gas by coal and oil. At present Washington's gas is made from oil, otherwise known as water gas. The witness said that while gas could be manufactured more cheaply from coal than from oil, the present was not an opportune time to construct a coal plant because of high prices and uncertainty of obtaining material. Within three years, perhaps, the local company could build a coal plant. A coal plant to manufacture two billion feet of gas a year would now cost between four and five million dollars. The saving on a coal plant over oil would depend on the ability of the company to sell coke, the byproduct of coal gas.

Sewickley Bed Is Being Rapidly Developed Near Fairmont, West Virginia

Years Ago the Pittsburgh Bed Was the Only Seam in the Fairmont Region Thought Worthy of Attention—Recently Much Development Work Has Been Done in the Sewickley Coal Bed—In Not a Few Instances Appreciable Areas of the Upper Bed Have Been Destroyed by Operations in the Lower

By H. A. Williamson
Fairmont, W. Va.

FROM the time that the first coal-mining operations were started in what is known as the Fairmont field of West Virginia until about the year 1910 little or no attention was paid to any bed of coal other than that known as the Pittsburgh. True there were scattering operations within the district in other measures, but these were not extensive and not seriously considered by operators in general, the normal condition of most of the firms attempting such developments appearing to be a state of bankruptcy. In the older purchases of coal lands most of the deeds either call for "all the coal" or simply for the "Pittsburgh coal" or "Big Vein," no attention being given to other deposits. This is easily explained by the local conditions existing. The Pittsburgh coal outcropping for many miles is worked from drift or slope openings throughout almost all the region at an elevation that is ideal for economical railroad construction and operation. This bed has greater thickness and better quality, according to all available information, than any other in the district, and consequently there was no inducement to develop any other measure.

Opening of new mines in the Sewickley bed has severely hampered the progress of the operations in the Pittsburgh bed because of the necessity of sharing with them the limited car supply. The capacity of the Sewickley mines is almost 7 per cent of that of the whole Fairmont region. The coal is well thought of as a domestic fuel, as it clinkers but little, burns readily and forms a fine ash.

When the demand for fuel was abnormally increased by the world war, many individuals with more or less knowledge of the coal business became desirous of starting mining operations, being attracted by the abnormal prices prevailing. Purchases of small coal areas for immediate development became frequent and it was only a short time until such Pittsburgh bed areas as were available were all being worked. Would-be operators then turned to the next best seam and purchases of Sewickley bed areas became the order of the day.

Growth of Development Rapid Since 1916

Up to this time the only railroad serving the Fairmont field was the Baltimore & Ohio. For some years construction of a road from Brownsville, Pa., to Fairmont, W. Va., has been under way, giving a connection with both the Pennsylvania Railroad system and the New York Central. In 1916 or thereabout some coal was shipped over this line from Monongalia County. About this time also, a railroad known as the Morgantown & Wheeling was started. It so happened that these two roads cut through the territory that carries Sewickley coal of good thickness and at an elevation above drainage that makes economical mining possible. This resulted in large purchases of Sewickley acreage along these two roads. The accompanying map graphically illustrates how completely the available acreage has been purchased by operators and prospective operators.

In a discussion of the development of this bed it is well to define immediately the area under consideration. For all practical purposes the Fairmont region may be said to lie within the borders of Harrison, Marion, Monongalia and Taylor counties, in West Virginia. Up to the present time the development of Sewickley coal may be considered as being confined within a narrow strip of land extending about five miles westward from the Monongahela and West Fork rivers (these streams marking the eastern limit of the bed), bounded on the north by the Pennsylvania-West Virginia state line and extending southwestward to the Marion-Harrison county (West Virginia) line. Reference to the accompanying map will clearly outline this.

Thickness of Bed Averages Seventy Inches

The Sewickley bed belongs to the Monongahela series and in the Fairmont region lies about 120 ft. above the Pittsburgh bed. The West Virginia Geological Survey states that its reported thickness runs as high as 12 ft. However, thicknesses of this bed stated to be in excess of 6 ft., except where thoroughly verified, can be accepted only with strong reservations. Most of the excessive thicknesses reported are from points where the coal lies under deep cover and are taken from the logs kept in drilling oil and gas wells. Such information, while given in good faith, is liable to grave error and cannot be accepted without verification.

Taking the reports from thirty-seven operating mines the average thickness of bed is 70 in. Fifteen mines report less than the average; eleven report 70 to 72 in.; five report 76 to 78 in.; three, 84 in., and three 96 in. The lowest thickness reported is 50 in., while the highest, as above stated, is 96 in. Probably 70 in. is a fair statement of the average thickness of the area under discussion, but in a detailed examination of any particular property this may be found to vary greatly within relatively short distances.

East of the Monongahela River this bed is above the hilltops—that is, denuded and lost—except possibly in a few isolated instances. To the southwest it thins out until, for all practical purposes, it may be said that at the Harrison-Marion county line it is no longer of workable thickness. Westward it passes rapidly below drainage so that at Wadestown, in the western end of Monongalia County, and at Glovers Gap, in the western end of Marion County, it is reported at a depth of from 800 to 1,200 ft. below the surface.

In character the Sewickley coal is similar to the Pittsburgh, and were it not for the limiting features of its quality it could be made to serve practically the same industrial purposes. The quality of this fuel, however, is inferior to that of the Pittsburgh and its use probably will be confined to steam production in stationary boilers, domestic consumption and as locomotive fuel.

SEWICKLEY DEVELOPMENTS IN FAIRMONT REGION

Monongalia and Marion counties, in northern West Virginia, are fast developing operations in the Sewickley bed. The coal, though not low in ash or sulphur, is a splendid domestic fuel, as it does not cinker. Convenience in the grate and ability to burn completely to ash under ordinary firing conditions are the chief desiderata in a domestic fuel.

Burns to a Fine Ash with Little Clinker

A peculiar characteristic is claimed for Sewickley coal as a domestic fuel, the following paragraph being the description given by the West Virginia State Geological Survey: "The coal has a fine reputation for domestic use among the farmers of Marion and Monongalia counties, who generally prefer it to the Pittsburgh coal below, on account of its freer burning and of the fact that it is less inclined to fuse in the grate. The coal is usually interlaminated with thin layers of mineral charcoal, and this structure causes it to burn with a bright flame, leaving only a fine ash with little clinker, although it carries more ash and sulphur than does the Pittsburgh coal below."

The coal as mined is liable to wide variations in quality. With reasonably good preparation it probably will run, on an average, 2 to 3 per cent higher in ash and a like proportion higher in sulphur than the Pittsburgh coal. Variations in quality arise in large measure from partings in the seam. At some points only two small partings are reported while at others as many as ten are said to exist, varying in thickness from ½ to 2 in. each. Some are composed of slate and others of fire clay. These partings make proper commercial preparation difficult and in some cases impossible, while shipments running 14 per cent in ash and from 4 to 5 per cent in sulphur probably are not unusual.

A rough approximation of the difference in quality between the Pittsburgh and Sewickley coals is illustrated in Table 1, the average analyses given being taken from the West Virginia Geological Survey reports.

These figures are the result of averaging the analyses of a number of samples. While much better results have been obtained and reported on Sewickley coal, such results are largely due to perfect preparation of the sample taken for analysis and could not be maintained in actual operation. The above probably is a fair average of what might be expected from shipments on orders extending over a considerable period of time.

As in quality so in appearance a wide variation occurs. The coal from some mines, or even from certain parts of the same mine, when loaded on railroad cars will have a fine appearance, comparing favorably with the Pittsburgh product. Other cars will be contaminated with fire clay and other impurities. If properly mined the coal makes good sizes and stands transportation reasonably well.

Mining conditions in the Sewickley bed may be said to be fairly advantageous. In most places the coal occurs under a sandstone roof; some slate must be handled, but not enough to be considered abnormal. The bottom is good and drainage is, as a rule, easily provided. Railroad sidings were originally constructed with convenience to the Pittsburgh coal in view, consequently in most cases it has been necessary to make special provision to get the Sewickley coal down to the proper elevation for loading into railroad cars. At some points the mine openings are as much as a half mile from the tipple to which the coal must be brought in the mine cars on an even grade; in other cases it is brought down in chutes, while at a few points it has been possible to build railroad sidings on a grade that bring the railroad cars to such

TABLE 1 AVERAGE ANALYSES FROM WEST VIRGINIA GEOLOGICAL SURVEY

	Moisture	Volatile Matter	Fixed Carbon	Ash	Sulphur	Phosphorus
Pittsburgh Coal	1 24	34 31	57 36	7 09	1 70	0 010
Sewickley Coal	1 26	36 65	50.63	11 46	4 00	0 009

an elevation that the tipple can be built to receive the coal directly from the mine opening. In a few cases shafts have been sunk to the Sewickley coal.

One of the most serious difficulties affecting the future mining of this coal measure is the working of the Pittsburgh bed below it. The interval between the beds is only about 120 ft. and wherever the Pittsburgh has been removed the Sewickley bed above it has been broken. So far as present-day mining is concerned, this, of course, completely destroys this bed. Removal of the Pittsburgh bed in most cases is controlled by companies not interested in the Sewickley, or even if they are interested in the upper seam, present-day commercial necessity requires them to overlook the destruction of the less valuable measure.

Mining in the Pittsburgh coal is so far in advance of operations in the Sewickley that it looks now as if a large portion of the upper seam will be destroyed in this manner. It is possible that where these beds go under deep cover and have not as yet been mined and are not likely to be worked for some years, an effort will be made to recover both. Where it is necessary to do shaft mining there is always an incentive to remove first the bed nearest the surface. This may in future years save a large part of the Sewickley coal. As the matter stands today there are but two or three companies carrying on mining operations in both beds with the object of recovering the highest possible percentage of both.

Another consideration that may affect the future value of this bed is the manner in which it is frequently worked. Persons with little or no knowledge of coal mining, attracted by the wildcat profits of some small operations, purchased limited areas of Sewickley coal and opened mines. Some of these have railroad facilities and some are "wagon loaders," but in every case the purchaser bought with an eye to immediate maximum production.

Consequently dozens of small mines are operating in haphazard manner at points that will be badly needed in future if proper extraction is to be obtained. In many of these mines the coal is literally gouged out. A little later these operations will be abandoned and will cave to such an extent as to make their re-opening impossible or at best a matter of excessive expense. So many of the most advantageous loading points have been occupied in this manner that future recovery of the bed may be seriously hampered and made highly expensive.

Forty-Three Mines with Railroad Tipples

The most recent available information shows thirty-seven operating mines in the Sewickley bed in Marion and Monongalia counties. This list may be augmented by the names of six other operations, not yet officially reported, making a total of forty-three mines working this bed. These figures refer only to such developments as have facilities for loading from mine cars into railroad cars. There are no figures available concerning the number of "wagon-loading," or "snow-bird," mines working in this measure.

If the figures reported by the operators are accepted these mines have an approximate capacity (not to be confused with output) of one and one-half million gross tons per year. The largest producing company has a tipple capacity of possibly 1,100 gross tons per day, while the smallest will not run over forty. In 1918 (the latest available official figures) the largest Sewickley operator in the district reported a production of about 201,000 gross tons.

Almost every condition of tipple construction and general plant equipment can be found here from the most modern to the most crude. At least one large operation is working in both the Sewickley and the Pittsburgh bed with the idea of a maximum recovery from both. The annual production of the Fairmont region from all beds of coal, will run about twelve and one-half million gross tons, according to the most recent available figures.

Referring to the accompanying table of coal production it will be noted that in 1907 only 9,538 gross tons of Sewickley coal were reported, all originating in Marion County and practically all coming from one mine. In the next year, 1908, the tonnage had increased fourfold. No further increase took place until 1914, when Marion County produced 107,209 gross tons of Sewickley coal. By 1920 this was again multiplied by four. No Sewickley coal was produced in Monongalia County prior to 1916, in which year the state reports show 19,041 gross tons. In 1920 it is estimated that this county will produce more than a half million tons of Sewickley coal, or more than the total county production from all beds in 1916.

TABLE II. COAL PRODUCTION FAIRMONT REGION, 1907 to 1920
(In Gross Tons)

	Marion County		Monongalia County		Total Production of Four Counties*
	Sewickley Coal	Total Coal	Sewickley Coal	Total Coal	
1907	9,538	3,619,764		292,596	7,671,817
1908	38,533	3,440,666		271,843	7,276,909
1909	25,379	3,733,765		235,816	7,412,903
1910	27,273	4,210,622		414,992	8,916,959
1911	20,424	4,084,822		464,319	9,157,661
1912	22,618	4,833,652		382,164	10,476,646
1913	30,221	5,271,441		426,137	11,403,510
1914	107,209	5,830,070		400,046	12,396,532
1915	119,942	5,988,879		319,947	11,788,682
1916	209,755	6,189,891	19,041	501,101	12,697,352
1917	250,483	5,125,390	48,446	751,403	11,822,386
1918	424,802	4,533,466	265,064	1,687,153	12,485,590
1919	420,000*	4,400,008	450,000*	2,158,219	12,370,359
1920	430,000*	4,500,000*	570,000*	2,700,000*	12,700,000*

Note—Fiscal year ends June 30. Area included covers Harrison, Marion, Monongalia and Taylor Counties.
*Estimated.

To summarize briefly the growth in Sewickley production: In 1913 but little more than 30,000 gross tons was mined, while it is estimated that in 1920 one million tons will be produced. On the other hand the total production of coal from the region (including that from the Sewickley bed) in 1913 was about eleven and one-half million tons, while in 1920 it is estimated at about twelve and one-half million tons.

Car Allotment Rules Cause of Big Tonnage

These figures appear somewhat deceptive in regard to the relative increase in production from the Sewickley and Pittsburgh beds. It would appear that the entire increase in output from 1913 to 1920 has come from the Sewickley bed mines. In a way this is true, but not because the Pittsburgh bed is incapable of increased production. Practically all the Sewickley mines were started between 1917 and 1920, and as each new operation was opened it received a certain car allotment from railroads.

On the other hand, practically all the Pittsburgh operations had been opened prior to 1917, and far from receiving additional car allotments their percentage of cars has been decreased. Thus it has been impos-

sible to augment the production of Pittsburgh bed coal while the Sewickley production has increased with the opening of each new mine. If railroad cars were made available to all mines to their full capacity it is not likely that the Sewickley production would increase to more than one and one-half million tons, while the output of Pittsburgh bed could easily be brought to twenty million tons and probably more. Furthermore if a condition of full car supply developed it is more than probable that the Sewickley production would decrease somewhat. Full car supply would mean a decreased price of coal, which in turn would make it impossible for the Sewickley product to compete in many markets with that from the Pittsburgh bed.

As already stated, the Sewickley operations are scattered along the West Fork and Monongahela rivers all the way from Worthington (a few miles southwest of Fairmont) northeastward to within five or six miles of the Pennsylvania state line. Developments are most numerous, however, a few miles northwest of Morgantown, in Monongalia County, between Randall, a station on the Monongahela Ry. and Cassville, on a branch railroad known as the Morgantown & Wheeling. On this branch the openings are nearly all located on the crop along Scotts Run and its branches and it is sometimes referred to as the Scotts Run district. About twenty mines are to be found in this vicinity.

The Monongahela R.R., which serves the larger part of these operations, connects with both the Pennsylvania and the New York Central at Brownsville, Pa. The other mines are located on the Baltimore & Ohio and on the two spur lines of the Western Maryland Ry., which connect with it. This railroad situation is illustrated on the accompanying map.

The Last Stand of the Open Shop

In Attempting to Complete Their Organization of the Coal Fields of Southern West Virginia and of the United States in General the United Mine Workers of America Have Precipitated a Strike—The Final Outcome Will Depend Upon Human Endurance

By Roy W. Hinds
New York, N. Y.

With the approach of cold weather and heavy mountain snows the coal strike in Mingo County, West Virginia, and Pike County, Kentucky, hinges upon the ability of the strikers and their families to maintain themselves indefinitely in their tent colonies. Just now this strike presents the most complete deadlock of any industrial struggle in the country. Neither the operators nor the strikers express even the vaguest hint of yielding, and the outcome thus becomes a question of human endurance.

The strike zone, which comprises virtually all of Mingo County and the Pond Creek field across the river in Kentucky, is a one-industry community. The strikers, if they are driven from their tents by the rigors of winter, must seek more permanent abodes, and the only homes open to them are the dwellings in the mining towns. They can occupy those by the simple process of returning to work in the mines.

I recently visited the two principal tent colonies—the Lick Creek camp, two miles up the river from Williamson, and the camp near the Borderland mines, seven miles down the river. In no case did a striker or a member of his family give a hint of wavering even in the face of approaching winter, and preparations were going forward for the building of floors in the tents and otherwise getting these improvised shelters into shape for an indefinite continuation of the strike.

Five Hundred Soldiers Patrol the Field

Near the Lick Creek strikers' colony is the camp of 500 U. S. soldiers, sent into the district at the request of Governor Cornwell after the situation got beyond the control of the local authorities. Throughout the summer clashes of armed and unarmed men followed the battle at Matewan, nine miles up the river from Williamson, between strikers and Baldwin-Felts detectives, in which ten men were killed and several others wounded. Prompt indictment of the survivors followed, but their trials have been postponed from time to time because feeling is yet too bitter for a jury trial.

In the field also are organizers of the United Mine Workers of America, and it is around these men and the soldiers that the present phase of the struggle revolves.

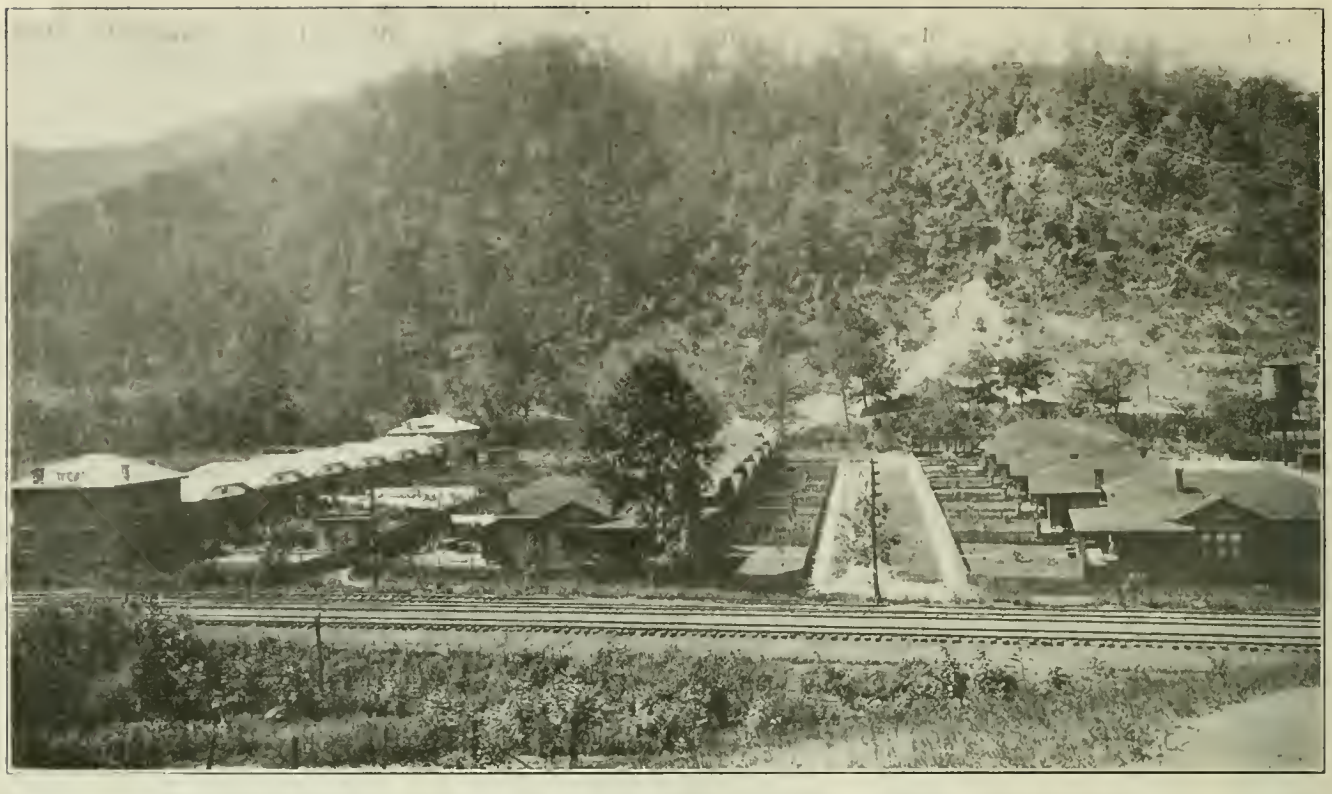
It is easy to find arguments for both sides. One hears that the tranquillity of the region was broken by the organization of local unions under the auspices of the United Mine Workers. Others say the district would have dealt effectively and without serious trouble with its own affairs if the troops had not been sent in. There is no resentment against the soldiers themselves, but there is strong indignation in some quarters against the orders which brought them there and against the moral spectacle thus presented of a community under armed guard.

Local Authorities Failed to Keep Order

The fact remains, however, that the local authorities did not preserve order. Ten men were killed in one outbreak. There were other less serious eruptions, and before the troops arrived the whole region lived in a state of fear, with murder and pillage always imminent. With the troops present the region is comparatively quiet, although it is difficult to predict at what moment the tension will reach the breaking point. No one admits that a community can continue to live under such conditions.

There are predictions that the miners will be forced to capitulate when cold weather sets in. There are other predictions that the operators will give in when they finally realize the unalterable determination of the strikers.

In a sense the situation has passed beyond the status of a mere labor difficulty. The type of miners here involved on the whole is different from that in any other coal field. They are natives of the region. The



THE GROUP OF HOUSES ARE SOME OF THE BRICK HOUSES AT BORDERLAND CAMP 1
These houses are of six rooms, equipped with electric lights and shower baths and rent for $24 a month. Some of the striking miners and their families left these houses, or were evicted, after joining the United Mine Workers and took up their abodes in tent colonies.

mining towns are steadily being repeopled through the importation of men from other districts. If this continues no jobs will be left to which the strikers can return should they ever desire to do so. They will face then the necessity of seeking work and homes in other communities. But will they depart without a struggle? Will they gradually disappear, family by family, until there are no strikers left and the strike automatically dies out, with the mines working at normal with the imported miners? Will these native families evacuate peaceably before the incoming families?

The merchants and business men of Williamson do not think so. Among these men the consensus of opinion is that open revolt is not far off. They are almost unanimous in demanding that the troops be kept in the field. Out of the first ten merchants interviewed only one wished the troops withdrawn, and this man is selling a large quantity of goods to the strikers, who, with the county and city authorities, are unremitting in demanding the removal of the soldiers. The authorities point to the presence of the troops as a reflection upon their own competency. The strikers point to them as a reflection upon their peaceable intentions.

This is the region of the old Hatfield-McCoy feud and similar interfamily strifes. It is a land in which hatred, once bred, dies hard. The mountaineer population has taken sides with or against the strikers, and the difficulty has now become a bigger proposition than any ordinary strike. It is the ranging of a community into opposing factions, and the general prediction is that if the troops are removed civil war will inevitably result, with the soldiers quickly brought back in greater force than ever.*

These predictions must be taken seriously when it is considered that the detachment of troops is fully equipped for mountain warfare. In the camp are pack mules, the safest animals for treacherous paths, with equipment for transporting machine guns and everything needed for a mountain campaign. If an outbreak should occur and it is not quickly checked no one doubts the result—guerrilla warfare.

Armed bands could roam almost at will for a considerable time among the wooded mountains, gaining sustenance and support from sympathizers. The means of warfare and the refuge of lawlessness are provided by nature herself. The mountainsides bristle with bowlders which could be sent crashing down upon mines, camps and homes. Natural forts, almost impregnable, abound along the slopes. Rifle pits and nests are perched among the crags.

No Complaint About Wages, Hours or Homes

Thus the industrial situation in this region is one of the most critical in the country. It is the outcome of an attempt by the United Mine Workers of America to unionize one of the last remaining open-shop mining districts in the country.

This field in its twenty years of coal production has achieved a remarkable position. It enjoyed twenty years of peace. Strikes were unknown. The operators, for the most part natives of the region, dealt directly with their employees, themselves natives. The field, which produced $15,000,000 worth of coal during the year preceding the strike, seemed to be isolated from the nation's general coal industry and immune from the industrial troubles that disturbed other regions. Throughout the war the unorganized parts of the West Virginia field produced their high-grade byproduct and domestic coal while the Central Competitive Field, central Pennsylvania, unionized West Virginia and the Western fields

*On Nov. 5 the battalion of Federal soldiers was removed and twenty-five troopers of the West Virginia constabulary arrived. As a result of the reduction in force at least three structures had, up to Nov. 11 been dynamited

were being paid in wages an average of $275 a month.

At the outset of the strike in May, 1920, the miners were being paid in wages an average of $275 a month. The books of the companies establish this fact, and the strikers themselves admit it. They were living in comfortable homes renting at unusually moderate figures. Working conditions on the whole were satisfactory. The strikers, even after months of bitter dispute and controversy, have no complaint to make upon the question of wages, hours, working or living conditions. Most of them even yet are friendly with the operators and, meeting in the streets or along the roads between camps, hold friendly conversation with them. Employer and employee in this field seem to be closer together than is ordinarily the case.

In the past any "grievances" that arose upon either side were taken up directly with the mine owners and settled satisfactorily. The operators met the workmen themselves and adjusted disputes, agreed upon wage increases or adopted measures to better working conditions. And for twenty years this method kept the peace, assured a normal production of coal and normal earnings in wages.

Then the emissaries of the United Mine Workers of America appeared upon the scene. There is a dispute as to when these men first came into the field. The organizers themselves say they came only after the miners had organized local unions and asked to be taken under the wing of the national body. The operators contend that agitators had been working secretly in the region before a single local was organized. Strike leaders cite as the issue the right of American workmen to organize under whatever affiliation they choose. The strikers give this, and this only, as the reason for remaining on strike—the right to organize as they think best for their own industrial welfare.

The operators admit the right of the men to organize. They themselves have their associations and are perfectly willing that the miners should have theirs. If they wish to organize a field union, or even a state union, the operators will not object. But there is one reservation upon which they insist—they will have no dealings whatever with the United Mine Workers of America.

This is an organization, they say, that habitually treats contracts as mere scraps of paper. They cite instance after instance to prove their assertion. They hold it to be an agency of agitation and one that undoubtedly will involve their field in far-away labor troubles. They cannot trust the United Mine Workers of America, and stand upon the proposition that they will not do business with a man or a set of men in whom they have no confidence.

The miners have the right to join the United Mine Workers of America. The operators have the right to refuse to employ a member of that organization. Each stands upon his self-evident prerogative. It appears then that a miner who thinks more of his membership in the United Mine Workers than he does of his job

POWERHOUSE AT BORDERLAND PLANT 1 AT BORDERLAND, W. VA.

The bridge which spans the Tug River at this point connects the company's properties in West Virginia and Kentucky. This is one of the mines chiefly affected by the strike, and previous to being placed under guard of U. S. troops was the object of attacks from the surrounding hills. The store and house in the foreground have both been fired upon, as well as the powerhouse. The postoffice is in the store and armed soldiers are constantly on guard there and at other points in the camp. The company operates another mine six miles down the river. The house just across the railroad is that of L. E. Armontrout, the manager of the mines, who from the porch returned the shots of strikers ambushed in the hills facing the store.

in that particular field should seek work where his policy and the policy of the operators are not so hopelessly at variance.

With a record of twenty years of peace during which wages were kept at a high point and working and living conditions were steadily improved, the operators undoubtedly hold the preponderance of public sympathy. The trouble did not come because the workman was oppressed. The square deal was the rule, and both factions recognized it as the square deal. The operators committed no offense against their employees, and yet they were afflicted with a disastrous strike.

A survey of the field shows that the miners lived under unusually good conditions. At one mining town—Borderland, six miles down the river from Williamson—the miners were provided with homes that would be envied by the average workman in other industries. The company paid an average of $300 a month in wages. The frame houses at the village, warm and comfortable and in good shape, rent at $2 per room per month. At this town twoscore brick houses, of cottage and bungalow architecture, have been erected. These are set in spacious lawns and are equipped with electric lights, shower baths and hot and cold water. They contain five and six rooms each and rent for $20 and $24 per month respectively. More of these brick houses are under construction. Yet several hundred miners went on strike at this "camp."

When the operators realized the fact that the United Mine Workers had set out to organize the field some of them adopted methods that could not fail to bring criticism. A miner who joined that union was summarily discharged. He and his family were evicted from the company houses on a half hour's notice, with no time to arrange for completing payment on furniture bought on the installment plan. In some cases these families were evicted by Baldwin-Felts detectives. Such harsh methods undoubtedly served to crystallize a sentiment for organization that previously was not particularly strong. They antagonized miners who had not joined the union but who nevertheless entertained a class sympathy which drove them to protest. These methods are chiefly responsible for 1,500 miners being on strike today out of a normal working force of 5,000. After an investigation of both sides I was forced to the conclusion that the policy of summary eviction is the only reason on which to base any serious criticism of the operators.

Destitution in the Tents of the Strikers

Perhaps nothing in the district is more striking than the contrast between the homes just mentioned and the tent colony of the strikers at Lick Creek. Living conditions in that camp are of the most primitive type. The sixty-two tents are fitted with furniture of crude home construction. Food in many cases is cooked upon stoves built of rocks and mud.

The children at this camp are poorly clad and the men and women are shabby. All are scantily fed on the coarsest of fare. The younger children cry almost incessantly, while the women, hungry themselves, do their best to quiet them by devices that call for no expenditure of money for food. The men while away the time in listless games of cards, with pebbles for stakes, and in scrutinizing the surrounding hills for spies and assailants, who they say are always on the watch.

The strike allowance given these people by the United Mine Workers of America amounts to $5 a week for the head of the family, $2 for the wife and $1 for each child.

High up on the bluffs across the river are the W. S. Leckie collieries, working below normal capacity because of labor shortage. Around the mines warm, comfortable dwellings stand empty. In the company stores are attractive stocks of foodstuffs and clothing at moderate prices. In the clubhouse of the Leckie camp are a dance hall, a motion-picture theater, a billiard room and a bowling alley.

Awaiting each child who was taken out of the camp into the tent colony is a seat in a modern school. The camp is provided with a physician and a woman welfare worker—Miss Edith Bennett—who saw service in the Red Cross in France. Miss Bennett pays particular attention to the children and to the instruction of mothers. Her services are given free to the inhabitants of the village. Each family pays 25c. a month for the services of the doctor.

The houses rent for an average of $16 a month. Awaiting the strikers are jobs which, according to the company's records and the admissions of the men, would pay each miner an average of $300 a month. And yet the miners refuse to cross the river from the tents, in which they are suffering hunger and all the discomforts of such a life, to return to work.

A constant procession of organizers or agitators goes from camp to camp and from tent to tent, setting forth at great length and with much ardor the advantages to come if the strikers hold out. And the strikers, at this writing, apparently intend to hold out. There are no signs of wavering, even though they see their jobs gradually being taken by newcomers. The operators intend to hold out also, as far as recognition of the United Mine Workers is concerned. Meanwhile, with a perfect deadlock existing, coupled with the presence of U. S. troops, the community feels that but little is needed to touch off the fire of a genuine revolt.

Industries Slump in Anthracite Region

IN SHARP contrast with conditions in the mines themselves, where there is steady work offered at wages which have been recently increased substantially, industries other than mining in the anthracite region are showing marked signs of a slump, coupled with broken working time and a possibility of sharp recessions in both price and wages. The "equalization" demands as formulated by the anthracite miners, by asking additional wage increases, are thus an effort to force up wages—and consequently prices—in what is a falling market, taking industry as a whole.

The Eagle Silk Mills at Shamokin, which form the main manufacturing plant of one of the largest silk concerns in the country, closed at noon Oct. 30 for an indefinite period. Three thousands workers, with a weekly payroll said to be about $50,000, are idle. Mills at Trevorton and Kulpmont, as well as plants outside the anthracite region, are affected. Officials of the Eagle corporation say that the public will not pay the prices asked for goods.

On Monday, Nov. 1, the Taubel Knitting Mills, of Shamokin, part of a chain owned by the largest manufacturer of hosiery in the world, suspended for lack of orders, throwing 500 hands idle and making the prospect dubious for 300 additional hands left at work in departments other than the main mill. Neither the Eagle nor Taubel executives had any idea when they could resume.

These conditions are, of course, not peculiar to the anthracite region. In general the buying public is objecting to prices and is not purchasing save under necessity. The Guaranty Trust Company, of New York, says that there is an endurance contest between the retailer and the consumer, with conditions favoring the consumer.

West Virginia Mine Electricians and Mechanics Discuss Their Everyday Problems

Rapid Growth of Electrical Mining Machinery—What to Outline in Ordering a Pump—Common Error in Arc Welding—New Type of Industrial Lamp—Proper Care for Transformers

AN ATTRACTIVE and highly instructive program was prepared for the second annual meeting of the Electricians and Mechanics Institute, which was held at Charleston, W. Va., on Oct. 28, 29 and 30, under the auspices of the Charleston Electrical Supply Co. and in connection with a display of mine electrical equipment by many of the leading electrical manufacturers of the country. Few institutes and engineering societies have been conceived and created for the sole purpose of diffusing knowledge among such practical mining men as have never had an opportunity to acquire a technical education. The Electricians and Mechanics Institute is one of these. Mine executives of other states might do well to follow the footsteps of West Virginia in the organization of similar institutions. The greater problems bearing on more economical and efficient production lie in safe hands today; but not so the thousand and one little puzzles that the mine electrician and mechanic must face daily. To aid him in the efficient performance of his tasks he is usually forced to draw on the fund of his experience, which may be backed with only the meagerest of book learning. Mine electricians are anxiously seeking information as was well evidenced by the attendance and the close attention of all who were present.

Second annual convention of mine electricians and mechanics is held in armory at Charleston on Oct. 28, 29 and 30, in connection with electrical equipment display by leading manufacturers of the country.

Once a year West Virginia's mine electricians and mechanics turn aside from the repairing of burned-out armatures, locating defective rail bonds, connecting pipe lengths and what not to meet in council and discuss their problems. The discussions that arise at these meetings are perhaps more informal than are heard at most institute sessions, and the papers that are presented are not embellished with resounding technical terms, for no austere technical atmosphere surrounds the members. The delegates from the different coal companies of the state pay strict attention to the daily proceedings, for theirs is an opportunity that will serve in the future as a stepping stone to better and more lucrative positions.

Half Day Devoted to Mining Exposition

Edward D. Knight, electrical engineer with the Cabin Creek Consolidated Coal Co., of Kayford, acted in the capacity of chairman at the meetings this year. The opening session, on Thursday morning, Oct. 28, was devoted exclusively to the general inspection and demonstration of all the electrical machinery and equipment that had been assembled for display in the booths that circled the main floor of the armory.

After lunch the delegates seated themselves in front of the armory stage in the central portion of the building. E. W. Seeger, of the Cutler-Hammer Co., read the first paper of the meetings, which was entitled "Everyday Electrical Control Apparatus for Everyday Mining Conditions." Following Mr. Seeger, E. D. Knight gave a talk on the ideal co-operation between mine foremen and mine electricians. Neither Mr. Seeger's paper nor Mr. Knight's talk aroused a great deal of discussion. The final paper of the morning, "Electricity and Its Applications in Coal Mining," was then read by D. E. Sullivan, of the State Department of Mines. Mr. Sullivan's article showed that much care had been expended in its preparation. It dealt in the main with the history and progress of mine electrification.

Sixty-four Per Cent of Coal Machine-Mined

The progress in the adoption of mining machines that has been made in West Virginia is interesting. "In 1896 and 1897," Mr. Sullivan stated, "the first electric mining machines were introduced in the mines of the state. In 1897 sixteen of the mines of West Virginia were using in the aggregate fifty-five machines. This brought about a new era in coal mining; the new machines undercutting about as much coal as ten men. Especially was this true in the harder seams. In 1897 only 5 per cent of the coal mined was cut by machine, and as the new method was an experiment, its progress was slow for several years.

"It was not until 1902-1903 that the electric machine came into popular favor in the mines of the state. The demand from that time has steadily increased until in 1918 there were 3,188 machines in 883 coal-mining operations. Over 64 per cent of all of the coal produced in the state that year was cut by machine. In the period 1896 to 1918 the production of coal by electric mining machines increased from 600,418 tons to 51,816,144 tons."

In the evening a moving picture was presented entitled "Welfare and Health." The picture was shown by C. R. Lingo, of the Ilg Ventilating Co., of Cincinnati.

The busiest session of the entire three from the standpoint of number of papers presented came the following day. In the morning meeting E. V. King, of the West Virginia Inspection Bureau, read a paper on an extremely timely subject, entitled, "Common Fire Hazards in Electrical Installations with Suggestions for Their Elimination." "Sub-station Installations for Coal Mines" was the subject of the next paper, which was read by the author, A. M. Rosenblatt, of the Engineering Service Co., of Charleston. Following Mr. Rosenblatt, J. J. Moore, of the Thomas Elevator Co., of Chicago, gave a talk on electric hoists in coal-mining service. Mr. Moore's talk, possessing high practical

worth, was perhaps more keenly enjoyed than any other given during the entire course of the meetings.

How to Specify What Kind of Pump Is Needed

In the afternoon John W. Hallock, professor and head of the department of industrial engineering at the University of Pittsburgh, discussed "The Type of Pump to Specify." Professor Hallock proved well qualified to speak on his subject, which, incidentally, is one that should concern more deeply the technically trained executive at the mine. Yet, the choice usually is left to the mechanic.

"There are two main variables that must be considered in the selection of a pump," said Professor Hallock. "The capacity of the pump is one of these variables and usually is specified in so many gallons per minute. Thus for gathering purposes we have pumps of capacities of 30, 50, 75, 100 and even 200 gallons per minute. How fast the pump shall run to produce this capacity usually is left to the discretion of the manufacturer. He designs his pump so that piston and gear speeds, bearing pressures and water velocities may be within the limits that past practice has shown to be most suitable.

Indeterminate Pump Specifications

"Never ask for a price on a 3-in. pump, as the expression is meaningless. It might mean a piston pump having a 3-in. discharge or one having a piston of 3-in. diameter, or it might mean a centrifugal pump having 3-in. connections. Obviously, the expression gives no idea as to the required capacity.

"The second of the great variables is the total head against which the pump is to operate. Too great care cannot be exercised in specifying this figure. First, the total head consists of three kinds of heads or back pressures on the pump: The static head, the friction head and the velocity head.

"The static head is the difference in elevation between the water in the suction pit and the highest point of discharge. It has no relation whatsoever to the length of the discharge line or size of line. This, of course, includes suction head as well as discharge head. And right here let it be said that, all things being equal, the suction head should be kept as low as possible. Keep it down to 8 or 10 feet if possible, and use a foot valve in every case unless it is absolutely impossible to do so.

Friction Head Increased If Pipe Is Rusty

"The second item in the total is the friction head. This head is exactly what its name signifies. It is the additional head imposed on the pump by reason of the friction of the water against the walls of the pipe. Contrary to popular belief, the friction is greater in a small pipe than in a large one discharging the same amount of water. Likewise in the same size of pipe, the larger the quantity of water, the greater the friction. Friction head usually is expressed as so many feet per hundred feet of discharge pipe. This friction value is determined by actual experiment, from which long and accurate tables have been compiled which are embodied in most trade catalogues.

"These tables are always based on the use of new clean pipe. If the pipe is old and, therefore, somewhat corroded inside, the friction will, of course, be greater. Provision usually is made for the added friction head due to the use of old pipe by increasing the figures in the tables several per cent. For instance, in pipe that has a rough interior the friction valves may be 50 per cent greater than shown. Elbows and fittings also increase the friction head.

"The velocity head is the last item to be considered in determining the work which the pump must perform. It is the head or back pressure imposed on the pump in starting a column of water from a state of rest and accelerating it to full velocity. It is similar to the big inrush of power on a motor that is just starting up. This head usually is not accurately calculated for each specific case, but due allowance is made in design and specification to take care of this portion of the total head."

Short Arc Will Alone Fuse the Metal

Following Professor Hallock, W. P. Bovard, of the Ohio Brass Co., read a paper on "Arc-Weld Rail Bonding" that was descriptive of several jobs encountered around the mines. "In general bonding practice," said Mr. Bovard, "the most difficult thing for the novice to learn is to maintain a short, steady arc. An arc over $\frac{1}{8}$ in. in length will not bring to the fusion point the surface upon which the deposit is flowing, and in consequence cold laps and seams result. The surrounding area is covered with slag and globules of metal and the deposited metal usually is burned or badly oxidized, due to the increased heat and long path of the arc. With the electrode held in the proper position a good crater is formed and the metal is deposited satisfactorily. With the long arc no penetration is possible, and the deposited metal falls down outside the heated area. With the long arc excessive overlapping and absolute lack of fusion are the usual result."

Importance of Accurate Electricity Meters

"Overhead Line Material" was the subject of a paper by C. C. Beck, also of the Ohio Brass Co., which was read at the conclusion of Mr. Bovard's paper. In the absence of the author, Edwin Wortham, consulting engineer of Richmond, Va., Professor Hallock read a paper entitled "Need for Switchboard and Test Instruments," saying: "A measuring instrument means a meter, no matter of what kind, which can be sworn to on the witness stand as being accurate within at least one per cent. A voltmeter, registering from 0 to 100 volts, should record the voltage with an error not to exceed one volt. If the instrument is not as delicate as this, it should be discarded and a new one sought in its place.

"In the United States today generators producing 12,700,000 kw. have been installed. It is highly conservative to say that these 12,700,000 kw. pull a full seven hours out of the twenty-four hours of each day for at least twenty-four days in the month throughout the year. Roughly this figures about 26 millions of kilowatt-hours. If one meter out of every three in the country is inaccurate by 2 per cent, 174 million kilowatt-hours are either lost and uncharged on the one hand or overcharged on the other. This stray current, as it might be called, costs about 2c. on the average per kilowatt-hour and represents $3,480,000 annually which may not be punching the time clock at all, or may be punching it unintentionally." Mr. Wortham illustrated his point rather severely, as the law of averages will tend to produce a balance, and it is apparent that no such loss of power is taking place.

On Thursday evening R. R. Dunlap, of the Jeffrey Manufacturing Co., discussed the relation between horsepower of mining-machine motors and voltage at the

face. Following his talk a moving picture—"Cutting and Loading"—which had been filmed by the Jeffrey people was presented and proved of more than ordinary interest.

The final session, on Saturday morning, brought forth but one paper, that being entitled "Notes on Electric Lighting of Coal Mines and Equipment." It was read by the author, Perry E. Hurd, of the Westinghouse Lamp Co. According to Mr. Hurd, a new lamp is about to be placed on the market which will prove to be more adaptable to underground service than any now in use, including the "mill" type, the filament of which is reinforced against sudden jars and shocks. The new lamp is of different construction from others, the filament being wound around a central spool instead of suspended from the glass shaft as is now the regular practice. Further, the shaft is suspended by springs from the base so that any sudden shock to the globe will be partly absorbed by the shaft instead of being directly transmitted to the filament.

An informal talk by L. H. Alline, of the Packard Electric Co., closed the final session and was well received by the institute members. Mr. Alline stressed the importance of not abusing transformers. In his opinion no single piece of equipment at the mines gives greater service or receives greater abuse, yet it demands a minimum amount of superintendence. The simplest kind of attention would often suffice to keep these electrical units in good repair the year around.

It is good practice to remove the sludge deposited in the base at least once yearly, when perhaps the oil should be renewed. If it is not advisable to replace all the oil so often as once a year, at least the lowest stratum should be replaced. Perhaps the better practice is to take a sample of the oil at regular intervals and submit it to the manufacturer, who is equipped to test it and report whether it should be renewed.

Too Much Use Made of Overload Rating

One member inquired why no overload rating was now being placed on transformers. Mr. Alline replied that the practice at the mines had formerly been to take the utmost advantage of the overload capacity, a practice which made the transformer short-lived. Now, the proper transformer was specified in the beginning and the overload capacity utilized only in emergency, this despite the fact that perhaps every machine was built to withstand an overload of 25 per cent. Mr. Alline then showed by diagrams the manner in which the two remaining transformers should be connected in open delta whenever one transformer out of the original bank has to be shipped to the factory for repairs.

At the conclusion of the program a rising vote of thanks was extended to the Charleston Electrical Supply Co. for the excellent manner in which the officials of that company had arranged the program and for the time that they had expended on the arrangements. The institute does not have a paid-up membership and is called together yearly by the Charleston company.

THE FEDERAL TRADE COMMISSION has already collected considerable information on the amount of investment necessary for operation of coal mines, but not until adequate investment figures are assembled for each district will it be possible to show the average net profit by districts in terms of the rate of return on the investment, which is the only accurate measure of profit. No satisfactory judgment of the rate of return on investment can be formed from any examination of the margins per ton.

United States Helping to Rebuild Railways Of the World

THE railroads of the world are now turning to the United States for material with which to renew and enlarge their working plants. Our exports of railway material in the fiscal year 1920 aggregated over $150,000,000 in value as against $80,000,000 in 1918 and $25,000,000 in the year before the war.

Necessarily, says a statement by The National City Bank of New York, the world's railways "marked time" to a very considerable degree during the war, especially in new construction. In Europe the construction of new roads was, of course, limited by war demands and in many cases the destruction far exceeded the construction. In other parts of the world which had relied chiefly upon Europe for financing new construction and supplying materials therefor the industry of railroad building came also to practically a standstill, and the world's railway mileage emerged from the war period showing but a small gain over that at its beginning.

Exports of Railway Materials Jump

It is not surprising then, to find that our exports of materials for railways in 1920 are six times as much in value as in the year preceding the war. Indeed the grand total of material exported for railways might exceed $200,000,000 if complete figures could be obtained. In certain lines such as steel rails, other track materials, locomotives, and cars, both freight and passenger, exact figures are available, but it is not practicable to determine what proportion of the $25,000,000 worth of structural steel or the $50,000,000 worth of metal working machinery exported in 1920 was for the railways. In locomotives alone the total exports in the fiscal year 1920 amounted to $43,000,000 against $25,000,000 in 1919 and less than $4,000,000 in the fiscal year 1914, all of which preceded the war. Of steel rails the total for 1920 was $32,000,000 against $10,000,000 in 1914, and of other track materials, including frogs, switches, spikes and ties, exported in 1920 $21,000,000 against approximately $5,000,000 in 1914. Railway cars for freight purposes show very large totals in the exports of 1920, $54,000,000 against $13,000,000 in 1918 and $5,000,000 in 1914.

This demand for new material for construction or equipment of world railways is especially interesting as evidence of the world's growing confidence in the quality of American manufactures. The calls for this high grade product come from every direction. Of the $53,000,000 worth of freight cars for steam railways exported in 1920 $31,000,000 worth went to France, $11,000,000 to Italy, and $5,000,000 to Cuba. Of the $32,000,000 worth of steel rails exported in 1920, the distribution was much wider; $12,000,000 worth to Japan, $5,000,000 to Cuba, $1,000,000 to China, including the leased territory of Kwang-tung; $1,700,000 worth to Brazil, $1,300,000 to France, $2,000,000 to British South Africa, $1,300,000 worth to the Philippines, $1,500,000 worth to the Dutch East Indies, and $750,000 to Peru. Of the $43,000,000 worth of locomotives exported in 1920 over $6,000,000 worth went to Italy, $2,000,000 worth to France, $4,000,000 to Cuba, $2,500,000 to Brazil, $4,000,000 to China, including Kwang-tung; nearly a million dollars worth to Russia and Europe, and one-half million dollars worth to Russia in Asia, while our nearby neighbors, Canada and Mexico, took about one-half million dollars worth each.

How Managers Could Decrease Frequency of Gas Explosions in Anthracite Mines*

One Casualty a Day in Anthracite Mines from Gas Explosions—Gives Instances of Methods Being Adopted That Made Dangerous Mines Unusually Safe—Ventilation Makes a Gassy Place Temporarily Secure, but Such Places Are Still Potentially Highly Dangerous and Must Be So Treated

By Joseph J. Walsh†
Wilkes-Barre, Pa.

NO casualties in coal mines are less excusable than those caused by gas explosions. With the many means available for the adequate ventilation of mines, with the many safety devices introduced to detect explosive gases and to prevent their ignition, there is but one explanation that can be made for the frequency with which such accidents occur in certain parts of the anthracite region. In that region during the last forty-seven years gas explosions have caused, on an average, a casulty a day. The safety of human life should be guarded by means that are calculated with so high a safety factor as to make accidents seem impossible. Especially high should that factor be when unfavorable conditions exist that cannot always be foreseen. The factor of safety of the hoisting rope can be expressed in numbers but the safeguard thrown around the possibility of a gas explosion cannot be made the subject of mathematical calculation, and for this reason more caution is needed.

J. J. WALSH

The author of this article has made a study of ventilation and in his work as mine inspector in the district around Nanticoke has seen good and bad examples of ventilation. He proves the value of the good from the sad experiences resulting from the bad. He has published a useful book on "Mining and Mine Ventilation."

General assertions that the miner's safety is in his own hands and that if he will not exercise caution nothing can be done for him are neither true nor do they help to meet the situation. It is true the miner does have statutory duties to perform. True also is it that he sometimes fails to perform those duties, but nevertheless many explosions occur from conditions that are beyond his control.

We are told that the miner who knows only a foreign tongue is unskilled and untrained in mining affairs, and that as a result he endangers his own life and that of others. It is said that he must be educated before any degree of safety can be assured. This statement is somewhat in conflict with actual fact, but education is, nevertheless, an essential element in any plan for the prevention of accidents. However, the educational campaign should be extended so as to include the inspector, the mine manager and all other mine officials. A man may be highly efficient in all the technical branches of mining and at the same time be unable to recognize danger when he meets it.

Great things have been achieved as a result of the educational movement among miners. Many have left the ranks and are now filling official positions. Regardless of this there will always be found in every coal mine the farmer from European countries who is unfamiliar with our customs and who, because he is unskilled and uneducated in safety, will imperil not only his own life but the lives of others, and surely we must not allow the safety of the mine to be imperilled by any man.

A chain is no stronger than its weakest link, and likewise a mine can be no safer than the most careless or the most unskilled man in it, unless drastic precautions are taken to make the mine so safe that the lack of care and skill of a workman cannot jeopardize it. Regardless of educational efforts, unskilled workmen will be found in every mine, and success in reducing the number of accidents from gas explosions will be no greater in the future than in the past unless the mine manager and the representatives of the state see that the mines are made inherently safe. In a certain part of Pennsylvania is a group of mines from which 457 tons of methane, or about 4,323 tons of firedamp, is expelled each day. During four years these mines produced more than 1,600,000 tons of coal for each gas-explosion casualty. A second group of mines which lies adjacent to those just mentioned has similar conditions. From this group 390 tons of methane, or about 3,689 tons of firedamp, is expelled daily, and the production per accident from explosion of gas is barely over 300,000 tons. Still a third group, comparable in every respect and generating about the same volume of gas, produces slightly less than 500,000 tons of coal per gas-explosion accident.

The industrial efficiency which made it possible in the first group to obtain so large a tonnage for each accident can be attributed to the fact that proper safeguards were placed around the workmen. For instance, safety lamps are used to the exclusion of all others in a section of the mine through which 22,000 cu.ft. of air is passing

*Abstract of paper entitled "Rules for Prevention of Gas Explosions in Anthracite Mines," presented before the Mining Section of the National Safety Council, Milwaukee, Wis., Sept. 30, 1920.

†District state mine inspector.

each minute and in which the methane content is 0.26 per cent. Also in another section in which the methane percentage is 0.25 per cent and the volume of air is 16,000 cu.ft. open lights are forbidden. In another mine similar favorable conditions obtain. Here, though a volume of 25,000 cu.ft. of air passes each minute and the methane percentage is only 0.14, the sole means of illumination is the safety lamp.

On the other hand, in the second group of mines open lights were used in an atmosphere containing as much as 1.12 per cent methane, the volume of air flowing being 28,000 cu.ft. per min. In the third group trolley locomotives were hauling trips in roadways where the gas percentage was in one case 1.02 per cent, and in another 2.30 per cent, the air volume being 12,000 and 34,000 cu.ft. respectively. Many similar instances of neglect might be cited.

Four Causes for the Accumulation of Gas

The chief causes for accumulations of gas in a coal mine are: (1) Insufficient volume of air provided by a ventilation fan which may be either too small or improperly located. (2) Loss of air through leakage, only part of it reaching the working faces. Conditions of this kind may be found in mines where the stoppings between the intake and return airways are poorly constructed. Where a mine is developed on the single-entry system adequate ventilation is hard to obtain. (3) Short circuiting of the ventilating current, due to a neglected door, the breaking of a brattice or the driving of openings too far in advance of the air. (4) Frequent interruptions of the air current on account of electrically-driven fans failing to function. This cause for accumulations of gas in coal mines is becoming quite serious.

Ignition of gas takes place in a coal mine most frequently as a result of the employment of open lights, the use of a long-flame powder or the utilization of electricity. Smoking, defective safety lamps and the careless striking of matches also are contributing causes of gas ignition.

Follow These Rules to Avoid Explosions

It is not my purpose to enumerate the many rules that have been published from time to time as precautions to be observed by the 130,000 miners of the anthracite field of Pennsylvania, but rather to suggest to the 128 mine managers a means by which they can eliminate to a large extent the possibility of an explosion, in case the commonly applied rules are overlooked by some member of the larger group.

(1) When about to install a fan, its size and location should be determined with the aid of a ventilating expert. Remember that as time goes on airways will become congested as a result of roof falls. The falls will not be cleaned up, as it is sometimes not practicable to do so. Because of this the ventilation will be impaired. To provide against this contingency the power of the ventilating equipment should be at least three times as great as that calculated from the volume of air required and the ventilating pressure assumed.

(2) Build all stoppings between intake and return airways of stone, brick or concrete; this can be done regardless of the pitch of the bed.

(3) As far as possible avoid the use of doors on the main roadways.

(4) At the more gaseous mines use steam-driven fans for ventilating purposes; they are more reliable than those which are electrically driven. It was found by an examination of the records of eight steam-driven fans that they stopped without warning on an average once in sixteen years. Under like conditions it was found from a similar examination of eight electrically driven fans that without warning they failed to function once every four months. Accidents have occurred as a result of the stopping of fans.

(5) At moderately gaseous mines, if an electrically-driven far be operated its motor should be on an independent circuit. By the term "moderately gaseous" is meant a mine or section of a mine in which is found a gas condition such as described in Table I.

(6) The air in each section of the mine should be analyzed monthly, but it must be remembered that danger lies not so much in the percentage of gas in the current as in the volume of gas generated each minute.

(7) With few exceptions, safety lamps should be used in mines having conditions such as are shown in Table I, because open lights are known to have ignited accumulations of gas in these mines, causing either fatal or non-fatal accidents.

TABLE 1 CONDITIONS AT MINES WHERE GAS EXPLOSIONS OCCURRED FROM OPEN LIGHTS

No.	Quantity of Air per Minute	Per Cent of Methane	Cubic Feet of Methane Generated per Minute
1	10,000	0 29	29
2	15,000	0 44	66
3	8,000	0 52	41 6
4	12,500	0 18	22 5
5	8,000	0 32	25 6
6	20,000	0 24	48
7	11,000	0 26	28 6
8	16,000	0 15	24
9	8,000	0 23	18 4

(8) A mine in which the direction of the air current is controlled by doors is, under like gas conditions, more dangerous than one ventilated without them. This should be considered in the application of safeguards.

(9) Permissible explosives should be used in all mines where danger of gas explosions exists.

(10) Any section of a mine in which 125 cu.ft. or more of methane is generated each minute should be classed among the more dangerous mines. By the term "section" is meant that part of a mine defined by the anthracite mine laws as being ventilated by a single current of air. The law allows seventy-five persons to work in such a section, which would, if just large enough to provide working places for that number of men, comprise an area of ten to twelve acres.

(11) In gaseous mines electricity should be used only in the intake airways.

(12) To give a miner a safety lamp for testing purposes and at the same time permit him to work with an open light is a dangerous practice. At any time while he is about his duties a door may be left open, and gas may accumulate. It would be unreasonable to expect the most careful workman to avoid accident in cases of this kind.

Unfortunately, it cannot be said that explosions are things of the past; they continue to occur in spite of all the skill and care exercised by mine officials and miners. It usually is the unexpected that happens; therefore it will be found to be prudent to surround workmen with every known safety device and place in their hands such means as will still insure their protection if a dangerous condition should arise.

Discussion by Readers

Edited by
James T. Beard

Peculiar Advantages in Adopting the Longwall System

Reference is here made to the peculiar advantages of the longwall system of mining, in contrast to the room-and-pillar system; and exception is taken to the statement that a soft floor is a disadvantage to the success of longwall work.

DISCUSSING the question of the best method to apply in working out the coal from a thin seam having a thickness varying from 32 to 35 in., V. Frodsham recommends the use of a combined pillar-and-stall and panel system of mining. In his letter, *Coal Age*, Oct. 14, p. 809, Mr. Frodsham makes the statement that "a soft floor is a great disadvantage to the success of the work." It is this statement particularly that has attracted my attenion and seems to call for a few comments.

I will not attempt to answer the inquiry of L. E. R., to which reference is made in this letter, further than to say that the thinness of the seam in question makes it quite apparent that the roof must be ripped or brushed or the bottom lifted, in order to secure the necessary headroom on the roads. There will naturally be some difference of opinion as to whether the roof or floor should be cut, but this must be determined by a more familiar knowledge of the conditions.

It can only be a lack of experience in longwall mining that would lead one to suggest the working of this seam by any room-and-pillar system. In my opinion, it would not be possible to obtain more than 25 or 30 per cent of the coal in the first working, should that system be adopted, and that would mean the opening up of a large territory before any reasonable output of coal could be secured. Moreover, the cost of brushing roof or lifting bottom, laying tracks and timbering haulage roads would be excessive.

Draining a Soft Bottom Avoids Trouble

Referring to the statement mentioned regarding the alleged disadvantage of a soft bottom in longwall work, I venture to say that if the work is properly conducted a soft bottom will give far less trouble in longwall than in room-and-pillar work. No one will deny that in the use of the latter system, the pillars would be forced into a soft bottom causing the roadway to heave and greatly increasing the cost of maintaining the roads.

In contrast with these troublesome conditions, consider that under ordinary conditions such a seam as this can be worked with continuous conveyor faces, say one hundred yards in length. In my experience when dealing with conditions such as these, the lifting of bottom to attain the required headroom on the roads had the effect of draining the underlying strata, which entirely did away with the trouble.

One can fully understand how there would be much difficulty encountered by adopting a room-and-pillar system under these conditions. It is not hard to believe that the heaving of the soft bottom would practically block the haulage roads and airways in the system he describes. But the difficulty is practically eliminated by adopting the longwall method and lifting the bottom so as to drain the underlying stratum.

Where it is possible to establish a continuous longwall face there are many advantages peculiar to that system. The more important of these are the following: Total extraction of the coal in the first working; concentration of the working force; minimum length of haul from the working face to the shaft bottom; cost for maintaining tracks and timbering roads reduced to a minimum; little or no explosives required; a larger percentage of lump coal obtained; better ventilating conditions where the air travels directly along the working face and requires little or no bratticing. The miners also are generally more efficient by reason of working in good air.

Where good substantial roadpacks are built on each side of the track, practically all the timber that will be required is what is necessary to keep two or three rows of posts at the face and build a few cribs at the corners of the roadways.

MINING ENGINEER.

McKeesport, Pa.

Attention to Details in Longwall Work Insures Success

The careful consideration of many important details in the prosecution of longwall work is shown to be essential to success. An instance is given where the undertaking failed through an insufficiency of packwalls, as the result of sending refuse to the surface instead of using it for building the packs.

I HAVE been greatly interested in the discussion regarding the best method to employ in the working of thin coal, the particular seam in question being 35 in. in thickness, as given in the inquiry of L. E. R., *Coal Age*, Aug. 19, p. 403.

Although the inquirer has failed to give sufficient data regarding the nature of the coal and the surrounding strata, thickness of cover and inclination of the seam, it can be stated without hesitation that the adoption of the room-and-pillar system of working advocated by one writer is undoubtedly out of the question. Deciding on the general plan of working a coal seam, is a matter of considerable importance in the later operation of the mine.

The room-and-pillar system applied to this thin seam would not only reduce the output per man, but the cost per ton of coal produced would be excessive in the first working. Moreover, a large loss of coal would result from the incomplete extraction in the second working or when drawing back the pillars. This is a common occurrence in room-and-pillar working, but is practically eliminated in the longwall method of mining.

Assuming a depth of cover not less than 150 ft. and a fairly level seam, it cannot be denied that the use of the longwall system, in this case, will give more round coal, better ventilation, and afford a closer supervision of the workmen, thereby increasing the output of coal per man, and reducing the cost per ton to a minimum. In most cases, the use of explosives is entirely eliminated in longwall work.

With this preface, I want to submit the plan shown in Fig. 1, which represents a section of a longwall mine. It will be observed that slant roads are driven off from

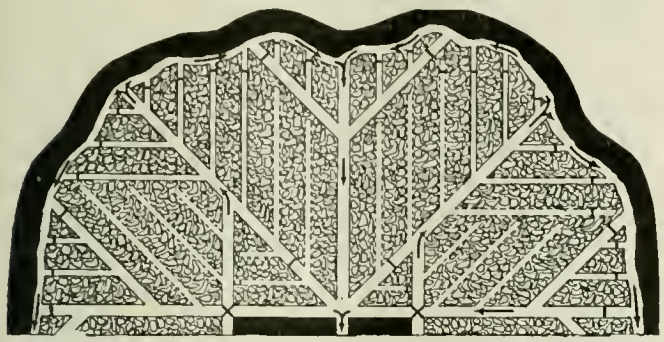


FIG. 1. GENERAL PLAN OF LONGWALL ADVANCING

the main headings, at an angle of about 45 degrees, and rooms are turned off these slants on 40 ft. centers. The rooms are driven up about 60 yd. when they are cut off by another slant, which is turned from the main heading. New rooms are then opened on this slant and driven parallel to the main heading as before.

In order to give a height of about 4½ ft. on the roads in these rooms, it will be necessary to take down about 18 or 20 in. of roof, or lift the same amount of bottom. The refuse thus obtained is used to build packwalls on each side of the road, in each room and on each slant road. Assuming the width of a gateroad as 9 ft. and estimating on a 20-in. cut, the amount of material secured per foot of roadway is $9 \times 1 \times 1\frac{2}{3} = 15$ cu.ft. in the solid, or say 30 cu.ft. broken. The seam being

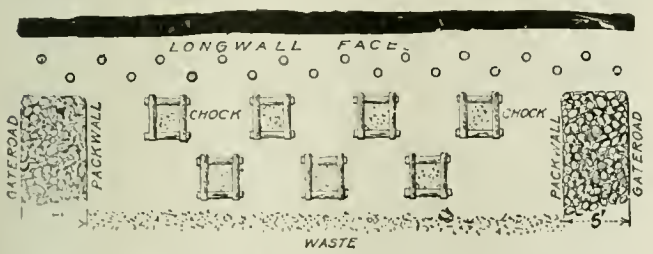


FIG. 2. TIMBERS AND COGS ON A LONGWALL FACE

practically three feet in thickness, there will be sufficient material for the building of two packwalls, five feet wide, one on each side of the road.

It is clear that the life of the main headings and the slant roads will be longer than that of the rooms. Also, the greater headroom needed on the roads will provide material for a greater width of roadpacks. In order to reduce the subsidence of the roof strata to a minimum, all packwalls must be substantially built and reinforced at regular intervals with wooden "cogs" or "chocks."

Referring now to Fig. 2, which shows the plan of a longwall face between two gateroads or rooms, it is seen that if the rooms are 9 ft. wide and driven on 40-ft. centers the building of two packwalls, each 5 ft. in width, will leave 21 ft. of waste between the packs. In this space, as shown in the figure, I would build temporary cogs in two rows. As each new row is built, the back row of cogs must be drawn and the roof allowed to cave in on the waste. If the roadpacks are well built they will prevent any undue sinking of the roof, under any cover up to 1,000 ft. in thickness.

The success of longwall work will always depend on the thoroughness with which the work is performed, and the execution of each detail relating to the building of the packwalls and chocks or cribs. Only skilled miners can be employed. Unskilled labor or miners who are not accustomed to longwall work, not knowing the necessity of doing a good job, are prone to do the work in a careless manner, which is sure to bring trouble sooner or later.

Experience and Familiarity with Longwall Work Needed to Insure Success

The adoption of the longwall system of mining requires that the officials in charge shall be experienced men and thoroughly familiar with longwall work. In late years, this system has grown in favor, in many mining districts, and has taken the place of the room-and-pillar system formerly used. There are instances, however, where the undertaking has not been crowned with success, which is largely due to the lack of acquaintance of the men in charge with the principles involved in this system. Allow me to cite an instance that occurred a few years ago in my own experience.

The conditions in the seam that we were working at that time were ideal for the use of the longwall system. The mine had been opened originally on the room-and-pillar system, but was now being worked by longwall. The seam contained sufficient refuse to completely stow the gobs. Though employed as fireboss at the time, but being familiar with longwall work, I endeavored to impress on the minds of the miners, the necessity of stowing all the refuse and building substantial packwalls, which had been drilled into me from boyhood. Frequently, I was obliged to stop the supply of cars to certain miners, until they had completed the work of building the necessary packs.

This soon brought me into bad favor with the foreman and the manager, who claimed that the miners spent too much time on the packwalls. They argued that it was cheaper to load the dirt into a car and send it to the surface where it could be dumped instead of handling it twice as was necessary to stow it in the waste. As a result, about one car of dirt was sent to the surface with every three or four cars of coal hoisted.

Insufficient Packwalls Bring Disaster

Knowing that the ultimate collapse of the workings was inevitable, I still persisted in urging the building of substantial packwalls and the stowage of the waste, but my efforts in that direction were of little avail. Not only did the poorly built packs and half filled gobs permit the short-circuiting of the air and destroy the circulation at the working face, but there was every evidence that greater trouble was approaching, although the management appeared to be perfectly satisfied that everything was working well.

On arriving at the mine one morning, not long after, the night fireboss informed us that the face of one section containing twenty rooms had completely closed during the night. The same thing happened to another section a few days later. One can readily realize the time and money that it was then necessary to spend in

order to reopen these closed sections and restore their normal producing capacity. Instances such as this, show that the success of a longwall proposition depends on thorough workmanship and experience in the work.

Midlandvale, Alberta, Canada. STEPHEN DAVIES.

Electric Firing, Past and Present

The introduction into the mines of the practice of firing blasts with electricity met with the same opposition as other mechanical devices. This early prejudice, however, has largely given way to suggesting means that will render electric firing more safe.

NOT long ago a writer in *Coal Age* made the suggestion of soldering together lightly, the two lead wires of an electric fuse at a point a short distance from their ends, the purpose being to short-circuit any current that would otherwise reach the detonator before the charge was prepared for firing.

Reading this suggestion carried my mind back to the days when this method of firing shots in mines was in its infancy. Many a time have I listened to a heated argument between old miners regarding the feasibility of firing shots with electricity. At that time the subject of electric firing was looked upon in the same manner as other mechanical devices. Its introduction into the mines was opposed by the strong prejudice of miners who were prone to regard every such attempt with suspicion. It required continued effort on the part of the management of the mines to overcome this prejudice.

One instance that I recall happened when I was a boy. A rock tunnel was being driven in a mine where all the blasting was done by fuse. The men driving this tunnel were experienced "sinkers," as they were called because they had gained their experience in the sinking of shafts and slopes. One day the contractor brought into the mine an electric firing device. He told the shiftboss that hereafter, all shots were to be fired by electricity. When this came to the knowledge of the men they all went out on a strike, and it required much persuasion to induce them to return.

SUPERSTITIOUS DREAD OF ELECTRICITY

When the first round of holes to be fired by the electric battery were prepared the wires connecting the shots were extended from the face of the tunnel out to the battery at the foot of the shaft, a distance of more than 1,000 ft., I should judge. The men appeared to be more afraid of the battery than of the shots to be fired. It was many months before anyone would go within fifty feet of the battery, except the shiftboss who did the firing. The men regarded the word "electricity" as something uncanny.

However, time has worked wonderful changes and today, the humblest worker in the mine is familiar with and shows no dread of the many electrical appliances installed. Every suggestion intended to increase the safety of these appliances is regarded with interest.

Referring again to the suggestion previously mentioned regarding the soldering together of the ends of the two lead wires of an electric fuse, there is little doubt but that this would be a step in the direction of increased safety. At the same time, what is of far greater importance, I believe, is to keep the firing cable away from the battery and from all other sources of accidental contact with live wires. To this end, let me say that the firing cable should be kept on the spool and not laid along the entry when the shot is being prepared. Further, the battery should be kept under lock and key until it is needed for firing.

In my opinion, where this is done and the firing cable is kept wound on the spool until the shot is fully prepared, there will be little danger of a premature explosion by accidental contact with some source of electricity. I judge from the statement made by the writer to whom I have referred, that he has in mind a cable lying at the side of the road and extending from the place where the shots are to be fired back to the battery, which is not a good plan.

Plains, Pa. RICHARD BOWEN.

Ratio of Carbon Dioxide to Oxygen in Normal Breathing

The amount of oxygen consumed in breathing is but a fraction of what is taken into the lungs, the proportion depending on conditions of rest or exertion.

PERMIT me, in the interest of accuracy, to call attention to a misleading statement that occurred in the interesting reply given to an inquiry regarding the capacity of the lungs and the amount of air inhaled and percentage of carbon dioxide in the exhaled breath in the issue of *Coal Age*, Oct. 7, p. 758.

The statement to which I refer reads as follows: "Practically, the volume of carbon dioxide in the exhaled breath is equal to that of the oxygen in the air inhaled, or say one-fifth of the tidal air."

Undoubtedly what the editor intended to convey was the fact that the volume of carbon dioxide exhaled is practically equal to that of the oxygen consumed in the lungs, which is only a portion of that in the air inhaled.

A person while performing work or undergoing other physical exertion will consume a larger proportion of the oxygen of the air he inhales than when at rest. But even then much of the oxygen is expelled in each exhalation.

For a full and comprehensive report on the respiratory exchange of man, under various degrees of exertion, allow me to refer to the tables found on pages 26 and 27 of Technical Paper 82, of the United States Bureau of Mines, entitled "Oxygen Mine Rescue Apparatus and Physiological Effects on Users." These tables show that even though the tidal volume of air passing in and out of the lungs might be as much as 70 liters (of which, of course, only approximately 20 per cent or 14 liters would be oxygen) only, roughly, 3 liters of oxygen would be consumed and approximately the same amount of carbon dioxide produced.

Pittsburgh, Pa. GEORGE C. NELMS,
General Sales Manager,
Mines Safety Appliance Co.

[We are pleased to have attention drawn to this inadvertence. The statement on page 758 should read as follows:

Practically, the volume of carbon dioxide in the exhaled breath is equal to that of the oxygen consumed, or say 1/40 of the tidal air passing in and out of the lungs of a person at rest, since the air exhaled when a person is at rest contains about 2½ per cent of carbon dioxide. Under violent exertion the oxygen consumed and carbon dioxide exhaled may reach 6½ per cent, or form about ⅛ of the tidal air.—EDITOR.

Inquiries of General Interest

Answered by

James T. Beard

Engine-Plane Haulage

Estimating, approximately, the power required to hoist a given load up an incline of a given length and grade; also, the size of rope and diameter of drum or sheave wheel required.

ASSUMING an incline 365 ft. long, having a grade of 15.5 per cent, what horsepower of engine, size of rope and drum or sheave wheel, will be required to hoist a load of twelve cars, total weight 25 tons, up this incline, using a single rope for hoisting the loaded trips and lowering the empty cars. MINING ENGINEER.

Central City, Ky.

This is what is called an "engine-plane haulage" and, from the statement made, it must be assumed that the load hoisted is unbalanced, a single rope being used in hoisting and lowering the cars.

The power required to make the hoist is shown by multiplying the sum of the track resistance and the grade resistance, in pounds per ton, by the speed of hoisting, expressed in feet per minute, and dividing the product by the efficiency of the engine, expressed as a decimal, times 33,000.

The track resistance, estimated in pounds per ton of moving load, may vary from 10 to 50 lb. per ton, depending on the style and condition of the car equipment and track. Assuming the cars are mounted on roller bearings and the track is in good condition, the track resistance may be taken as 20 lb. per ton.

Without serious error in this case, the grade resistance can be taken as 20 lb. for each percent of grade, making the sum of the track and grade resistances $20 \times 25 + 20 \times 15.5 = 810$ lb. This total resistance represents the pull of the loaded trip on the rope. But, in order to allow for the weight of the rope when the trip is at the bottom of the incline, we will estimate this pull at the drum as, say 1,000 lb.

Using a factor of safety of five, in determining the size of rope required, gives a breaking strain of $(5 \times 1{,}000) \div 2{,}000 = 2.5$ tons. Then, since the breaking strain of a one-inch, cast-steel, six-strand, seven-wire, haulage rope is 32 tons, the diameter of rope required in this case is $d = \sqrt{2.5/32} = 0.28$ in. To allow for the wear on the haulage rope, we will use a $\frac{1}{2}$ in., cast-steel, wire rope.

In order to obtain the best results in prolonging the life of the rope, the diameter of the winding drum or sheave wheel should not be less than 60 times that of the rope, which makes the minimum diameter of drum, in this case, $60 \times \frac{1}{2} = 30$ in. or $2\frac{1}{2}$ ft. A larger diameter of drum or sheave will lengthen the life of the rope.

Now, assuming a speed of hauling of, say 8 mi. per hr., or $(8 \times 5{,}280) \div 60 = 704$ ft. per min.; and taking the efficiency of the engine as 80 per cent, the power of the engine required for making this hoist is:

$$H = \frac{1{,}000 \times 700}{0.80 \times 33{,}000} = 26.5, \textit{ say } 30 \textit{ hp.}$$

To make due allowance for increased friction and bad condition of track or rolling stock, it will be well to install a 40- or 50-hp. engine for this hoist. It is always advisable and important to have an excess of power available to meet any emergency that may arise. If the highest efficiency is to be attained an engine should not be operated at the limit of its capacity, but a fair margin should be allowed in order to obtain the best results and provide for the further development.

Coking Qualities of Coals

The only test to ascertain the coking quality of a coal is the practical test. The analysis of a coal is no reliable indication of its coking quality, and is only suggestive of the approximate yield in case coking takes place.

FOLLOWING is the analysis of a coal taken from a Pittsburgh 6-ft. seam, located in Lewis County and known as "Lewis Block," in West Virginia. I am anxious to learn the coking quality of this coal and its value. The coal gives by analysis, the following:

Water, 1.35 per cent; volatile matter, 38.65 per cent; fixed carbon, 49.38 per cent; ash, 10.62 per cent; sulphur, 1.63 per cent; phosphorus, 0.025 per cent. The heating value of the coal is 13,287 B.t.u.

Uniontown, Pa. OPERATOR.

The analysis of a coal does not furnish any reliable indication of its coking quality. It is said to be suggestive of the proportionate yield in case coking takes place, however. Whether a coal will coke or not can only be positively determined by an actual test. Sometime ago the *Colliery Engineer* published what was claimed to be a practical indication of the relative coking quality of a coal. The method suggested was simple and one that could be made in the field. It was as follows:

Grind a small sample of the coal in a mortar sufficiently fine to pass through a 100 mesh. Pour out the loose material and observe the result. If considerable of the remaining portion of the powdered coal adheres to the mortar and the pestle it is an indication that the coal will coke well; but if the mortar and the pestle are clean after grinding, it can be assumed that the coal will not coke. In other words, the coking quality of a coal is claimed to be indicated, more or less correctly, by the degree with which the fine material adheres to the mortar and the pestle after the grinding.

In the process of coking it is assumed, in estimating the approximate yield of a certain coal from its analysis, that all the ash and generally all the fixed carbon remains in the coke. In that case, the sum of the percentages of these two constituents would represent the approximate yield of coke. In the Connellsville region, it is found that about 60 per cent of the sulphur also remains in the coke. If the volatile matter in the coal is not sufficient, however, to furnish the heat required for the coking of the coal some of the fixed carbon will be consumed and the yield of coke diminished.

Examination Questions

Answered by

James T. Beard

Mine Bosses' and Firebosses' Examination. Indianapolis. Ind., 1920

(Selected Questions.)

QUESTION—*Give five causes of accidents which occur on haulageways and methods to prevent them.*

ANSWER—1. The use of haulage roads as travelingways, without maintaining a proper clearance space or refuge holes and keeping these unobstructed. 2. An improper system of haulage or no system at all where drivers and motormen are prone to take chances. 3. Bad track conditions and poor rolling stock, causing breakdowns and wrecks. 4. Improper timbering of haulage roads and lack of careful inspection to prevent possible roof falls on the roads. 5. Incompetent and reckless drivers and motormen who have a disregard for safety rules and regulations.

QUESTION—*Give five safety precautions a miner should observe on going to his working place at the face.*

ANSWER—1. Observe that the fireboss has examined the place and made his mark on or near the face of the coal. 2. Carefully examine the roof and the face of the coal to detect any dangers that may exist. 3. Set any timber that may have been discharged by the shots fired the night before, or that may be needed to support the roof and make the place safe for work. 4. Replace any brattice that may be torn down, and see that the necessary quantity of air is traveling and sweeping the face of the coal, so that there is no accumulation of gas or smoke in the place. 5. Observe that all shots have been fired, and see that each car is properly spragged or has its brake set, before proceeding to load coal.

QUESTION—*What are the causes of dust explosions in a mine and what is the best-known method to prevent them?*

ANSWER—The use of excessive charges of powder in blasting, which pulverize the coal, and the failure to load out the fine coal and slack and keep the working face free from accumulations of dust contribute largely to the conditions that invite dust explosions. Shots that are not properly placed and tamped or are overcharged, producing a blownout or windy shot, or the firing of two or more shots at the same time in the same place, may cause a dust explosion, particularly in the mining of a soft coal that is highly inflammable. The danger is much increased in machine mining.

When working such coal, dust-proof cars should be used and every precaution taken to prevent the accumulation of dust on the roads. An effective sprinkling system should be employed and a suitable method of humidifying the air installed to prevent the drying out of the mine. In all such cases, strict regulations must be made and enforced in regard to blasting. Competent shotfirers should be employed, whose duty should be to examine, charge and fire all holes drilled by the miners, except such holes as are, in their judgment, unsafe for any reason.

QUESTION—*In what way would you provide for the protection of your men from falling roof?*

ANSWER—A systematic system of timbering should be employed that is adapted to the particular conditions in the mine. Strict regulations should be made and enforced regarding the timbering of all working places, roads and travelingways, which should be regularly and thoroughly inspected by the foreman and his assistants to see that the miners take due precautions for their own safety. Every possible means should be used to impress on the men the fact that they are largely responsible for their own safety while at work in the mine.

QUESTION—*What is the best and safest way to detect the condition of the roof?*

ANSWER—The roof must be carefully examined to detect any slips or fault lines. Too much reliance must not be placed on sounding the roof after the usual manner employed by miners. However, when sounding the roof with a pick, the miner should hold his free hand against the roof to detect any tremor or vibration in the loose slate. A thorough knowledge of roof formation and conditions is important. Particular attention must be given to boulders, horsebacks and pot-bottoms, which are always dangerous.

QUESTION—*What is the danger arising from working a mine adjoining an abandoned mine? What is the law regarding the method of approaching abandoned mines?*

ANSWER—When working a mine that adjoins an abandoned mine, there is always the danger of penetrating the old workings, which may contain accumulations of water or gas that would endanger the work in the new mine. It is never safe to place absolute reliance on any map or survey, but the precaution must be taken of keeping advanced drillholes in the face of the live workings when approaching the workings of an abandoned mine.

Section 14 of the Indiana Mine Law provides that places driven toward abandoned workings, shall not exceed eight feet in width and that drillholes shall be kept not less than three yards in advance of the working face, one hole at or near the center of the face and sufficient flank boreholes on each side.

QUESTION—*How would you proceed to rescue a person caught by a fall of roof?*

ANSWER—It is not possible to lay down any absolute rule to be followed in such a case. While due caution is always necessary, some risk must be taken if the man is to be rescued. It may be evident, at once, that the man has killed instantly by the fall, in which case it is unwise to take any unnecessary risk in recovering the body. If there is the slightest chance, however, that life still remains no time must be lost in extricating the victim from his perilous position. It will seldom be safe to attempt setting any timber to secure the roof from further fall, before dragging out the man, but help must be quickly summoned and every effort made to rescue him.

Coal Statistics Shown to Have National Importance—I

Rapid Change in Output and Distribution Facts Makes Frequent Measurement Necessary to Government and Industrial Planning—Accurate Records Indispensable Now in Laying Embargoes and Priorities and in Solving Transportation Difficulties

By F. G. Tryon*

THE high prices of coal which have prevailed in the United States since the withdrawal of the maximum prices on April 1, 1920, and the apprehension of a fuel shortage voiced both in this country and in Canada have lent new importance to statistics of coal production and distribution. For many facts about the coal industry, such as labor, wages, mining methods, reserves, costs, investment, and profit, annual measurements are frequent enough, but the facts of production and distribution change so swiftly that monthly or even weekly and daily measurements of their broader aspects are necessary for intelligent planning either by the industry or by the Government.

The need for operating statistics of the coal industry is always with us, but at a time like the present it becomes imperative. Decisions of policy, such as the laying of an export embargo and the execution of specific plans formulated to carry out the policy, require accurate records, promptly available, of how coal is moving from mine to market. There is every prospect, moreover, that the need for such operating records will be acute for months to come. Overcoming the transportation disability which has been the limiting factor in coal production since the coal strike of 1919, and rebuilding consumers' stocks of coal will take months.

Complications Cause a Need for Figures

The complicating factor of the demand for export overseas, which though not the prime cause of the present high prices has yet had a disturbing effect on the distribution of the coal produced, is likely to continue for years. As long as it does, even superabundance of coal in the interior will not solve a recurring problem of distribution at tidewater points—a problem which will require accurate statistics available at frequent intervals.

For the sake of brevity, bituminous coal only will be considered in this paper. This is not because anthracite is unimportant. Anthracite has at length achieved a condition of stability, and, though exported in large amounts to Canada, is not shipped overseas in significant quantities, and its market in the United States is confined to twenty-three states in the North and East. The reserves underground are limited, the production is relatively constant, and its distribution and consumption present few new problems. The mining of anthracite yields a major product—the domestic sizes—and a byproduct—the fines or steam sizes. The one cannot be produced without the other, and the problem of anthracite distribution may be summed up in the statement that there is a chronic shortage of the domestic sizes and a chronic oversupply of the steam sizes.

In sharp contrast to anthracite, bituminous coal is mined in thirty states and produced in bewildering variety. Each field has its own market, determined by the quality of its coal and by the freight rate, and the competition between fields is keen. Bituminous mining is normally beset by an uncertain demand. Most fields are affected by a seasonal fluctuation in demand, and all respond quickly to changes in the general tone of business. When the market is active, a shortage of transportation usually develops, and as a mine runs only when cars are available, its output varies greatly from day to day. These factors make the distribution of bituminous coal a complex and ever-changing variable which must be measured at frequent intervals.

How Weekly Production Is Estimated

The subject of production is treated in the weekly coal report of the U. S. Geological Survey, begun by C. E. Lesher in July, 1917. Weekly estimates of the total production of anthracite and bituminous coal and beehive coke are published, based in each case upon statements of the number of cars loaded by the railroads, collected either direct from the roads themselves or through the American Railroad Association.

The statistics of total weekly production may be regarded as adequate. We need also, however, at least monthly statistics of production by states and by fields. It is not enough to know the total output, for a shortage in one locality may exist simultaneously with a surplus in another, and yet because of transportation difficulties the surplus may be unavailable to meet the shortage. Furthermore, there is as great a variety of coals as of cloth, and it frequently happens that coals suitable for a special purpose may be in short supply when an abundance of fuel for other purposes exists. A feature of the coal market in the Northeast throughout the present year has been a scarcity of coals suitable for gas manufacture, and at seaboard a scarcity of the low volatile coal. It follows that current statistics of output, by fields, will at the same time yield a measure of the output by grades of coal. In an attempt to meet the need for current production statistics, by localities, the Geological Survey has begun the publication of monthly estimates of production by states, based upon railroad shipments. Certain technical difficulties in separating between one state and another the tonnage of coal originated on railroads loading in more than one state must be overcome, however, before the estimates can be brought to the accuracy desired.

Factors Limiting Production

Of scarcely less importance in intelligent direction of the industry are current statistics of operating conditions at the mines which will isolate the factor limiting production in each district, and thereby make possible the application of remedial measures. Pioneer work in this direction has been done by Mr Lesher of the Geolgical Survey in the system of weekly mine reports established during the war and maintained since.

*U. S. Geological Survey.

The arrangement is purely a voluntary one, which has, however, received generous support from a large number of producers of coal.

Underlying Purpose of Weekly Reports

The weekly operating reports have established their usefulness as an indicator of the particular factor to which attention must be directed if production is to be brought to a maximum. They are essentially control statistics, possessing incidental value as permanent records, but chiefly useful as a barometer of change from week to week. It is unsafe, for example, to cumulate the losses attributable to a particular factor from one week to the next. Elimination of one factor limiting production may bring into play others whose influence has hitherto been obscured by the first.

(To be continued next week)

Insurgents Attack Miners' Union

SEVERAL insurgents at the Pennsylvania Coal Co.'s operations are greatly incensed against the United Mine Workers of America, asserting that the union is preventing men in the northern section of the anthracite region from entering the organization until after Jan. 1. The allegation is that by delaying the admission of the men to the union it will be possible to prevent them from voting under the rule that requires that a voter shall have been a member for six months prior to the election.

Nor is all peaceful in the bituminous regions, for on Nov. 7 impeachment of the executive officers of the Pittsburgh region (No. 5) was demanded in a resolution unanimously adopted at a meeting of the "rebel" contingent in the Fort Pitt Hotel, Pittsburgh, Pa. John R. Walker, of Springfield, Ill., attacked the local executive officers for having failed to recognize the convention. A committee was appointed to notify the executive officers of the trial, and then if they refuse to attend the convention will try them in their absence.

Sales Realization and Cost for 535 Coal Operators During May and June Compared

Federal Trade Commission Report for June Shows 3c. Decrease in Cost Per Ton and an Increase of 20c. in Sales Return, Making an Increase of 23c. in Margin—Decrease in Cost Attributed to Rise of 828,742 Tons in Production

COMPARISON of sales realizations and reported costs during June, 1920, with May, 1920, for 535 identical operators, according to the bulletin of the Federal Trade Commission, shows the relative change indicated in the table below. The table also shows the average number of days worked in June, 1920, which was nineteen, as compared with the monthly average for May, which was seventeen days.

COMPARISON OF JUNE, 1920, SALES REALIZATION AND REPORTED F.O.B. MINE COST WITH MAY, 1920, FOR 535 IDENTICAL OPERATORS BY GENERAL COMPETITIVE REGIONS

		June, 1920				May, 1920					
General Competitive Regions	No of Operators	Production, Tons	Average Days Worked	Sales Realization	Reported F.O.B. Mine Cost	Margin (a)	Production (Tons)	Average Days Worked	Sales Realization	Reported F.O.B. Mine Cost	Margin (a)	Increase (+) or Decrease (—) of Reported Cost in June From That in May	
Central Competitive "Interstate"	156	2,884,822	19	$3 20	$2 37	$0 83	2,395,504	16	$2 94	$2 39	$0.55	—$0.02	—1 per cent
Eastern Adjacent	136	1,624,676	18	3 79	2 71	1 08	1,503,751	16	3 50	2 70	0.80	+ 0.01	
Western Adjacent	34	434,870	19	3.29	2 54	0 75	390,537	16	3 01	2 60	0.41	— 0 06	—3 per cent
Southern Appalachian	62	969,950	20	3 69	3 16	0 53	960,395	19	3.45	3.14	0.31	+ 0 02	+1 per cent
Southwestern "Interstate"	85	485,711	19	3 78	3 53	0 25	468,354	18	3 69	3 55	0.14	— 0 02	—1 per cent
Rocky Mountain	62	1,782,128	21	3.25	2 75	0 50	1,634,874	19	3.15	2 76	0.39	— 0 01	
United States	535	8,182,157	19	3.43	2 69	0.74	7,353,415	17	3.23	2.72	0.51	— 0.03	—1 per cent

(a) "Margin" is *not* the same as profit.

The decrease of 3c. per ton in the average reported June cost of the 535 operators, with the increase of 20c. in their sales realization, resulted in a 23c. increase in margin for June, 1920, as compared with May, 1920. The decrease in the June cost of these operators (1 per cent less than May) is to be attributed to their increase of 828,742 tons, or 11 per cent, over May in production.

In order to throw light on the effect which a change in the production tonnage has in bringing about a change in costs, tabulations were made by the Federal Trade Commission in the April and May bulletins for a slightly larger number of operators than are covered in this bulletin for June. Taking their average monthly production during 1918 as a base, they are grouped according to the relative decrease or increase in their production for the first quarter of 1920 and for April and May, 1920, respectively, and their total f.o.b. mine cost increases or decreases were thus shown in relation to change in production. A 14-per cent increase over the wage scale in effect throughout 1918 was made in November, 1919, and was in general effect during the first quarter of 1920. The 27-per cent wage increase awarded by the U. S. Bituminous Coal Commission (which included the 14-per cent increase) went into effect April 1, 1920. In the April and May bulletins these tabulations of the increase in total reported costs for those groups of operators whose production changed least showed reported cost increases in those months as compared with 1918 of 47c. per ton, or 22 per cent, and 51c. per ton, or 23 per cent, respectively. The increased cost due to wage advances since 1918, as nearly as it is possible to measure it from these tabulations, may safely be said to average somewhat less than 50c. a ton.

Morrow Derides Calder Scheme for Federal Control of Coal Industry

IN AN address before the Eastern Ice Manufacturers' Association at Atlantic City, Nov. 11, J. D. A. Morrow, vice-president of the National Coal Association, of Washington, declared that no emergency exists in the bituminous-coal industry to call for federal control of the mines, such as that hinted by Senator Calder, of the Senate Committee on Reconstruction, a few days ago. The bituminous-coal industry, through its handling of the soft-coal shortage emergency, Mr. Morrow said, has shown that it is able to meet its own problems.

Mr. Morrow urged patience on the part of the public toward business enterprises throughout the country, which, he said, have not yet recovered from the economic effect of the war. The coal industry, he said, had been unable, up to a short time ago, to catch up with the necessary output of coal to meet the country's requirements because of inadequate railway facilities.

In his address Mr. Morrow said: "There is nothing in the present situation in the coal industry to warrant any such regulation of the industry as that suggested by the Calder committee. I think everyone here knows full well that American social life and business life have been conducted with as little interference from the Government as possible, leaving the individual free to conduct his own affairs in his own way. It is that freedom which has enabled this country to offer the wonderful opportunities to its citizens which it has afforded. I think everyone will admit that governmental interference, regulation or control of any business is so impractical and fraught with so many disadvantages and evils and is so inevitably certain to result in higher costs and operating expenses to consumers that government control or regulation ought to be imposed on no business except as a last resort.

Unsettled Conditions Only a Passing Phase

"The conditions in the bituminous-coal industry which have caused consumers trouble in obtaining their supplies and have given opportunity for speculative prices in this commodity are but a passing phase of the war readjustment. We all understand perfectly well that lack of transportation is the basic cause of the trouble. Well, the remedy for that difficulty is not regulation of coal but improvement of transportation facilities. The railroads are making vigorous efforts to bring this about.

"If the railroads are given an opportunity to recover from the ill effects they suffered during the war there is no doubt whatever that they will furnish all the transportation this country needs. When that is done people need have no fear as to future sufficiency of their coal supply or the reasonableness of prices.

"The public needs to be patient with business enterprises in the United States which have not yet completed after-the-war adjustment. We need patience and hard, common sense in the existing condition of affairs and not theoretical, socialistic governmental regulation. If business men are given an opportunity to work out these problems they will emerge successfully from the economic chaos brought upon the country by the war."

Dwelling upon high speculative prices that existed in some of the soft-coal fields during the shortage Mr. Morrow said:

"The unfortunate feature of the situation was that it afforded an unusual opportunity for speculators who never had had anything to do with the coal industry before to inject themselves into the market and accentuate an already acute situation. The National Coal Association, representing the responsible bituminous-coal producers of the United States, has had no sympathy at any time with these speculative abuses. The association has made every effort to prevent the misuse of transportation facilities for the purpose of speculating in coal by anybody.

"It is only in the last few months that we have had enough cars to transport coal. In the meantime the production of coal has risen to 12,000,000 tons a week and prices have begun to decline so that they are now much below the levels prevailing six weeks ago.

"If the priority orders of the Interstate Commerce Commission are continued until Dec. 1 I have no doubt that production will be sufficient during the remainder of the winter, together with the reserves that will have then been accumulated, to carry the country through to next spring without any difficulty. Therefore there is no reason whatever for anyone at the present time to pay unreasonable prices of soft coal."

Railroads Make Records in Moving Freight

A NEW record for 1920 in the number of cars loaded with commercial freight on railroads throughout the United States was made during the week which ended Oct. 23, according to reports announced Nov. 11 by the car service division of the American Railway Association. The total for the week was 1,010,961 cars, which was within 500 cars of the peak recorded in 1919. This total was 5,298 cars more than were loaded during the previous week, 33,910 cars greater than the corresponding week of 1919 and 90,850 cars greater than during the same period in 1918. This was also the third successive week that the total had exceeded the million mark.

Except for the Central Western and Pocahontas districts increases as compared with the same week in 1919 were reported by all districts, while the number loaded in each district during the week of Oct. 23 exceeded the number loaded in the same districts during the corresponding week in 1918. Increases were shown, as compared with 1919, in the number of cars loaded with coke, forest products, ore, merchandise and miscellaneous freight, although decreases were shown in the number loaded with grain, grain products and coal.

Car loadings in the week ended Oct. 30 dropped to 973,120.

During the twelve weeks from Aug. 1 to Oct. 23 inclusive cars loaded with revenue freight totaled 11,654,567, which is believed to be without parallel in American railroad history. This was an increase over the corresponding period in 1919 of 362,902 cars and 223,100 over the same weeks in 1918. During the same period this year 2,513,138 cars were loaded with commercial coal as compared with 2,412,-249 cars for the same weeks last year.

Statistics compiled by the Bureau of Railway Economics, according to *Railway Age* disclose the fact that in August the railways moved more freights not only than in August of any previous year, but more than in any previous month in any year in history This seems a conclusive answer to charges which have been made by W. G. McAdoo and others that the railways have been inefficiently operated since they were returned to private control, and that they can be operated with maximum efficiency only under unified Government control. The number of tons of freight moved one mile in August was 42,706,000,000. The nearest approach to this ever made before was in August, 1918, when the number of tons moved one mile was 40,776,000,000.

The detailed figures regarding the way in which this record-breaking achievement was accomplished are interesting and significant in view of the efforts the railways have been making for some months to increase efficiency of operation. The average miles each freight car was moved daily in August was 27.4. This was the greatest mileage ever attained in any month except in May, June and July, 1917, under private operation. In other words, in none of the twenty-six months of Government operation was this record for car movement ever equaled. The average tons handled in each loaded car in August, 1920, was 29.8, a record exceeded only in the months of July, August and September, 1918.

The best test of the efficiency with which the country's freight cars as a whole are being utilized is the average number of tons of freight moved daily with each car. The average number of tons moved one mile daily with each car in August, 1920, was 526. This record has been surpassed only in August and September, 1918, when the average load per car was the highest ever reached, and in June, 1917, under private operation, when the average miles per car per day was almost the highest ever reached.

Milwaukee Rail Receipts Show Steady Gain

RECEIPTS of coal at Milwaukee from all sources from the opening of navigation up to Nov. 1, 1920, were as follows:

	By Cargo Vessel		By Car-Ferry		By Rail		Grand Total, Tons
	Tons, Hard	Tons, Soft	Tons, Hard	Tons, Soft	Tons, Hard	Tons, Soft	
April	17,500	18,500	12,184	47,887		64,967	161,038
May	109,600	136,462	19,204	21,531		214,246	501,043
June	138,771	192,573	3,546	22,015		106,186	463,091
July	104,690	259,459	5,082	18,228	350	112,237	500,046
Aug	126,206	401,559	4,026	13,408	2,800	73,240	621,239
Sept	76,940	487,757	4,547	15,556	224	100,434	685,458
Oct	127,656	425,612	2,311	13,992	379	57,801	627,751
Total	701,363	1,921,922	50,900	152,617	3,753	729,111	3,659,666
1919	757,419	2,856,414	48,036	145,271	2,081	296,899	4,106,120
Decrease	56,056	934,492	2,864*	7,346*	1,672*	432,212	546,454

* Increase.

There were about 650,000 tons of soft coal on the docks when navigation opened in the spring of 1919. The docks were bare, however, when the first cargo was received this year.

Indiana Operators Will Produce Amounts Specified by Fuel Commission

EARLY reports received by the Indiana Coal and Food Commission from coal-mining companies indicate, it was said at the commission's office, that many mine operators will make every effort to comply with Order 8, recently issued by the commission, directing the operators to produce for Indiana domestic consumption specified amounts of coal.

Additional direct orders and even seizure of mines may result if operators refuse to obey the commission's order. The commission has authority under the law to direct a certain mine to provide a specified amount of coal for a certain consumer, and if such order were not complied with Governor Goodrich, it is believed, would not hesitate to seize the mine.

Reports to the commission that certain jobbers and operators have not complied with the commission's margin and price-fixing orders have caused investigations to be started, and if evidence justifies the commission will cite the offenders to appear before it and show cause why their licenses should not be revoked.

Approximately a hundred orders directing certain coal mining companies in Indiana to produce coal for certain consumers have been issued by the state special coal commission. The orders name the companies, prescribe when, to whom and for what purposes prescribed amounts shall be mined and shipped. The orders were issued to relieve coal shortages for certain communities, schools, utilities and hospitals.

An emergency order issued by the State Special Coal Commission must be filled directly by the coal-mining company receiving the order and the entire transaction is to be between the operator and designated consumer, and is not through the operator's selling agent, the commission has ruled. This action was taken by the commission when it was reported that some of the emergency orders received by the companies had been filled through the selling agents. The commission objects to the delay and bringing in of a third party.

The Indiana public service commission, which by law is directed to see that mines receiving emergency orders get cars to ship the coal, has received notice from the coal commission of the emergency orders, and John W. McCardle, vice-chairman of the service commission, has taken up with F. H. Worthington, of Terre Haute, Ind., superintendent of the St. Louis Branch of the Pennsylvania lines, complaints that some of the mines along the Pennsylvania have not had sufficient cars to fill the coal commission's orders. No other transportation complaints have reached either commission, it is said.

E. I. Lewis, chairman of the service commission, said that in event the railroads do not provide sufficient cars to meet the requirements of the mines receiving the emergency orders the service commission will organize itself to carry on special activity along that line, as it is directed by law.

The coal commission Nov. 4 heard seven coal mining companies' appeals for reclassification in groups which will permit them to obtain higher prices for their coal. The companies are: Ridge Coal Mining Co., Chicago; Lower Vein Coal Co., West Terre Haute; Owensburg Coal Co., Bloomfield; J. Wooley Coal Co., Evansville; Otter Creek Coal Co., Brazil, and the Supply Coal Co., Bicknell. The commission has reclassified no mining companies other than a few it permitted to go into the Brazil block class.

Less than fifty companies, it was said at the offices of the commission, complied with the commission's order No. 8 for the first week of the order's application. There are approximately 280 companies in the state. The order besides prescribing tonnages to be sold in Indiana, required the companies to report their Indiana shipments and deliveries for the week ended Oct. 23. The commission received about twenty replies thus far supplying the required information.

The latest bulletin issued by Jesse E. Eschbach, chairman of the fuel commission, shows that coal-mining companies which have filed reports sold 101,208 tons of coal in Indiana last week out of a total production of 343,539 tons.

Subpœnas in thirty-seven suits brought by retail coal dealers in northern Indiana against the retail selling margins of $2.50 and $2.40 established by the commission were served on Mr. Eschbach Nov. 3.

Williamson Operators Not Signing Scale

THE statement recently made by C. F. Keeney, president of District 17, United Mine Workers of America, that twenty-seven operators in the Williamson field had signed contracts with the United Mine Workers is untrue, according to a statement made by the Williamson Operators' Association. The fact is, as stated by the secretary of that body, that three companies with mines having railroad tipples have made contracts with the union and two of them are extremely small producers. The balance of the operators, it is said, are just as determined as ever that they will not recognize the United Mine Workers. The situation in the Winding Gulf field is steadily improving as shown by the performance report of mines in the affected district.

Hold Miners' Pay for Political Purposes

ALL members of the United Mine Workers in Districts 17 and 29, both in West Virginia, were assessed for the support of the candidate of the Non-Partisan League, Samuel B. Montgomery, the main figures in that party being C. F. Keeney, president, and Fred Mooney, secretary of District 17. The miners in many instances have not relished being assessed for political purposes and have openly rebelled, declining to pay any such assessment, stating that they joined the union for the labor benefits they expected to derive from it and not for the purpose of supporting political candidates. One company in the New River field which checks off for general labor assessments declined to check off for the benefit of the League. There was a strike at some of the company's mines, but it was of short duration.

Belgian Miners Strike for More Pay

CONSEQUENT on the refusal of the Coal Owners' Association to raise the wages of their mine employees five francs (49c.) per day, 50,000 coal miners in the Charleroi district of Belgium went on strike on Monday, Nov. 1, causing the Government to prohibit the export of coal and to restrict the use of deliveries of German coal to public utilities, vitally important industries and domestic use. Stocks are available to keep the railroads and the public utilities running for six weeks. The coal miners in the central district resumed work on Nov. 10, but the Charleroi men still remained out. Negotiations, however, are under way.

Franklin Miller and Colonel Wentz Engage in Lively Tilt On Integrity of Coal Industry

National Coal Association President Asserts That Personally He Made Every Effort to Have Obligations Observed Maintains That All Fuel Contracts Entered Into in Good Faith Are Equally Binding

CONTRACT obligations and the integrity of the coal men in meeting those obligations was the subject of a spirited dialogue at the hearing before the Reconstruction Committee of the U. S. Senate on Nov. 4. Both Senator Calder and his technical adviser, Franklin Miller, took the coal industry to task for failure to live up to its contracts and Colonel Wentz, president of the National Coal Association, who was on the stand, while admitting in part the waywardness of the coal men in this regard, said he had personally done all that he could to help the situation.

Should Work for Keeping of Contracts

Mr. Miller asked Colonel Wentz if, in keeping with the great duty of man to man and the fulfillment of commitments upon which one man has to depend on another, it would not be well to endeavor through his strong association to devote its energies to gathering facts, reasons and arguments as to why contracts should be kept; to send that out to his membership; and in the event of a seller being unable to make full weekly deliveries because of strikes or other unavoidable causes, that the seller agree that the amount of coal delivered under his contract each week equal in per cent that delivered to any other of the seller's contract customers, and that the seller should avoid all delivery of spot coal or speculative coal or export coal while man to man he is under obligation to make good a commitment.

Colonel Wentz replied that "spot coal is all right. I am not speaking as president of the association. I am speaking as an individual operator. I never had any contract in my life which permitted me to ship any spot coal, and I never expect to make one. With regard to export coal, why is not a contract entered into in good faith with a French railroad as much of an obligation as a contract entered into in good faith with an American railroad? And if I did enter into such a contract and had a pro-rated delivery clause in my contract, would I not be liable for damages to the foreign road if I neglected to ship it a just proportion of my production, or would I not be liable to damages to the American railroad if I failed to ship it in just proportion to my production? I hardly see where the legal liability and moral responsibility differ."

Orders and Consignees Double Crossed

"Suppose you shipped it to both pro rata rather than shipping to spot market at higher prices?" Mr. Miller asked. "Interstate Commerce Commissioner Clyde B. Aitchison testified here Aug. 13, and when he was asked if it had ever been suggested that coal was being held back for higher prices or speculation he answered: 'I have not any doubt of it. There has been the greatest crossing of orders, double-crossing of orders and double-crossing of consignees and those who had contracts for the last ninety days that I have ever known about in my business experience. This is abundantly established. We have moved coal. It has been moved and delivered in such quantities that there ought not to be any occasion for panic. But there has been the excuse of car shortage and the excuse of labor trouble. The result has been that certain unscrupulous mine owners, I have no doubt, and perhaps certain brokers who have contracts with the railroads, with construction companies of one kind or another, with industries, with wholesalers and with retailers of coal have deliberately withheld the fulfilling of their contracts in order that they might have coal on the spot market.' Now, Commissioner Aitchison had been following this pretty closely, and this is his opinion and his testimony before our committee."

Colonel Wentz also condemned any such practice.

Reminding Colonel Wentz that this had been called to his attention Aug. 13, Mr. Miller asked if anything had been done to remedy it since that time.

"Personally," Colonel Wentz replied, "I have done everything I can to remedy it since that time. As I told you Aug. 13, as president of the National Coal Association, under the by-laws and rules of the association, I have not been permitted to discuss prices or contract conditions. That is, in my mind, one of the misfortunes of the Sherman Act."

Thereupon the chairman asked Colonel Wentz: "You do not believe that if you call together members of your organization and urge them to live up to their contracts so as to avoid this condemnation of the industry, to fulfill to the letter their agreements—the agreements that they made—that would be violating the law?"

Colonel Wentz did not think it sounded so.

The chairman said he would take it to the Senate and have it made immune, if it did.

Colonel Wentz thought that would be preferable. "It does seem absurd," he said, "but there have been so many instances—for instance, the hardwood lumber case; they went a little further, but lawyers differ so much as to just where you draw the line. But I do say that I have personally done all the work I can in that direction with every coal operator I could."

Proposes Method of Waking Up Operators

The chairman said it seemed to him that a copy of that testimony of Commissioner Aitchison should be sent to every coal operator in America and placed before each with the alternatives of control by a coal administrator or of the price or property, through Congress. That would wake them up, he thought.

Mr. Miller then asked Colonel Wentz if, in case the Attorney General gave an assurance that he could meet and discuss the fulfillment of contracts, he would feel the matter was of sufficient importance to propose to the National Coal Association that they amend the by-laws to the extent of enabling him to do so.

"If the Attorney General has the authority to take such action," Colonel Wentz replied, "and his successor will confirm that authority and not bring prosecutions—that is the trouble with the situation; if a succeeding Attorney General takes a different view he can bring prosecutions; it is a contract agreement affecting the law that you suggest; that is the size of it and that is the whole difficulty."

Colonel Wentz in Statement Denies Any Admission of Wrongdoing

IN A statement issued Tuesday, Nov. 9, in reply to statements emanating from the Calder Committee on Reconstruction, Colonel D. B. Wentz, president of the National Coal Association, emphasized the point that bituminous-coal operators, acting through the National Coal Association, long ago took steps to eradicate abuses in the industry which were attacked by the Senate committee. Colonel Wentz made it clear that, due to efforts of the operators toward increasing the output of coal at the mines, prices have materially declined within the last few weeks and will continue to drop.

In his statement Colonel Wentz said: "A wholly wrong impression has gone out to the public through statements emanating from the U. S. Senate Committee on Reconstruction, of which Senator Calder is chairman, pertaining to high prices in the bituminous-coal industry. Broadly

the entire industry has been accused of 'practicing gross extortion on the whole public of the United States.'

"The Senate committee asserts that 'wrongdoing has been admitted by D. B. Wentz, representing the National Coal Association; by Commissioner Clyde B. Aitchison, of the Interstate Commerce Commission, and Daniel Willard, representing the railroads.' No such admission has been made by me nor do I understand that any such admission has been made by either of the others. So as to put the matter straight on the record, I wish to deny emphatically that there was any wrongdoing in any action taken by representatives of the National Coal Association, of the Interstate Commerce Commission or of the American Railroad Association in their efforts during the coal-shortage emergency to increase the production and shipments of bituminous coal and to obtain the movement of sufficient supplies to parts of the United States which were in dire need of coal.

"On the contrary, the priority orders issued by the Interstate Commerce Commission and the action taken by the railways and the coal producers, which have been indiscriminately attacked by witnesses before the committee, were eminently practical and right. Those orders have made it possible to overcome the deficit in coal output caused by the switchmen's strike of last spring and have been the direct means of averting a very serious shortage of coal during the fall and winter.

Alleges Attempt to Influence Mr. Tumulty

"It has been asserted by F. T. Miller, special assistant to the Senate Committee on Reconstruction, in testifying as a witness before the committee, that the influence of Joseph P. Tumulty, secretary to the President, was sought by officials of the National Coal Association to persuade the Interstate Commerce Commission to issue orders which would enable operators to 'dodge' contracts specifying lower prices than those prevailing in the open market during the shortage emergency. The allegation was made by Mr. Miller that the coal operators sought to manipulate the whole coal situation through their conferences during the summer and fall at the White House.

"This statement of Mr. Miller's is flagrantly false. It is true that officials of the National Coal Association endeavored to keep Mr. Tumulty intimately advised of conditions in the industry. This was done simply and solely that the President might be fully and accurately informed. Likewise information with respect to production and distribution of bituminous coal and operating conditions in the various fields was placed before officials of the Interstate Commerce Commission, of the American Railroad Association and of various agencies in Washington who were necessarily interested in the situation. We felt that they were entitled as public officials, giving consideration to this vital question, to all the information we could give them.

"I am glad to see that Mr. Tumulty himself has given the lie to the insinuation that his help was sought to give unfair advantages to the coal operators or to work against the best interests of the public.

Recounts Efforts of National Association

"The joint statement of Senators Calder and Edge gives the impression that the National Coal Association and the coal industry have done nothing up to this time to put an end to abuses which the Senators attack. This impression is grossly misleading and unfair. The fact is that the National Coal Association months ago, through special committees, began an effort to eliminate various abuses that had developed during the shortage emergency, with the result that, through the co-operation of other branches of the industry, they have been generally eradicated."

After recounting the efforts of the National Coal Association to obtain increased car supply following the switchmen's strike, to eliminate reconsignment evils, speculative holding of cars under load at Tidewater and wagon-mine speculators Mr. Morrow continued:

"At my appearance before the Calder committee I explicitly stated that while high prices had prevailed in some of the bituminous-coal fields during the shortage emergency the rank and file of the responsible operators were not guilty of charging excessive prices. The fact is that ever since last spring from 70 to 80 per cent of the soft-coal output has been shipped from the mines at reasonable prices. The remainder of the product was largely that which fell into the hands of speculators.

"Had it not been for the consistent efforts of the bituminous-coal operators, as represented in the National Coal Association to overcome the shortage emergency throughout the summer and fall, the nation would now be faced with the calamitous prospect of a soft-coal famine during the winter. This contingency no longer need be feared. There will be ample coal and at reasonable prices for all."

Wages Received by Mine Workers Under New Anthracite Agreement

THE October issue of the *Monthly Labor Review*, issued by the U. S. Bureau of Labor Statistics, contains a complete discussion of the wage rates resultant on the agreement signed in conformity with the award of the U. S. Anthracite Commission. The majority report is printed in full, as is the agreement of Sept. 2, but the most interesting feature of the article is the series of tables prepared for the review by Charles E. Ash, auditor of the Lehigh & Wilkes-Barre Coal Co. In a table which uses as a base the actual earnings per hour as found by the Bureau of Labor Statistics itself in twenty-two collieries during the half month period ended Jan. 31, 1919, Mr. Ash works both backward and forward, showing the hourly rates back as far as the 1912 agreement, as well as carrying them out to show what they are under the award now in force.

This calculation shows that the inside workers as a group are now receiving wages on an hourly basis 132.8 per cent greater than the hourly rate in force when the European war began. The present compensation for inside workers is 111 per cent greater than in 1916 and 17.1 per cent greater than at the end of 1918.

Outside workers, exclusive of breaker employees, are receiving pay on a basis of 167.5 per cent in excess of pre-war rates, 132.9 per cent above the 1916 basis, and 18.4 per cent above the basis at the end of 1918.

Breaker workers—the majority boys, of course—are getting 170.5 per cent more than they did before the war, 132.9 per cent more than in 1916, and 15.8 per cent more than at the end of 1918.

Lumping all employees, wages are now 138.6 per cent above pre-war wages, 114.5 per cent above 1916, and 17.4 per cent above the end of 1918.

The average hourly earnings of inside workers are now 78.7c., of outside workers 55.9c., and of breaker employees 40.3c. The average for all workers, inside and outside, is 72.3c.

Inside and outside daymen, who got from $1.50 to $3 per 9-hour day in 1914, today get from $4.20 to $5.96 for eight hours.

Boys, who got from 90c. to $1.40 per day of nine hours in 1914, now get from $2.45 to $2.96 for eight hours.

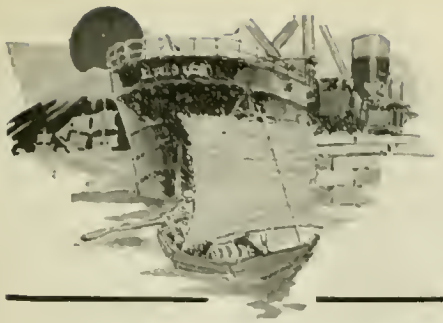
The contract miner, whose hourly earnings averaged 42.5c. under the agreement which expired March 31, 1916, averages 99.2c. under the new contract, or $7.936 for eight hours. On this basis the contract miner averages a higher hourly rate than do blacksmiths in manufacturing shops in fifteen out of seventeen cities covered by U. S. wage reports, blacksmiths' wages in these fifteen cities running from 75c. to 90c.

The contract miner averages a higher hourly rate than do boiler makers in twenty-six out of thirty cities covered by the Federal reports. Boiler makers in Philadelphia manufacturing and jobbing shops get from 80c. to 90c.

In twenty-five out of thirty-two cities electrotype finishers get less than does the contract miner, and the same holds true in the case of electrotype molders.

Out of thirty-four cities there are but three in which molders get as much or more than does the contract miner. In Pittsburgh, home of the iron industry, the iron molder gets 93.8c. an hour.

Wage reports from which the above material is obtained can be found on pages 699-716, *Monthly Labor Review*, October issue.



Foreign Markets and Export News

Germany's Coal Program Calls for Increased Production

Germany's coal production reached its highest point in 1913, when 187,000,000 tons of pit coal were produced, and dropped during the first months of the war until 1915, when again it increased to its highest point in 1917, in which year the production was 167,000,000 tons. Following the end of the war production decreased and in 1919 was only 98,000,000 tons. Before the war German production left a considerable surplus for export, which in 1913 was 45,000,000 tons. The import of foreign coal was in the same year 11,000,000 tons, mainly anthracite from England. The import of foreign coal ceased almost completely during the war. It recommenced, however, in the last few months, when several contracts for American coal have been closed.

Since 1919 the production of pit coal has increased as is shown in the following schedule:

	Production of				
	Pit Coal	Lignite Coal	Coke	Briquets of Pit Coal	Briquets of Lignite Coal
	(In 1,000 gross tons)				
January-June, 1920	61,890	52,204	11,634	2,230	11,261
January-June, 1919	49,033	43,543	9,542	1,804	9,024
January-June, 1918	77,689	51,094	16,674	2,743	11,948
January-June, 1917	73,509	45,222	15,832	2,480	10,246
January-June, 1913	84,671	41,900	15,065	2,879	10,304

During the first six months of 1920 the total production of coal (pit and lignite) is approximately the same as in 1918 and 1917. The production of Alsace-Lorraine and the Saar district is of course not included in the figure of 1920, but has for the sake of comparison been deducted from the figures of the preceding years. The production of the latter two districts was 9,000,000 tons in 1913 and 6,500,000 tons in 1918.

The following shows how the various coal districts of Germany are contributing to the total production:

In June, 1920, Produced:	Pit Coal	Lignite Coal	Coke	Briquets of Pit Coal	Briquets of Lignite Coal
	(In 1,000 gross tons)				
Prussia	10,654	7,838	2,049	362	1,751
Saxony	334	701	12	...	274
Bavaria	6	163	....	...	19
Thuringia	.....	500	....	...	....
Brunswick	.....	255	....	...	....

By the peace treaty Germany is compelled to supply part of her production to Poland, Austria, France, Belgium, and Italy. The supply of the three last named countries has lately been regulated by the Spa agreement and is now stipulated at 2,000,000 tons per month or 24,000,000 tons per year. The supply to Poland and Austria is not regulated. It averaged in the first half year about 4 per cent of the total production, or roughly 2,500,000 tons. The compulsory export of Germany is therefore approximately 30,000,000 tons a year, leaving the country for free disposal about 92,000,000 tons of pit coal and 104,000,000 tons of lignite. The corresponding figures for 1913 after deducting export were 150,000,000 tons of pit coal and 82,000,000 tons of lignite. There is, therefore, a shortage of 58,000,000 tons of pit coal, which is only partly relieved by the higher production of lignite, of 22,000,000 tons.

However, Germany cannot afford to stop export of coal to neutral countries. This must be maintained in exchange for raw materials and foodstuffs. The amount of this export is not published but it is estimated from 8 to 10 millions of tons a year. The situation may, therefore, be summarized that the inland supply of pit coal has been reduced to less than half of the pre-war supply while the supply of lignite is now larger than it ever was.

These figures show that the shortage of pit coal is only partly caused by the compulsory deliveries under the peace treaty and to a considerable part by decreased production. It appears that after the Spa agreement has settled the quantity of coal to be supplied to allied countries, strong efforts are directed toward raising of the coal production in the Ruhr district to such an extent that slight improvements have been effected already during the last months.

DURING THE MONTH of August France produced 1,954,000 tons of coal. During the same month the production of the Saar mines under French control was 686,000 tons. The imports into France from England in August amounted to 800,000 tons. It may be noted that the total exports of coal from England amounted to only 1,847,000 tons during August.

Freight Rates Continue to Decline

The freight market, according to W. W. Battie & Co.'s coal trade freight report, has declined still further and rates are weak, particularly to Antwerp, Rotterdam, French Atlantic and East Coast South American ports. A few steamers have been chartered each day for export coal since the first of the month and the demand for tonnage still continues.

Freight rates by steamer follow:

	Nov. 1.	Nov. 8	Tons Discharged Daily
Malmo	$13.00/13.50	$13.00/13.50	1,000
Copenhagen	13.00/13.50	13.00/13.50	1,000
Stockholm	about 13.50	13.00/13.50	800
Gothenburg	13.00/13.50	13.00/13.50	1,000
Antwerp/Rotterdam	9.50/9.75	9.50/9.75	1,000
Hamburg	10.50/11.00	10.50/11.00	1,000
French Atlantic ex. Rouen	10.50/11.00	10.00/10.50	700
Algiers	12.00/12.50	12.00/12.50	700
West Italy	12.00/12.50	12.00/12.50	800
Marseilles	12.00/12.50	12.00/12.50	1,000
Piraeus	about 13.50	about 13.50	1,000
Triest/Venice	14.50/15.00	14.50/15.00	1,000
Port Said	13.00/14.00	13.00/14.00	1,000
Constantinople	about 15.00	about 15.00	500
Gibraltar	11.50/12.00	11.50/12.00	1,000
Pernambuco	about 13.75	about 13.00	500
Bahia	about 13.75	about 13.00	500
Rio	about 12.50	11.50/12.00	1,000
Santos	about 13.00	12.00/12.50	600
Buenos Aires or Montevideo or La Plata	12.00/12.50	11.50/12.00	750
Para	about 13.50	about 12.50	500
Rosario	about 13.00	about 12.50	750
To Nitrate Range	8.75/9.25	8.75/9.25	750
Havana	about 6.00	about 6.00	500
Sagua or Cardenas	about 7.50	about 7.50	300
Cienfuegos	about 7.00	about 7.00	500
Caibarien	about 7.50	about 7.50	300
Guantanamo	about 7.00	about 7.00	500
Manzanillo	about 7.50	about 7.50	300
Bermuda	about 7.00	about 7.00	300
	P. c. and dis. free	—	
Kingston	about 8.50	about 8.50	400
Barbados	8.00/8.50	8.00/8.50	500
St. Lucia	8.00/8.50	8.00/8.50	500
Santiago	about 7.00	about 7.00	500
Port of Spain, Trinidad	8.00/8.50	8.00/8.50	500
Curacao	about 8.00	about 8.00	500
Free p. c. Curacao		Curacao	
St. Thomas	about 7.50	about 7.50	500

All above rates gross form charter.

Secretary of Commerce Suggests Limitations In Export Trade

In a statement in *Commerce Reports*, published by his department, Secretary of Commerce Joshua W. Alexander says the United States should limit its efforts to building up an export coal trade to countries that are natural mar-

kets when a sufficient supply has been produced to supply domestic demands. He denies that he lacks sympathy with development of the coal industry, but says the primary interest of the producer is furnishing coal to domestic consumers at as low a rate as possible.

Curfew Law to Conserve Fuel in Germany

A curfew will ring at 10 o'clock throughout Prussia this winter except in Berlin and a few other principal cities, where public gathering places will be permitted to remain open one hour later, according to the *Public Ledger*. This order comes from the Minister of the Interior and probably will apply to all Germany, being made necessary by the coal storage, which has already forced a suspension of deliveries to electric power plants in the Rhineland and Westphalia and has closed down many blast furnaces.

Output in Northern France Increases

Six pits in the Ostricourt Collieries are in operation and the sinking of No. 7 pit, undertaken before the war, will soon be resumed. The daily output is over 2,400 tons, and it is expected that the mines will recover their full productive capacity in 1921 (800,000 tons a year).

The output of Nord and Pas de Calais coal fields reached nearly 1,000,000 tons during September, 1920. Of this total 745,000 tons were yielded by Pas de Calais collieries (Bruay, Marles, Nœux, Béthune, etc.). The Mines de Bruay produced 213,000 tons, Marles and Nœux, 163,000 tons each, Béthune, 147,000 tons. Other collieries contributed 50,000 tons (Ferfay, 22,000; Vendin-les-Béthune, 14,000; Ligny, 13,000; la Clarence, 9,000). The Nord collieries (Anzin, Aniche, Ostricourt, etc.) produced 218,000 tons. The Mines d'Anzin produced 75,000 tons, Aniche 62,000 tons, Ostricourt 52,000 tons. Some 6,000 tons were produced in the Dourges fields, 6,000 tons from Douchy, and 4,500 from the Escarpelle.

German Production Per Man for 1919 Not Equal to 1918 Figures

Coal mined per man by German labor during 1919 decreased as compared with the 1918 figures. The following averages were obtained, the corresponding figures for 1918 being given in parentheses: Dortmund district—184 tons (244 tons), or 0.618 tons (0.754 tons) per shift; Upper Silesia, 176 tons (259 tons), or 0.602 tons (0.830 tons) per shift; Lower Silesia, 130 tons (163 tons), or 0.421 tons (0.514 tons) per shift; Saar 158 tons (194 tons), or 0.529 tons (0.616 tons) per shift; Aachen, 158 tons (189 tons), or 0.514 tons (0.581 tons) per shift; Lower Rhine (left bank), 207 tons (259 tons), or 0.699 tons (0.811 tons) per shift. These figures contrast very strongly with those for brown coal, which were, in the Left Rhine district, 1,253 tons (1.664 tons), or 4.083 tons (5.400 tons) per shift, and in the Halle district, 666 tons (875 tons), or 2.215 tons per shift.

Exports of Coal. Coke and Manufactured Fuel From the United Kingdom During September, 1913, 1919 and 1920*

To		September, 1920 — Coal—Small Tons	£	Coal—Through-and-through (Unscreened) Tons	£	Coal—Large Tons	£	September — All Coal Quantity (tons) 1913	1919	1920	All Coal Value (£) 1913	1919	1920
Russia		10,039	42,052	530	3,180	1,529	11,466	668,472	24,454	12,098	487,402	75,690	56,698
Sweden		23,717	117,258	19,351	121,374	15,775	83,954	394,314	122,354	58,843	262,418	451,373	322,586
Norway		9,787	50,169	17,416	107,346	12,014	71,958	174,861	94,077	39,217	112,249	336,079	229,473
Denmark		30,070	136,530	21,432	122,204	14,908	90,009	275,724	90,911	66,410	180,232	336,306	348,743
Germany		1,916	11,492					833,326		1,916	503,660		11,492
Netherlands		13,294	53,499	2,573	14,841	661	3,185	154,904	24,720	16,528	95,858	80,696	71,525
Belgium		9,703	31,684	6,528	35,823	2,923	14,070	164,448	3,000	19,154	96,966	5,958	81,577
France		229,645	739,235	225,017	939,335	78,257	356,079	1,040,489	1,280,655	532,919	658,144	3,454,082	2,034,649
Portugal		1,148	5,670	13,988	73,235	382	2,196	94,086	75,604	15,518	69,510	238,072	81,101
Azores and Madeira		3,527	15,813	1,185	5,712	15,196	83,632	6,754	26,414	19,908	5,624	72,771	105,157
Spain		1,086	3,362	4,634	22,024	118	557	196,781	35,839	5,838	139,740	128,844	25,943
Canary Islands		8,635	40,326	5,642	30,763	24,812	132,129	73,897	25,485	39,089	56,173	86,794	203,218
Italy		60,586	229,176	59,436	302,841	44,434	193,527	810,994	329,471	164,456	572,570	892,690	725,544
Austria-Hungary				2,665	8,543			53,761	43,701	2,665	36,072	140,198	8,543
Greece		1,487	10,333	10,076	57,951	3,903	22,368	76,091	9,542	15,466	62,278	33,554	90,652
Algeria		17,103	66,210	10,471	50,561	45,562	222,231	66,505	22,426	73,136	45,147	67,176	339,002
French West Africa		41	263	149	801	2,070	7,776	10,776	19,489	2,260	8,283	59,840	8,840
Portuguese West Africa		5,486	25,867	1,793	9,661	24,897	140,250	18,624	14,445	32,176	16,014	52,668	175,778
Chile		90	488					27,204	553	90	22,761	2,404	488
Brazil								158,896	6,276		139,977	21,883	
Uruguay		3,719	11,658			4,438	16,641	65,642	26,172	8,157	57,438	81,487	28,299
Argentine Republic		5,528	33,167					267,142	62,094	5,528	223,967	175,081	33,167
Channel Islands		615	1,576	4,114	7,205	8,551	16,375	14,509	12,462	13,280	10,394	21,456	25,156
Gibraltar		20,407	93,435	27,081	151,371	83,047	445,460	14,940	102,115	130,535	11,870	317,679	690,266
Malta		5,691	26,002	797	4,345	24,892	114,205	36,249	21,644	31,380	24,913	50,989	144,552
Egypt		13,335	60,332	11,891	61,213	93,726	443,666	258,232	138,759	118,952	191,421	369,738	565,211
Anglo-Egyptian Sudan													
Aden and Dependencies								22,930			19,811		
British India		235	1,057					8,827		235	7,026		1,057
Ceylon						5,151	19,316	25,601		5,151	21,586		19,316
Other countries		9,109	36,428	12,692	64,397	22,917	93,657	182,201	64,527	44,718	142,663	179,411	194,482
Total	Anthracite	69,650	184,310	391	1,420	68,271	305,345	254,811	165,969	138,312	205,903	367,101	491,075
	Steam	396,333	1,595,333	345,441	1,706,098	454,999	2,254,746	4,467,111	2,090,509	1,196,773	3,135,956	6,179,614	5,556,177
	Gas	200	1,001	98,487	423,764	238	1,429	996,158	271,158	98,925	633,730	747,945	426,194
	Household					6,559	22,875	175,022	11,930	6,559	115,392	39,795	22,875
	Other sorts	19,816	62,438	15,142	63,444	96	312	304,078	137,623	35,054	191,186	398,464	126,194
Total		485,999	1,843,082	459,461	2,194,726	530,163	2,584,707	6,197,180	2,677,189	1,475,623	4,282,167	7,732,919	6,622,515
Total (Sept., 1919)		*649,687*	*1,566,445*	*859,613*	*2,466,991*	*1,167,889*	*3,699,581*						
Total (Sept., 1913)		*1,525,181*	*842,926*	*1,216,584*	*761,588*	*3,456,415*	*2,675,653*						
Coke—Gas								125,357	150,096	74,133	113,660	546,410	609,800
Other sorts										44,843			314,983
Manufactured fuel								179,041	135,268	246,830	158,600	367,313	1,311,247

To		Nine Months Ended September, 1920 — Coal—Small Tons	£	Coal—Through-and-through (Unscreened) Tons	£	Coal—Large Tons	£	Nine Months Ended September — All Coal Quantity (tons) 1913	1919	1920	All Coal Value (£) 1913	1919	1920
Total	Anthracite	677,138	1,696,993	1,456	6,322	571,630	2,156,349	2,189,491	1,147,514	1,250,224	1,743,332	2,391,814	3,859,664
	Steam	5,146,206	17,589,018	4,197,361	17,559,991	6,871,969	30,402,057	39,755,473	21,912,477	16,215,536	28,105,660	16,190,846	65,551,066
	Gas	1,668	7,200	1,574,690	6,271,272	10,764	37,386	8,583,712	2,494,702	1,587,122	5,259,521	5,407,616	6,315,858
	Household	14	60	1,016	5,460	51,010	135,796	1,335,833	97,688	52,040	873,933	212,971	141,316
	Other sorts	436,441	1,428,826	309,561	1,193,586	631	2,160	2,653,279	1,186,231	746,633	1,649,710	2,515,569	2,624,572
Total		6,261,467	20,722,097	6,084,084	25,036,631	7,506,004	32,733,748	54,517,788	26,838,612	19,851,555	37,632,156	56,718,816	78,492,476
Total for nine months of 1919		*5,894,119*	*10,657,430*	*7,567,449*	*15,879,784*	*13,378,045*	*30,181,592*						
Total for nine months of 1913		*11,018,098*	*7,389,519*	*11,006,035*	*6,728,028*	*30,495,645*	*23,513,709*						
Coke—Gas								838,055	1,012,564	652,226	800,023	2,964,267	3,859,934
Other sorts										806,129			4,453,210
Manufactured fuel								1,542,365	1,253,844	1,746,734	1,323,714	2,682,201	8,071,691

* From the *Colliery Guardian*

Utilities See in Assigned Cars the Only Solution of Their Fuel Difficulties

Utility Officials Blame Machinations of Operators for Issuance of Service Order No. 21—George W. Elliott Asserts That Plants Have Been Unable to Obtain Coal Since Suspension of Order No. 16—Tabulation Shows Fuel Situation

By Paul Wooton
Washington Correspondent

THAT the average public-utility official firmly believes that he has been deprived of assigned cars through the machinations of the coal operators became clear as an outgrowth of the discussion of car distribution and other matters affecting public utilities, at the annual convention in Washington last week of the National Association of Railway and Utility Commissioners. In the discussion of the various questions pertaining to coal it was quite evident that the state public utilities commissioners sympathize entirely with the position of the Committee on Gas and Electric Service that assigned cars offer the only solution to the existing fuel difficulties.

In a letter to Walter A. Shaw, president of the National Association of Railway and Public Utilities Commissions, George W. Elliott, secretary of the National Committee on Gas and Electric Service, called attention to "the calamity that is impending" and presented a table showing the ratio of shipments to the needs of the utilities. Mr. Elliott's letters reads as follows:

The National Committee on Gas and Electric Service feels it incumbent to call the attention of your honorable body, while it is in session, to the gravity of the coal situation as affecting the operations of public utilities generally throughout the United States.

The Interstate Commerce Commission, realizing the hazardous condition which the public utilities were in and acting with the authority conferred on them by the new transportation law, made effective July 19, 1920, a service order which authorized the placing of assigned cars at the coal mines for public utility loading sufficient to take care of the daily requirements, but not for storage, and by this action protected the public in ensuring the utilities regular shipments to provide for daily service to the public. These priority orders were continued until Oct. 14, when they were superseded by the present Service Order No. 21, which order was intended to be invoked only where emergency was shown to exist and that every effort was to be made to get the coal they had previously bought and contracted for without recourse to Order No. 21.

Shipments Recede to 47 Per Cent of Needs

Since that date more than three weeks have elapsed and all efforts to obtain their coal have proved futile and the result of such failure is depicted in the accompanying tabulation showing that after the suspension of Order No. 16 on Oct. 14 and without the assistance of Order No. 21, the shipments from Oct. 15 to 23 showed a falling off to 47 per cent of the current daily consumption of a representative group of utilities; a further survey made for the week ending Oct. 30 showed the shipments to be only 53 per cent of daily needs, thus further depleting the meager reserve stocks of the utilities and the dark outlook of facing winter conditions with the prospects of possible curtailment or suspension of service to the public.

With these conditions confronting the public utilities we feel it our duty to take the opportunity of bringing it to your attention in order that you may be made fully aware of the calamity that is impending unless some action is taken to provide carrying capacity at the mines to insure daily operation of public utilities in the discharge of their obligations to the public. . . .

Our committee is composed of members appointed by the American Gas Association and the National Electric Light Association, which two associations represent approximately 85 per cent of all the utilities furnishing these classes of service, and all its expenses are borne by these associations, although the services of our committee are not confined to the above membership but are rendered to non-members as well, and all municipal and other plants furnishing similar public service. We are also acting for the American Electric Railway Association or any non-members in that industry.

The table referred to in Mr. Elliott's letter follows:

COAL SITUATION AT REPRESENTATIVE PUBLIC-UTILITY PLANTS
(In Carloads of Fifty Net Tons)

Name of Company	Address	Average Daily Needs	Average Daily Shipments Wk. Oct. 23	Average Daily Shipments Wk. Oct. 30	Col. 2—Ratio of Shipments to Avg. Daily Needs Week of Oct. 30	
Consumers Gas Co.	Toronto, Can.	18.7	4 0	6 3	21	33
Hartford City Gas Light Co	Hartford, Conn.	3 5	0 0	2 0	0	67
Hartford Elec. Light Co.	Hartford, Conn.	8 2	4 0	3 8	46	46
Potomac Power Co	Washington, D. C.	15 2	7 1	8 1	47	53
Valdosta Lighting Co.	Valdosta, Ga.	0 7	0 5	0 5	43	71
DeKalb-Sycamore Elec. Co.	Dekalb, Ill.	1 5	1 1	1 0	75	67
Granite City Gas Lt. & Fuel Co	Granite City, Ill.	0 5	0 1	0 5	20	100
Central States Gas Co.	Vincennes, Ind.	0 7	0 0	0 0	0	0
Citizens Gas Co. of Ind.	Indianapolis, Ind.	45.7	30 3	0 0	66	0
Ft. Wayne & Northwestern Ry	Kendallsville, Ind.	0 6	0 1	2 2	17	367
Indianapolis St. Ry. Co.	Indianapolis, Ind.	4 4	0 0	0 0	0	0
Kentucky Utilities Co.	New Albany, Ind.	1 4	1 0	0 0	70	0
United Gas & Elec. Co.	New Albany, Ind.	0 7	0 4	0 5	57	71
Cambridge Gas Lt. Co.	Cambridge, Mass.	6 3	2 9	1 6	44	28
Taunton Gas Lt. Co.	Taunton, Mass.	1 8	1 0	0 8	56	44
Worcester Elec. Lt. Co.	Worcester, Mass.	9 4	3 8	5 1	46	34
Battle Creek Gas Co	Battle Creek, Mich.	4 0	0 8	1 5	20	37
Consumers Power Co.	Jackson, Mich.	24 9	11 8	12 8	48	51
Detroit City Gas Co.	Detroit, Mich.	1.7	9 0	6.3	48	34
Detroit Edison Co	Detroit, Mich	93.6	24 4	0 0	26	0
Grand Rapids Gas Lt. Co.	Grand Rapids, Mich.	6.8	1 4	2.0	20	32
Iona Gas Lt. & Coke Co.	Iona, Mich.	0 3	0 3	0 2	100	67
Michigan Light Co.	Flint, Mich	12.2	11 0	0 8	90	6
Wastenaw Gas Co	Ann Arbor, Mich.	2.1	1 1	1 3	52	62
Southern Ill. Lt. & Pr. Co.	St. Louis, Mo.	0.2	0 9	0 0	450	0
Union Elec. Lt. & Pr. Co.	St. Louis, Mo.	28.1	21 3	0 0	76	0
Public Service Elec. Co.	Newark, N. J.	73 6	30 5	41 7	41	57
Public Service Gas Co.	Newark, N. J.	20.9	7 4	12 0	25	41
Adirondack Power & Lt. Co	Amsterdam, N. Y.	8.2	2 4	1 8	29	22
Brooklyn Edison Co	Brooklyn, N. Y.	36.4	20 4	20 0	56	55
Buffalo Gen. Elec. Co	Buffalo, N. Y.	12 9	1 6	2 8	13	22
Consolidated Gas Co. of N. Y.	New York, N. Y.	59 0	18 6	30 0	32	51
New York Edison Co.	New York, N. Y.	117 0	65 0	70 0	56	67
Rochester Gas & Elec. Co. Rochester, N. Y.,	Gas	9.9	7.5	8.0	76	81
	Elec	8 2	9 3	0 0	113	0
So. N. Y. Power Co	Cooperstown, N. Y.	0 2	0.0	0.0	0	0
Erie City Water Works.	Erie, Pa	1 3	0.6	0.0	38	0
Phila. Rapid Transit Co.	Phila, Pa.	9 5	5.8	6.0	61	63
Cinn. Traction Co.	Cincinnati, Ohio.	9 4	4 6	5 7	49	61
Cleveland Illuminat'g Co.	Cleveland, Ohio.	45.0	27 0	23 0	60	65
Cleveland, S. W. & Cols. Ry	Cleveland, Ohio.	4 1	3 3	3.2	80	79
Ohio Elec. Rys. Co.	Springfield, Ohio.	2 6	3 5	0 0	13	0
Ohio Service Co.	Coshocton, Ohio.	3 0	1 4	1 3	46	43
Ohio St. Power Co.	Fremont, Ohio.	7 0	1 1	3 3	17	47
Penn. Ohio Elec. Co.	Youngstown, Ohio	11 7	6 6	5 3	48	45
Toledo Rys. & Lt. Co.	Toledo, Ohio.	24 0	14 7	0 0	61	0
United Gas Impr. Co.	Phila., Pa.	12 6	2 0	0 0	22	0
Phila. Elec. Co.	Phila, Pa.	69 0	0 0	68 0	0	69
Citizens Gas Lt. Co.	Jackson, Tenn.	0 4	0 0	0 5	0	125
Memphis, Gas Co	Memphis, Tenn.	6.6	1 8	2 3	27	35
Richmond Dept. Pub. Svc.	Richmond, Va.	2 6	2 0	1 8	77	69
Milwaukee Elec. Ry & Lt.	Milwaukee, Wis.	37 4	29 0	0 0	77	0
Milwaukee Gas Lt. Co.	Milwaukee, Wis.	13.6	3 1	3 5	23	26

		Daily requirements	Daily shipments	Daily shipments	Ratio of shipments to average daily needs	
Total—week 23		855 5	406.9	....	47	..
Total—week 30		668.5	....	357.5	...	53
Total of utilities reporting in week of Oct. 23. which also reported in week of Oct. 30	Week of 23	599.5	262 9	....	44	..
	Week of 30	599 3	....	309.5	...	51

The communication from Mr. Elliott led the Association of Railway and Utilities Commissioners to invite him to address one of its sessions. Mr. Elliott took issue with the statement which had been made by Commissioner Aitchison of the Interstate Commerce Commission that the utilities want the commission to enforce the carrying out of contracts. He denied that there ever had been any such intention. All that is asked is the invocation of Service Order No. 21, which was duly authorized by the commission.

Mr. Elliott told the audience at the convention that the co-operative committee, of which he is a member and on which the operators and the railroads each has representation, is not meeting the utilities situation and that the Interstate Commerce Commission declines to allow the use of assigned cars to meet the emergencies which are not relieved by the operators and the railroads when called upon to provide emergency coal. In that connection Mr. Elliott states that he has no fault to find with the National Coal Association, but says "it is quite evident that the National Coal Association cannot control its own members. Operators frequently make no shipments even when advised that an emergency exists."

Operators and Roads Ignore Calls for Help

Mr. Elliott was careful to state that John Callahan, representative of the operators on the committee, had worked tirelessly and conscientiously, but that individual operators are coming more and more to pay little attention to Mr. Callahan's telegrams urging them to ship on the contracts of utilities which are at the end of their fuel supplies.

In the same way Mr. Elliott finds that A. G. Gutheim, who represents the railroads on the committee, puts forth his best efforts to get cars for the operator called upon to ship to a utility in trouble. The difficulty again is that the individual road ignores Mr. Gutheim's request.

A perusal of the letters being received at the rate of several hundred daily by Mr. Elliott shows very clearly that the average utility official is of the opinion that the coal operators presented their side of the case so well that the Interstate Commerce Commission was influenced to cancel Service Orders Nos. 9 and 16 and authorize an order advantageous to the operators at the expense of the utilities.

Mr. Elliott made it clear in his remarks before the convention that the repeal of Service Order No. 16 was inevitable because the Interstate Commerce Commission could not allow an order to stand that was being used for speculative purposes. He admitted that many abuses arose under Service Order No. 16 and that with assigned cars in their control, many utilities used them as a weapon to beat down prices. Under the present order, however, he points out that the National Committee on Gas and Electric Service is in a position to ascertain when a real emergency exists.

Expects Utilities To Be in Straits All Winter

While both the operators and the railroads expect the situation to improve within a week to the extent that plenty of coal will be available for everyone, Mr. Elliott and his associates do not share that expectation. As few utilities have a reserve worthy of the name, Mr. Elliott predicts that the fight to keep the public utilities in operation will last all winter. With winter transportation difficulties at hand, Mr. Elliott expects to see an increase in the obstacles to the accumulation of normal reserves on the part of public utilities, unless assigned cars are allowed.

On the other hand, the operators declare that the co-operative committee has functioned and has furnished coal in hundreds of emergencies. One proof that it has functioned is that no utility has closed. It is contended vigorously by the National Coal Association that the public utilities are exaggerating their situation. It is not believed that there is anything at all in the present situation to justify the use of assigned cars at a time when the saturation point has been reached. It is pointed out that one of the large railroads, which does not have a mine on its line, finds it no longer necessary to request assigned cars to obtain its coal.

Another evidence that supply has caught up with the demand is the fact that middlemen are in grave difficulties, due to the large number of cars of coal which have been refused and which they cannot handle under the present limitation of reconsignment. In addition, attention is called to the fact that Lake insurance expires Nov. 23, which brings navigation to a close on that date, thereby releasing an additional 2,000 cars daily for other deliveries. December is certain to be a light month in the consumption of steam coal, as a large percentage of plants have made plans to make repairs and take stock during that month.

Operators also called attention to the fact that any preferential deliveries on public-utility contracts is likely to involve them in legal difficulties, for any other holder of a contract would have a good basis on which to claim damages.

In this connection it may be said that the utilities intend to continue a determined fight to be placed on the same basis as railroads in the matter of assigned cars. Mr. Elliott uses this example: The Pennsylvania R.R. transports passengers between Washington and Baltimore. In order to safeguard the continuity of the service, it is allowed assigned cars for its coal. The Washington, Baltimore & Annapolis electric line also hauls passengers between Washington and Baltimore, but because it happens to transform its coal into electricity there is no such safeguarding its continuity of operation.

Why Service Order No. 16 Was Suspended

CHAIRMAN CLARK of the Interstate Commerce Commission, speaking before the National Association of Railway and Utilities Commissioners in Washington, Thursday, Nov. 11, 1920, answered the critics of the commission who have complained that by canceling Service Order No. 16, which provided unlimited assigned cars for public utilities, public utilities in general have been in a precarious position as regards their supply of coal.

In answer to E. I. Lewis of Indiana, who said that Indiana, Illinois, Wisconsin and Ohio are finding that the operation of the present order (S. O. No. 21) is not safeguarding the vital interests which are served by the public utilities, Mr. Clark said:

"In the first place I want to say that in view of the circumstances that obtained throughout the country, which are well known to all of you, at the time the Transportation Act became a law and that have persitsted since that time and been greatly aggravated by labor troubles that could not have been foreseen, I do not feel that any action taken by the Interstate Commerce Commission under its car service powers needs any defense where the facts under which the order was made are understood; and I do not think we need to apologize for anything that we have failed to do, and I do not want to be understood as doing either of those two things. Without going into what might be interesting but would be too long a recital of the conditions affecting the fuel situation, and coming concretely to the point that you referred to, I want to point out that one of the things which we bore in mind and carefully protected by the assigned-car rule permitted public utilities the same advantage that the railroad has under the assigned-car rule for railroad fuel, to see to it that public utilities could get coal for their current needs, but not to increase their storage.

"That was the specific provision of our order. And under that provision they were able to get coal for their current needs, and many of them did a good deal more. Some of them did largely increase their storage supply, and others connived with outsiders and dishonestly, and wholly improperly, shipped coal under those terms, and under these assigned car privileges coal that never was used for the public utility at all was diverted to other uses, and that is why we suspended that order. And since we suspended that order we have said to every public utility, or every representative of a public utility who has approached us on the subject, 'You bring to us a showing of a mine operator from whom you have contracted your coal, and show us the railroad over which you want to ship it, and

give us an opportunity to give a specific permit or order that will take care of your situation, and we will give it full consideration'; and not one of them has come forward with his operator prepared to say 'We want this coal and this operator will furnish it if you will provide the cars.'"

Evils of Assigned-Car Practice Explained By Commerce Commissioner Aitchison

HAD the coal operators who have been opposing the theory of the assigned-car practice been present at the meeting of the National Association of Railway Commissioners in Washington, on Thursday, Nov. 11, they would have heard from Commissioner Aitchison of the Interstate Commerce Commission a résumé of the arguments opposed to assigned cars for public utilities strangely similar to those advanced by the operators against assigned cars for railroad fuel.

Under the pressure exerted by the public utility companies, urging either a return to assigned cars ad lib., as under Service Order No. 16, or a loosening up under S. O. 21, Commissioner Aitchison reviewed the coal situation of last spring and said that when the public utilities came to the commission with their troubles, provision was made for their protection and "for a period of sixty days any utility in the United States which chose to do so was permitted to draw a sight-draft on any railroad in the United States in favor of any man that it designated for all the cars it could use, and those cars had to be taken from the neighboring mines on that same line and given to the utilities." The coal thus provided was for current use and not for storage or reassignment, and under the orders the utilities were getting all the cars that they needed to carry coal for their daily use, and, in addition, for adding to their storage piles.

Mr. Aitchison blamed the utilities for not observing the spirit of the orders. "They had sixty days' time within which they had this boon," he said. "And was that privilege observed by them in the spirit in which it was given? No! The result was that in three districts of the United States alone the total assigned cars that these public utilities asked for their daily requirements exceeded the average daily consumption winter and summer of all the utilities of the United States—three districts on three railroads.

"Of course that was a condition which was intolerable. When we assign a car we diminish the available car supply for the other mines. We make it possible for this mine to run 100 per cent time, and thereby another mine which normally would operate 75 per cent time is able to operate only 50 per cent time. The effect of that sort of thing on mine labor can be imagined. It is bad enough in the case of railroad assigned cars; but when you come to multiply it, it makes it infinitely worse. The laborers go from the mine with the 50 per cent car supply, where they are employed 50 per cent of the time, to the place where they can get steady employment. The result is threefold. It cuts down the total production; it increases the unsettled condition of labor, and by diminishing the amount of coal on the spot market it increases the price of spot coal.

"Now for those sixty days we gave them the opportunity to build up their coal supplies, and when there is a real emergency we are ready now to see the coal move to meet the necessities of public utilities; but we are unwilling to bribe a mine operator who has a contract with a public utility but who prefers to sell his coal elsewhere—because the public utility contract was made last spring or winter, when the price was low—we are unwilling to bribe him by giving him extra cars, by giving him an advantage over his honest mine neighbor.

"Now that is the situation. We have laid this invitation before a number of these utilities, and not one of them has accepted it, although one gentleman said it was just what he wanted, and he was going to stay over for the purpose. Bring your mine operator here, have the railroad man come here who distributes these cars, and we will see that that mine gets its fair share in proportion to the coal produced upon that line of railroad, and that that mine gets what its neighbors do. Then let that mine operator tell what he has done with the coal he has produced, what he is doing with it, and what he will do with it, and we will consider whether it is necessary to give him a super-allotment of cars and take cars from the neighboring mine and give them to him over and above what he is normally entitled to, creating a discrimination in his favor.

"The simple fact is that it resolves itself down as 99.44 per cent of these cases have resolved themselves down—it is a question of price and that is all there is in it, because the coal has been produced and is being produced. Why even last week—the week ended Nov. 6—with All Saints' Day, a holiday for every Catholic miner, and with election day in that week, the production, which fell to 7,500,000 tons after the switchmen's strike, exceeded 11,350,000 tons for last week, and that week's production was preceded by four weeks which exceeded 12,000,000 tons a week. We are today equaling the coal production of 1917, the height of the war; maybe a few thousand tons one way or the other, but substantially the same. We have exceeded that production on coal.

The Interstate Commerce Commission on Nov. 15 issued a further amendment to Service Order No. 20, effective at midnight, Tuesday, Nov. 16, which has the effect of releasing the territory west of the Mississippi River from the use of open-top cars preferentially for the loading of coal. It also permits carriers east of the Mississippi River to use all flat-bottom gondola cars for loading of commodities generally as well as coal.

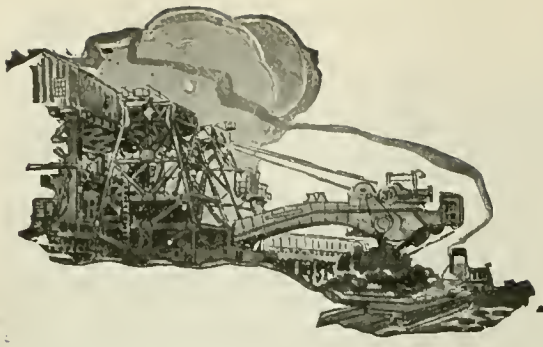
"Now there is a duty that devolves upon the public utility commissions with respect to this public utility coal. Price is not a transportation emergency that is recognized by the Transportation Act. If we are to take care of a public utility because it cannot buy coal except by giving cars preferentially there is no reason why we should not widen our activities and look over the community generally and attempt to pick out the essentials of industry and use them in the same way. We can and will take care of the rare cases, even if we have to load coal onto passenger trains in order to do it. But as price is the thing that is sticking in the minds of these utilities you gentlemen are the ones who have got to protect them there; and if there is any breakdown, it is not with us, because the coal is being produced and moved, and if your utilities cannot get it, that is their lookout and yours."

Exports Exerted Minor Effect on Coal Prices Throughout Country, I. C. C. Finds

THE Interstate Commerce Commission on Friday, Nov. 12, issued a report covering its investigation into the effect of exportation of coal on prices, conducted under a resolution passed by the Senate June 4 last. The commission says that while foreign demand for American coal was an important factor in causing domestic coal prices along the Atlantic seaboard to be high during the first nine months of 1920 it was only a minor factor in creating high coal prices for the country as a whole.

"It would be an error to assume that fundamentally the high prices paid for spot coal are to be ascribed mainly to the large export," the commission says. "There has been an abnormal domestic situation. The foreign demand intensified the abnormal domestic demand and the several factors together afforded an opportunity for the exacting of prices not justified by the cost of production."

The commission says, however, that in certain situations the foreign demand plays a much more important part than is indicated by a comparison of total export and production.



Production and the Market

Weekly Review

PRODUCTION of soft coal has overtaken demand and prices are still dropping. Without exception the markets for bituminous coal are being filled and demand is decreasing. Business is experiencing a slump the extent of which will be measured in coal production in the next six weeks.

Compared with the slump in prices of other commodities, coal is going down gradually. Last week witnessed the most general and violent fall in wholesale cash prices for commodities of any week in 1920, and probably the greatest general decline of any single week since 1893 or 1894. Of eighteen commodities of general consumption twelve declined last week, five were unchanged, and only the wholesale price of eggs advanced.

Service Orders Likely To Be Suspended Soon

It is not expected that the soft-coal market will touch bottom until after Dec. 1, which also is the latest date at which the outstanding service orders of the Interstate Commerce Commission are expected to be suspended.

Production of bituminous coal last week was in excess of 12,000,000 tons, following 11,355,000 tons, a record for election week. Anthracite production made a sorry showing election week with 1,390,000 net tons, a decrease from the maximum possible of nearly 2,000,000 tons. The loss was due to observance of holidays and absenteeism.

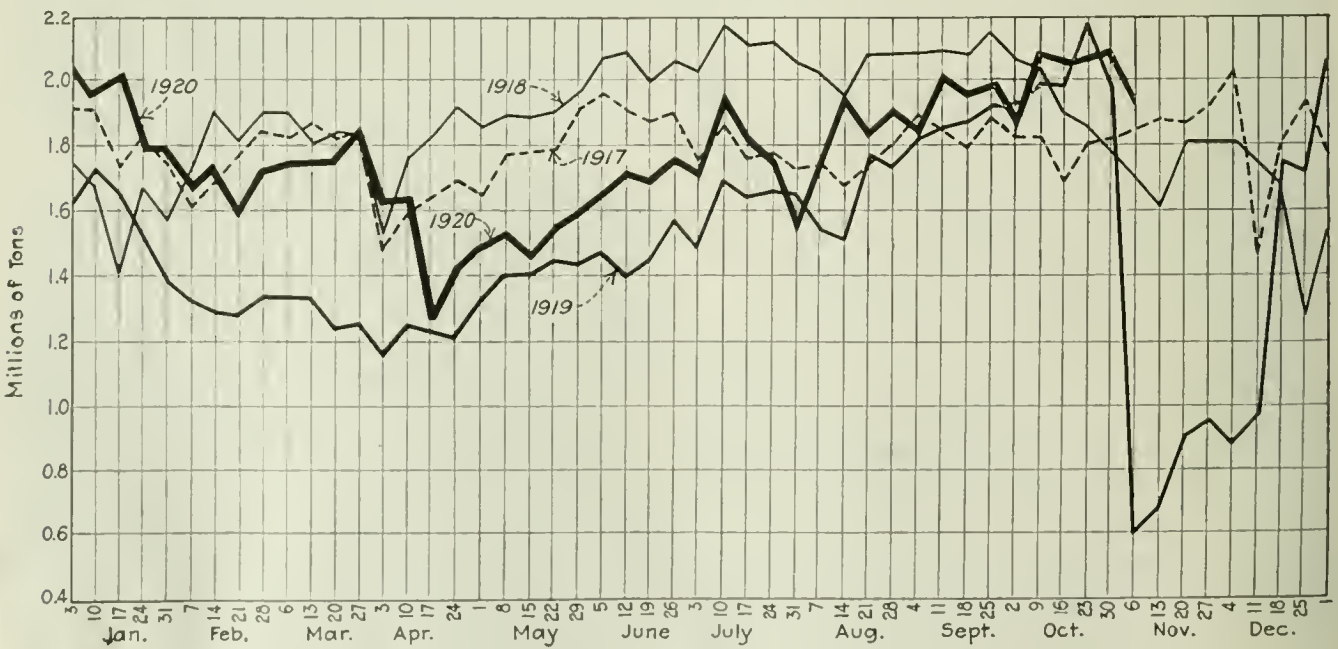
Public utilities stoutly maintain they are extremely short of steam coal, but steam railroads with few exceptions are well stocked up and are well covered by contracts. Coal stocks in the hands of New York City utilities on Nov. 8 were 397,494 tons, a decrease of 18,464 tons compared with the week preceding. Retail dealers who distribute soft coal are absorbing a large tonnage. Under the informal arrangement between Middle West retailers, coal shippers and the railroads, entered into in October, whereby 2,010 cars per day would be supplied on emergency orders, about 19,000 cars, representing 40 per cent of the total promised, had been shipped up to Nov. 3.

It is important to bear in mind that the excess over normal in the present output is being absorbed on contracts and current orders of last month. The far-seeing operators have had salesmen on the road for the last four to six weeks and have been covering with railroad assigned-car contracts until next April. On this business prices have ranged from $4.25 to $5.50 on best steam coal of Fairmont grade.

BITUMINOUS

Production during the first week in November declined 1,963,000, or 9.4 per cent, as compared with the preceding week. According to the Geological Survey, 11,355,000 net tons were mined. As anticipated, the decrease was caused by the occurrence of election day and All Saints' Day within the same week, although the loss was not as heavy as expected. In spite of the decrease, the output was larger than in the corresponding week of any of the last four years. The year 1920 is now less than 7,000,000 tons behind the 1917 figure. Early reports during the week of Nov. 8-13 indicate a heavy production figure for that period.

Average Daily Production of Bituminous Coal*



*From weekly report of Geological Survey.

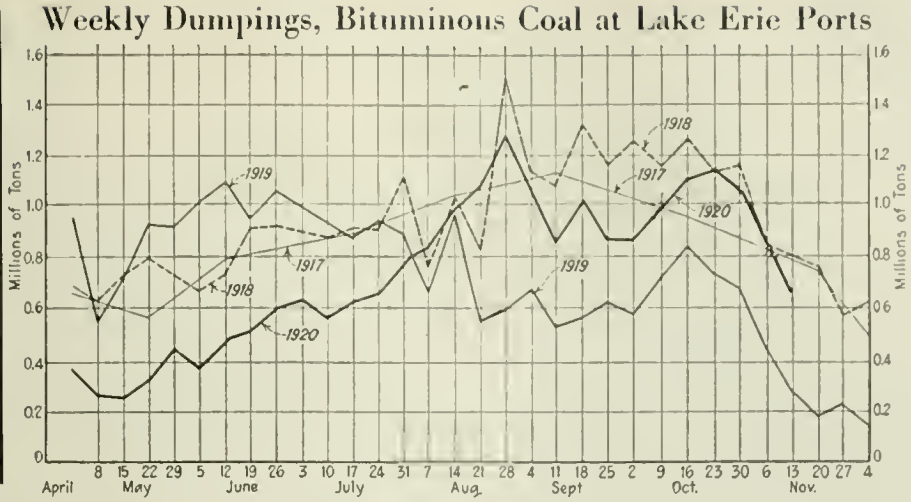
Lake Coal Dumped Season to Nov. 13

(NET TONS)

	1919	1920
Total	22,385,789	21,561,951

Week of Nov. 13, 1920

Cargo	627,157
Fuel	41,793
Total	668,950



Transportation conditions continue to improve, but slowly. Car shortage was not the leading factor in curtailing production during the week, as the reduced working time caused by the holidays made losses from inadequate placements almost negligible. Improvement in the supply of empties was general throughout the northern Appalachian section, while middle Appalachian reports showed a decline in the Kanawha district. Gains were made also in the Alabama fields, where cars are available for all tonnage produced. Kentucky operations still experience the poorest supply, although improvement is noted in the western section of the state. Pittsburgh No. 8 district is hampered by lack of cars and operators have applied to the Interstate Commerce Commission for relief, which has been promised. Illinois placements were decidedly better. West of the Mississippi, Utah and Colorado still report unsatisfactory supply.

Labor is working more smoothly. In some sections the return of men to the mines from other industries is almost causing a surplus, as in the Alabama section. The recent holidays were the cause of considerable idleness, as miners seized the opportunity presented and a general lay-off resulted. Eastern Ohio miners are still in a dissatisfied frame of mind, but production there has made some gains since the settlement of the outlaw strike. The Georges Creek and Upper Potomac section is the scene of disturbance that may call out 8,000 men. Withdrawal of Federal troops from the Thacker strike zone was the signal for a renewal of threats and violence. Striking Colorado lignite miners have largely returned and production is nearing normal.

Prices Continue To Drop, but Less Swiftly

Prices for spot coal continue to drop, although the week ended Nov. 6 was not marked by the swift decline of the preceding week. To the weak demand caused by industrial let-down was added a tendency on the part of buyers to withdraw from the market and await still lower prices in the belief that the bottom of the decline has not yet been reached. Buying for reserve is almost at a standstill and cancellations are common.

Fairmont quotations are lower; Pool 34, $5.50, and Pool 44, $5. Pittsburgh district prices range $4@$4.50 for steam, $5@$5.50 for gas and byproduct; Pittsburgh No. 8 is unchanged. Midwest prices have weakened as manufacturing curtailment continues; Indiana steam lump is now being quoted at $5 for shipment outside the state. Western Kentucky coal is in good demand with prices slightly lower at $5.25@$6. The Boston market has reached a new low-price level: medium Pennsylvania grades, $5; bunker supplies generally a dollar higher. New York reports a further slump with New York Central Line coals at $5, slightly higher than Pennsylvania Line fuel; Pool No. 11, $4.50@$5; Pool 10, $5.25@$5.75, and Pool 34 down to $5 @$5.50. Late Philadelphia reports show a range of $5 to $7 for medium and best grades; Pool 18 slow at $4@$4.50. Corresponding slumps are reported in all the market centers with increasing production narrowing the breach between supply and demand.

According to the Geological Survey, coal handled over the Tidewater piers for the week ended Nov. 7 amounted to 1,168,000 net tons, or a decrease of 39,000 tons from the figure for the preceding week. The tonnage handled was destined as follows:

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Totals
Coastwise to New England	68,000	15,000	33,000	109,000	1,000	226,000
Exports	8,000	102,000	181,000	214,000	7,000	512,000
Bunker	114,000	14,000	17,000	55,000	4,000	204,000
Inside capes	. .	40,000	25,000	5,000	.....	70,000
Other tonnage	126,000	....	7,000	23,000	.....	156,000
Totals	316,000	171,000	263,000	406,000	12,000	1,168,000

A further decrease was noted in the all-rail movement to New England, 4,757 cars being forwarded to the five rail gateways. Compared with the preceding week this was a decrease of 97 cars.

Lake dumpings for the week ended Nov. 14 amounted to 668,950 tons, a decline of 180,000 tons compared with the preceding week. October receipts at Duluth-Superior was the largest of the year for anthracite and bituminous. Cumulative receipts of soft coal were 34 per cent short of 1918 and 16 per cent behind 1919. The distribution of cargo coal actually handled at Lake Erie during the season of 1920 so far has not departed greatly from normal, as indicated by past years. According to the Ore and Coal Exchange, of the 19,091,000 tons forwarded 27.6 per cent went to Canada, as against 21.5 per cent in 1919 and 23 per cent in 1918. Of the coal forwarded to American ports the proportion going to Lake Superior has decreased slightly, while shipments to Lower River points have increased.

ANTHRACITE

Production during the first week of November fell off sharply, 1,390,000 net tons being the output reported by the Geological Survey. The slump was caused almost entirely by observance of the holidays in election week.

The anthracite domestic situation is somewhat easier at inland West points, where receipts have improved lately. Eastern retailers are still apportioning their meager supplies in an endeavor to stretch the tonnage available until additional shipments which have been promised reach them. Prices for the company product are unchanged, although independent operators are still obtaining fancy prices for their coal. The miners' wage question is assuming a serious aspect although it is hoped that trouble can be averted should the demand for a 10 per cent increase be refused.

COKE

Beehive coke production declined during the week ended Nov. 6, a total figure of 388,000 net tons being reported, as against 422,000 for the week preceding. Connellsville reports an extremely weak demand with but little call for free coke. Prices are silghtly lower: furnace $8.50 and foundry $9.50@$11, with first-half contracts being discussed on a tentative basis of $6.

Reports From the Market Centers

New England

BOSTON

Market Is Lifeless — New Low Price Levels Made — Movement Slackens — Labor Is Apparently Indifferent — Colder Weather Brings Fresh Anxiety Over Domestic Anthracite—Light Output with Inadequate Receipts.

Bituminous—The market here is progressively soft. There is an utter dearth of inquiry for spot coal, with no relieving prospect for the near future. There are a few inquiries for delivery extended over several weeks but on such transactions it is difficult for minds to meet, so widely apart are buyer and seller. Industrial conditions are at a low ebb and there are but few large textile or other factories that either have not the coal on hand or have it due on contract that will carry them well into March on the basis of current consumption.

A few sales have been made at less than $5 per net ton at the mines for ordinary Pennsylvania grades. Those that are more eligible for bunker and export trade are commanding from 75c@$1.25 more, but buyers are quite ready to delay purchases indefinitely. Gas coals are also on a much lower level and there is no stability to prices.

Both all-rail and by water there is a marked let-down in receipts. The Hudson River gateways show a gradually sagging movement and this will fall off still further when the railroads have succeeded in accumulating an ordinary seasonable reserve. All the Tidewater piers show less tonnage dumped for coastwise destinations and the trade is agreed that we have some very dull months ahead.

It is apparent, however, that grades like Pools 1, 74, and 9 are to show greater relative firmness than inferior coals. Consumers here have been liberally educated as to the disparity between grades and for that reason the buyers who are particular as to quality will be willing to pay a higher premium than was customary in normal times. No steam-user emerges from such a season as we have gone through in 1920 without some sort of determination to secure good coal if there is a way to get it.

There have been rumors here of the extraordinary state of car supply in the central Pennsylvania district. One story is that there were 2,800 cars on one division of the Pennsylvania Railroad between originating point and the scales waiting consignment.

Labor is apparently quite indifferent to the relaxing demand. The approach of cold weather will somewhat increase the number of hands for the smaller operations but there are still a number of local difficulties which contribute to light output. In many quarters, however, it seems not to be understood that all the props are out from under the market and from now on that it is to be strictly a hand-to-mouth affair.

Current prices at wholesale range about as follows:

	Cambrias and Clearfields	Somersets
F.o.b. mines, per net ton	$4.50@ 6.25	$5.25@ 7.50
F.o.b. Philadelphia, per gross ton	7.65@ 9.65	8.50@11.00
F.o.b. New York, per gross ton	8.10@10.20	9.00@11.50

Anthracite—The Massachusetts Fuel Administrator has given new emphasis to the 3-ton limit for delivery to any one place. Local supervisors have also been appointed to regulate deliveries so that the coal now available can be equitably distributed. There is every willingness to co-operate, but the retail dealers are exceedingly anxious over the slowness with which coal comes forward. In the face of this situation a succession of holidays made the output light and undependable.

Tidewater

PHILADELPHIA

First Freezing Weather Finds Dealers with Little Stock on Hand — Early Relief Is Probable — Dealers' Profits Attacked — Steam Trade Moderates — Bituminous Prices Continue To Ease — Consumer Not Inclined To Buy—Export Business Held Back.

Anthracite—Cold weather came with a rush this week, with a mark well below freezing. As anticipated, dealers were besieged for coal.

To add to the difficulty, a prominent local paper has given much space to an alleged investigation of the cost of coal. The basic statement is that the retailers can make sufficient profit at $11.75 a ton as compared with the present average price of $15 for the family sizes. The articles are filled with the grossest inaccuracies which are quite apparent to those in the trade, but the effect on the public generally has been such as to cause them to look upon their coal man with suspicion.

Even though retail yards are nearly empty it cannot be said there is any suffering, which shows the results of big summer storage. Most dealers have small stocks, especially pea, to meet the demands of small users. Fair shipments are on the way to retailers. There is no change whatever in wholesale or retail prices.

The miners' wage question is assuming a still more serious aspect. The belief is growing that unless the demands of the men for a 10 per cent increase is granted, they will take advantage of the approach of winter to go on strike. It is just possible that wiser heads among them will figure out that public sympathy will be somewhat lacking at this time, especially since many of the necessities of life are coming down; the people will likely feel that the miners are being amply compensated.

With the easing of the soft coal market there is a tendency toward anthracite steam sizes becoming a little freer. The larger companies report that buckwheat is not at all free with them, but the smaller concerns, accustomed to a premium of $1 or more, are finding it difficult to get the higher prices. On rice, most of them are glad to sell at company price of $3.25.

Bituminous—The market continues to shade off. All grades can well be included in a price range of $4.00@$7. The former price is that quoted for Pool 18. Buyers having become somewhat used to the various pool qualities, are quite wary of this grade. During the past few days a really favorite price has been $5 simply for a good coal, yet even this fails to move much tonnage.

The consumer is playing a strictly waiting game and is not buying until absolutely necessary. Many have the impression that the price will run down as low as $3. Of course the producers simply look upon such a conjecture as ridiculous. At this time the consumer is being almost bombarded with all sorts of propositions from the producer, both through salesmen and by mail. It has been so long since he has been solicited to buy coal that he views this as evidence of a market collapse and frankly states he is waiting to see just how far prices will drop.

If the authorities should, in the very near future, become a little more liberal in the issuance of export permits, the coal that is now being offered around $5 will look like a real bargain in a couple of weeks. One thing is certain, that quite a few shippers with coal standing at Tide are taking very heavy losses to dispose of coal on hand at the piers.

NEW YORK

Prepared Coals Are Scarce While Steam Is Freer — Improvement Expected with Ending of Lake Season — Bituminous Is Plentiful at Tidewater — Prices Lower with Buyers Scarce — Cars Are Adequate.

Anthracite—Prepared coals continue scarce as ever here and the only change is in the steam situation. This market was hard hit by the three-day holiday of the miners but production has recovered and the usual amount of coal is now being received. The loss of tonnage caused by the three holidays is estimated at over 700,000 tons, much of which would have come to this market.

Pronounced changes in the situation

are looked for shortly. The stopping of Lake navigation will help, while other changes will be brought about by the producers themselves.

While the companies and large independent operators are sticking closely to their regular schedule, the small independents are inclined to shade their quotations slightly. Comparatively small tonnage of this coal is coming in, buyers preferring to take chances of securing fuel at the lower figures than to load up with the high-priced coal.

So far consumption has not been heavy. Retailers have not been so hard pushed and in necessary cases have been permitted to either mix or to substitute sizes. Quotations for prepared coals of the small producers were around $13.50 at the mines.

The steam coal situation is much easier. Demand has fallen off. Buckwheat No. 1 ranged $5@$5.75 at the mine. Rice and barley were almost a drug on the market. Rice was quoted $3@$3.75 and barley $1.25@$2. Boiler coal, which is seldom seen in the spot market, was being quoted around $1.90 at the mine. There was no change in company prices.

Bituminous—The slump in the market continues. Buying has fallen off and instead of the buyer hunting coal, conditions are quite the reverse and salesmen are now disposing of their wares at the best price possible.

The closing down of industries has had its effect upon the market. Most manufacturers were well stocked before the slump in business occurred and have stopped shipment of whatever unfilled orders they may have booked. This cancellation of orders has thrown considerable coal back into the spot market. Operators are beginning to feel effects of the low prices and are not now inclined to sell coal below the cost of production.

Coal is accumulating rapidly at Tidewater, the New York Tidewater Coal Exchange reporting 1,897 cars on hand on Nov. 12 as compared with 1,808 cars on Nov. 5.

Ending of the Lake season will have further effect upon this market with increased shipments coming forward. Shippers are making an effort to clean up their outstanding orders before navigation closes but say they have plenty of line orders to take care of any tonnage that fails to reach the Lake ports in time to be carried to its original destination.

Operators complain of the lack of miners, many of whom spend their time hunting instead of at their work. Car supply is good.

Quality figures considerably in quotations. New York Central line coals ranged as high as $5 while coals along the Pennsylvania were slightly lower. Pool 11 was quoted $4.50@$5.50, while Pool 10 ranged $5.25@$5.75. Pool 34 early in the week was quoted as high as $6 and towards the close ranged $5@$5.50. At the end of the week there was an offer made of 11,000 tons of mixed coals at $10.50 alongside. Further declines are generally expected.

BALTIMORE

Big Break in Prices—Many Customers Withdraw from Market—Coal Men Holding Off, Expecting Rebound—Tide Situation Is Easy—Hard Coal Scarcity Is Worst in Many Years.

Bituminous—The decided break in soft coal prices last week caused a considerable upset in all normal trading conditions here. Many consumers are not entirely satisfied with the much cheaper coal offered. On the other hand a majority of soft coal handlers are in no hurry to contract, contenting themselves with spot sales, convinced that a rebound is due shortly.

It was rumored that some high class coal sold at $5 and even under. The lowest figure in anything like a considerable transaction was $5.25@$5.50, this applying to both steam and gas. A week or ten days of almost perfect car supply was a decided factor in sending the quotations downward, but there is a sign of tightening in the fact that the car supply on the B. & O. has dropped below 70 per cent with the Western Maryland supply but little better.

Labor troubles in the Georges Creek and Upper Potomac regions which seem likely to spread and affect 8,000 miners are in line to cut a big figure in the situation, especially as cold weather seems at last at hand. The tide situation is easy, the number of ships waiting for coal cargoes having been cut to about 20, the lowest in many weeks. About 3,000 cars are also on reserve at the piers. Late reports show the market is continuing the decline. Pools 9 and 71 are $5@$5.25 Pools 10 and 11, $4.50@$4.75. Export business is being cancelled and expectations of even lower prices prevail.

Anthracite—The situation here is now truly acute, and all of the principal dealers have entered a series of conferences in an effort to find a solution. Instead of receipts improving, there was almost a cut-off last week, despite the fact that many dealers were willing to take even high priced coal if they could get it. Some of the yards of big dealers are swept entirely clean.

It is estimated that between 12,000 and 15,000 homes here are still without coal.

The city is also concerned and authorities are engaged in a fuel survey, as many schools and fire-houses are without coal. With cold weather actually here the situation is deemed the worst since the anthracite strike of eighteen years ago.

Lake

BUFFALO

Bituminous Close to the Bottom—Selling Is Slow—Consumers Refuse to Stock—Cars Are Plentiful—Dock Fuel Scarce—Anthracite May Come by Special Order.

Bituminous—The market still sags and promises not to firm up till the bottom is reached. Shippers say that it is likely to go below the profit line before it stops and then probably recover a little. Before that happens, however, some sort of reorganization of the labor scale must take place. Not many mines can turn out coal at a profit at $4 a ton, mine price, and that is predicted soon.

As a rule the Buffalo jobbers have not gone into the profiteering schemes and they are now settling back into a regular trade, the others who did do some plunging being glad to join them. It is of course impossible for anyone to make big profits now. The rule is to sell on a 50c. margin, and in some cases even less than that is accepted, in an endeavor to move coal.

Even at that the consumer is indifferent. One jobber complains that no matter how low he makes a price he is told that there are others still lower. It will not answer to sell too close to the market, for before the car reaches destination the price is sure to be off and then there is risk of a cancellation.

Quotations are difficult, as prices are not at all uniform, but a fair average would be $6.85 for Youghiogheny gas, $5.75@$6 for Allegheny Valley mine run, $5@$5.50 for Pittsburgh lump or mine run, $5 for No. 8 mine run, $4.50 for slack and $6 for Cambria County smokeless, smithing being too scarce for quoting. The difficulty in making these mine prices is that they are likely to be too high before they are in print. For Buffalo delivery add $2.36 for Allegheny Valley and $2.51 for other districts to cover freight. No delivered prices are now made.

Anthracite—There is prospect of a solution of the shortage problem by getting coal for the city from the mines direct, the local shipping agents apparently being instructed to send practically everything out by Lake. It seems to be the idea that too many families are out of coal to permit waiting till the Lakes close. It is reported that a consignment of 7,200 tons is now on the way here, through arrangement with the Chamber of Commerce. In case that is not enough the city council is studying the legality of seizing coal as it comes in for Lake shipment.

It is said that there are 3,000 families without coal and the fact that several thousand have a full winter supply does not appeal to the destitute. The end of the Lake season is now only about three weeks away, when coal ought to be plentiful here. The mistake was made in giving too much to certain ones early in the season, this being easier and cheaper than to send out a ton or two on an order.

Lake—Shipments for the week were 99,450 net tons, of which 38,200 tons cleared for Duluth and Superior, 31,300 for Chicago, 21,700 for Milwaukee, 4,700 for the Sault, 2,200 for Quincy Mines, and 1,350 for Racine.

Freight rates are advancing, being $1.75 to Quincy Mines, $1.60 to Racine, $1.25 to Chicago and the Sault, 75c. to Milwaukee, and 60c. to Duluth.

Coke—Demand is not steady, but jobbers are doing something in the remnant line at $14 for 72-hour Connellsville foundry, $12@$12.50 for 48-hour furnace, and $10 for off-grades and stock. It is pretty hard to get coke, as so much of it is contracted and no new ovens are coming in. The furnaces are not running as strong as they were. Domestic sizes are in demand, competing with anthracite, at $7.50 for large sizes, $10.50 for nut, and $2.75 for breeze.

CLEVELAND

Coal Receipts Gain — Prices Continue Soft — Holidays Hit Operations — Demand Declines as Buyers Anticipate Freer Supplies and Lower Quotations— Operators Appeal for More Cars.

Bituminous—Mines in the No. 8 district have not attained the height of production hoped for, as a result of church, election and armistice day holidays which have been seized upon by miners as vacation opportunities. The car supply also has not been averaging more than 50 or 60 per cent. The Pittsburgh Vein operators have appealed to Washington for more cars and the Interstate Commerce Commission has wired promise of working out a remedy. The greatest shortage is on the Baltimore & Ohio R.R., which serves a large part of the No. 8 district.

Despite all of the handicaps, however, the situation is decidedly easier. Not only are receipts improving steadily, but the demand is declining. Industrial demand is falling because of the pronounced slackening of plant activity. Retail demand is less because of the growing belief that fuel supplies will be much more ample and cheaper after the close of the Lake season Nov. 24. This event will release from 2,000 to 2,500 cars of coal for other markets daily.

At the present time receipts in Cleveland average 87 cars daily against 64 cars one month ago. A development of some significance is the lack of interest on the part of users of steam and other grades in securing stocks. At this time of the year industries usually are buying for reserves.

Pocahontas and Anthracite—Despite real improvement in the entire coal situation there is still a lack of these grades. Dealers, however, are rapidly making deliveries and are not more than two weeks behind. Domestic users are sure to benefit both in freer supplies and lower prices from the release of the coal now going up the Lakes. The Chamber of Commerce Retail Coal Committee reports that no complaints of suffering from lack of fuel or failure to get deliveries are now being received.

Lake—Suspension of Order 10 has reduced the volume going to the Northwest. The average shipments are now running somewhat less than 2,500 cars. Lakes movement to Nov. 1 was 19,000,000 tons against 21,000,000 in 1919.

Retail prices of coal delivered in Cleveland are:

Anthracite—Egg, chestnut and stove, $15.
Pocahontas—Shoveled lump, $11.75; mine run, $11.25.
Domestic Bituminous—West Virginia splint, $11.75; No. 8 Pittsburgh, $9.50; cannel lump, $15.
Steam Coal—No. 6 and No. 8 slack and mine run, $10.25; No. 8¾-in. lump, $10.25.

MINNEAPOLIS

Reduced Consumption Improves Situation — Bituminous Shortage Estimated at One Million Tons—Docks Are Making Careful Distribution.

A touch of severe weather gives warning that winter is at hand. But the mild fall has certainly resulted in a considerable saving, particularly with domestic users. While domestic consumption is largely a hard coal proposition, yet soft coal has also shared in the saving.

Anthracite receipts to the last of October are only 17,000 tons less than for 1919, and the amount saved in reduced fall consumption will more than make up that amount. While it cannot be expected that hard coal will be plentiful, it now seems very probable that there will be enough to "get by."

The bituminous shortage is somewhat improved through this saving and other factors heretofore touched upon. These include the diversion of a considerable tonnage of railroad orders to the Illinois fields as well as some other large users. Dock receipts to the end of October show deliveries of 4,560,000 tons and last season's 5,772,000 tons. Last year 2,000,000 tons of coal were carried over, but only 800,000 tons this spring. The total shortage this season is around 2,400,000 tons. However, through the above factors, this is cut down to a considerable extent. When these allowances are considered, the net shortage existing is not more than 1,000,000 tons.

Members of the dock trade hope for sufficient coal to drag through without serious difficulty until spring, but fail to see how it is going to be done. They believe that the all-rail trade will have all it can do to handle the business it has assumed without making up any such shortage. Railroaders hope for a continued improvement in their deliveries, which they insist is wholly a matter of cars.

In the meantime, the same grade of coal is quoted $8.95@$13.50. Docks are not anxious for business at any price, feeling sure that there will be need for all the coal on hand now or to be dumped by the close of navigation.

MILWAUKEE

Market Is Quiet and Steady — Cold Weather Stimulates Demand — Wholesalers Undergo Grilling Following Complaints of Profiteering.

A spell of cold weather has stimulated demand to some extent, but there is no rush and all anxiety as to the winter supply seems to have subsided. Cargoes are arriving daily and the flow of soft coal by rail from Illinois and Indiana is steady and in good volume.

It is more and more apparent that Milwaukee will have to depend upon the rail supply during the winter. Bad weather and track blockades will entail suffering in the interior.

Representatives of six big distributing companies were grilled on Nov. 10, by Alvin C. Reis, legal advisor of the State Marketing Commission, for the purpose of discovering whether or not dealers are in any way responsible for alleged excessive prices. Complaints have reached the state authorities that $24 per ton is exacted for anthracite and $18.50 for soft coal. If it is proven that Wisconsin dealers are blameless, the matter will be placed in the hands of the Federal authorities for acting.

Edward A. Uhrig, president of the Milwaukee-Western Fuel Co., bore the brunt of the grilling. He attributed present high prices to huge exports, frenzied buying at the mines and the breakdown of the transportation system of the country from April to the present date.

Mr. Reis repeatedly attempted to uncover possible price agreements, but all the witnesses denied having any knowledge of quotations set by their competitors. Hearings will be held at a number of other points in the state.

Inland West

DETROIT

Steam and Domestic Are in Less Demand—Bituminous Receipts Increase— Prices Show Lower Level—Anthracite Supply Still Inadequate.

Bituminous—Interest of buyers has diminished in both steam and domestic markets. Wholesalers and jobbers report the bituminous situation considerably easier than it has been during recent weeks.

Economic conditions affecting business and bringing about a reduction in the activity of manufacturing plants have developed a more conservative attitude on the part of buyers. They are now taking only enough coal to meet current requirements and show a disinclination to increase reserves.

Domestic buyers also have been rather indifferent, comparatively moderate temperatures having relieved the pressure of demand on retailers. The belief that lower prices may be quoted is probably a factor in encouraging delay. The advent of winter weather will stimulate domestic demand.

Prices show quite material reductions, while the supply of coal of the better grades is increasing gradually as the result of declining Lake shipments. Domestic Hocking lump is quoted $7@$7.50 at the mines; mine run is selling $5.50 and slack $5@$5.25. The product of other Ohio mines holds about the same level. West Virginia lump is $8, with mine run ranging $6@$6.50 and slack $5.75.

Anthracite—There is little improvement in the situation. Retail yards are without reserves and shipments coming to Detroit are small and delivery more or less uncertain. Because of this condition many dealers are

mal quantities. Anthracite shipments recommending the substitution of coke or bituminous coal. The hope is still expressed that shipments will be sent forward in larger volume after the end of navigation.

CINCINNATI

Demand Is Excellent—Mine Conditions Improving—Retail Prices Are Firm—River Wave Bringing Coal — Good Buying for Reserve.

Operators, jobbers and retailers are awaiting the much-heralded reduction of coal prices. Many of them are able to fill all orders received, although experiencing great difficulty in obtaining smokeless supplies.

The demand continues excellent. Industries are seeking all the coal they can get and are being supplied in a manner that bespeaks nothing but a plentiful supply for these parts this winter. Conditions at the mines are improving. Transportation conditions on all the roads are better and are expected to improve further.

Users of coal have followed the advice of the coal men to lay in their winter supply wherever it was possible and as a consequence it is estimated that 75 per cent of the local trade is stocked up for the cold months.

Operators and wholesalers say there has been no great changes in prices that have prevailed for the past few months. There has been no change in the retail situation. Conditions on the Ohio River are very bad, owing to the low stage and there have been very few shipments in the past few weeks via that route. There will be no more shipments until the artificial wave is created next week.

Retail prices now being obtained in the Cincinnati market are as follows:

Bituminous lump, $9.25@$10.50; nut and slack, $8.50; run of mine, $8.50@$9.25.
Smokeless lump, $11@$11.25; run of mine, $10.
Anthracite, chestnut and egg, $14@$15.
Coke, domestic egg, $14.50@$15.

COLUMBUS

Still Further Weakening in Steam Coal—Domestic Remains in Good Demand with Prices Showing Some Recession—Lake Trade Is Fairly Active—Production Gradually Increasing.

Domestic trade is still the big feature of the coal business in Ohio. Demand continues brisk and a larger tonnage is moving. Many localities still have only very small stocks for distribution. This is especially true of rural sections, where dealers hesitate to pay the extreme prices.

Retail prices are still high, although a downward trend is noted. Hocking lump sells $9.50@$10.50 while Pomeroy is slightly higher. West Virginia splints retail $10@$11.50 as the market is not yet affected to any extent by lower prices at the mines. Pocahontas remains scarce and sells $12@$14.50.

Steam grades continue weak and there is an absence of buying from large industrial centers. Prices have declined to about $3.75@$5.50 for Hocking and Pomeroy grades and $6@$7 on West Virginia splints. Some Kentucky coal is finding its way in. Railroads are taking a fair tonnage. Reports show that large users have reserve stocks to last for 60 days and even longer. Screenings are extremely weak, selling $3.50@$4. at the mines.

Lake trade is still active and a fair movement to the Northwest is reported. Vessel movement is good and while insurance is off Nov. 15 shipments will continue for several weeks after that date. The Toledo docks of the H. V. Ry. during the week ended Nov. 6 loaded 175,188 tons; the T. & O. C. docks loaded 90,258 tons.

The car supply is improving slowly. Reports show an output of 70@75 per cent in the Hocking Valley and about 65 per cent in Pomeroy Bend. Eastern Ohio had a better run with 65 per cent output. Cambridge and Crooksville had 65 per cent.

Prices at the mines of the principal coals used in central Ohio are:

Hocking lump	$4.50@$7.00
Hocking mine run	$4.00@$4.75
Hocking screenings	$3.50@$4.25
Pomeroy lump	$4.75@$7.25
Pomeroy mine run	$4.00@$5.00
Pomeroy screenings	$3.50@$4.25
West Virginia splints lump	$5.50@$7.25
West Virginia mine run	$5.00@$6.00
West Virginia screenings	$4.00@$4.25
Kentucky lump	$6.00@$7.25
Pocahontas lump	$6.75@$7.75

CHICAGO

Market Is Greatly Weakened—Present Stocks Are Good—Many Cancellations Noted—Receipts Are Entirely Adequate.

Retail yards are clogged and manufacturers have sufficient coal on hand to care for present meager consumption. Orders are being cancelled and this has demoralized the local market to some extent. Jobbers have felt the cancellations most as the buying public has been waiting for an opportunity to get back at this branch of the coal industry. The public in a great many instances feels that it has been exploited. This feeling applies to a great many concerns of mushroom growth who have been attracted to the industry because of the opportunity for excessive profits.

One rather amusing instance of this feeling came to light last week. With the general easing up of the market, one dependable operator found himself with a little extra coal on hand. One of his largest customers came into his office and requested that his shipments be doubled. The operator was expecting to have his order cut down. The explanation was that the manufacturer had cancelled a number of orders placed with some jobbers as he knew it would embarrass them to have the coal on the open market at this time. He also knew that the operator would probably welcome an opportunity to ship a little extra coal on contract and thus took advantage of the situation to pay off an old score and at the same time do a favor.

Good grades of Eastern coals are coming into the market in almost normal quantities. Anthracite shipments have been very gratifying and people now find that their patience has been rewarded and they have an ample supply on hand. The situation is nearly the same on Pocahontas and New River coals, although the prices on these two are still abnormally high. West Virginia and Kentucky splints are coming in fairly good quantities and being sold at prices running $6@$8 per ton for the block sizes.

Southern Illinois prepared sizes are $5.50@$6.25; mine run, $5@$6; screenings, $4.15@$5.25. Springfield district prepared coal, $4.75@$6.25; mine run, $4@$4.75, and screenings, $3.25@$3.50. Northern Illinois, $5.50@$6.50 for domestic; mine run, $4.50@$5.50, and screenings, $4@$4.75. Indiana fourth vein outside the state ranges $5.25@$6.50 for prepared; $3.75@$4.50 on mine run; fifth vein prepared coal is $5@$6.50; mine run, $4.25@$5, and screenings, $3.25@$4.

MIDWEST REVIEW

Colder Weather Strengthens Domestic Demand—Steam Market Is Very Weak—Operating Conditions Are Improved.

During the past few days the weather has been much more seasonable. This has had a noticeable effect on the demand for domestic coals but has had no influence whatsoever on the steam situation. The steam market by the way, is weakening day by day. Good Indiana steam lump three or four weeks ago sold at $7@$8.50 per ton, f.o.b. mines. Today this coal is offered at $5.

The current market on mine run and screenings is very weak and is without prospect of immediate improvement. The slump in manufacturing which seems to have swept the whole country is being felt in the Middle West pretty seriously. The few industries which have so far withstood the times and have continued operating, find themselves with plenty of coal on hand and prospects of more at a cheaper price. Many lines of business have temporarily ceased operations, principally on account of lack of orders.

Operating conditions in all important producing centers continue to improve. Car supply during the last week has been very satisfactory and mines in some locations have received better than an 80 per cent supply.

Labor is steady and the men are showing an inclination to attend to business, a condition which was conspicuous by its absence a few months ago. The week just ended shows the coal market one step nearer to normal.

ST. LOUIS

Seasonable Weather Enlivens Domestic Market—Steam Conditions Easy—Car Supply Is Good and Movement Better—Steam Prices Rally.

The St. Louis situation continues to take on an easier tone. Seasonable weather has helped conditions, especially as regards steam. The Standard screenings market still continues to be $3.25@$3.50 locally, with somewhat better prices prevailing on country

shipments. However, the outside steam call, is also getting lighter. This is taken up in a measure by increased railroad tonnage of mine run. Production of domestic is sufficient to take care of the local call, but the country demand at times exceeds the supply on account of restrictions and unequal rates.

Car supply in the Standard and Mt. Olive fields showed up better than 50 per cent on commercial. Armistice day saw most of the mines shut down, the few that did work marking half time.

There are a few labor troubles in the Standard field, but nothing serious. Prices on mine run were $4@$4.50, lump $4.25@$5.50 locally. Outside shipments averaged 50c. higher. Circular prices in Mt. Olive prevail, $4@$5 on all domestic sizes with steam applied almost entirely on contract.

In the Carterville field better working time prevails on account of a good car supply, occasioned by quicker movement. The supply was better than 60 per cent for commercial on all lines, excepting the Missouri Pacific, where mines are working better the past week than for sometime, owing to railroad tonnage. Circular prices prevail from $4@$5.50 among the larger operators, with a few independents asking as high as $7.

In St. Louis proper there is very little storage coal ahead. A few cars of anthracite moved in during the past week and also some smokeless, with considerable domestic coke from Alabama. Domestic conditions are easy, with light demand. There is no change in retail prices.

South

LOUISVILLE

Prices Are Softening as Steam Demand Drops — Domestic Sizes Are Scarce — Wide Range of Mine Prices Noted — Further Declines Seen.

Demand for steam coal has weakened perceptibly during the past ten days, resulting from the fact that the Lake season is about over, and industrial consumption is slowly lagging.

Retailers are demanding lump coal as the domestic consumer wants that grade and nothing else. The operators are producing about 90 per cent mine-run. Now that demand for steam is easing off and car supply is improving it is high time that the producer gives the retailer what he wants.

Retailers and jobbers are complaining about the tactics of some Kentucky producers, who after accepting orders will probably ship one car, and then claim that failure of car supply, or duplicate selling through another officer of the company, makes it impossible to ship at the present time. There is also a tendency to sell to the highest bidder.

It is claimed that by January many of the operators will again be soliciting for business to keep their mines working, although some real severe weather may change that prospect. Some coal men expect to see mine run as low as $4 by the end of the month if production continues on the present basis.

One jobber from letter offers on his desk quoted the following prices—Blue Gem block, $10.50@$10.75; mine-run in box cars, $7.50; open cars, $8.50; Elkhorn mine-run in box cars, $6.75; Cannel block, $11.

Eastern Kentucky coal is quoted at prices ranging $5.50@$6.50 for steam grades, the market being principally a question of what the operator has to sell, and how badly it is wanted.

Louisville retailers are quoting eastern Kentucky and West Virginia block, $11.50; mine-run, $11; nut and slack, $10.50. West Kentucky lump, $10.50; mine-run, $10; screenings, $9.

Domestic sizes are strong, due to colder weather, prices ranging up to $9.50, with some operators caring for old customers at $6.

BIRMINGHAM

Slack Demand and Increased Production Lowers Steam Prices—Domestic Inquiry Is Good and Exceeds the Supply—Labor Becoming Very Plentiful—Supply of Cars Equal to Requirements.

The steam market has been very easy the past week and the needs of the trade have not been sufficient to absorb production of the lower and medium grades. There has been no accumulation of Cahaba, Black Creek, Pratt and the like, as only small lots of these coals are available above contract requirements. Weakened trade conditions are due to a general industrial recession, many plants throughout this territory either closing down or going on short time. All those in operation have coal stocked and the railroads and utilities now are in a comfortable position.

Quotations for steam are somewhat off, Black Creek and Cahaba ranging $5@$7, Big Seam $4@$5, Jagger and other Carbon Hill grades being offered $4.50@$5.

The domestic situation is easier as a result of the 18-day order restricting shipments to confines of the state, and all urgent needs have been met. There has been no opportunity for stocking, however, and yards have little or no supply on hand. Some mine run coal has been sold for domestic use and a much greater tonnage will have to be diverted. Domestic mines, hampered by strikes and car shortage since early spring, have been unable to fill contracts and have cancelled all delinquent deliveries. Prices range $4@$6 for prepared sizes.

Labor is drifting into the mining field more rapidly than it can be absorbed. There is now a surplus of unskilled labor at all points easily accessible from this city and larger towns. The force of miners is also nearing normal, but irregularity in reporting for work is holding down the output. Cars are being supplied in sufficient numbers to avoid any delay to operation in this direction.

Western

DENVER

Lignite Miners Returning, Following Industrial Commission Ruling—Prices Remain Steady.

Colorado's lignite output is nearing normal again, following the return of most of the miners who struck to enforce a demand for recognition of the union. Prices at mines are about the same as before the trouble, which ended suddenly when prosecution was threatened by the State Industrial Commission.

The commission contended that the men walked out after the matter had been set for hearing, contrary to law. Operators thus far have refused to deal with union leaders, although the men were ordered back to work by the policy committee with that sort of a promise held out for them by leaders.

This action came only a short time before the decision of Judge Bradfield of Weld County, who, in supporting the industrial act, found twelve former officials and members of the miners' district board guilty of "aiding, inciting and encouraging a strike." The cases dated back a year, but in many respects were similar to the recent troubles.

Prosecution in the old cases was based on the premise that "coal mining is vested with a public interest." Union leaders are preparing to attack the constitutionality of the industrial law on that ground by appealing the cases.

Canada

TORONTO

Conditions Are Improving—Shipments Arriving More Freely — Bituminous Easier — No Hardship Feared During Winter.

Conditions in the coal trade are improving and both anthracite and bituminous are coming forward more freely, with wholesale prices for the latter easier. The lessened demand for soft coal by many industrial plants makes the shortage less seriously felt than would otherwise be the case.

Comparatively mild weather has rendered the domestic demand for anthracite less urgent than usual at this season. Fuel Controller H. A. Harrington is in full charge of the situation and states that a strict watch will be kept over deliveries and people with well-stocked cellars will not be allowed to obtain additional supplies until others are furnished.

Quotations per short ton are as follows:

Retail.	
Anthracite, egg, stove, nut and grate	$16.90
Pea	15 40
Bituminous steam	16.00@17 40
Domestic lump	18 15
Cannel	20 00
Wholesale f.o.b. cars at destination:	
Three-quarter lump	13 25@14.00

News From the Coal Fields

Northern Appalachian

PITTSBURGH

Consumption Decreasing and Prices Decline—Car Supply Is Not So Satisfactory—Cold Snap May Cause Market To Stiffen.

Operators do not expect the car supply to be very materially diminished by modification of coal-car definition that went into effect Nov. 7, whereby flat-bottom gondolas 42 inches and under are excluded. It is felt that industries do not need cars as much as they did a month or two ago, while at the same time the lower rate of industrial operation will reduce their consumption, so that coal requirements will be decreased. In the past few days, however, there has been a serious shortage, particularly on the Pan Handle. Lake shipments are now nealy ended, and this will increase car supplies for other trade.

Prices have continued to sag, being off 50c.@$1. The market as reflected by regular sales in the past few days may be quoted $4@$4.50 for steam and $5@5.50 for screened gas and by-product. The leading interest's price remains at $3.75 for mine run, where it has stood since the wage advance of last August. This interest's production is, however, fully absorbed by shipments on contract. Its retail price at yards in Pittsburgh is $6.

Still lower prices are expected, if demand continues light, while a cold snap might send prices upward again. There is some discussion as to whether the highest priced sellers of the past few months, who have no regular customers, will attempt to buy their way back into the market by selling coal at a loss, or will submit to a period of idleness, in which their costs can be reduced.

CONNELLSVILLE

Spot Demand Is Very Light—Pace of Price Decline Moderates — Production and Consumption Decreasing.

Demand for spot furnace coke has been extremely light, while there has been only a very moderate demand for foundry. There has been much blowing out and banking of blast furnaces, and more is in prospect. Contract deliveries have been very good in consequence of the decreased requirements, and it is only occasionally that a furnace has to enter the spot market. Operations at the foundries are decreasing, but there is still a fair demand. On account of the decline in prices foundries are less disposed to accumulate stocks, and the current buying barely equals consumption by foundries not having regular contracts.

The spot market is down only 50c. in the week, against $1 decline the preceding week $7 in the fortnight before. Spot quotations now are $8.50 for furnace and $10.50@$11 for foundry.

There is some discussion as to prices on furnace coke contracts for the first half of the new year, but it can hardly be said that there are active negotiations. No flat prices have been quoted or bid. As to ratios, many operators are arguing that a 4 to 1 ratio will prove proper, but furnaces do not admit their willingness to consider anything better than 5 to 1, which would make $6 coke in case basic pig iron declined to $30 from its present level of $38.50. One small contract at 5 to 1 has been made for the last two months of this year.

The *Courier* reports production in the Connellsville and Lower Connellsville region in the week ended Nov. 6 at 201,950 tons, a decrease of 22,345 tons.

UNIONTOWN

Market Weakens, but Prices Are Stationary—Rejections of Inferior Grades —Car Supply Declines Slightly—Poor Transportation Conditions Growing.

While still extremely soft, no further price recessions have been made in the local market. Prices for both coke and coal have remained fairly stationary, but without any of the stabilizing characteristics that would indicate a solidification of the present price range. Further losses are expected before gains are registered, the steel outlook precluding any return to high prices.

Coal continues to range $4@$5. Grades have practically vanished in the general market slump. Quality is now of prime importance, as the volume offered makes transactions in questionable grades very distasteful to the wholesalers. Rejections have been numerous and consequent losses heavy.

Coke is well fixed at $8@$8.50, prices varying throughout the course of every day. Operators strenuously object to the present market level, owing to increase rather than reduction in operating costs, but so great is the volume of product offered that supply and demand will not permit of any present stiffening in price.

Car supply has slackened a bit during the past few days, the slump from the maintained 100 per cent placement being very slight, however. Chief trouble again is centered on the Pennsylvania lines.

CENTRAL PENNSYLVANIA

Spot Market Reaches Lower Price Level—Canadian Railroads Buy Heavily—Full Car Supply in Field

The market continues fair, but is no longer marked by the intense scramble so characteristic during the early fall. Operators have begun to carry out the spirit of the resolution adopted a week ago with the view of eliminating outlaw buying which created artificial prices. Representatives of Canadian railroads entered the field during the week and made heavy purchases of fuel and their presence has helped to maintain work at a number of operations.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

BITUMINOUS COAL

	1920 Week	1920 Calendar Year to Date	1919[a] Week	1919[a] Calendar Year to Date
Oct. 23[b]	12,32,000	440,557,000	13,140,000	389,651,000
Daily average	2,039,000	1,749,000	2,190,000	1,547,000
Oct. 30[b]	12,418,000	452,976,000	12,111,000	401,762,000
Daily average	2,070,000	1,756,000	2,019,000	1,558,000
Nov. 6[c]	11,355,000	464,331,000	3,582,000	415,344,000
Daily average	1,893,000	1,759,000	597,000	1,536,000

ANTHRACITE

	1920 Week	1920 Calendar Year to Date	1919[a] Week	1919[a] Calendar Year to Date
Oct. 23	1,915,000	68,935,000	1,992,000	68,109,000
Oct. 30	1,696,000	70,631,000	1,475,000	69,584,000
Nov. 6[c]	1,390,000	72,021,000	1,972,000	71,556,000

BEEHIVE COKE

United States Total

Week Ended Nov. 6[c] 1920	Week Ended Oct. 30[b] 1920	Week Ended Nov. 8 1919	1920 to Date	1919[a] to Date
388,000	422,000	375,000	18,076,000	16,574,000
		Daily Average		
65,000	70,000	63,000	68,000	62,000

(a) Less one day's production during New Year's week to equalize number of days covered for the two years. (b) Revised from last report. (c) Subject to revision. All figures in net tons.

Spot prices have reached the lowest level since the fuel administration ceased to function, having dropped 50 per cent as compared with two weeks ago. High grade low-volatile coal is now selling $5@$5.50. Some sales have been made as low as $4.75. Operators with contracts in some instances are receiving slightly more than the spot market prices.

Throughout the Central Pennsylvania field 100 per cent car distribution has been maintained lately.

FAIRMONT AND PANHANDLE

Fairmont

Price Slump Continues—Cars Are Plentiful but Election Holidays Cut Fairmont Production — Confiscations Arouse Operators—Panhandle Placement Also Improves—All Demands Are Weaker.

Election activities cut production to a marked extent during the opening week of the month, despite the fact that there was opportunity for a larger output, owing to increased car supply. Because of time lost during the early part of the week, mines were unable to load all the cars furnished during that time, with the result that there were more cars available than usual during the last three days of the week. The run of cars on the Western Maryland, Monongahela and the Charleston Division of the Baltimore & Ohio was larger than usual.

Methods of the B. & O. in confiscating coal where characterized as high-handed by operators. Early in the week the railroad announced it would confiscate loaded cars.

Prices continued to slump as a result of the decreased demand. Producers were seeking business instead of letting business come to them. It was apparent that increasing production was having a most potent effect in pushing prices downward. They reached as low a level as $4.75 for Pool 44 and $5@$5.50 for Pool 34. Producers were looking more and more to export markets as the demand for Inland decreased. The call for export coal was only fair, however.

Northern Pan Handle

Loadings were larger during the first week of November at mines served by the Pennsylvania than at those dependent upon the Baltimore & Ohio. Pennsylvania mines had 100 per cent car supply while plants on the B. & O. lost a day or so during the weekly period.

Tonnage produced, however, sufficed for general market demand, which was even more listless than during the preceding week. Prices continued to decline, particularly on slack coal and for Lakes, the latter price even reaching the low level of $4.75. The prevailing figure much of the time during the week was about $5.

Despite the accumulation at Lakes, rail movement was fairly good. Water transportation, however, had been somewhat hampered by the low stage of the Ohio River.

Industries in the Wheeling District were plentifully supplied, according to the representative on the Fair Practices Committee, and no fear was expressed that Wheeling industries would run short of coal.

Middle Appalachian

LOW-VOLATILE FIELDS

Election Idleness Cuts Production—Cars Nearly Adequate for Available Tonnage—Tide Shipments Curtailed—Sharp Slump in Demand—Prices and Conditions Almost Normal.

New River and Gulf

General conditions in the New River field at the outset of November were not particularly conducive to a large production. The election interfered with operations for several days. There was furthermore an actual shortage of cars, although that was not so patent because of days missed during the early part of the week.

Smokeless coal and New River coke were beginning to feel the general effect of a falling market, there being a lessened call for smokeless, although the Tidewater demand was holding up rather well. However, there were few boats awaiting cargoes. Coke was off, having declined to $12@$14. Mine run was not bringing more than $5@$5.40 a ton, with export coal at $8. There was so much coal at the Lakes that little tonnage was going there and the weather had greatly weakened the Western markets.

Loading fell off to a very considerable extent in the Gulf region, the election being largely responsible. Hence both the Virginian and the Chesapeake & Ohio railroads were able to provide about all of the cars which could be handled.

As so large a part of the Gulf output was under contract, even though there was a very weak spot demand, it failed to affect conditions to any appreciable extent. Loads were not being pulled as promptly as was to have been expected, owing to the poor condition of C. & O. motive power.

Pocahontas and Tug River

Lowered production in the Pocahontas region during the first six days of November followed in the wake of the election. Activities of third party leaders had of course been limited by the injunction in force as to the organization of the Pocahontas field, but many miners made the first three days of the week a holiday.

Owing to this idleness losses recently observed from a car shortage did not appear on the surface.

Most of the Pocahontas production is being applied on contract, there being little spot business. In fact the only spot demand is in Virginian cities. There has also been a diminution of the demand in Western markets, which appear to be fairly well supplied. The spot business at Tide has fallen off and much of the coal now dumped is on contract. Market conditions, as they affect Pocahontas coal, are now regarded as being back on a normal basis again.

The election also affected Tug River production, little being accomplished during the first half of the week. It was not until about Thursday that the men were back at work in their usual numbers.

There was anything but an active market and unless there should be a change in present conditions it is believed there may be a lessened production by the first of the year because of "no market." The spot market is extremely inactive, especially in the West. There is even an absence of that strong spot demand at Tide so much in evidence a few months ago. Much of the coal now moving to Tidewater is on contract. Conditions are now more nearly normal than they have been for some time.

HIGH-VOLATILE FIELDS

Production Suffers from Election Idleness—Intimidations Renewed in the Thacker District—Price Recession Is General—All Demands Are Weaker—Car Supply Shows No Material Improvement.

Kanawha

Not only did the election hamper production, but during the latter part of the week ended Nov. 6 a marked shortage of cars on the Chesapeake & Ohio also affected the output.

The volume of tonnage moving Lakeward was of course small with prices down. As a matter of fact, Lake shipments made were largely on outstanding orders.

Prices were still on the decline, hovering around $4.75 a ton for Inland markets, with inquiries growing less. While the demand was somewhat better for domestic lump, mild weather was exerting an effect on the market, though prices for domestic were about $6. It was difficult to ship much coal to Tide or Eastern markets, owing to a growing accumulation. For a time during the week the prevailing price for Tidewater was $8.

Northeast Kentucky

Reduced production in the week ended Nov. 6 was due largely to cessation of operations at a good many mines on election day, so that the total output was only 53 per cent of capacity. Car shortage losses were less, having been trimmed down to 35 per cent, but that was because of the election idleness which forced the labor shortage losses upward. There was no actual improvement in car service.

Market conditions were such as to absorb the entire output, even though the demand was not particularly brisk. Conditions seemed to have become more stabilized than during the final days of October, though prices were still receding somewhat. Much coal was going into Kentucky markets, though some was finding its way to the Lakes.

Virginia

Election day and its attendant idleness materially interfered with production. Aside from that operation was at the rate of about 90 per cent of capacity, with the car supply sufficient for all purposes. A further labor shortage also curtailed production.

In sharp contrast with other bituminous regions there was a strong market for Virginia coal and the prevailing price at the beginning of the month was close to $7. Little or none of the output of southwest Virginia was being exported. Mines continued their special effort to supply the needs of home industries and domestic consumers which of course strengthened and increased outside calls for spot coal.

Logan and Thacker

Election day played havoc to some extent with production in the Logan field which only reached 185,000 tons last week, an output much below that recorded during the greater part of October, when the monthly output totaled 948,634 tons or 54 per cent of capacity.

Ground was regained during the latter part of the week but not enough to replace the loss. There was not much more than 4,000 tons consigned to Lake points and little of that was on spot orders. Lake prices were far from attractive, not being much over $4.75 a ton. For that matter there was little activity in Western markets insofar as conditions were reflected in the Logan field, where the general run of prices were around $5, with the prospect that they would go even lower.

Though production fell down to the extent of 12,200 tons in the Thacker field last week, conditions continued to improve in the strike situation. However, with Federal troops no longer on duty in the strike zone efforts at sabotage and intimidation were resumed, which resulted in the dynamiting of several plants and one railroad trestle, with numerous threats, so that producers are certain that the strikers would make one last desperate effort before giving up their attempt to organize the Williamson field.

In the strike zone during October there was an output of 103,000 tons, an increase of 60 per cent over September. At the end of the month more than 1,400 men were at work, that being an increase of 40 per cent over September.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Car Supply Slumps — Demand for Domestic Is Good — Tendency Toward Higher Prices.

Car supply has reached the lowest point possible, without complete cessation of work, mines barely getting one day supply per week. Strong demand coupled with the severe car shortage is causing many operators to openly threaten to sell for more than the $6 maximum set by Government officials.

The Cumberland Valley Division of he L & N has a capacity of about 1,600 cars per day, whereas not more than an average of 400 is being loaded. Such a low ebb leaves but little spot coal. The little free prepared coal is eagerly bought with no question as to prices.

Export demand continues good, but there is no coal for shipment. The lifting of the compulsory Lake order has caused but little change in marketing outlets from this field.

Results of the election seem to greatly please most of the operators, for they are inclined to believe that a change of administration can at least work no harm, whereas there is great hope that the new administration will attempt to work in greater harmony with the industry.

Middle Western

WESTERN KENTUCKY

Prices Are Softer As Result of Competition of Other Fields—Demand Is Good and Movement Steady—Production Increases with Better Car Supply.

Better car supply has been noted so far for November. The Illinois Central R.R. supplied 74 per cent of mine ratings and the L. & N. furnished up to 52.6 per cent. These are the best averages shown in many months.

Railroads are taking a fair volume of coal, while there is a good demand for both steam and prepared sizes coming from various districts. Movement of steam coal has increased rapidly, while the demand for lump continues good. Southern movement is especially good at this time, short freight hauls aiding. In the Northern fields competition for business is increasing as Lake demand falls off, and more coal is being offered than heretofore.

The price range is rather wide. One jobber reports that he has been offered mine run at $5.25; 4-in., $4.75; lump, $6.50; nut and slack, $4.75. A range average for the field as quoted by the West Kentucky Coal Bureau shows lump, $6.46; mine run, $5.02; nut and slack, $3.52.

Prices range $4.50@$8 on lump, $4.60 @$7.25 on mine run, and $3.75@$7.25 for screenings.

DUQUOIN

Car Supply Improves—Heavy Northwest Shipments—Labor Situation Is Good—Domestic Price Declines.

The car supply has improved somewhat over the preceding week. Not a single mine was reported as being idle on account of car shortage.

It is reported that the coal famine which was expected in the Northwest is averted, due to the enormous tonnage unloaded there during the months of October and September from Illinois and Indiana. More coal has been shipped to that region from this district in the past two months than ever before.

While production has been increased and the weather has continued warm, prices seemed to hold their own. Many of the producers are beginning to get caught up with their contracts. Very little change was noticed on mine run, remaining at $4@$4.25; screenings dropped to $3.75@$4; lump to $4@ $4.50.

Western

UTAH

Car Shortage Continues — Retailers' Supply Is Short—Much Interest Shown Over Rate Controversy.

Losses from car shortage continue. Some relief is in sight, however, according to H. W. Prickett, of the Utah Traffic Service Bureau, who has just returned from Washington, D. C. where he went in the interest of intermountain traffic matters. Dealers are getting very short of supplies now that the weather has turned colder.

Fight between the Interstate Commerce Commission and the Utah Public Utilities Commission over freight rates is now on. It will be remembered that the Interstate Commission allowed the railroads an increase and the Utah commission, claiming the right to regulate all public utilities in the state, refused to permit the new rates allowed by the interstate body. The coal operators, among other large shippers in the state, made a strong appeal against the increase.

Canada

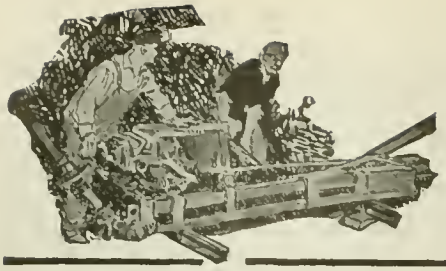
BRITISH COLUMBIA

Satisfactory Resumption of Work Follows Strike—New Export Market Seen — No Apprehension of Domestic Fuel Shortage.

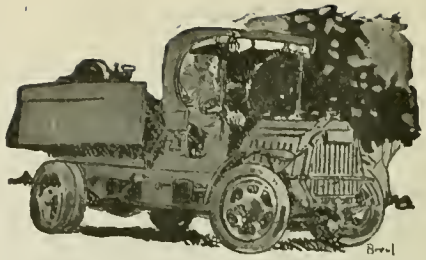
Eastern British Columbia collieries have settled back into normal conditions after October's labor storm. Most of the mines are operating as near to capacity as the available labor permits. In the Crow's Nest field there has been some dissatisfaction among the men because of charges of discrimination in the re-engagement of those who went on strike.

Coal is being shipped probably in as large quantities as ever before in the history of the industry in western Canada. It would appear, therefore, that there is no cause for apprehension of domestic and industrial shortage.

The demand for British Columbia coal outside of the Province continues. One of the latest export orders is for 7,500 tons to be delivered to Auckland, New Zealand. The call for Vancouver Island coal for the mercantile traffic of the Pacific also is increasing; in short there is no lack of market; rather the difficulty of the operators is to get coal out in sufficient quantities.



Mine and Company News



ILLINOIS

The Madison Coal Corporation has purchased from Mr. and Mrs N. E. Kinney, residing near Divernon, the coal rights lying under their land adjacent to the Divernon coal mine. The price specified in the transfer was $24,000.

The Big Muddy Coal Co. is making some extensive improvements at its New Virginia mine in Williamson County. Some of the new outfit includes six mining machines, one haulage motor, a new 250 k.w. generator, 50 pit cars and some general improvements in the top works. The company also has erected 25 new four-room bungalows and expects the tonnage of the mine to be increased 30 or 40 per cent in the near future.

The Southern Gem Coal Co., of Chicago, is having plans prepared for the erection of a new one-story plant addition for coal washing and handling at Pinkneyville, Ill. It will be one-story and is estimated to cost about $100,000, including equipment.

INDIANA

Two men were killed and twenty narrowly escaped death recently in a gas explosion at **Miami Coal Mine No. 8.** The explosion occurred about time the night shift of twenty-two men was ready to come out of the mine. The entry, where the men were killed, was damaged badly by the blast, but the rest of the mine was not affected. The mine employs about 400 men on the day shift, which would have gone into the mine two hours after the accident.

Announcement has been made of the formation of a new coal mining company at Ft. Wayne to be known as the **Service Coal Co.** The directors are Samuel W. Greenland, William H. Snyder and Edward F. Minneker.

Articles of incorporation have been filed by the **Republic Coal Co.,** of Sullivan, a newly organized company formed for the purpose of operating coal mines. The company has a capital stock of $50,000, and the directors are Harry Ward, J. A. Ward, Homer Trimble, Jack Alumbaugh and Bert Stanley.

KENTUCKY

The Michigan State Grange has arranged the details for the purchase of a coal mine at Cumberland, Ky., to supply coal to its members at cost. The initial outlay on the mine will be $1,000,000.

The Tildsley Coal Co., of Cincinnati, has absorbed and taken over the **Smith Gardner Coal Co., of Louisville.** The former will continue the Louisville office as its branch ,with A. H Gardner in charge as district manager.

It was reported at Ashland, at a merchants dinner recently, that the **C. & O. R.R. was planning to spend $1,500,000** on road improvements in the Ashland Division this year, improving trackage and making arrangements for handling larger tonnage.

The Rockhoose Coal Co., of Hazard, has filed notice of an increase in capital from $150,000 to $250,000.

A number of Missouri capitalists have formed a new organization to be known as the **Kentucky Coal Co.,** with capital of $150,000. R. A. Baker, J. P. Adams, R. H. Bruce and others are interested. The company proposes to develop coal lands immediately above Whitesburg on the Louisville and Nashville main line. A new townsite is a part of the plant. A large part of the product will be coked, a battery of fifty ovens for this purpose to be erected at once.

The Nolansburg Coal Co., Pineville, Ky., capital $40,000, has been chartered by C Hurst, J. C. Buell and Hattie Hurst.

Three men were burned in the power plant of the **Louisville Gas & Electric Co.,** in flashes from pulverized coal near the pulverizer. Investigation showed that a can of blasting powder had come in with the coal the can being torn to pieces and the powders mixed with the pulverized coal by the pulverizer, and touched off by friction of spark. It is believed that the coal came from the company's own mines at Echols, Ky.

The Tiffany Coal Co. has sold its mining plant and land at Hymar, Knox County, to the Georgia Development Co., at a consideration said to be $150,000.

MONTANA

The Westmont Coal Co. of Darby, has been formed by John F. Waddell, R. B. Nicholson and John Cheney, with a capitalization of $150,000, to mine, buy, sell and deal in coal and coal lands.

OHIO

The Ohio Coal & Iron Co. has been sold to S. Labold and G. E. Carlyle of Portsmouth and D. D. Davis of Oak Hill Property conveyed includes 7,200 acres in fee simple and the mineral rights to an additional 10,000 acres, and is also rich in deposits of limestone, clay and shale suitable for brick, tile and pottery production. The purchasers are owners of several pottery and brick plants.

PENNSYLVANIA

The Youghiogheny and Ohio Coal Co., owning a dozen or more big mines in Belmont and Jefferson Counties, is spending a considerable sum of money in the development of its coal poperties west of Rayland and they have built a modern model town in which to house their workmen. Glen Robin will have the distinction of being the most up-to-date mining settlement in the whole country.

The Holtwood Coal Co. has purchased land along the Susquehanna River on the Lancaster County shore from midway between Safe Harbor and Shenka Ferry to Pequea for reclamation of 5,000,000 tons of coal deposits in the river at this point. The company has contracted with the Anthracite Production Co. to get the coal from the bed. Sidings and dredges are now in course of construction. With operation in full sway, coal will be removed at the rate of 1,000 tons daily.

Announcement has been made in Uniontown of the sale of approximately 9,000 acres of coal and surface properties, formerly a part of the estate of the late I W. Semans, to **Hayden, Miller & Co.,** of Cleveland, Ohio, for $1,250,000. The holdings include 5,867 acres of coal and 1,000 acres of surface ground in Greene County, this state; 637 acres of coal and 96 of surface in Harrison County, W. Va.; 110 acres of coal in Marion County, W. Va., and smaller holdings in Fayette and surrounding counties.

Stone Bros., of Uniontown, have purchased a tract of 600 acres of Pittsburgh coal, on Simpson creek in the vicinity of Smith chapel of the M. E church, Harrison County, from John A. Holbert, of Fairview, for more than $500,000. It is reported that rights of way have been procured for a railroad which will be connected with the West Virginia and Pittsburgh division of the B. & O.

Several new mine openings of Somerset County companies have been completed and additional coal is being mined in the field. **The Specht Coal Co.** is shipping coal from one opening with the main opening nearing completion. **The Hillcrest Coal Co.** completed its plant recently. The company plans ten new dwelling houses. **The Triangle Coal Co.** on the west side of Stoney Creek is also ready to open its mine.

Feeling that they were not represented at the recent wage conferences and therefore had not promised to give back pay to their employees to meet the difference in wage before and after the award for the period between April 1 and the wage settlement, the **Scotch Valley Coal Co.,** operating near Hazleton, refused to make the settlement which its non-union workers demanded. As a result, the 150 persons that the company employs called on the United Mine Works of America to help them, declaring that they were locked out for having ventured to make a demand for back pay. The mine workers also are seeking the support of the Department of Labor at Washington.

UTAH

The geologists who were sent by the **Utah State Board of Equalization** to survey the coal veins in Huntington Canyon have completed their task, having followed the veins of coal for 60 miles up and down the canyon. It is expected that a tunnel will be cut through the mountains so as to make the coal accessible from Mohrland. The property is believed to contain many billions of tons of high grade coal. Officials of the **United States Fuel Co.** have already made a survey of the proposed tunnel site, but the company has not yet authorized any statement as to what it will do.

The Mutual Coal Co.'s plant in Carbon County is on the point of completion and coal is expected to be mined by the latter part of November. The working entry into the seam from which the first production will be made has been put in good working condition. The spur from the Rio Grande R.R. and the tipple side tracks are ready for track laying. The company will sell its coal to its own stockholders of whom it is said there are more than 1,700 in Utah and Idaho.

John H. Tonkin of Salt Lake City and **Charles W. Buckley** of Chicago have purchased 320 acres of coal lands near Price, Carbon County, at a cost aggregating $91,800 from the U. S. Government. Payment has been made to Receiver Heber C. Jex of the local land office. It is claimed that this is the largest sale of government coal lands ever made in this country.

The Mutual Fuel Co. is opening a new mine in the Spring Canyon district, near Raines, Utah. A large crew is at work on the surface getting ready for operations.

WASHINGTON

Joseph Daniels of the University of Washington has prepared a bulletin on the **coking situation on the Pacific coast.** The coking industry of Washington and British Columbia is arousing considerable interest, more particularly in the recent discussions of the question of establishment of iron and steel plants in the Northwest. The increasing interest in the resources of this portion of North America as potential and active sources of industrial raw materials has led to considerable investigation for supplies of coal. The bulletin presents a history of the coking industry together with accumulated information and data obtained from investigations and tests made by the writer and others.

WEST VIRGINIA

The newly organized **Tomkins By-Product Coal Co.** will operate principally in Logan County, where it is believed development work will be initiated at an early date. This enterprise is capitalized at $100,000, those most closely identified with the new company being: D. N. Crawford, W. E. Tomkins, C. R. Conner, C. C. Rand, H. V. Roe, all of Huntington.

The Sehell Coal Co. has just been organized for the purpose of handling coal, coke, iron, timber and spoke products, headquarters of the company being at Hubbard in Mineral County. The capital stock of the new company has been fixed at $50,000, those most largely interested being: J. F. Somerville, N. D. Somerville, J. P. Dorsey all of Cumberland; Elmer Whitsker and Thomas Wilhelm, of Hubbard, W. Va.

The Richland-Marshall Coal Co., Moundsville, has perfected arrangements for the development of its coal property, and the installation of electrical machinery and equipment will be inaugurated at an early date.

The Craig Coal Mining Co., Howesville, recently organized with a capital of $200,000, has perfected plans for the development of 200 acres of coal lands in this locality. W. E. Arnett is president and H. G. Hodges, treasurer, both of Kingwood West Virginia.

The H. N. Hough Coal Co., Lumberport, recently organized with a capital of $50,000, is planning for extensive development of its coal property to increase the output to 400 tons per day. Equipment for all features of operation will be installed at an early date.

The development of the plans of the **Coalmont Coal & Coke Co.** is proceeding satisfactorily. The aerial tramway and electric light and power plant should be completed this year at the present rate of progress. Four of the tramway cables are stretched and the buckets and other equipment are on the ground. Two large marine boilers will supply power for the electric plant, which will be housed in a new building of pressed brick and steel. Light and power is to be furnished both for the mine plant and for the town. A water system is to be installed.

The Kanawha Cannel Coal Co., organized with a capital of $50,000, has acquired about 250 acres of coal lands in the vicinity of Marmet. This will be developed to produce about 1,000 tons daily.

BRITISH COLUMBIA

The Government's Mine Rescue Station at Fernie is being enlarged to accommodate more adequately the apparatus with which it is equiped and for the training of the miners in its use. This station is provided with about as complete a line of appliances for mine rescue work as can be procured. The Fernie Station was the first in British Columbia and one of the first in the Northwest to be provided with the Gibbs type of breathing apparatus. The Government also maintains at a high state of efficiency, stations at Nanaimo, Cumberland and Merritt. That at Nanaimo has been outfitted with six sets of the Paul apparatus and four sets of the Gibbs; that of Cumberland is equipped with the Draeger apparatus of the 1917 model, but this shortly will be replaced with the modern type, and that of Merritt, which recently was taken over by the Provincial Department of Mines, has six sets of the Draeger and four sets of the Gibbs.

That the **Canadian Collieries (D) Ltd.**, owners of large areas of coal bearing lands on Vancouver Island, are contemplating opening up new sections is indicated by drilling work that is in progress at Sable River, near Union Bay. A number of holes have been driven and the results are said to have been generally satisfactory. Similar explorations are being carried on in other districts, and word of the company's plans with regard to the opening of new mines is being awaited with interest.

ALASKA

A good grade of coal is being mined at the junction of the Healey and Nenana Rivers in Alaska. The mine, which is operated by the **Healey River Coal Corporation**, is close to the Alaskan Ry. near Fairbanks and a tramway is used to deliver the coal to the railway tracks. Some large seams in the Healey River section are to be explored

Association Activities

Central Pennsylvania Coal Producers' Association

Operators of the Central Pennsylvania field met in Altoona, Pa., on Nov. 4, on the question of pledging themselves not to ask unreasonably high prices. President James H. Allport presided. The meeting was largely attended and partook more of the nature of a gathering of individual operators rather than a meeting of the association. Mr. Allport explained that the purpose of the meeting was to take action in harmony with that taken last week at Cleveland, O., by the National Association. A resolution was prepared and adopted, by which it was resolved:

"That the bituminous coal operators of central Pennsylvania refuse to ask or receive unreasonably high prices for bituminous coal, and further that all unwise practices in the industry, where any such exist, be condemned and eliminated; and

"That in accordance with the action taken by the bituminous coal operators at the Cleveland meeting, that the bituminous coal operators of central Pennsylvania instruct the chairman of this meeting to immediately appoint a committee of ten, of which he shall be one, and of which the secretary of this meeting shall be secretary, said committee to be known as the fair practice committee to function in this district in conjunction with the department of justice to the end set forth in this resolution; and

"Be it further resolved That the committee prepare basic resolutions and a set of rules to govern the action of the committee, and a plan for raising necessary funds to carry on the work of stabilizing the coal mining industry."

William Hahman of Altoona declared that, in his opinion, the resolutions do not mean anything. Mr. Allport replied that unwise practices referred to had to do with the resale of coal. In many cases it is sold from one broker to another, each exacting a toll of profits and it should be the object of the operators to eliminate this waste. Mr. Allport contended that the operators are not permitted to fix prices. Secretary Charles O'Neill, in answer to questions, explained that committees are being named by producers, wholesalers and retailers and that pledges are being given that no resold coal will be handled. This, he explained, will eliminate some of the middlemen.

Pittsburgh Vein Operators' Association of Ohio

The only development of interest in this district is the appointment of The Fair Practices Committee, which was reported following the meeting of bituminous operators in Cleveland on Oct. 26.

They advise they have not received any report of dissatisfaction on account of prices charged, nor failure to secure coal in a satisfactory volume. The feeling prevails that the statements made at the Cleveland meeting and the appointment of the Fair Practices Committee as a result, has eliminated any objectionable conditions, if they existed in this district, before the meeting. It seems probable now that the Committee will not receive any complaints

Southern Ohio Coal Exchange

Operators in the southern Ohio field met at the Deshler Hotel, Columbus, Ohio, Nov. 4 to take action on the question of fair practice as requested by the Department of Justice at Washington. The meeting was called by the exchange, George H. Barker, vice president of the Maynard Coal Co., was made chairman and W. D. McKinney, secretary of the Southern Ohio Coal Exchange, secretary.

Chairman Barker read the letter from the Department of Justice requesting the meeting and also the result of the recent operators' meeting at Cleveland, when resolutions favoring fair practices were adopted. A statement was made of the really serious situation in domestic circles in Ohio and adjoining states.

Following the adoption of the resolutions Col. Endrakin of Chillicothe described the serious conditions in the coal trade in that section, saying that some consumers had been coming 40 to 50 miles to Chillicothe for coal. Secretary B. F. Nigh of the Michigan-Ohio-Indiana Coal Association urged operators to co-operate toward loading domestic coal to relieve the situation in the three states. A motion was adopted pledging this support.

Western States Retail Coal Merchants' Association

An organization to be known as the Western States Retail Coal Merchants' Association has just been formed with headquaters in Salt Lake City, Utah.

The object of the association is to bring together the various local retail associations of the Far West for the purpose of interchange of ideas and co-operation. The states who will be charter members are Utah, Oregon, Idaho and California. Washington and Nevada have yet to be heard from.

Officers have been elected as follows: President, J. Calvin Ewing, San Francisco; Vice-president, J. R. Slayden, Pasadena, Cal.; W. C. Holman, Portland, Ore.; C. E. Sharp, Boise, Idaho; F. B. Kimball, Salt Lake City, Secretary, W. C. Stark, Salt Lake City.

Recent Patents

Governing Fuel Pump.—Adolph F. Christmas, Easton, Pa., assignor to Ingersoll-Rand Co., Jersey City, N. J., 1,352,050. Sept. 7, 1920. Filed Sept. 28, 1918. Serial No. 256,129.

Mining Machine.—Albert Ball, Claremont, N. H., assignor by mesne assignments to The Jeffrey Manufacturing Co., Columbus, Ohio, 1,352,169. Sept. 7, 1920. Filed July 26, 1909. Serial No. 509,579.

Anemometer.—Sydney George Starling, Forest Gate, and A. J. Hughes, London, England, assignors to Henry Hughes & Son, Ltd., London, England, 1,352,391. Sept. 7, 1920. Filed Apr. 10, 1919. Serial No. 289,066.

Briquet Drier.—Robert S. Plummer, Philadelphia, Pa., assignor to American Briquet Co., Philadelphia, Pa., 1,352,377. Sept. 7, 1920. Filed Sept. 11, 1919. Serial No. 323,172.

Traffic News

Vigorous protests will be made at the I. C. C. hearing on Nov. 16 to the proposed increases in **trimming and dumping charges at Hampton Roads.** The proposed increases place the charge for this service at Hampton Roads eight cents above the charge at Philadelphia and Baltimore. An addition to the protest of the coal operators will be that of the steamship interests generally, including the United States Shipping Board.

In the complaint of the **Alden Coal Co.** of Matherville, Ill., the I. C. C. has decided that the rates on coal from Matherville to Hopewell, Ill., initiated by the Director-General of Railroads were unreasonable, but denies reparation because the complainant is not the real party in interest. The Commission says the rates were unreasonable because they exceeded $1 per net ton.

In the complaint of the Central Pennsylvania Lumber Co., the I. C. C. decides that the rates on coal from Lucinda, Pa., via Waverly, N. Y., to Ricketts, Pa., are unjust and unreasonable, prescribes reasonable maximum rate for the future and awards the complainant reparation.

Indiana Rates.—The trade here will be considerably affected by a recent intrastate increase in freight rates, amounting to about 33⅓ per cent. The increase was granted by the Indiana Public Service Commission after the steam roads had petitioned for an increase of 40 per cent. Because of the fact that Indianapolis is a big distributing point for the greater portion of Indiana, the distributing houses of Indianapolis have been greatly affected. Some of the industries through appealing to the commission saved themselves much added expense when in cases like the brick manufacturers, no increase was allowed and the sand and gravel industry intrastate rates were increased only 11 per cent.

Twin Cities.—The stringent coal situatin has called attention anew to the waterway project to the Atlantic via the Welland canal and the St. Lawrence river. It is pointed out that this would release cars which are now tied up to move products of the Northwest. The through waterway would allow the flour and other products of this section to go by water, and the cars now used for moving them would be available for the coal and other trades.

Louisville & Nashville R.R.—In the plea of the Louisville & Nashville R.R. for an increase in coal rates from mines in Kentucky, Tennessee and West Virginia to points North and Northwest, the railroad company has asked that its rates from and to the points specified be increased from 33⅓ per cent, ordered effective Aug. 25, to 40 per cent, as given to the Chesapeake & Ohio R.R., a competing line. It was contended by the Kentucky coal operators that the Illinois mines would be placed in direct competition with the Kentucky fields should the increase be granted. A decision will be rendered after the Interstate Commerce Commission reviews the testimony taken.

Personals

William B. Lloyd, of Wm. B. Lloyd Co., Philadelphia, Pa., took advantage of a lull in the retail trade to visit the anthracite region. He spent several days in the vicinity of Mauch Chunk and reports the Lehigh field working to capacity, so far as can be seen.

Work has been started on the rebuilding of the coal yard for **A. G. Solomon**, Norristown, Pa., dealer. The work is to be completed within two months and when finished will be double the capacity of the former yard.

N. W. Garrett has joined the force of the Irwin Valley Gas Coal Co., located in the Widener Building, Philadelphia, Pa. Mr. Garrett has had long experience in the bituminous trade and was formerly connected with the well known house of B. Nicoll & Co.

T. C. Hughes was a recent visitor in New York City. Mr. Hughes has been actively connected with the coal mining industry for many years, at present being president of the Kentucky Collieries of Pineville, Ky. While in this vicinity, he acquired much information that will be valuable in the development of his mines and sale of the coal.

M. L. Burtles has been appointed Huntington representative of the Old Dominion Coal Corporation of Charleston, W. Va., succeeding **H. A. Christian**, transferred to Cincinnati. Mr. Burtles was formerly connected with the Amherst Fuel Co. of Lundale.

Four additional representatives of the fair practice committee of northern West Virginia operators have been selected to act in the following group of counties in northern West Virginia: **J. J. Phileen**, secretary of the Chamber of Commerce of Clarksburg for the counties of Harrison, Doddridge, Lewis, Gilmer and Calhoun; **E. M. Grant** of Morgantown, for the counties of Marion, Menongalia and Preston; **Charles Ritter**, secretary of the Business Men's Association of Elkins, for the counties of Randolph, Taylor, Upshur and Barbour; **William Hesket**, of Piedmont, for the counties of Mineral, Hampshire, Hardy, Grant Tucker and Pendleton.

Thos. F. McGowan, retail coal dealer in Philadelphia, was successful at the recent election in his candidacy as a membe of the State legislature, receiving an extraordinarily heavy vote.

Geo. W. Edmands, founder of the old Geo W. Edmonds & Co. retail business until its consolidation with the Newton concern, was at the last election chosen for the fourth time to represent the Fourth District of Philadelphia County in the U. S. Congress. Mr. Edmunds is in receipt of the congratulations of his many friends in the trade.

F. J. Ginn has been appointed traffic director of the National Committee on Gas and Electric Service.

F. B. Layton, for some time vice-president of the Bader Coal Co., has organized an independent company, under the name of the F. B. Layton Coal Co., with office in Milk St., Boston, Mass.; capital stock, $50,000.

W. J. Davis, New Straitsville, Ohio, coal operator and former county Republican chairman, was rendered unconscious and seriously injured, when he fell from a cut of cars at his mine.

W. N. Wetzel, former superintendent of mines for Utah Fuel Co. at Castle Gate and at Sunnyside, is coming back to Carbon County, where he will take a position as general superintendent for the Carbon Fuel Co.

Henry S. Fleming, consulting engineer, of New York, for several years chairman of the executive of the Canadian Collieries (Dunsmuir) Ltd., operating collieries on Vancouver Island, British Columbia, has resigned as president of that company and its allied organizations, the board of directors and the bondholders' committee, having decided that the executive management shall in future be wholly in British Columbia.

D. S. Riddle of the Riddle Coal Co., Chattanooga, Tenn., visited New York City recently, following the Cleveland operators' meeting, which he attended. Mr. Riddle's company conducts an extensive jobbing business in the South, with mining connections in Kentucky.

Paul Pool, of Johnstown, Pa., for four years assistant superintendent of the Cambria Steel Co.'s coke plant at Franklin, Cambria County, resigned Nov. 1 to accept a position as superintendent of the by-product coke plant of the Semet-Solvay Co. at Detroit.

G. Allen Crane, mining engineer, announces that he has established offices at Vancouver, B. C., with a view to offering his professional services for consulting, reporting, developing and administrative work in all classes of mining.

A. G. Gutheim, of Washington, representative of the American Railroad Association, was in the Twin Cities recently on a visit. He stated that there would be an early relief from the transportation difficulties which have caused so much grief to the coal trade.

J. M. Savage, for some years General Manager with headquarters at Victoria, B. C., of the Canadian Collieries (D) Ltd., has been appointed Chairman of the Company's Executive, vice **Henry S. Fleming**, resigned.

A. F. Elliott, who for thirteen years has been chief electrical superintendent of the coal mines of the Tennessee Coal, Iron and Railroad Co., and has been identified with the growth of the mines of that company, has resigned.

Prominently among the Central Pennsylvania coal operators who attended the recent meeting of the National Coal Association at Cleveland, Ohio, were **H. J. Meehan** and **Enoch Carver**, of the firm of J. C. Cosgrove & Co., of Johnstown.

R. B. Mitchell, general superintendent of the Illinois mines of Cosgrove & Co., Johnstown, Pa., is a visitor in Johnstown. He is head of the Sandford Coal Co., the company recently installing a new tipple which has increased the output to 2,500 tons daily.

Thomas M. Davis, superintendent of Mine No. 6 of the Peabody Coal Co., located at Springfield, Ill., has been transferred to Mine No. 7, at Kincaid, Ill.

E. J. Alexander, after serving for fifteeen years as fuel agent for the Chicago and Eastern Illinois R.R., has been tendered a position as vice-president of the Ender Coal & Coke Co., Fisher Bldg., Chicago.

Mr. J. Noble Snider, having returned to the service of the N. Y. C. R.R., was appointed Coal Freight Agent, with headquarters at New York.

The American Export and Inland Coal Corporation, which was organized not long ago, has announced the appointment of **W. A. Leigh** as its Michigan representative.

J. J. Snively has accepted an important position with A. R. Hamilton & Co. Mr. Snively for a time was connected with the Northern West Virginia Coal Operators' Association.

Industrial News

Philadelphia, Pa.—The Cortright Coal Co., located in the Pennsylvania Building, have succeeded in getting additional floor space for their business which has grown rapidly in the past several years. The new space doubles their former capacity and gives them ample room for housing their sales department as well as the various underlying companies of the concern, of which H. B. Cortright is president and H. Bartram Cornog vice president.

Clarksburg, W. Va.—Jewett, Bigelow & Brooks, coal brokers, with general offices in Detroit, have opened an office in Clarksburg with Loring J. Smith as representative. The company plans to open an office in Fairmont also just as soon as a location can be obtained. The Fairmont representative of the company is Fred M. Bennett, Cincinnati.

Philadelphia, Pa.—The Phila. & Reading Ry., using approximately 3,000,000 tons of coal per year, has entered upon a fuel conservation plan. Mr. Charles P. Dampman has been appointed supervisor of fuel conservation, and has issued a pamphlet covering the various ways in which coal can be saved. Particular attention is called to the manner in coaling the locomotives, but stress is also being laid upon overloading of tanks, coal lost in transit, etc. The committee plan has been adopted to make the movement effective, there being committees to oversee the plan on each division, as well as sub-committees in round-houses and shops. A saving of 420,000 tons has been set as a mark, which would mean about 200 pounds per locomotive mile.

Pittsburgh, Pa.—The fair practice committee of the Pittsburgh district coal operators has sent a circular to all operators of the Pittsburgh Federal district urging operators to do everything in their power to meet the demands for coal for domestic use. They are requested to advise the secretary of the committee, R. W. Gardiner, as to what coal they have available.

New York, N. Y.—C. W. Hunt Engineering Corporation has been formed with offices at 143 Liberty St., New York City, to handle sales entailing engineering in connection with the Hunt products and all engineering services previously performed by the C. W. Hunt Co., Inc.

Lansing, Mich.—The fourth district of the Michigan Coal Merchants' Association has been organized here. William B. Smith, state association secretary, was here from Detroit. The fourth district will comprise dealers in Ingham, Livingston, Eaton and Shiawasse Counties. Twenty-five representatives from the various towns were present at the meeting.

Hartford, Conn.—The J. B. Engineering Sales Co., has ben appointed Connecticut sales agents of the Conveyors Corporation of America, formerly American Steam Conveyor Corporation. Offices are located at 60 Prospect St., Hartford, Conn.

Obituary

Anthony LePage of Clinton, a coal operator, was killed recently, when the automobile in which he was riding was struck by a passenger train at a crossing east of Clinton. LePage was alone in the car and was going to Terre Haute.

B. J. Libby, well known in the fuel business of South Minneapolis, died recently after a brief illness. He had been confined to a wheel-chair for nearly 40 years, having been left a cripple when about 16 Despite this, he established a fuel business which he directed from his chair and conducted it successfully until his death.

A. H. Hamilton, consulting mechanical engineer, died in Vancouver, B. C., after a brief illness. For many years he was master mechanic for the Western Fuel Co. of San Francisco, later with the Canadian Collieries, Ltd.

George W. Stevens, President of the Chesapeake & Ohio R.R., dropped dead at the Greenbrier Hotel, White Sulphur Springs, recently. Mr. Stevens was active in the development of the coal fields of West Virginia, and during his term of office as President of the C. & O. an unusually large number of branch lines were built to aid in the development of the State's natural resources.

Coming Meetings

Illinois Mining Institute will hold its next meeting on Nov. 20 at Springfield, Ill. Secretary Martin Bolt, Springfield, Ill.

Coal Mining Institute of America will holds its annual meeting Dec. 8, 9 and 10, 1920, in the Chamber of Commerce Auditorium, Pittsburgh, Pa. Secretary, H. D. Mason, Jr., Chamber of Commerce Bldg., Pittsburgh, Pa.

The American Society of Mechanical Engineers will hold its annual meeting Dec. 7, 8, 9 and 10 in the Engineering Societies Building, 29 West 39th St., New York City.

Taylor Society will hold its annual meeting Dec. 2, 3 and 4 in the Engineering Societies Building, 29 West 39th Street, New ork City. This society tends to promote the science and the art of administration and of management. Managing director, H. S. Person, 29 West 39th Street, New York City.

The Wholesale Coal Trade Association of New York, Inc., will hold its annual meeting in New York City Jan. 18, 1921. Secretary, Charles S. Allen, 90 West Street, New York City.

American Society of Mechanical Engineers' annual meeting will be held in the Engineering Societies Building, 29 West 39th Street, New York City, Dec. 7 to 10 inclusive. Secretary, Calvin W. Rice, 29 West 39th Street, New York City.

Illinois Mining Institute will holds its annual meeting Nov. 20 at Springfield Ill. Secretary, Martin Bolt, 1600 College Street, Springfield, Ill.

West Virginia Coal Mining Institute will hold its annual meeting Dec. 7 and 8, at McLure Hotel, Wheeling, W. Va. Secretary, R. E. Sherwood, 1001 Kanawha Bank Building, Charleston, W. Va.

COAL AGE

The Weekly Journal of the Coal and Coke Industries

Volume 18 NEW YORK, THURSDAY, NOVEMBER 25, 1920 Number 22

The Cancellation Bugbear

FIRST the textiles, leather, rubber and allied industries and most recently the machine-tool industry have been worried by cancellation of orders. Business in these lines has been threatened with disruption because buyers refuse to take goods ordered before prices started downward. W. Randolph Montgomery, counsel for the National Association of Credit Men, recently said that it has been the boast of American business men that the last decade has seen an improvement in business morals; that when a contract was made, the goods would be taken and would be paid for. "Pious expressions about the sanctity of contracts are [now] as potent as the fourteen points were, confronted by the hatreds and passions of the European nations, when they met in conference two years ago."

So far this year, carelessness in observing contracts for coal has not been charged to the buyer but rather to the seller, who found in too many instances some basis for neglecting "options to ship," otherwise known in the coal trade as contracts, in order to sell coal on the higher priced open market.

It will be no new experience for the coal shipper to have consumers cancel orders, should that condition develop this year. Nor is the cancellation of business as serious for the producer of coal as it is for the producer of a manufactured article, because if the order for coal is withdrawn the coal is not mined and no capital is tied up in semi-finished or completed products.

With Regard to the Sherman Act

ADDRESSING the nineteenth annual convention of the National Machine Tool Builders Association at the Hotel Astor, New York, the second week in November, President Albert E. Newton is reported to have told his members that "any reduction in prices on machine tools will not stimulate demand, but is more likely to work to the contrary," a sentiment found to be general among members, according to the report of the meeting in *Iron Age* (Nov. 18, p. 1321). The president is reported also to have said that "There is only one cause that I know of that should either increase or decrease the price of machine tools, and that is cost. . . . The depression with which we are now contending is no new experience for us, and is not a surprise. . . . I believe most of our members fully realize that the values which accrue to them from the fruits of our association are proportionate to the time and mutual support given by them."

Can you picture the president of the National Coal Association advising his members that any reduction in prices of coal will not stimulate demand, but rather the contrary, or that the only cause justifying lower prices of coal would be decreases in cost? Can you imagine any official of any coal-men's association advising its members in any wise regarding selling prices? So far has the coal industry gone in following the spirit of the Sherman law that even information regarding the prices at which past business has been transacted no longer is exchanged.

Emphasizing Responsibilities

CO-ORDINATION in economic groups to eliminate the great waste and misery of intermittent employment and unemployment was urged by Herbert Hoover, speaking as first president of the Federated American Engineering Societies in Washington on Nov. 20, 1920. Before this gathering of engineers representing every avenue of industry, the bituminous-coal industry was pointed out as one where bad economic functioning resulted in an average of but 180 days employment per year, a condition the solution of which would be greatly helped if a basis of co-operation could be found between the coal operators, coal miners, the railroads and the consumers. Mr. Hoover said: "The combined result would be a higher standard of living to the employee, reduced risk to the operator, fundamental expansion of economic life by cheaper fuel. With our necessary legislation against combinations and the lack of any organizing force to bring about this co-operation, the industry is helpless unless we can develop some method of governmental interest; not in governmental ownership but in stimulation of co-operation and better organization."

Mr. Hoover did well to include the consumers among those whose efforts are needed to improve the balance in the soft-coal industry. The fate of the industry at all times is in the hands of the consumers. Compare, if you will, the business of raising and marketing wheat with that of bituminous coal. The farmer raises the wheat, and either the farmer, the local or terminal elevator or the flour mill keeps the product in stock to meet varying demands. The producer of coal must leave his product stored as nature put it—under ground, unmined—until the consumer calls for it either for storage or for consumption.

The "bad functioning" of the bituminous-coal industry, held up as a horrible example, is not the fault of the producer. The education of the men in the coal-mining industry in the fundamental economic facts controlling the success of their business should be considered but a step in the education of consumers. We do not believe with Mr. Hoover that the industry is helpless unless there is developed some method of governmental interest in the stimulation of co-operation for better organization. Rather we think that the need is to stimulate the interest of the business men—the men who control the functioning of our coal-consuming industries, including the railroads and the public utilities—in their responsibility for the proper functioning of the coal industry. The real problem is

to bring these men to a realization that the relief they seek against high prices for coal, from periods of shortage and from shipments of inferior product lies along the purely selfish lines of common sense. Consumers must realize the fundamental fact that they are the arbiters of their destiny, and not the producers. Once the coal consumer appreciates these facts there will be created proper governmental interest in collecting and furnishing him the facts about coal.

Mining coal cheaply, safely, and with due regard to its conservation as a great natural resource, and the placing of that coal, properly prepared, in railroad cars, is only one-half of the industry in coal. The other half is distribution and merchandising of this product at a profit and with due regard to sane business methods.

Coal Age believes it can best serve the industry by serving not only those who produce the coal and those who merchandise it but those who must buy it as well. We seek to forward the "co-ordination in economic groups" for which Herbert Hoover speaks, and our interpretation of that general expression is that production and selling of coal must be linked up with intelligent buying of coal.

Federated Engineering Societies Perfect Organization; Twenty-one Associations Represented

TWENTY-ONE engineering societies with an aggregate membership of more than 60,000 have perfected the organization of the Federated American Engineering Societies and selected Herbert Hoover as their first president to lead them in their program to place the engineer properly in relation to public affairs and to make the engineer's voice heard in matters of national concern. These sessions were held in Washington, D. C., Nov. 18 to 20, inclusive.

This organization of the Federated American Engineering Societies has been perfected through the efforts of a joint conference committee, representing the four large engineering societies in the fields of electrical, mechanical, civil, and mining and metallurgical engineering. At the beginning of this organization's meeting Richard L. Humphrey, who has served as chairman of the joint conference committee, set forth the general function of the work and emphasized the keynote of the conference when speaking of the large responsibility of the engineer to make useful his "capacity for leadership."

Meetings and Records Open to Public

Societies accepting membership before July 1, 1921, will be regarded as charter members of the federation.

The two problems which were debated at greater length than any others during the entire conference related to matters of publicity and the location of headquarters of the federation. Apparently largely in recognition of the fact that all the work of the federation must be obviously in the open and without the suspicion of secret machinations, it was finally decided that every phase of the federation work should be regarded as public. Not only will all sessions of the council, the executive board and committees, except executive sessions, be open to any proper person, but also all records of the meetings as well.

Since the Federated Societies will deal largely with national problems, it was decided that Washington was the proper location for its headquarters. Another factor in this selection of Washington was the feeling that seems to prevail, especially in certain Western societies, that New York influence in the federation work should be reduced to a minimum. It is recognized that in dealing with public matters at least a branch office in Washington would be essential, and the necessity for the establishment of two offices was to be avoided, if possible, by this means.

In view of the fact that the American Engineering Council (the name of the working body made up of delegate societies of federations) probably will take over the activities of the Engineering Council which has been operated for several years by a limited number of societies, there was special importance attached to the report of the work of the Engineering Council made by J. Parke Channing, its chairman.

As typical of problems to be considered by the Federated Societies, there were presented briefly during the conference two or three important discussions on transportation, labor and similar subjects. L. B. Stillwell discussed the problem of highway transportation, pointing out particularly the economic waste resulting from inadequate regulation of highway traffic by heavy trucks.

States Engineers' Part in Labor Problem

The problems of labor were treated in the presidential address of Herbert Hoover before the final session of the council. In treating of this subject the engineering problem was particularly well presented in the following comment:

> This engineers' association stands somewhat apart among these economic groups in that it has no special economic interest for its members. Its only interest in the creation of a great national association is public service; to give voice to the thought of the engineers in these questions. And if the engineers, with their training in quantitative thought, with their intimate experience in industrial life, can be of service in bringing about co-operation between these great economic groups of special interests, they will have performed an extraordinary service. The engineers should be able to take an objective and detached point of view. They do not belong to the associations of either employers or labor, of farmers, or merchants or bankers. Their calling in life is to offer expert service in constructive solution of problems to the individuals in any of these groups. There is a wider vision of this expert service in giving the group service of engineers to group problems.

In order that the Federated Engineering Societies might lend their support immediately to several important projects, the executive board passed resolutions in support of the following projects: (1) The compilation and preparation of critical tables of physical and chemical constants, as undertaken by the National Research Council. (2) The proposed federal department of public works, as advocated by the Engineering Council. (3) The proposal by Mr. Hoover for the investigation of industrial waste and authorizing him as president to form an organization under the auspices of the federation, to work immediately to this end. It is probable that this work on labor relations and elimination of industrial labor wastes will be the first project actively fostered by the federation.

Herbert Hoover Elected Head of American Engineers

Herbert Hoover was elected president of the Federated American Engineering Societies Nov. 19 by the Federation's Council in session in Washington. Mr. Hoover is head of the American Institute of Mining and Metallurgical Engineers, one of the thirty organizations making up the Federated Societies.

Judge Upholds Landlords in Conserving Coal Supply

Asserting that if the expected coal shortage comes coal can be used to better advantage later in supplying heat than now in supplying hot water every day, three landlords in the New Jersey Avenue Court in Brooklyn were discharged. They were arraigned on charges of failing to supply hot water.

New Shipping Board To Be Organized Dec. 1.

When the new Shipping Board, composed of Rear Admiral W. S. Benson, reappointed as chairman for six years; F. I. Thompson, of Alabama; J. N. Neal, of Oregon; J. A. Donald, of New York; C. H. Rowell, of California; G. D. Goff, of Wisconsin, and Charles Sutter, of Missouri, holds its first meeting in Washington, Dec. 1, a general discussion of the whole shipping situation and future organization of the board will be held. One matter to be determined is whether any recommendations are to be made to Congress for amendments.

Commerce Commission Approves More Loans to Roads

The Interstate Commerce Commission has approved a loan of $1,840,700 to the Erie R.R. to aid in reconstructing freight-train equipment, making improvements to existing equipment and for additions and betterments to its roadway and structures, estimated to cost $6,680,000. The company itself is required to finance about $4,840,000. The commission also has approved a loan of $9,630,000 to the New York, New Haven & Hartford to aid in providing equipment and additions and betterments to way and structures at an estimated cost of $13,525,000.

Gas Men Attribute High Price To Coal Cost

The American Gas Association, in annual convention at the Hotel Pennsylvania, New York, Nov. 16, placed the blame for present high gas rates upon the shoulders of oil and coal interests. Philip H. Gadsden, chairman of the emergency committee, said in part: "Our financial reserves are wiped out and our credits impaired. The ten-cent boost in gas oil by the gallon boosts the cost of gas 35 to 40c. per 1,000 cu.ft. We cannot get coal enough even at tremendously high prices. Let the public decide whether the oil man and the coal man shall reap enormous profits at the expense of so essential an industry as ours."

Oil Consumption Grows Rapidly

R. L. Welch, general counsel and secretary of the American Petroleum Institute, stated Nov. 16 at the convention of the American Gas Association in New York that the rate of oil consumption in the United States is increasing so rapidly that the demand will reach 1,000,000,000 barrels a year and that amount can readily be absorbed.

NEWS BRIEFS

Terse Items Chronicling Events of Interest to the Industry

Pennsylvania R.R. Makes Record

The highest recorded volume of freight traffic ever transported in the history of the Pennsylvania Railroad system was handled during the month of October. Reports from all divisions show that during the month an average of nearly 24,000 loaded cars per day, or 167,461 per week, were forwarded to their respective destinations. This represents more than 870,000 tons of freight a day, or over 6,000,000 tons a week, loaded on the Pennsylvania Railroad, or accepted by it from connecting lines.

Belgian Miners Resume Work

Coal miners in the Charleroi district, Belgium, who have been on strike for more than a week, returned to work Monday, Nov. 15, the strike ballot failing to show that 70 per cent of the men favored the strike, which was necessary for its continuance, as required by the miners' Federation rules.

Petroleum Output Gains

Production of petroleum made a new record in California during September, when the average daily output rose to 304,340 barrels.

Engineers Launch New National Program of Public Service

The American Engineering Council of the Federated American Engineering Societies at a meeting at the New Willard Hotel, Washington, D. C., Nov. 19, launched a national program of public service, the chief features of which are: Conservation of the nation's resources in coal, oil, timber, water power, etc.; immediate work upon the national problem of transportation; solution of the relations between capital and labor, in which the engineer, from his comparatively impartial point of view, is believed to be especially equipped to make recommendations; creation of a national public works bureau by means of a reorganization of the Department of the Interior, co-operation with the Drafting Bureau of Congress in its work of preparing for a national budget system, and guiding legislation for the licensing or registration of engineers.

Revival of Lighting Restrictions Darkens Paris at 12:30

As a result of the British coal strike Paris has revived lighting restrictions in order to save coal. With arc lamps lit in the main arteries of the city, with the cafés remaining open until 1 o'clock in the morning, Paris at night had regained much of its old physiognomy and its reputation of "La Ville Lumière." Now lighting restrictions are again imposed. Since Sunday, Nov. 14, the cafés have been closing half an hour after midnight, and motion picture houses, theaters and concerts at 11:30.

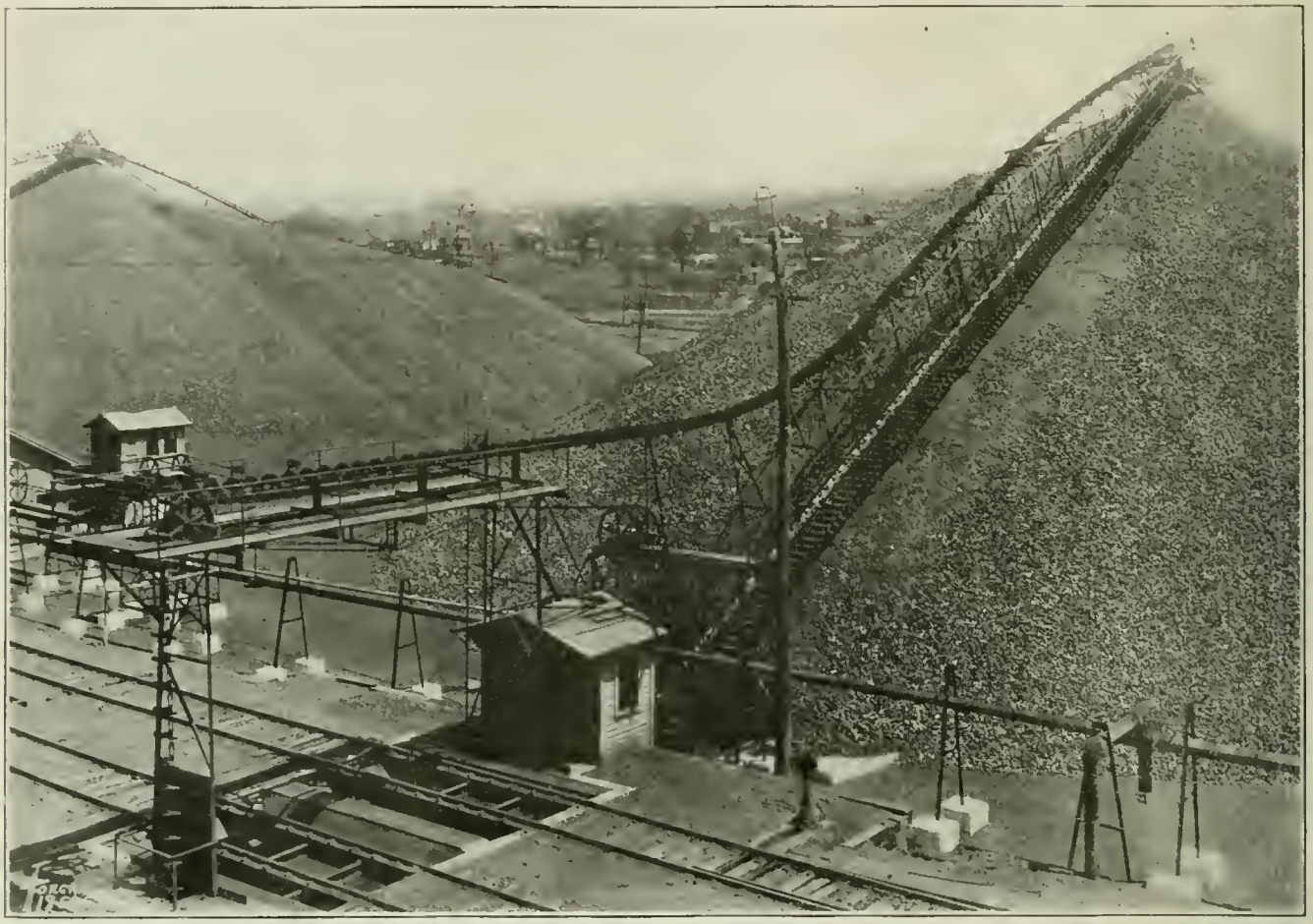
P. R. R. Drops 2,850 Men

In anticipation of a traffic slump this winter the Pennsylvania R.R. dropped from the payroll Nov. 12 1,350 men employed at its Altoona shops, approximately 15 per cent of the total number employed there, and on Nov. 15 announcement was made that there would be a lay-off of 2,500 more men, 1,000 of them on the Philadelphia Division, within the next five days. Fifteen hundred of the employees will be laid off in the Central Pennsylvania Division. At Williamsport, where it is announced 505 will go, the majority will be car shop employees. Since the end of October there has been a total net reduction of over 10,000 employees of the Pennsylvania system, most of them east of Pittsburgh.

Canadian Development Planned

Plans are being formulated for gigantic transportation and industrial development in western Canada jointly by the Pennsylvania R.R., the Canadian Pacific Ry., the Essex Terminal Ry. and the Canadian Steel Corporation, involving the expenditure of $200,000,000.

Through the Coal Fields With a Camera



Storing Anthracite Coal in Large Quantity

As anthracite coal will not heat appreciably when stored, it may be safely stocked out in the weather to any depth. The two photos above show a detailed and a general view of a storage plant. Coal is dumped from hopper-bottom cars into a track bin. From here it is taken by a scraper conveyor extending up one leg of the stocking derrick. Doors in the bottom of the trough permit the discharge of the coal at a point slightly above the top of the pile. Reclaiming is done by another scraper conveyor that moves along the ground and gathers the coal to the railroad tracks.

An Emergency Governor with Hoist Recorder Gives Data on Safety and Efficiency

Emergency Governor Slackens Speed, if Excessive, and Stops Overwinds—Recorder Shows if Governor Has Acted to Prevent Either Tendency—Chart Records Signals, Hoisting and Standing Time and Governor Tests—Indicates How Hoisting Can Be Bettered Economically

By G. F. Royer
Wilkes-Barre, Pa.

STUDY of the development and use of emergency governors (often miscalled overwinders or overwind preventers) have revealed that many attempts have been made to prevent automatically overwinding and over-speeding. Descriptions of devices of this kind are found dating back to the early days of steam hoisting, and possibly even further. However, in the absence of any specific date, which can be positively shown to mark the beginning of the idea, Oct. 10, 1868, may be taken as the approximate starting point.

Upon that date a patent was issued by the United States Government to Ottis and Schmitt, wherein the principle of centrifugal force operating through a predetermined distance was employed to prevent accidents. Since that time, as the patent records show, many inventors, American and foreign, have attempted to increase the safety of hoisting.

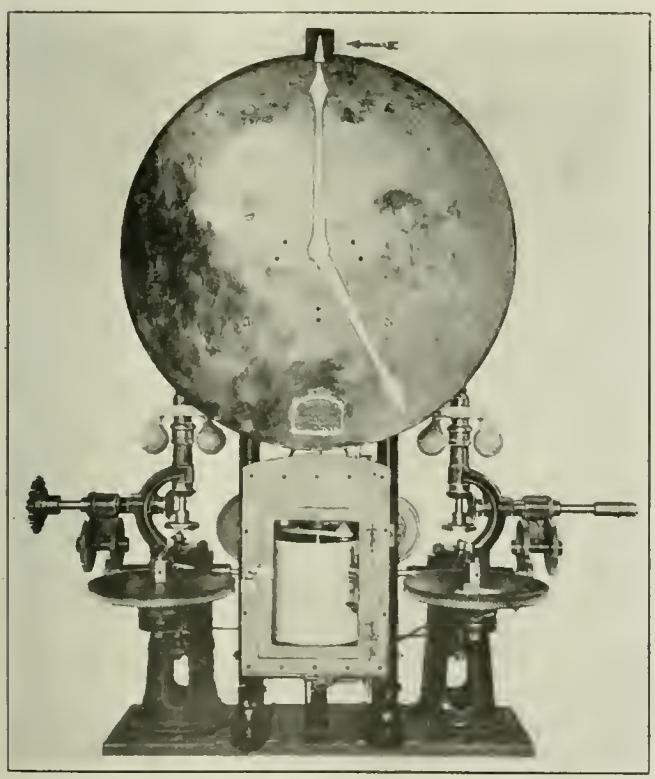


FIG. 1. EMERGENCY GOVERNOR FOR CONTROL OF CLUTCH-DRUM HOISTING ENGINES

This governor is equipped with a recorder attachment which keeps a spiral record detailing the running of the hoist, showing not only the number of hoists and the time at which they were made, how long a period the hoists took, the length of delays, but also when the governor was tested, what signals were given and from what points—the surface or the landing.

Many of them have been tried out and cast aside for lack of real value. Others, being somewhat more meritorious, have been retained, some of them even to the present day. It seems to have been the usual object of the inventors not so much to control as to assist the hoist operator in the performance of his duties. One of these machines which was adopted quite extensively, although complicated and expensive to install, could be adjusted so that the hoist could be started by hand, and it would then be so controlled by the machine that it would bring the cage automatically to rest at the landing. This could be repeated as often as desired.

Governor Often Stopped Cage at Working Place

On account of the varying weight to be hoisted and the irregularities in steam pressure, the cage would not come to rest at a fixed point, and it became necessary under certain frequently recurring circumstances for the engineer to cut out the governor by means of a lever provided for that purpose and so bring the cage to the landing.

While this type of governor did not give complete protection, the fact that it was used extensively, and that some machines of this variety are still employed, proves that many mine operators early realized that there was a necessity for protection against the danger of overwinding. They were therefore willing to make the necessary expenditure for a governor that would give even partial protection.

It is not my intention to write a history of the development of the emergency governor, except in so far as may be necessary to substantiate my conviction that these machines have now reached such a state of perfection (whether considered from the humane or business standpoint) that no company operating hoists can afford to be without the protection they give. The dangers of hoisting may be divided into two parts, the mechanical and the human hazard. While these perils are distinct, they are interdependent and both have to be carefully considered if safety and economy are to be secured.

Safety Needs of Mechanical Equipment

In order to be sure that this mechanical hazard is reduced to a minimum, the cage must be of ample strength and approved design. The guides must be properly anchored; the dogs or safety clamps must be reliable and in good condition. The cable must be of the required tensile strength to handle the load at the speed desired. The sheaves must be of sufficient diameter and the groove of the correct contour to prevent

undue stress and wear on the rope. The tower must be constructed in a proper and safe manner. The hoisting rope must coil properly on the drum of the hoist, which must itself be of sufficient strength to withstand the centrifugal force and the crushing stress, which is increased by every succeeding coil of the rope.

This drum must also be strong enough to withstand the torsion caused by the acceleration and retardation of the load and the sudden application of the brakes. The brakes themselves must be capable of bringing the hoist to rest within safe limits, while engine or motor must have sufficient power to perform safely the work imposed upon it.

Many other like details must be considered under the general head of mechanical hazard. Most of the equipment subject to failure can be readily seen and inspected and many of the individual parts are actually inspected every day. This is doubtless the reason why some of the reports and statistics state that "the shaft is the safest place in and about the mine."

While doubtless it is true, with few exceptions, that the shaft is comparatively safe, it has not always been so. Because the dangers are readily apparent they are unfailingly considered by those in charge of operations. Even subconscious cognizance of their existence develops rapidly into an acute stage whenever minor accidents or slight irregularities in hoisting occur. Because these dangers are always obvious operators have been willing to accept the assistance of hoist builders in the elimination of shaft hazards. The builders on their part have always been willing and anxious to go to any reasonable length to minimize the hazard encountered in the operation of their machines.

"Hoist the Cage and I'll Let You Know"

How slight an accident or irregularity in operation will attract the attention of those in charge and how careful they are to ascertain the cause before continuing regular operation, may be judged from this account of a somewhat peculiar occurrence which transpired at Luzerne, Pa., while I was in the engine room of a coal-mining company. On an idle day when adjustments were being made in an emergency governor which had just been installed, the cage was being slowly hoisted to the landing.

When the machine came to rest the engineer remarked that something was wrong down below. On calling the bottom by 'phone he asked: "What is the matter down there?" and received the reply: "There is a mule in the sump and you dropped the cage on him." The next question by the engineer was "What the h— is that mule doing in the sump?" The reply was: "Hoist the cage off him and I'll let you know."

It developed that a mule had wandered into the sump, and while hoisting the cage to the top landing, the opposite cage had descended upon the mule, forcing him to a prone position, his body supporting the whole weight of the cage, and holding it about 16 in. above the landing point. Strange as it may seem the beast was not seriously injured.

I was somewhat at a loss to understand how the engineer was led to believe that something was wrong down below, some 750 ft. away, at the end of a cable. Whatever he noted it was certainly neither a jar nor noise. Upon asking him, however, he made it clear by replying that he had observed extra slack in the cable. This, of course, was caused by the cage resting on the mule.

This occurrence dispelled any lingering doubt that I may have entertained as to why the mechanical hazard had been so thoroughly taken care of. It has firmly convinced me of the soundness of my opinion that this peril is so obvious that it is bound to receive prompt and serious consideration.

Let us now consider and analyze the human hazard in connection with hoisting. This differs from the mechanical, which is a created peril—created chiefly by the necessity of performing dangerous operations. The human hazard, on the other hand, is always with us, according to our measure of intelligence and general fitness for performing work to which we are assigned. And considering that over-winding is possibly the greatest danger encountered in connection with hoisting, it can be readily understood why the engineer or hoist operator is so carefully selected.

Engineer Always Liable to Make Mistakes

Just what rules, regulations, customs or criteria are followed in selecting men for operating hoists, I am unable to say. This much is certain, however, regardless of the rigidity of the examination they may be called upon to pass, they themselves form a tangible peril. Being human they carry with them into their hoisting operations the human hazard, which, regardless of any test, examination or trial, cannot be altered, since it is a hazard of the mind of man, which is frail at best. This mind, resourceful or dependent, active or sluggish, accurate or eccentric, sensitive or careless, may be easily changed from the reliable to the unreliable by mental or physical condition.

All these contradictions show the weakness of man which is the weakness of John the engineer. On account of John's long and almost perfect record, we sometimes forget this personal hazard and rest assured that what he has done hitherto he will continue to do. Not infrequently, however, we are suddenly roused to the fact that this hazard has grown stronger as John has grown weaker, and we pay for our trustfulness by destruction of property and often by loss of life. John is then no longer classed as a good engineer, but on account of his long and faithful service is designated as *having been* a good engineer. Even this small measure of credit is seldom unanimously accorded.

In order to fully appreciate the efficiency of a hoistman, who after ten years of hard service has earned and still retains the distinction of being a good engineer, we must have an expert knowledge of the duties and the responsibilities that his position entails. His duties consist in hoisting and lowering cages in the shaft and bringing them to rest at a given point. These cages attain a speed of 1,500 to 2,000 ft. per min. Thus in a busy shallow shaft a trip is made every 30 sec., and this operation must be repeated hundreds of times a day or over 100,000 times every year.

A Revolution Too Many May Spell Disaster

If the hoist operator overruns the landing point from two to three feet, minor accidents and delays will result. Overrunning the landing by one revolution of the drum may cause a serious accident or even loss of life. When we consider the power of the machine which he handles, the thousands of times that he must start, accelerate, retard and stop the hoist at a given point, note the constant concentration of mind necessary to perform this work, and recall that a moment of forgetfulness may be fatal, we may begin to appreciate the

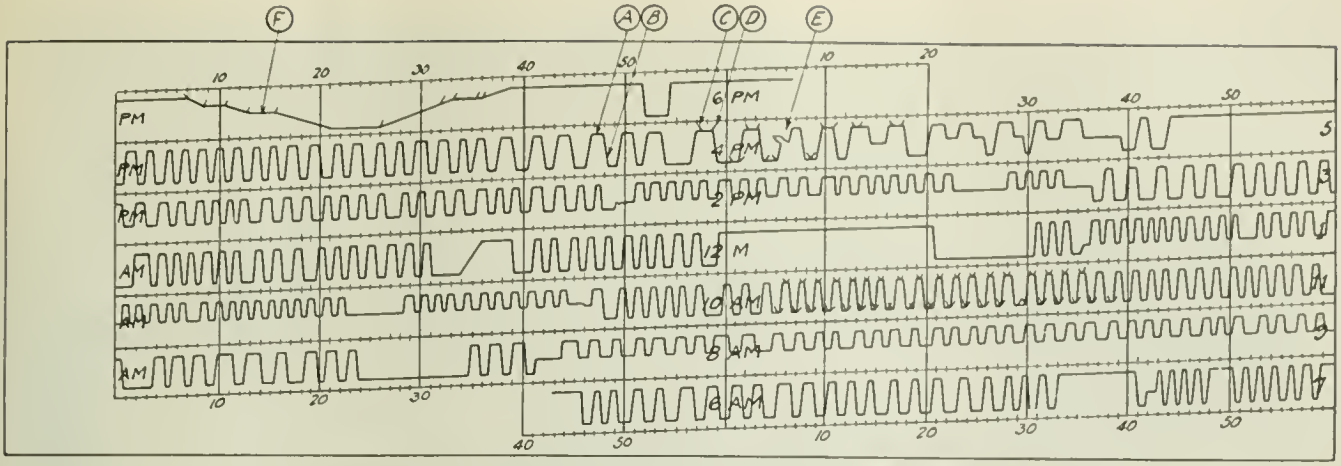


FIG. 2. CHART RECORDS ALL THE DETAILS OF A TWELVE-HOUR RUN
At the end of the day, the manager or superintendent can analyze the day's run, see where needless delays occurred and hunt for their causes. The short "teeth" show hoists made from an upper landing, the longer "teeth" the runs made from a lower level.

strain under which he labors and to understand what "a good engineer" means.

It may be thus appreciated that the hoist engineer is performing and has been performing in the past one of the most exacting duties that fall to the lot of man. Such a man is beyond question entitled to all the protection and aid that can possibly be given him. We must, also, if fair-minded, be charitable when he makes a mistake.

In looking over the patent papers of fifty-two inventions for eliminating the dangers of hoisting, I find fifty-two variations of only two principles. The devices were of all grades of usefulness from those possessing much real merit to those that illustrate only that the inventor lacked knowledge and sound mechanical judgment. Two of the early inventions, however, seem to possess so much real merit that I believe only a lack of business judgment or the absence of an opportunity to prove their value prevented their being perfected and made a part of present-day hoisting equipment.

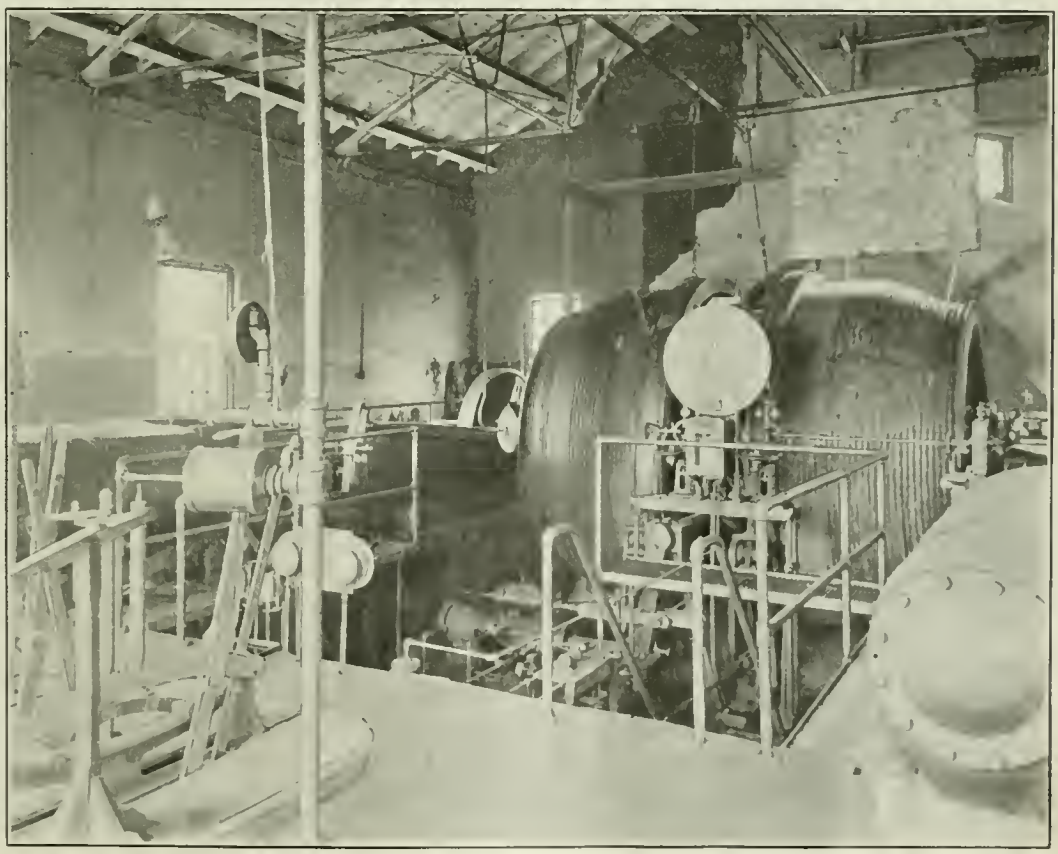
One of the two principles followed has been to assist the engineer in performing his work by automatically stopping the hoist at the end of each trip. Governors constructed upon this principle may be properly called automatic. The other principle is to stop the hoist in emergencies, that is, whenever the machine is being operated at a dangerous speed or is not being retarded sufficiently upon approaching the landing. This might be called an emergency governor.

Automatically assisting the engineer in the performance of his duties gives at best only partial protection. Only a few machines of this type have been developed. The emergency brake, however, has made greater progress and has been improved from time to

FIG. 3

Steam Hoist

A 30 x 48 direct-connected clutch-drum Vulcan hoist equipped with an emergency governor with a recorder attachment. With a record of achievement or the reverse plainly visible on the day's chart everyone is spurred to increased effort. Where there is no tangible evidence of efficiency, there is apt to be none exhibited.



time until it is now recognized by many as an essential part of the hoisting equipment.

The principle employed in this type of governor is identical with the first of which I have any record. It embraces as an essential element the fly-ball governor in connection with a predetermined movement. It is built practically along the same lines as those followed by Messrs. Ottis and Schmitt in 1868. Probably one of the most important reasons for the slow progress made by emergency governors is the lack of co-operation between inventors, and engineers and mine owners. It was not difficult to convince the mine owner that such a governor was necessary, but it was extremely hard to make him believe in the absence of specific proof (which cannot be secured without actual trial) that such governors would furnish adequate protection under existing conditions in his particular mine.

The owner has no desire to create a hazard for the purpose of practical demonstration, and it is probable that a majority of first orders for these machines were not given in the belief that it was good business, but with a desire to do everything within reason to protect the lives of the workmen. The uncertainty as to the efficiency of these devices has never been entirely dispelled.

Another reason why the emergency governor has been slow of adoption has been the lack of a real understanding of the part these devices play in preventing overwinds. This doubtless is the fault of the manufacturers, who, intentionally or otherwise, have conveyed the impression that an emergency governor of itself alone prevents such accidents. As a matter of fact, these devices are only instruments composed of well-known mechanical movements so arranged that they mechanically put into operation the means provided for bringing the hoist to rest. I believe that sufficient stress has not been laid upon the fact that an emergency governor is useless unless the brake, the reverse and throttle are reliable and easily manipulated.

Defective Devices May Discredit Governor

The devices sometimes employed to close the throttle, apply the brakes and even reverse the hoist when necessary, have been of such crude construction that they have created uncertainty in the minds of operators and engineers and so have retarded the adoption of the governor from which these devices receive their power.

What would constitute an ideal governor? It should be one that in an emergency not only brings the hoist to rest by setting in operation the available braking power, but a device that is simple in construction, reliable in operation, easy to understand and operate, and as it is a mechanical hazard built for the purpose of controlling and confining the human hazard within bounds it should act instantly and accurately when called upon to prevent the destruction of property and possibly that of life. It should be as purely mechanical as possible and safe primarily within itself.

While a governor constructed as above described might be mechanically ideal and bridge the gap existing between the two hazards, control and confine the human peril within prescribed limits and thereby reduce danger to a minimum, it would still fall short of perfection. It should have attached to it and forming an integral part of its mechanism, a recording device. This should be constructed with the same perfection as is attained in the governor itself

This recording attachment should give a daily 24-hr. record of every movement of the cage within the shaft. It should record every trip made by the hoist, show from which landing the trip was made, mark the signals given for the movement of the cage and the time required to make the hoist. It should, also, record the time during which the hoist was at rest and the time consumed in inspecting the shaft as well as show the time when the signals are given and if from the upper or lower landing. Furthermore, it should register whether these signals have been properly obeyed. It should record all delays as well as the loss of time incurred thereby. Finally, above all it should record whether the governor has been tested or is out of commission at any time and whether for any cause it had applied the brakes and brought the hoist to rest in case of emergency.

The governor that will do these things or cause them to be done is not only the ideal appurtenance for a hoist but is one that is positively necessary from both a humane and a business standpoint. All this is claimed for the governor shown in the accompanying illustration, which is the latest simplified type of the Roybel emergency governor with the recording attachment which is now made a part of the device. The attachment gives a daily 24-hr. record.

The chart (see Fig. 2) is a printed form and bears upon its surface parallel spiral lines divided into sections by perpendiculars. These sections representing 10-min. periods are designated by figures. The sections are themselves further spaced off into minutes. The chart is placed upon the cylinder of the recorder, the end lapped covering the circumference of the drum and making a continuous spiral of these parallel lines, between which the tracings made by the movements of the cage are drawn.

Graph Shows When Governor Regulates Speed

Lines designated by *A*, which are parallel with the spiral lines, are traced while the hoist is at rest. Lines *B* are made when the cage is in motion, their angle being increased or decreased from perpendicular according to the speed at which the hoist is operated. Symbol *C*, which is traced at right angles to line *A*, is caused by the signal being given at the bottom landing.

Symbol *D*, which is at right angles to symbol *C*, is caused by the signal being given at the upper landing. Symbol *E* is made when the governor is tested or when, from any cause, it has operated and brought the hoist to rest. These symbols when appearing at a certain time of day would indicate that the governor was being tested as the rules may require. When appearing at any other time it would show that some emergency arose causing the governor to operate, probably thereby preventing an overwind. Beginning at the bottom, the chart, when removed from the drum of the recorder, may be interpreted as follows:

The chart was placed upon the recorder at 5:43 a.m.; at 5:45 hoisting operations began, continuing regularly until 6:33, when a delay of eight minutes occurred. At 8:41 a trip was made, but on the return the cage was stopped for one minute at one of the lower landings. After a delay of two minutes hoisting was again resumed. Irregular hoisting is shown at 7:24, when a delay of eleven minutes occurred. At 7:41 the lines indicate that by means of the clutch the hoist was changed so as to take its load from a different level. Hoisting continued regularly from 7:45 to 9:23, when a delay of five minutes again occurred.

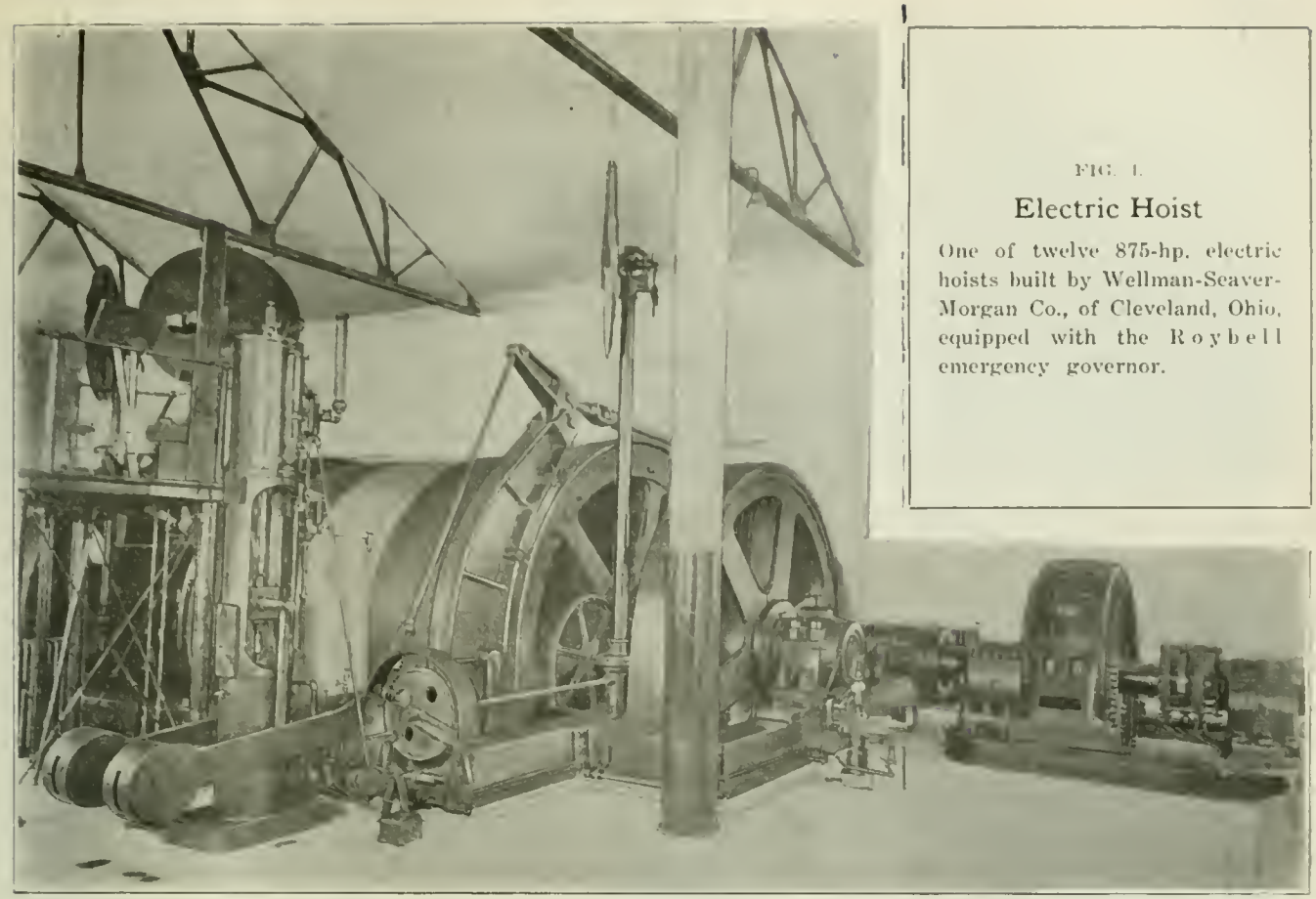


FIG. 1.

Electric Hoist

One of twelve 875-hp. electric hoists built by Wellman-Seaver-Morgan Co., of Cleveland, Ohio, equipped with the Roybell emergency governor.

At 9:31 a.m. a delay of three minutes is shown. Three minutes were consumed in bringing the cage to the top landing and a rest of three minutes was made at this point. Tracings of this kind occur in the event of hoisting a sick or injured man to the surface, or when from any cause it is necessary to secure a slow movement of the cage. Lines designated by *F* signify that the cage was traveling slowly as when the shaft is being inspected. In this instance the graph shows that the inspection started at 5:07 p.m. and that 14 min. were consumed in making this inspection, while the return trip shows practically the same time was occupied in inspecting the opposite compartment.

How Economic Use Can Be Made of Record

While the chart illustrated shows only 12 hr. of operation, the regular chart affords a 24-hr. record. When fully understood the graph is readily followed, and irregularities or bad practice are recorded so plainly that they may be detected without effort. The chart reproduced reveals the fact that there has been a delay in hoisting during the busy hours aggregating 40 min. This in many instances would be equivalent to a loss of eighty trips. It is almost certain that some of these delays are unavoidable. An investigation as to their cause could be made, and the result of any remedy applied for their elimination would show on succeeding records.

Instances are not uncommon wherein delays have occurred daily for months but have been unknown, not from lack of proper attention on the part of those in charge but through a belief that the efficiency of the plant was above the average. In one instance the company had expended much money in the installation of improvements such as self-dumping cages and had made many other alterations for the purpose of keeping the hoist in continuous operation. It had, however, overlooked one important fact which was disclosed by the recorder.

This hoist was equipped with a hand clutch, and it was frequently necessary to change the cage elevation so as to hoist from different levels. This required the assistance of extra help, but was performed with much precision and in such a short space of time that it appeared that no improvement in this respect could be made. The first reading of the chart showed that these changes, which of themselves seemed unimportant, caused delays during the day amounting to approximately 28 min. All these time losses occurred during the busy period.

This appeared regularly on the chart for three days, and to reduce it a steam clutch was ordered and installed. This resulted in a 50 per cent reduction in delay, and an increased output of 80 tons of coal daily. This, of course, occurred at an extremely busy shaft where it was possible to supply a greater amount of coal to the bottom than could be hoisted to the surface. I have no doubt, however, that many delays of this nature, escaping the attention of those in charge and in themselves considered unimportant, are, nevertheless, the cause of appreciable loss that might be eliminated if they appeared daily or even frequently on a record of operation.

How Record Assisted in Coal Preparation

To show the value of a daily record in a shaft wherein conditions are the opposite of those related and where the question of daily output has no bearing, the following occurrence, which happened in an anthracite mine, may be cited: The output from this colliery could be

hoisted from the slope in half the time allotted to this operation. The practice among the employees was to allow the coal to accumulate at the bottom and then hoist to the surface rapidly. When the accumulation had been cleared away the slope would lie idle again until a second accumulation occurred. The result of this practice was that the breaker was fed at irregular intervals, causing inefficient preparation and considerable loss to the company on this account. A governor with a recording attachment was installed and through its use this bad practice was corrected. When the coal was hoisted at regular intervals it was better prepared and enabled the company to make larger profits.

Although the governor was adjusted so that the engineer could hoist only at a predetermined speed, the records showed conclusively that the morale of those in charge was improved and that orders given them were obeyed implicitly because they were fully aware that their part in hoisting operations was recorded and would come before the mine superintendent every day.

Improvement in the morale of those responsible for hoisting operations is not confined to these particular cases. If it is known by those employed in hoisting that their shortcomings cannot be shifted to the shoulders of others and that daily reports of their habits come directly before the superintendent of the mine, it will at least cause an endeavor on their part to maintain a high standard. This helps materially in eliminating the dangers of hoisting and increases the general efficiency of the entire plant.

Reclaiming the Coal Mines at Lens

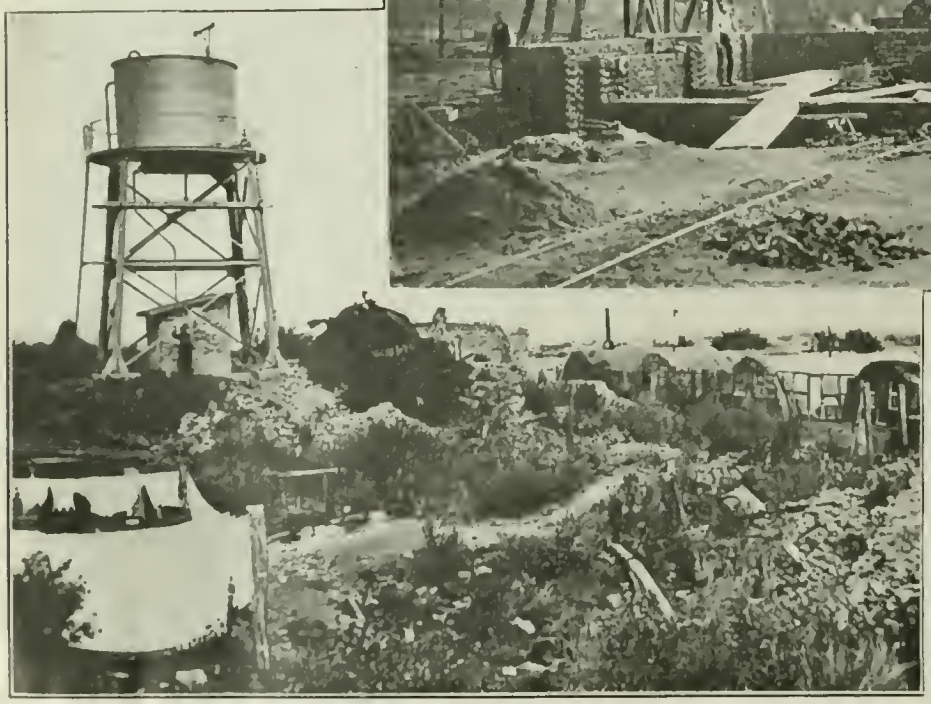
By E. J. Mehren
New York City

WORK is now in progress at Lens, France, on the reclamation of coal mines. The walls of the destroyed shafts through which water found entrance to the mines are being made tight by forcing cement through the rings of boreholes which have been drilled around each of them. On June 22 this operation had been completed at two shafts and was in progress at four others, and at the four remaining shafts requiring treatment work had not been begun. Such was the progress that had been made, however, that it was

New Headframe

A temporary but substantial structure erected over No. 3 shaft at Lens. In the rear can be seen the mass of ruins which German deviltry created out of the elaborate headworks that French skill had erected.

Photo by Central News Service



New Water Tower

War relics are still in evidence. In the background can be seen some of the army huts which the French miners are using, now that the enemy of France and the world has retreated.

Photo by Central News Service

ROW OF NEWLY-CONSTRUCTED MINERS' DWELLINGS AT LENS

Not a pretty scene, for no time or opportunity has yet been given for the planting of trim gardens round these comfortable houses. French operating companies build good towns for their workingmen. France has not received due credit for the care it has always taken of the problem of housing. Before the war its mine villages compared with the best in the United States.

hoped that pumping could be started in a month's time. The coal at Lens is overlaid with several strata, one of which, of limestone, 326 ft. thick, is fissured and waterbearing. The top of this stratum is about 98 ft. below the ground surface and throughout the entire depth of the limestone the shafts were lined with cast-iron tubbing. There are thirty shafts in all, fourteen for the extraction of coal and sixteen for ventilation, all measuring 15 ft. 9 in. in diameter. At ten of these the Germans had dynamited the lining, thus permitting the water to flow in and fill the mines.

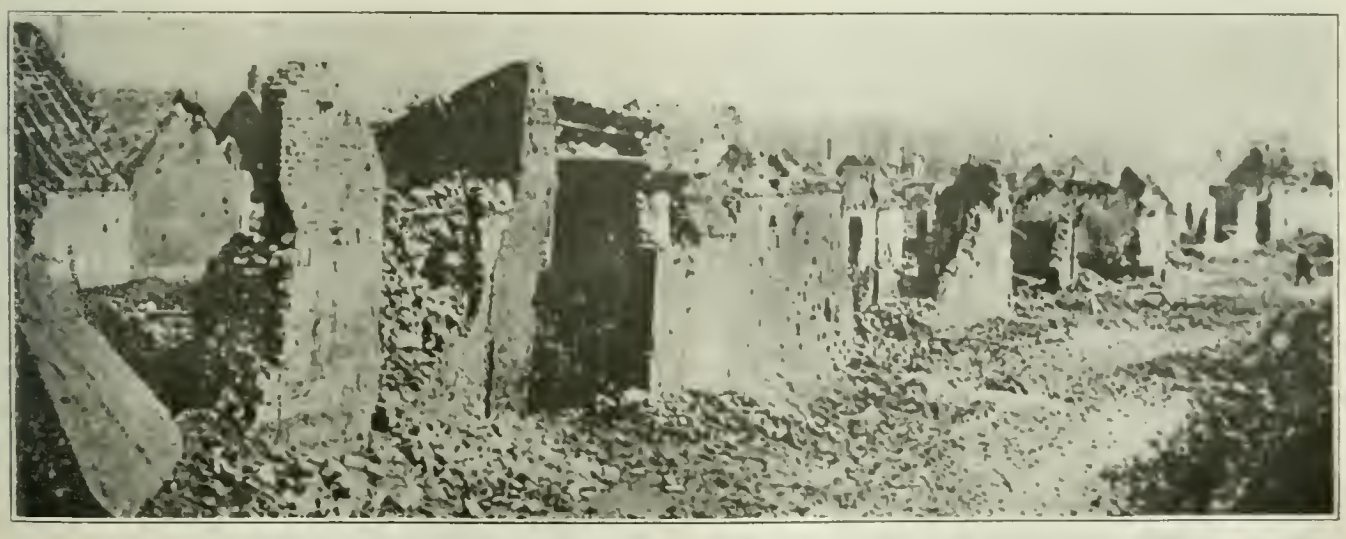
To reclaim the damaged shafts a ring of holes, fifteen in number, placed in the circumference of a circle about 50 ft. in diameter is bored concentrically with the shaft. The holes extend to the impervious stratum underlying the limestone, and cement grout is pumped into them under a pressure of 5 to 10 kg. per square centimeter (71 to 143 lb. per square inch). As a rule neat cement is used, though when the flow is free, cement sand grout is used until the sealing has commenced. Experience thus far indicates that about 4,500 bbl. of cement will be required to seal each of the ten shafts.

It was expected that the extraction of coal would begin in about six months (from June 22) but full capacity probably will not be reached in less than two years. In other words, capacity operation is not expected until at least 3½ years after the signing of the armistice. About 1,500 men are engaged on the reclamation work, contrasted with the 15,000 employed when the mines were in full operation.

Canada Second in Use of "White Coal"

IN VIEW of the world's diminishing coal resources, "white coal," or developed water power, is more than ever commanding attention in various countries. Canada is now said to possess the greatest per capita water power development of any country in the world excepting Norway. According to "The Dominion of Canada," a study by the Bankers Trust Co., of New York, Canada, with 19,500,000 "white-coal" horsepower available, has a per capita development of 0.26 horsepower compared with 0.54 horsepower for Norway and 0.07 horsepower for the United States. The latter country with 30,000,000 "white-coal" horsepower available leads the world in potential and developed water power resources and Canada comes next.

In general, Canadian water powers are applied to three uses: (a) municipal purposes, (b) for manufacture of pulp and paper and (c) for electro-chemical and similar processes. Of the developed water power about 78 per cent is used for municipal purposes, about 14 per cent for the pulp and paper business and about 8 per cent for electro-chemical or similar processes.



A STREET IN THE MINING SECTION OF LENS AS THE GERMANS LEFT IT

The French are rapidly reconstructing these ruined villages. These ruins bear witness to the fact that prior to the war the French mine workers lived in substantial dwellings.—*Photos by Central News Service.*

Direct Negotiation and Open Shop Cited as Safeguards of Mine Worker's Freedom*

Co-operation of Transportation Lines Necessary to Effective Distribution of Coal—As Anthracite Production Even Under Favorable Conditions Is Readily Absorbed, Interruption of Operation Will Inconvenience the Public

By Edward W. Parker†

FOR a little more than seventeen years, or since October, 1902, when the anthracite mine workers terminated their great strike of that year and returned to their working places in accordance with their agreement with President Roosevelt, and the appointment by him of the Anthracite Coal Strike Commission, industrial peace has prevailed in the anthracite region. As a result the miners and the communities have prospered to an extent probably not equalled, certainly not excelled, in any industrial locality in the United States, if indeed in the world. It was too much to hope or expect that there would not be some local disaffection, and this there has been, but it has been sporadic and not contagious or epidemic, and has been settled through the ageney established by the strike commission, namely, the Anthracite Board of Conciliation, which consists of six members—three from the operators and three from the miners. The more recent Anthracite Commission says in its majority report that the creation of the Board of Conciliation "is, perhaps, the most valuable and most abiding work of that commission."

Among the developments of the year 1920 in the anthracite industry this authority assigns an important place to the endorsement of the principle of the open shop strongly emphasized in the negotiations on the anthracite wage scale, despite — or perhaps partly because of — the activities of a new agency in labor matters, the consulting economist.

The Anthracite Board of Conciliation has not only maintained peace in the anthracite region by the amicable adjustment of such grievances as have come before it (and these have numbered some eight hundred during its seventeen and a half years of existence) but since 1912 its members have constituted three-fourths of the committee that has negotiated the wage agreements of which there have been no less than nine, including the one of Sept. 3, 1920, since the Anthracite Coal Strike Commission made its report to President Roosevelt in March, 1903. It is true that when the latest agreement terminated, on March 31, 1920, negotiations for the formation of a new agreement signally failed, and this failure is responsible for whatever of an unfortunate character the year 1920 developed in the anthracite industry.

The failure to negotiate a new agreement, which resulted eventually in the appointment by the President of a commission to settle the matters in dispute, was due primarily to the interjection into the controversy of a new element known as the "consulting economist," impersonated by one W. Jett Lauck, and, secondarily, to the demand of the miners for a "closed shop" in the anthracite region. The latter can be more conveniently disposed of first.

Demand No. 5 of the fifteen demands originally presented by the miners for the consideration of the negotiating committee was: "We demand a closed-shop contract, which means full recognition of the United Mine Workers of America as a party to the agreement."

It proved to be the principal stumbling block in the deliberations of the committee. Except for this the two sides were not far apart when, after nearly two months of negotiation in New York, and a final disagreement, with a resulting suspension of work, was imminent, the committee accepted the invitation of the Secretary of Labor to go to Washington. There nearly a month was taken up in conferences with the Secretary, who with extraordinary patience and diplomacy endeavored to effect a settlement. After numerous separate and joint conferences with the two sides of the commitee, the Secretary submitted a tentative plan of agreement, most of which was in a spirit of compromise accepted by the representatives of the operators. The representatives of the miners, however, unwisely advised, had somewhat amended their original demands, and had presented to the Secretary what they designated as an "ultimatum," included in which was a demand that Article IX of the Anthracite Coal Strike Commission award be eliminated. This particular article next to the one providing for the creation of the Board of Conciliation is probably the strongest pronouncement of that commission. It says:

"IX. The commission adjudges and awards: That no person shall be refused employment, or in any way discriminated against, on account of membership or nonmembership in any labor organization; and that there shall be no discrimination against, or interference with, any employee who is not a member of any labor organization by members of such organization."

Reasons Given for Upholding Open Shop

That commission then spoke unequivocally for the open shop. In giving utterance thereto it did not fail to state its reasons in language no less forcible, and I may be pardoned if I here quote a portion of that language:

"The right to remain at work where others have ceased to work, or to engage anew in work which others have abandoned, is part of the personal liberty of a citizen that can never be surrendered, and every infringement thereof merits and should receive the stern denouncement of the law. All government implies restraint, and it is not less, but more, necessary in self-governed communities than in others to compel restraint of the passions of men which make for disorder and lawlessness. Our language is the language of a free people, and fails to furnish any form of speech by which the right of a citizen to work when he pleases, for whom he pleases, and on what terms he pleases, can be successfully denied. The common sense of our people, as well as the common law, forbids that this right should be assailed with impunity. It is vain to say that the man who remains at work while others cease to work, or takes the place of one who has abandoned his work, helps to defeat the aspirations of men who seek to obtain better recompense for their labor and better conditions of life. Approval of the object of a strike, or persuasion that its purpose is high and noble, cannot sanction an attempt to destroy the right of others to a different opinion in this respect, or to inter-

*An address delivered under the title "What 1920 Developed in the Anthracite Industry," at the American Mining Congress, Denver, Col., November, 1920.

†Director, Anthracite Bureau of Information, Philadelphia, Pa.

fere with their conduct in choosing to work upon what terms and at what time and for whom it may please them so to do.

"The right thus to work cannot be made to depend upon the approval or disapproval of the personal character and conduct of those who claim to exercise this right. If this were otherwise, then those who remain at work might, if they were in the majority, have both the right and power to prevent others who choose to cease to work from so doing.

"This all seems too plain for argument. Common sense and common law alike denounce the conduct of those who interfere with this fundamental right of the citizen. The assertion of the right seems trite and commonplace, but that land is blessed where the maxims of liberty are commonplaces."

Operators Willing to Compromise; Workers Refuse

But to return to the Secretary. So far as the matter of wages was concerned the operators had agreed to practically all of the compromise suggestions the Secretary had made, but positively declined to agree to any change of principle enunciated by the Anthracite Coal Strike Commission, and the Secretary had finally to notify the President that he had gone the limit his conscience would permit.

The miners in convention at Wilkes-Barre repudiated the Secretary's suggestions and requested the appointment of a commission, as the President had announced he would do if the controversy were not settled otherwise. That commission also has spoken for the open shop. It ordered, to be sure, that an agreement based upon its findings should be made with the United Mine Workers of America, but it added that, "this official recognition of the United Mine Workers of America for the purpose of adjusting differences and strengthening collective bargaining does not carry with it the theory or the fact of the "closed shop" or the "check off." And it strengthened the award of the Anthracite Coal Strike Commission by providing the machinery through which the non-union man should be protected in his rights of having his grievances presented before the Board of Conciliation, for it provided further "that it does not in any degree interfere with or annul the provisions of the award of 1902 in which the rights and privileges of non-union men were stated and protected; and provided further that in cases where non-union employees have grievances or where for any reason the grievance committee or mine committee fails to give such grievance consideration satisfactory to the employee, his right to appeal from the decision of the foreman or grievance committee and to the Board of Conciliation shall be inviolate."

This endorsement of the principle of the open shop is one of the things that 1920 developed in the anthracite industry.

And now to go back a little and consider the primary cause of the failure to reach an agreement by the wage committee—the consulting economist. First at the meetings in New York and later in the hearings before the President's commission the miners' case was presented in the shape of elaborately prepared statistical exhibits in which the increased cost of living as compared with increased earnings, the theory of "the living wage," the budgetary plan of determining wage scales, the occupational hazards of anthracite mining, etc., were set forth in extraordinary detail and manifold combinations.

Consulting Economist Did Not Come Cheap

The miners had engaged a consulting economist, W. Jett Lauck, aforesaid, for whose services the treasury of their organization was mulcted, according to a statement in *Coal Age*, to the extent of approximately $40,000. Lauck, it seems, had burst from obscurity into a certain degree of prominence by having himself appointed as secretary of the War Labor Board, from which he graduated into his present line of activity. And he has been decidedly active. He has organized a highly efficient publicity department which obtains for him a large amount of free advertising in the daily papers, and he is a liberal contributor to the magazines and the publications of economic societies. He poses as the advocate of labor and has figured in a number of labor controversies, notably among recent ones the street railway strike in Boston, before the Railroad Labor Board in Chicago, and in the hearings before the two coal commissions.

Whatever may have been his success in the other controversies, his efforts on behalf of the anthracite mine workers were less than useless. It was developed at the hearings before the commission, indeed by Lauck's own confession, that the exhibits he presented were neither statistically nor mathematically correct; in fact, every statement was discredited and the money spent upon the preparation of all this "testimony" and the services of the consulting economist before the commission was little more than money thrown away. Undoubtedly the representatives of the miners were deceived by the plausibly concocted exhibits. They were deluded into the belief that they were entitled to more concessions than the operators felt were justified, and into the hope that by refusing the offers made by the operators and the compromises suggested later by the Secretary of Labor, they would obtain further concessions at the hands of a commission.

Time Lost and Ill Feeling Engendered

As it was, the negotiations were prolonged over a period of nearly six months, bad feeling was engendered, as has been shown in the dissatisfaction with the award of the commission through the "vacations" taken by the miners, and it is not certain, unfortunately, that further trouble will not yet arise. But for the interjection of the consulting economist into the controversy an agreement probably would have been reached within sixty days from March 9, when the negotiations were begun; the men would not have had to wait six months for their increased pay, bad feeling would not have been engendered, and the friendly spirit that has prevailed in the anthracite region, largely through the beneficial influence of the Board of Conciliation, would have been maintained. Moreover, the treasury of the union would be better off by some $40,000.

This does not appear too much to assert. The good feeling that existed at the beginning of the negotiations was shown in the first general meeting of operators and miners on March 9. And one of the first acts of the committee[1] appointed at that meeting was to pass a resolution making any agreement as to wages retroactive to April 1, the representatives of the miners giving the assurance that there should be no suspension of mining pending the negotiations. This showed not only a spirit of amity in the committee but an earnest desire to subserve the interests of the public dependent upon the anthracite mines for its health and comfort.

Points That Caused a Deadlock

At the end of several weeks of negotiations in New York the points of difference upon which the two sides could not come to an agreement were a difference of 5 per cent in the advance of wages demanded and offered and the closed shop. The operators agreed to sign up on a 15-per cent advance and the principle of the open shop maintained. The representatives of the miners insisted on an advance of 20 per cent in wages with the closed shop and check off. It appearing then that the differences were irreconcilable, the Government, in the person of the Secretary of Labor, stepped in. When the disputants, if such they may be called, appeared before the Secretary, he said in effect "Will you split the difference and agree upon a 17-per cent advance?" The operators assented, but the miners were not in a spirit of compromise and refused the proffered olive branch.

The "ultmatum" of the miners, presented to the Secretary on May 18, demanded an increase of 65 per cent for contract miners over the 1916 rate and an increase of 20 per cent for all daymen over the rates in effect. The increase demanded over the 1916 base for contract miners was equivalent to a little less than 18 per cent over the rates they were then getting, so it can be seen that there was a difference of less than 1 per cent in contention so far as the

[1]The wage negotiating committee consisted of the six members of the Board of Conciliation, together with the president of the United Mine Workers of America, and another operator to maintain the balance. The chairman had no vote.

contract miners were concerned and of 3 per cent so far as the daymen were concerned, based on the Secretary's suggested compromise, which the operators had agreed to accept.

It was quite evident at that time that the miners' representatives were under the sinister influence of their consulting economist, and were not in a humor for compromise of any sort, so the whole case went to the commission appointed by the President. Here it was opened up *de novo*, for it was stated in the articles of submission and in the President's proclamation that "it is understood that neither operators nor miners are in any manner bound by any tentative suggestions that have been made during the period of their negotiations and that either side shall use its own discretion in the presentation of its case in connection with the matters at issue."

Mine Workers' Demands Undergo Revision

When the contending parties appeared before the commission the demands of the miners had been modified somewhat, the original demand for a 60-per cent increase over the existing rate being changed to read "the present wages of the anthracite mine workers be increased to correspond to the increases granted the bituminous mine workers by the Presidential Coal Commission," and the demand for a 6-hour day and a 5-day week was changed to one for an 8-hour day for all classes of day labor, with overtime for Sundays and holidays. The demand for a closed shop was unchanged. Most of the demands, which were increased to eighteen, were of minor character, such as replacement without expense to the miner of tools lost through no fault of his own, and were granted without much demur. Others were of local importance only and provision was made for their adjudication through the Board of Conciliation. What happened to the demand for the closed shop has already been noted. The only other two of major importance were the ones for increased wages and the 8-hour day.

It developed at the hearings before the commission that the demand for an increase to correspond to the increases granted the bituminous mine workers by the Presidential Coal Commission was susceptible of several interpretations, the rate of increase being stated to mean anywhere from 27 to 31 per cent, with a $6 minimum for common labor, both with and without existing differentials, and that the different conditions prevailing in the anthracite and bituminous fields were played one against the other to secure advantages in the matter of wages. For instance, in the hearings before the Bituminous Coal Commission particular stress was laid upon the larger *earnings* of the anthracite mine workers, because, notwithstanding the higher *unit rates* in the bituminous fields, the miners could not earn living wages on account of the fewer number of days they were able to obtain employment. This condition was strongly brought out in the minority report of John P. White, former president of the miners' union, and it was largely because of these conditions that the increase in *rates* to the bituminous workers was given.

Increase of Rates, Not Earnings, Asked

It was clearly shown by the operators that the anthracite mine workers were then earning more wages than were the bituminous workers after the advances granted by the President's commission had gone into effect. In presenting their case before the Anthracite Coal Commission the exhibits prepared by the consulting economist made comparison with the *rates* in the bituminous fields, the earnings being either ignored or stated in the form of estimates which so grossly misrepresented the facts that there was little doubt of premeditated and determined intent to deceive the commission.

It is not my desire or intention to charge the representatives of the miners on the negotiations committee with being party to this attempt at deception. They were, as I have already stated, themselves deceived by speciously manipulated statistics into the belief that the anthracite mine workers were not as well paid as their bituminous brothers, though had they taken cognizance of the prosperous conditions in the anthracite region as compared with those in the bituminous fields, they might have thought differently.

The award of the commission on the wage demand was in close agreement to the compromise suggestion of the Secretary of Labor, with, however, a special consideration to the lower paid class of labor, which was given a minimum of $4.20 per day, or per shift, as against a minimum rate of $4 suggested by the Secretary. In their original offer of an advance of 60 per cent to the contract miner over the 1916 base rate and of 15 per cent to the daymen over the then going rates the operators felt that they had, in justice to the public, which must in all such cases pay the bill, gone as far as they could.

The Secretary of Labor, in a letter to the President outlining the situation after his attempt at mediation had failed, stated that the basis of compromise he had proposed was as far as he could go and justify his position.

Publicity Methods of Consulting Economist

The consulting economist evidently had foreknowledge of the commission's conclusions (by which is meant, of course, the majority report), for hardly had the report with the President's acceptance of it been released at the White House before a mimeographed discussion of it by W. Jett Lauck was in the hands of the newspaper representatives in Washington and in the mails. In this review the consulting economist informed the public that the increase in wages granted was not sufficient to warrant any advance in the price of coal. He ignored the fact that the Federal Trade Commission had shown that the labor cost of producing anthracite was $3.41 a ton, and that if this were applied only on the domestic sizes the labor cost was $4.89 a ton.

It is estimated that with the larger advance to the low-paid labor the total added labor cost by the commission's award is 18 per cent, or about 88c. a ton on the prepared, or domestic, sizes. The Trade Commission's report showed that the average margin on fresh-mined coal was 36c. a ton, equal to about 4½ per cent on the capital invested, namely, $7.50 to $8 per ton of output.[2] And this did not represent profit, for out of it had to be paid Federal taxes, sales expenses and interest on borrowed capital, and from it reserves for non-insurable risks had to be set up.

Evidently Mr. Lauck is of the opinion that the anthracite operators should do business at a loss from 60 to 75c. a ton for the pleasure of supplying him with his winter's supply of fuel.

It may not be that the "vacation" strike of the anthracite mine workers following the President's acceptance of the majority report was actually instigated by the consulting economist, but he was at least cognizant of the plans of those who fomented and directed it, for in the same statement he announced that "as a result of this award there probably will be trouble in the anthracite field," though he attempted to duck any responsibility for such an eventuality by saying that the weather forecaster who predicted rain did not produce the rain. Not content with mulcting the miners' treasury to the extent of $40,000 he was in the light of succeeding events apparently responsible, if only in part, for the sacrifice of several million dollars in wages, a goodly part of the back pay accumulated since April 1, and for the non-production of some 2,000,000 tons of badly-needed coal.

Eight-Hour Demand Endangered Output

The demand for an 8-hour day, with punitive overtime, was denied by the commission. It was shown that if the breakers were to operate on an 8-hour basis it was necessary for some men to put in regularly from 9 to 10 hours, and, conversely, if all employees were limited to eight hours, the breaker time would be shortened and production reduced accordingly.

It is gratifying to be able to state that the anthracite mine workers faithfully carried out their agreement to remain at work during the six months that the negotiations were passing through their several phases, although, as

[2] "Anthracite Mining Costs," by R. V. Norris, Engineers' Committee, U. S. Fuel Administration. *Transactions* A. I. M. & M. E. New York meeting, February, 1919.

stated above, dissatisfaction with the terms of the commission's award was manifested by unauthorized strikes, under the guise of "vacations" which seriously affected production, particularly in the Schuylkill and Lehigh regions, during the month of September, and resulted in a substantial decrease in tonnage.

Unfortunately, this was not the only factor that acted against increased production of anthracite during the present year. Several other untoward incidents occurred, among which may be mentioned (1) the outlaw switchmen's strike in the spring and early summer, which interfered with car supply and the movement of customary tonnage at that season to the head of the Lakes; (2) embargoes by the New England railroads, particularly the New York, New Haven & Hartford, which limited all-rail distribution into that territory during a goodly portion of the summer; (3) strikes of towboat men in New York harbor, which lasted more than two months and reduced the water movement to ports on Long Island Sound; (4) a strike of about two months' duration by about 10,000 employees of the Pennsylvania Coal Co. and (5) an appreciable shortage of productive labor (miners and miners' laborers) throughout the entire region. As a result of these combined circumstances the shipments for the first six months of the present coal year amounted to 33,200,000 gross tons, compared with 35,100,000 gross tons last year. This does not tell the whole story, however, for production this year, on account of the increased demand for anthracite, made more insistent by the shortage in bituminous coal, includes a considerably larger proportion of washery coal—how much it is not possible to say at the present time; probably as much as 2,000,000 tons.

What the year 1920, therefore, may be said to have developed in the anthracite coal industry may be summarized as follows:

(1) In wage controversies, satisfactory conclusions may best be arrived at through direct negotiations between the parties at interest, as determined the agreements in the anthracite industry from 1902 to the present year, without the interference of consulting economists or other outside influences.

(2) Co-operation of railroad and other transportation agencies is necessary to insure the orderly distribution of the product.

(3) The production of anthracite under most favorable conditions is not more than sufficient to meet the domestic fuel requirements of the territory it serves. Consequently steady employment is offered to its employees, and any interruptions to continuous operation will result in possible inconvenience to the public or the substitution of other fuels if they are available.

(4) The policy of the open shop is a safeguard to the individual freedom of the American workman.

Tests with Jig Having No Suction Effect Suited to Small Sizes of Coal

Many Attempts Have Been Made to Adapt Existing Coal-Washing Machinery to the Preparation of Small-Sized Anthracite—A Jig That Has No Suction Effect Solves the Problem

By J. H. McNally*
New York City

SUITABLE preparation of the steam sizes of anthracite is one of the most troublesome problems encountered in breaker operation. The industry has been fully alive to the fact that these sizes must be prepared in order to profitably move them, yet despite much study and experimentation the measure of success attained has been small. Today many attempts are being made to adapt concentrating tables and redesign existing jigs to successfully prepare these small sizes.

It is not my desire to create discussion regarding the relative merits of tables and jigs for this work; each has a place where it can be used to advantage. It is the purpose of this article, however, to describe a jig that has been in practical and successful operation for the last ten months and to give some results of its performance and operation, and let the reader judge for himself as to the applicability of this device to his own particular preparation problems.

Suction Makes It Hard to Wash Small Sizes

The principal cause of failure in the attempt to prepare steam sizes on jigs suited to the preparation of domestic sizes is the suction induced by the return stroke of the jig plunger. This produces a rich refuse product. Such a suction exists to a greater or lesser degree when these jigs are used on the larger sizes, but its effect is much emphasized when attempt is made to use them on buckwheat or rice coal, while on barley their use apparently is hopeless. Realizing that this suction is the shortcoming of most jigs, many designers have attempted to overcome it by placing valves in the plunger, but, to my knowledge, these mechanisms never go beyond the experimental stage. It remained for the ore-concentrating art to show the way.

The James automatic jig, made by the James Ore Concentrator Co., of 35 Runyon St., Newark, N. J., embodies this feature. It is of the single-compartment, balanced type, using the cup-and-gate method of refuse discharge. The screen measures 4 x 4½ ft. and is provided with ¼-in. circular perforations. It carries a bed of ⅜-in. iron ore.

Referring to Fig. 1, which is a cross-sectional view, the device is seen to consist of a stationary jig chamber, supported in a large wooden tank, on top of which is placed the operating mechanism. From the bell cranks (1 and 2) the pulsator (*A*) is suspended by rods working clear of the sides of the jig chamber. This pulsator has the shape of two inverted pyramids, on each face of which are placed three valves, making twenty-four in all, having an aggregate area equal to that of the screen. These valves are so designed that they open on the downward and close on the upward stroke of the pulsator, thus causing the flow of pulsation or water through the jig to take place in one direction. This reduces suction to a minimum.

Coal is fed to the jig by a chute leading in on the right, and after separation it overflows through an opening on each side of the chamber, as is shown by dotted lines. It is discharged by draglines not shown in the figure. The slate discharges on the left side of the jig

*Fuel engineer, Weston Dodson & Co., Inc.

chamber and feeds the dragline illustrated. The action of the cup-and-gate mechanism is described further on in this article.

Cup and Gate an Old Concentrator Device

In connection with the method of discharging the refuse, the cup-and-gate action is almost as old as the concentrating art, and yet it is practically unused in the design of coal-washing machinery. It is interesting to see the lengths to which certain jig manufacturers go in order to attain the automatic discharge of refuse, when by this simple means they can obtain results that are entirely automatic and which require none of the complicated mechanisms they insist on using.

A brief non-technical explanation of the cup and gate will suffice to show the action of this device. Referring to the accompanying illustration, Fig. 2, representing the chamber of a jig, it will be seen that this chamber is divided by the baffle "*A*" into two parts, *A* and *B*. This baffle, or division plate, clears the top of the screen by a distance equal to the thickness of the bed desired. Water pulsates through the bottom screen in both compartments *A* and *B*. Materials of different specific gravities—for instance, coal and slate—are fed into the

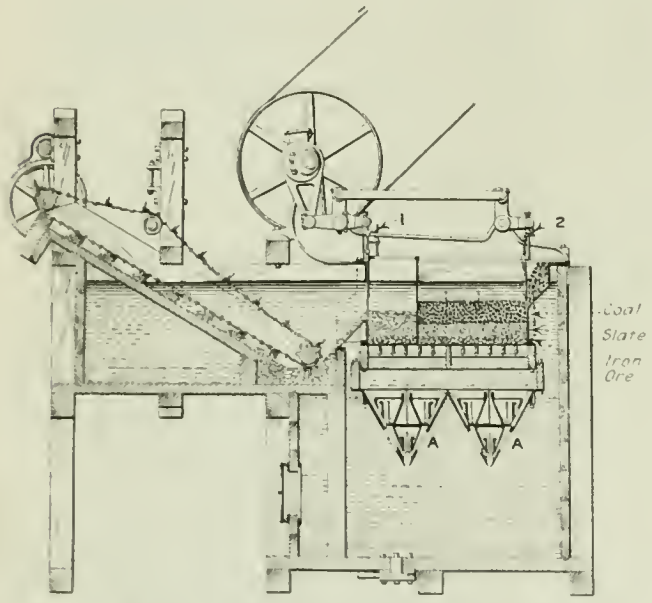


FIG. 1. CROSS-SECTION OF THE JIG

Vertical oscillation of the double conical valve chamber produces upward impulses of water through the stationary jig bed. Good coal attaining a certain level overflows through two stationary side openings, while the refuse leaves the machine by way of cup-and-gate arrangement.

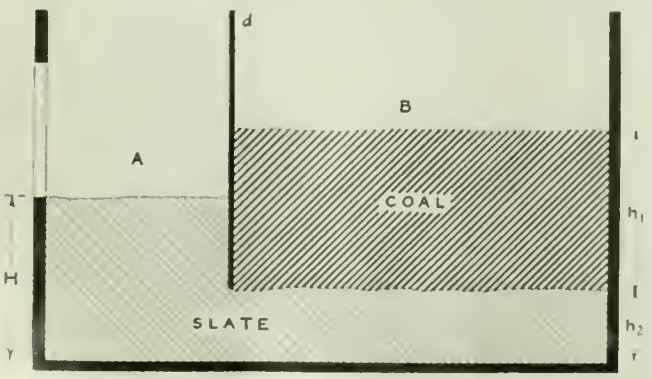


FIG. 2. DIAGRAMMATIC SKETCH OF THE CUP-AND-GATE

When the weight of heads h_1 — h_2 equals that of H, refuse overflow takes place. Operation of this device is simple and effective.

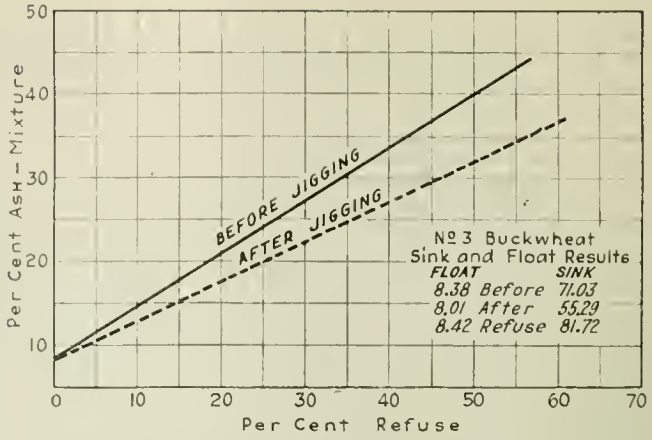


FIG. 3. RELATION BETWEEN ASH AND REFUSE IN JIGGED AND UNJIGGED COAL

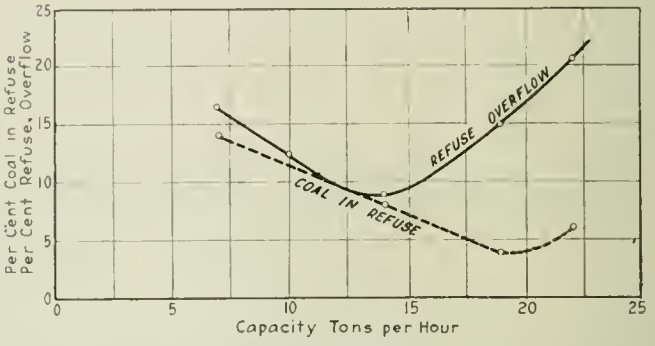


FIG. 4. CAPACITY-EFFICIENCY CURVES OF THE JIG

Stroke, speed and refuse content were held constant and the rate of feed varied. A good coal and a good refuse cannot be obtained simultaneously.

right end of the chamber *B*, and a separation takes place, the lighter material (coal) seeking the top, and the heavier (slate), the bottom.

Now consider compartment *B*, having a certain height or head of slate, h_2, and coal, h_1. The water level being the same in both compartments (*A* and *B*), the sum of the weights of these heads must be equal to the weight head of the slate in compartment *A* at any given instant. Now if a means of discharging the coal in compartment *B* and the slate in compartment *A* is provided, each upward pulsation of water will cause coal to overflow in *B* and slate in *A*, when and so long as $W_2H = w_1h_1 + w_2h_2$, where w_1 and w_2 are the specific gravities of coal and slate respectively.

The height of the two discharge gates, of course, takes into consideration the average specific gravity of the materials to be separated. A numerical example will show this action. Assume the specific gravity of the slate to be 3 and of the coal 1.5, and that the bottom of the baffle "*a*" is set 3 in. above the screen, while the coal discharge gate is set 15 in. from the screen.

The head due to the slate is 3 in. $\times$ 3 = 9 units.

The head due to the coal is (15 — 3) 1.5 = 18 units.

Total head = 18 + 9 = 27 units.

This figure divided by the specific gravity of slate (3) gives the height of the slate discharge *H* above the screen, or 27 ÷ 3 = 9 in.

In practice the height of the coal overflow is fixed, while that of the slate can be varied to suit the material treated. Setting the slate overflow, or gate, too low will cause a rich refuse, while placing it too high will cause slate to come over with the coal.

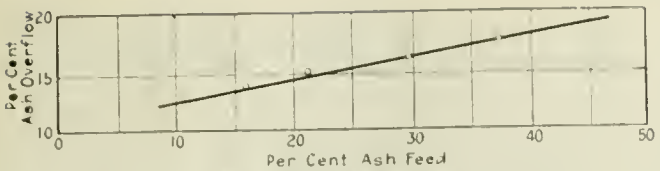


FIG. 5. ASH FEED-OVERFLOW CURVE

Stroke, speed and rate of feeding were held constant while ash content of the feed was varied. The efficiency of cleaning underwent little change from 11 to 37 per cent refuse in the feed.

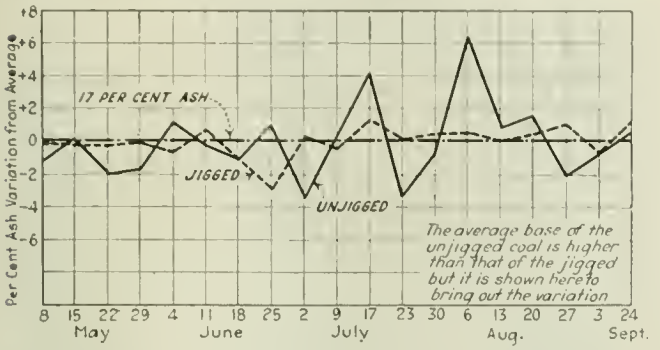


FIG. 6. CONSISTENCY OF JIG OPERATION

The percentage of the ash content in the washed coal varied little from month to month. Maximum variation from May to October was about 4 per cent.

Referring to Fig. 1, the partition "*a*," called the division plate, is shown at the left of the jig chamber. The crank handle to the left controls the height of the slate overflow, while the rate of feed to the jig is regulated by the handle to the right, operating a gate on the feed chute. The coal overflow is on both sides of the chamber and cannot be seen in the illustration, but is represented by dotted lines.

Advantages of Using This Suctionless Jig

The following salient advantages result from this type of construction: (1) Low water consumption; (2) automatic operation, for no "tapping" is necessary; (3) operation and efficiency independent of the refuse content of the coal, up to the maximum rate at which the jig will discharge refuse; (4) practical elimination of suction; (5) equally efficient operation with anthracite from ½ in. to plus ⅛ in.; (6) consistent results in anthracite operation—the ash content of the coal overflow has not varied more than 1 to 2 per cent during ten months of operation.

I recently completed a series of tests on this jig that in every case verifies the above conclusions. The coal tested was standard No. 3 buckwheat, made through a ⅜-in. and over a ⅛-in. round-mesh screen, containing approximately 12 per cent undersize. The percentage of coal and refuse was determined by a sink-and-float test, using a zinc-chloride solution with a specific gravity of 1.7. The sink-and-float products were analyzed for ash.

In this connection a point of interest is brought out. The ash content of the various materials as analyzed shows the ash of the pure coal (float product) runs practically constant in all cases, while that of the refuse (sink product) varies as much as 40 per cent, based on the after-jigging figures. The average results of these tests show an ash content as follows:

	Ash Content of Float, Per Cent	Ash Content of Sink, Per Cent
Before jigging	8.38	71.03
After jigging	8.01	55.29
Refuse	8.42	81.72

The explanation of the low ash content of the sink product of the coal discharge, or the overflow from the jig, lies in the fact that the jigging operation removes practically all of the heavy ash-making material, but does not remove the bad and medium bone, which, of course, will sink in a 1.7 specific gravity solution. This phenomenon is one of the principal reasons why the sink-and-float test has been unjustly condemned by those who try to use it without possessing definite knowledge of the quality of the various materials that make up the refuse or sink product.

The curves in Fig. 3 exhibit the relation existing between the ash and refuse in jigged and unjigged coal.

Tests with Different Factors Constant

In conducting tests on this machine it is advantageous to hold certain factors constant and vary the others, thus obtaining their relation. The variables affecting jig performance are: (a) Length of stroke, (b) number of strokes per minute, (c) rate of feeding, (d) refuse (or slate) content of feed, (e) refuse (or slate) content of overflow, (f) coal content of slate discharge. The first four are independent variables and can be kept constant under test conditions, while the fifth and sixth (e and f) are dependent on them.

In one series of tests the stroke, speed and refuse content were held constant at 2 in., ninety strokes per minute and 25 per cent respectively. The jig was operated at various capacities ranging from 7 to 22 tons per hour, and the curves shown in Fig. 4 were derived.

It will be noted from these curves that the refuse or slate in the overflow (coal discharge) is at a minimum when the jig is operating at fourteen tons per hour capacity, while the coal in the slate discharge reaches a minimum at nineteen tons per hour. Here is an experimental demonstration of the well-known rule of thumb in jig practice that either a good coal or a good refuse may be obtained, but both cannot be obtained at the same time.

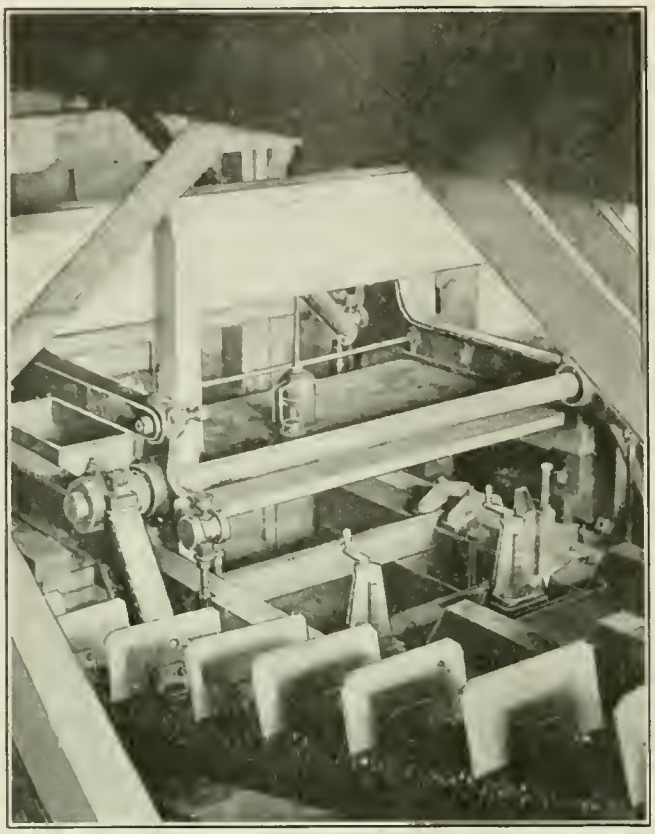
Stroke, Stroke Speed and Feed Rate Fixed

In the second series of tests the stroke speed and rate of feed were maintained constant at 2 in., ninety strokes per minute and fourteen tons per hour, but the refuse content of the feed was varied from 15.7 to 37 per cent. As a result the curve shown in Fig. 5 was derived. The flatness of this curve should be noted, as it shows that the results obtained from the efficiency of the jig are nearly independent of the refuse content of the feed up to 37 per cent.

The shape of the curves shown in Fig. 4 may be explained as follows: Assuming that the jig is operating at ninety 2-in. strokes per minute, it is circulating water through the screen at a rate of approximately 2,000 gal. per minute. This volume of water is greatly in excess of that necessary to cause proper separation when the jig is fed at the rate of seven tons per hour capacity, and it causes slate to overflow with the coal.

The excess circulation becomes zero at fourteen tons per hour capacity, above which it is not sufficient, and the feed passes through the jig with a decreased settling action, thereby causing more slate to be discharged with the coal. This can be readily understood by considering that a point may be reached where the amount of material handled is increased to such an extent that the jig chamber becomes so crowded that the feed material passes through the device with no separation whatever.

Similarly, the rich slate discharge is caused by the jig bed having too much fluidity at a feed of seven tons



JIG IN OPERATION

The bell cranks operating the pulsator and one of the conveyors removing the coal are shown.

per hour. Under such conditions coal is trapped with the slate on the settling stroke of the pulsator, and consequently is discharged with it. This action gradually becomes less as the excess fluidity decreases, and at a feed of nineteen tons per hour the jig contents reaches the proper consistency and the coal in the slate discharge attains its minimum, after which it increases, because of an insufficient volume of water.

Of course, it will be understood that a new set of conditions is established when either the length of the stroke or speed is changed, thus causing an increase or decrease in the amount of water circulated. As a result, a new performance curve may be derived for each separate length of stroke, and it is my intention to make this the subject of a subsequent article.

In order to show the consistency of preparation obtainable with these jigs, the chart, Fig. 6, gives the per cent of ash variation from the averages of the weekly samples of this coal from May to October, 1920, in comparison with the same variation of an unwashed No. 3 buckwheat from another colliery. This shows the improvement in quality and also the consistency of the ash content of the coal.

COAL MINES IN the State of Coahuila, which for several weeks have been under Government protection as a measure of safety during the strike of coal miners there, were returned to their owners Nov. 18 by a decree issued by Governor Luis Gutierrez of Coahuila. Workmen who desire to return to their tasks were by the decree assured of ample protection, and the owners received guarantees against disorders.

The decree gave the basis of the wage scale which returning workmen and owners must accept and stipulation was made that if within three days the mines were not in operation and producing enough coal to rivive paralyzed dependent industries the Government would again take over control of the mines.

New President of Mechanical Engineers Has Been Active in Engineering Societies

EDWIN S. CARMAN, of Cleveland, Ohio, newly-elected president of the American Society of Mechanical Engineers, will take office after the society's annual convention, which will be held in New York City in December. He succeeds Major Fred J. Miller, of New York. Mr. Carman was born in Prairie Depot, Ohio, in 1878. His high school and business training was supplemented by special instruction and studies in engineering at the Central Manual Training School at Cleveland. He began work in the shop of the Sun Oil Co., of Toledo, Ohio, and four years later entered the engineering field with the American Machine & Mfg. Co. He was appointed chief engineer after two years in the engineering department. In 1908 this company was consolidated with the Johnston & Jennings Co., and Mr. Carman was appointed chief engineer and manager of the engineering and machine department.

EDWIN S. CARMAN,
President elect of the American Society of Mechanical Engineers

In 1908 Mr. Carman was engaged by the Osborn Manufacturing Co., of Cleveland, Ohio, to design, manufacture and build up a complete line of foundry molding machines, the design being based upon sound engineering principles with the details of manufacture in regard to workmanship equal to that of the machine-tool industry.

In 1913 Mr. Carman became directly associated with the Osborn Manufacturing Company as chief engineer in charge of engineering and manufacture of the machine division, and in 1916 he was elected a director and secretary. In 1917 he was appointed works manager of both the machine and brush divisions of the company.

He is the author of a treatise on foundry molding machines and pattern equipment and a contributor of papers on the art of machine molding.

For a number of years Mr. Carman has been prominent in the activities of engineering societies. He was elected president of the Cleveland Engineering Society, and completed his service in this office in June, 1920. He was first chairman of the Cleveland section of The American Society of Mechanical Engineers, which was authorized in December, 1918. Mr. Carman was a member of the A. S. M. E. Committee on Aims and Organization and chairman of Sub-Committee C, which dealt with relations of the mechanical engineer to other engineers. He was one of the society's representatives on the joint conference committee.

Leon P. Alford, formerly editor of *American Machinist*, will be Mr. Carman's associate as vice president of the American Society of Mechanical Engineers.

THE EXECUTIVE COMMITTEE of the United Mine Workers' Union, Nova Scotia and New Brunswick districts, on Nov. 19 voted, 76 to 20, for rejection of a tentative wage agreement submitted by miners' officials, mine operators and representatives of the Dominion Department of Labor. The rank and file of the union will now vote on the proposition. If they reject it a strike is probable. About 12,000 miners are affected.

Wallboard Much Used in Anthracite Company Houses, Especially for Repairs

On New Dwellings of Unseasoned Lumber Wallboard Is Apt to Warp, but Where Plaster Falls Off It Is Better for Use Than New Plaster—It Resists Violence and Water, Is Warm, Neat and Soundproof

MINING companies are prone to be somewhat backward in using modern materials in the construction of houses for their employees. This reluctance to follow new practices probably rises from two causes: Custom and lack of acquaintance with the building art. There was a time, not so long ago as to be beyond the memory of many people now living, when almost anything with four walls and a roof was considered good enough for a miner to live in. Since then, however, conditions and ideas have changed so radically that the attitude now assumed by coal producers is: Can anything within reason be sufficiently good to induce the miner to live in it?

Let us compare the miner's house of, say, twenty years ago with the dwelling now constructed by a coal company for its employees. The old house consisted of three or possibly four rooms, rarely more. Sometimes such houses were made double, with four rooms on a side, on possibly two floors.

Great Advances Made in Materials Used

The dwellings of today are built with anywhere from three to eight rooms or more, depending on the size of the family to be accommodated. Sometimes these structures are single and sometimes double. The rooms may be all on one floor or upon two or three floors. Some companies have built two-family houses, others construct their houses double, so that by making a slight and inexpensive change in interior arrangements they may be converted into one large house, wherein as many as three small families may live.

As the houses have changed, so have the materials used in their construction. Formerly anything that could be considered as lumber was employed. Tar paper was placed upon the roof and the interior was ceiled sometimes with rough lumber and sometimes with tongued and grooved boards. Stoves were used for heating and holes were left in the chimney to receive stovepipes.

Materials that enter into mining-house construction today, however, are the best that can be procured. Clapboards are employed on the outside, or the buildings are constructed of concrete or vitrified tile left bare or stuccoed. Asbestos or slate shingles are used on the roof as well as the better grades of rubberoid roofing. Hard or semi-hard tongued and grooved flooring is laid, while the walls are lathed and plastered or covered with wallboard. Bathrooms are now being provided, and the cellar often contains a heating furnace. Every room also is wired for electric lighting.

Reading Compares Repairs with Wallboard

It may thus be readily seen that modern construction of miners' houses varies radically from that employed twenty years ago or more. Probably one of the latest of modern building materials coming into use extensively is wallboard. The Philadelphia & Reading Coal & Iron Co., the largest producer of anthracite coal in Pennsylvania, has begun to use this material exclusively for the repair of all walls.

In the construction of new dwellings this company is still using lath and plaster, not on account of any objection to the wallboard itself but because the lumber used in the construction of houses is apt to be imperfectly seasoned, and when the wallboard is placed directly on the studding and this dries out it warps. This springs the wallboard and ruins its appearance although not detracting in the least from its usefulness.

In its repair work this company is now using as much as three carloads of wallboard in a year. Miners and their families as a rule are hard on the houses they live in. Families in many instances are large, and the children romp and play through the house with a freedom, abandon, and violence that is likely to cause the plaster to crack and fall.

When this occurs the company does not replaster the rooms but tears down the old plaster from the ceiling or the wall, as the case may be, and puts wallboard in its place. Sometimes, of course, only the ceiling is repaired; sometimes one or more walls, while in other cases whole rooms are covered with this material.

Wallboard Nailed Over the Old Plaster Lath

It has been found unnecessary to take down the lath; in fact, better results are obtained when the lath is left in place, as this gives a backing for the board and strengthens it. This material is particularly valuable for the repair of old buildings. As everyone knows who has had charge of houses, old plaster when torn down is hard to replace, because the new material refuses to clinch upon the old lath, and consequently is likely to fall within a short time after being put in place. No trouble of this kind is ever experienced with wallboard. No matter how old the lath may be, it will still permit the nails holding the board to enter it and secure a good hold.

One great advantage possessed by wallboard over plaster in repair work is the ease, rapidity and cleanliness with which it may be placed. This is particularly advantageous where the work has to be done while a family is living in the house being repaired. A little sawdust and a few pieces of board have to be swept up, but this is considerably easier than cleaning up after plasterers.

Another advantage lies in the fact that only the board itself and a few nails need to be taken to the job. With plaster it is necessary to transport a mixing box for lime, the necessary sand, and a considerable number of tools, all of which must be returned when the work is completed.

Wallboard also lends itself to decoration much more readily than does ordinary plaster. The cracks between

the board sections are covered with strips of the board itself, giving the effect of panels. Sometimes the tenants paint or grain these to make them look like wood. The space between the strips often is papered, painted or kalsomined. Sometimes the occupants fresco the walls or otherwise decorate them to suit their preferences. This they would not be likely to do if the walls were simply plastered, but since the wallboard lends itself so readily to decoration of this kind it seems to have an irresistible influence in impelling tenants to decorate, thereby adding to the attractiveness of their homes.

Wallboard Is Warm, Soundproof and Durable

There are numerous other advantages attendant upon the use of wallboard. It withstands the bumps and thumps of romping children better than does plaster. It is particularly useful in the kitchen, as this is the room most continuously used in a miner's house, and consequently subjected to the hardest wear. The rooms where it is employed seem to be warmer than those with ordinary plaster on the walls, and the board is no better conductor of sound than is plaster.

Another advantage is that upon those occasions when a bursting water pipe or a leaking roof permits water to gain access to a ceiling, it does not loosen and come down as the ordinary wall covering is likely to do. Paint appears to soak into wallboard and does not peel off, as it sometimes does when placed upon a hard plaster finish or upon wood.

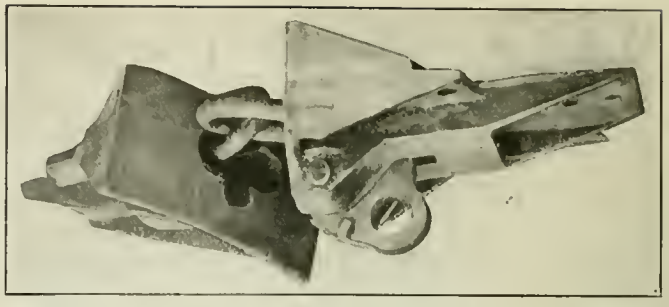
All in all, therefore, wallboard appears to be a much better material than plaster to employ in repair work. If the lumber of which the house is constructed is thoroughly seasoned, it is better to use it when the house is first built. One thing, however, must be carefully watched in the use of wallboard, and that is to see that it is dry when applied, for otherwise it may warp.

Mine-Car Coupler Which Reduces Accidents

A NEW type of mine-car coupler has been developed and placed on the market by the Electric Steel Co. of Indiana, of Indianapolis. This differs radically from existing types and apparently possesses several appreciable advantages.

As may be seen in the accompanying drawing, this device consists of a male and female bumper together with two coupling links permanently fastened to the male bumper. This bumper is provided with an aperture cruciform in cross-section, the lower leg of the cross being open downward. The inner link, pinned to the bumper, is free to move within the vertical opening of the cruciform aperture, while the outer link, engaging the inner one, is free to move in the horizontal opening of the cross. When the outer link is pushed into the male bumper as far as it will go, nearly half its length protrudes beyond the bumper surface while the inner link hangs downward, supported from the outer link. The female bumper is provided with a rectangular opening splayed outward. In this a latch operates.

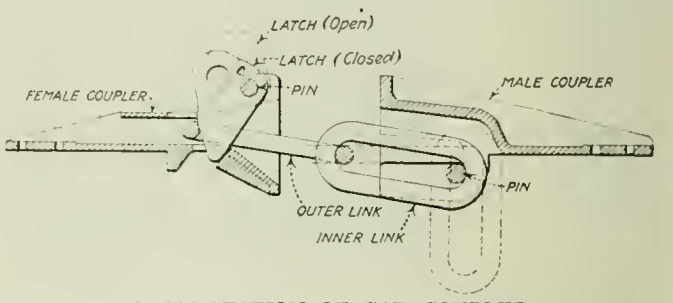
In coupling cars the outer link is pushed into the male bumper as far as it will go, when it stands in a practically horizontal position. The cars are then bumped together and this link is forced into the flaring opening of the female bumper until the latch is pushed upward and finally drops back through the opening in this link.



MINE-CAR COUPLER DESIGNED TO RENDER TRIP-MAKING SPEEDY AND SAFE

Male coupler, to which the links are permanently attached, has an opening in the form of a cross into which both links can be pushed, one vertically and the other horizontally. The female coupler, on the left, has a latch that engages the link when it is pushed into place.

In uncoupling sufficient slack is given the links to permit the latch to be lifted. This releases the outer link and allows the cars to be separated. Sufficient play is given the outer link in the openings of both bumpers to permit coupling and uncoupling even on sharp curves.



CROSS-SECTION OF CAR COUPLER

Coupled position is in solid lines, uncoupled in a series of dashes. Outer link is guided into the female coupler by the converging sides of the opening and when it has reached the desired point, the latch, which is lifted by the link, falls automatically into place and makes a firm connection.

As is well known, many men are injured, seriously or slightly, in coupling and uncoupling cars while making up or breaking up trips. Such a device as this therefore will go far to decrease the dangers to which men in the transportation department are subjected. Some people who have used this device assert that it decreases such accidents by more than 90 per cent. This device has been given a thorough tryout at one plant, having been in use for more than a year.

Transit Company Would Increase Fares Because of High Cost of Coal

INCREASED cost of coal has been laid before the Washington public by the Washington Railway & Electric Co. Some say it is in justification for an intention of the company to ask the local utilities commission for an increase in car fare. The company has had printed and posted, two each, in all of its cars operating in the city, the following poster:

"How the price of coal affects the Washington Railway & Electric Co.

"Bituminous coal cost the company $3.25 per ton in 1916.

"As a result of 11 consecutive increases (two of these since August, 1920) the price is now $8.43 per ton, an increase of 159 per cent.

"This company and its subsidiaries burn 220,000 tons of coal annually.

"The annual coal bill has increased since 1916 from $371,683 to $1,850,000.

"These interesting facts are presented for the information of our patrons.

"Washington Railway & Electric Co."

Problems of Operating Men

By James T. Beard

Machinery in Coal Mining

The rapid growth of machinery of every kind in coal mining leaves no room to doubt that the day is not far distant when practically all classes of work will be performed largely by the aid of mechanical devices of different kinds.

WRITING on this subject, Richard Bowen urges the idea that mechanical equipment will prove the actual solution of most of the growing difficulties in coal mining. In his letter, *Coal Age*, Sept. 23, p. 641, he argues that the sentiment of miners should favor the increased use of machines in mines for the reason that such equipment lightens their labor.

So great is the increasing demand for coal, that human labor unassisted cannot expect to long supply what is needed. As a result, we see on every hand the human factor giving place to new and improved machinery. But notwithstanding this trend of the times there are many who still hold that the old-time methods are better. It is difficult to see on what this claim is based when we consider the increased efficiency and the multiplied tonnages that have come through the introduction of mechanical equipment.

Why Are Not Coal Loaders More Commonly Used in the Mines?

There is one class or division of the work, however, where the use of machinery has not been received with the same favor as in other branches. I refer now to the use of coal-loading machines in the mines. Most mining men will agree that the loading of coal at the face, after the common practice, using the shovel, is a most wasteful process. We have adopted haulage locomotives, coal-cutting machines, conveyors, mechanical cagers, trip-feeders, pumps and mechanical ventilators, all of which are to be found in many large, up-to-date mines; but where are the coal-loading machines.

The fact that the loading of coal at the working face is one of the most burdensome tasks that the miner must perform, causes one to wonder that coal loaders have not been introduced more universally. Having seen some of these machines in operation, I predict that with slight changes in the machines and, in some cases, adapting the method of mining to their use, a great advance will be made in this line of work.

Few will deny that the present is a mechanical age, and the tendency is to perform all kinds of work with the aid of machines. While I am neither a prophet nor the son of a prophet, I feel that it will not be many years before all classes of work relating to the mining of coal, its handling and transportation, will be accomplished through the use of mechanical equipment.

As has been stated, this should not cause any howl on the part of labor. The introduction of machines will doubtless change the order of things and make the work easier to be performed. There will be a larger production and work enough for everyone, but it will not be the burdensome task of present-day mining. If we compare the future with what we have seen accomplished in the past by the aid of machinery, we must admit that the day is coming and not far away when the human factor in production will be small indeed, in comparision with what it is at present.

A few years ago water was collected from different parts of the mine in water cars and hauled to the bottom where it was hoisted to the surface. Today, pumps, siphons and pipe lines conduct the water from where it accumulates in the mine, and discharge it above ground. It used to be the custom to haul coal by mules from the working face to the tipple, but locomotives have long since replaced the mule in coal mining, and a single machine now does the work of five or six animals at less expense and in less time. If I do not miss my guess, the next five years will see a large amount of machinery going into the mines, and mine managers will do well to give this a thought.

Hillside, Ky. OSTEL BULLOCK.

Staying Qualities of Roller Bearings in Mine-Car Service

The results of practice in the use of roller bearings for mine cars appear to discount all the arguments made to substantiate the claims of those who still adhere to the old style of plain-bearing equipment. Numberless factors exist that tend to strengthen prejudice in favor of any equipment that has been long in constant use. There is naturally a dislike to change equipment already installed.

TRUE it is that, as suggested in the article of W. H. Noone, *Coal Age*, Aug. 26, p. 449, plain-bearing mine carwheels are frequently much underestimated; but it is in a different sense from that intended by Mr. Noone. The underestimate of that type of bearing occurs in the matter of its cost of operation, which is always supposed to be less than the actual.

Few of the users of plain-bearing wheels keep an accurate account of the cost of repairs, replacements and lubrication. If this was done it would be found that the expense of keeping such wheels in service is much greater than they had ever dreamed. While I do not question that in a few instances the cost of lubricating plain-bearing wheels is $2.46 per car per year, as claimed by Mr. Noone, it is my belief that these are exceptional cases.

One operator who has 2,000 cars in use equipped with flexible roller bearings told me the other day that his cost of lubrication was $1.06 per car per year; and he had all the figures before him when making that statement. But, as in the previous case, I must admit that this low cost is exceptional. Experience and observation lead me to estimate the average cost of lubricating roller-bearing cars of the spiral type as

$1.25 per car per year; and this may increase to $1.50 per car per year under less favorable conditions.

In my opinion the plain-bearing mine carwheel is headed for the scrap pile as sure as the sun shines. Some eight or ten years ago the plain-bearing, self-oiling, mine carwheel was the best on the market. It was far superior to the old type of wheel having a straight bore without any receptacle to hold the lubricant. Today the flexible roller-bearing wheel is as far superior to the plain-bearing wheel as the latter was superior to the old type that it supplanted.

Recommended by Manufacturers and Users

The fact that 95 per cent of reputable mine-car manufacturers advertise and recommend the roller-bearing type of wheel is *prima facie* evidence that roller-bearing equipment is better adapted for mine service than the best possible style of plain-bearing wheel. I have never known anyone to continue buying equipment that did not give good service, even though it could be had at a lower price. But, considering the fact that operators are buying roller-bearing equipment at an advance of from 20 to 25 per cent over the cost of plain bearings, it would seem beyond a doubt that the roller-bearing type gives the best service for the money. It seems unreasonable to suppose for a moment that large operations conducted on a small margin would purchase equipment that did not pay, or that the manufacturers of such equipment would recommend its use, unless they had proven to their own satisfaction its value. Anything else would not be good business.

It canot be denied that there are hundreds of mines, today, that have been in operation for nine or ten years and still use the old plain-bearing wheels, which was the only type of mine carwheel in use when those operations were started. Owing to the advance in the price of all kinds of equipment during the last four or five years operators who have four or five hundred mine cars equipped with plain bearings hesitate to scrap this material. Hoping that the prices of the better equipment would be reduced to a more normal level many have continued to buy the old type of bearing.

Operators Now Realize the Saving Effected

For the most part, however, operators have now come to realize the possible saving in the cost-sheet through improved bearings that greatly reduce the outlay for labor required in lubricating the old style of equipment and replacing wheels that are so badly worn in the hub as to be unfit for further use, although the tread of the wheel is still good. In addition to these items must be considered the loss of tonnage due to many idle cars laid up for repairs.

Owing to the greater liability to wrecks occurring in mines having steep grades, Mr. Noone lays considerable stress on this point and says, "The grades of a mine will invariably dictate the type of bearing that is more economical and practical to employ in hauling." This statement does not appeal to me, since the cars equipped with either type of bearing must be controlled by a suitable brake. Again, when a plain-bearing car is caught in a wreck and the wheel casting broken it is necessary to replace the entire wheel; but if a roller-bearing wheel is broken it needs only to have the bearing removed and placed in another wheel casting, which is quickly done.

The point to be kept in mind is that in mines where the roads are level the drawbar pull and track resistance due to friction of bearings are much less in the use of roller-bearing equipment than in plain-bearing cars.

Speaking of lubricating mine cars, the use of black oil or "blackstrap," like plain-bearing carwheels, is fast being replaced by a good grade of grease, which is now used to lubricate both plain- and roller-bearing cars. Although the first cost of the grease is greater than that of the oil its longer life makes its use desirable. When a plain-bearing wheel is not badly worn in the bore it holds the grease fairly well; but it is practically impossible to prevent sand or grit from working into the bore of a carwheel, which is quickly ground out and enlarged. The tendency is to squeeze the grease toward the back of the wheel, which has become more enlarged than the remaining portion of the bore. In that case the wheel does not retain the grease long at a time and the lubrication of the car becomes more and more expensive.

Not long ago I investigated a pile of scrapped wheels, some of which were wanted for another purpose. These wheels were originally bored for a $2\frac{7}{8}$-in. axle. Of fifty wheels examined, the bores of eighteen were under $2\frac{1}{2}$ in. in diameter, while the remaining thirty-two varied from 3 to $3\frac{1}{2}$ in. in diameter at the rear of the hub. The date of the casting appeared on each wheel, and it was found that some of them had only been in use three and others four years.

Roller Bearings Outwear Best Chilled Treads

These wheels were made by four of the best wheel manufacturers in the country, which shows how easily this type of wheel becomes worn and is ready for the scrap heap. Just here it is well to note that the steel hub or steel lining of a roller-bearing wheel will last many years longer than the cast iron of a plain-bearing wheel mounted on a steel axle. Naturally, there is less wear and friction in the rolling action of such a bearing than in the sliding motion of a plain bearing.

In my experience it is very rare to find a plain-bearing wheel having a perfectly good bore and a worn-out tread, provided the latter has been properly chilled. In the large majority of cases the tread is found in perfect condition when the bore has been worn and greatly enlarged. Wheels with flat places on the tread are often found, but this is the result of spragging the wheels. A roller bearing will generally outwear a well-chilled tread, which should always be good for many years.

Referring to the Carbondale test, Mr. Noone expresses the belief that the poorest type of plain-bearing equipment was used; but it is my understanding that the plain-bearing equipment employed was considered exceptionally good by the many operators who were present at the test.

In closing let me cite an instance of a mine equipped with roller-bearing cars where the length of haul was thirteen miles for each round trip. In that instance a plain-bearing wheel if not thoroughly lubricated would have been ruined in making a single trip. The superintendent informed me that they lubricated the cars but twice a year, or once every six months.

Facts such as these are difficult to gainsay. In my opinion the only people who are not in favor of roller-bearing equipment are those who have never used the flexible type of bearing. Mr. Noone may be getting excellent results with his plain-bearing cars, but the change to roller-bearing would surely surprise him.

Huntington, W. Va. OBSERVER.

Record Earnings of Miners

REFERRING to the item published in *Coal Age* Sept. 23, p. 621, in which it was stated that a Pennsylvania miner employed in the Marion mine of the West Penn By-Product Coal Co., drew $245 as his pay for two weeks, after having missed one day in that time.

While this is an excellent record, I ran across another a few days ago that makes this one look as though the man was a "piker." It was last month when I was visiting No. 3 mine of the Peabody Coal Co. for the purpose of investigating a fatal accident that occurred in that mine.

On coming to the surface a few of us fell to discussing things, as mining men will when they get together. This time the question of wages came up and Clem Plodeck, the superintendent of the mine, remarked that two men working a couple of 12-ft. entries on shares drew $783.34 the previous pay. One of the men had $20 more in his envelope than the other. The superintendent stated that the men were hard workers, each loading roughly 20 tons of coal a day. If my recollection serves me rightly, I believe I have given the exact figures; but this is certainly a remarkable showing. W. L. MORGAN.

Greenville, Ill.

Are Safety Inspectors Needed Under the Indiana Mining Law?

An extremely limited view of the duties and responsibilities of safety inspectors in mines is here presented, and the thought expressed that the oversight and instructions required by law to be given by practical miners to their laborers is all that is needed to insure safety.

THE mining law in the State of Indiana requires that every man, before he is permitted to work independently as a miner at the coal face, must pass an examination and answer questions to prove that he is a practical miner. Until then, he must work with a person who has passed such an examination and received a certificate as a practical miner.

Under this law, it seems to me that a so-called "safety inspector" is not required, as he would have no opportunity to give needed instructions, except where a miner fails to properly oversee and instruct the man in his charge. I would consider a man who is only permitted to work under the instructions of a certificated miner, as a "miner's laborer."

In my opinion, it is the duty of every practical miner to exercise more care in looking after his laborer than he has for himself. That is really what the law demands; it requires each miner to instruct his laborer in all matters pertaining to safety. Again, the mining law requires the employment of competent shotfirers, in all mines employing more than ten men as miners and where gas is generated in dangerous quantities. It is the duty of these shotfirers to inspect and fire all blasts that have been prepared in keeping with the requirements of the law.

While these two laws, known as the "Shotfirers Law" and the "Miners' Efficiency Law," are long steps in the right direction to insure safety in mines, it cannot be denied that they need revision. They each attempt too much in some respects but are deficient in others. When firebossing it was always my earnest endeavor to prevent miners from lighting thin layers of gas at the roof, which had escaped detection by the fireboss because the gas did not reach the safety-lamp flame in testing. It would frequently happen that such a thin layer of gas would be fired by a miner's lamp carried in his cap.

My instructions to all miners were to carry their lamp in their hand when entering a place, especially if that place was not in constant use. Miners who have worked long in mines generating much gas acquire habits that others do not possess or think necessary until they have learned a bitter lesson by being severely burned, owing to their lack of caution in the manner of carrying their lamps.

A miner unaccustomed to gas will often brush his head into what is called a "cap-full" of gas, and when this happens such a miner will generally start to run from the place in an endeavor to escape the flaming gas. An experienced miner caught thus will duck quickly to save himself from being burned. These are everyday occurrences in mines generating gas and should be fully treated in the mining law. W. H. LUXTON.

Linton, Ind.

Inquiries Of General Interest

Proposed Building of Two Dams to Isolate a Pumproom In a Mine

To avoid the possibility of the pumps in a mine being flooded it is proposed to isolate the pumproom by building two dams, one in the sump opening above the water level and the other closing off the pumproom from the workings where the water accumulates.

OWING to water accumulating under a head of 30 ft. measured from the pumproom floor, it has become necessary to devise some means of isolating the pumproom from the mine workings, in order to avoid the possibility of the pumps being submerged and rendered useless for service.

In this instance, the sump which is 8 x 13 ft. in section, is sunk in the floor of the pumproom, and the water ordinarily stands at a level of 8 ft. below the floor. The sump is directly connected with the mine workings where the water accumulates under a possible head of 30 ft. above the pumproom floor.

It has been proposed to completely isolate the pumproom from the workings, by building two dams. The smaller one is to be built in the sump opening above the water level and must withstand an upward pressure due to a head of 38 ft. The second and larger dam is to be built in the opening of the pumproom, which has a height of 16 ft. and a width of 23 ft. In order to give sufficient clearance space for the changing of the piston rods on the pump, it is necessary to restrict the thickness of this dam to four feet.

In the accompanying sketch, I have attempted to show the general arrangement in respect to the position of the two dams and the location and size of the sump. I want to ask for a general description of what will be necessary in the way of reinforcement, assuming these

dams are built of good concrete. Kindly give the size, weight and number of I-beams that will be required in each dam to withstand the pressure due to a possible head of 30 ft. above the pumproom floor. Please show the arrangement of the reinforcing beams and the method of anchoring them in the sides of the opening. The pumproom and the sump are in solid rock.

————, Pa. ENGINEER.

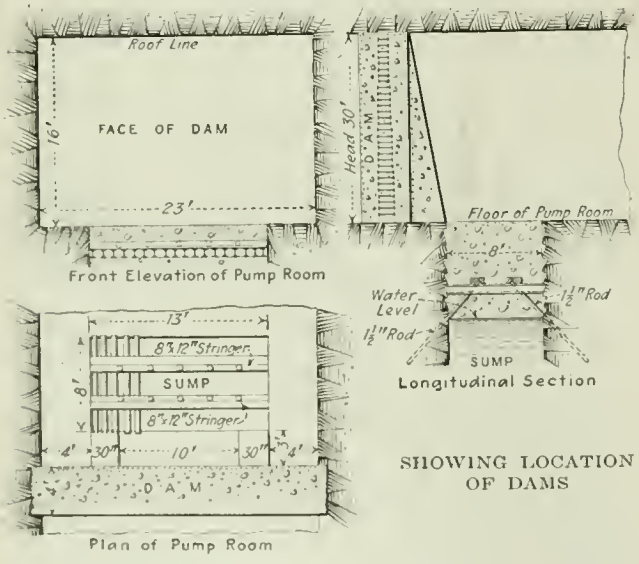
First, regarding the dam to be built in the opening of the sump, it is assumed that this must withstand a pressure due to a head of 38 ft., which is $38 \times 0.434 = 16\frac{1}{2}$ lb. per sq.in., or 2,376 lb. per sq.ft. We will estimate the size of the I-beams, for a span of 8 ft. and a uniformly distributed load, spacing the I-beams 9 in., cen. to cen. The load on a single beam is then

$$L = \tfrac{3}{4}(2{,}376 \times 8) = 14{,}256\ lb.$$

For a uniformly distributed load, the section modulus (S) is equal to the load (L), in pounds, multiplied by the length (l) of the span, in inches, and divided by 8 times the fiber stress (f), which we will assume as 12,000 lb. per sq.in. This gives for the required section modulus of a single beam, in this case,

$$S = \frac{Ll}{8f} = \frac{14{,}256(8 \times 12)}{8 \times 12{,}000} = 14.3$$

Referring to the tables giving the strength of I-beams, (Pocket Companion, Carnegie Steel Co., p. 175), we find for this section modulus, an 8-in. I-beam weighing 18 lb. per ft. Spacing these beams 9 in. cen. to cen., will require eighteen beams, say 8 ft. 6 in. in length, to close the opening, allowing 3 in. to be hitched into each sidewall of the sump. The total weight of these I-beams is $18\ (8\frac{1}{2} \times 18) = 2{,}754$ lb.



SHOWING LOCATION OF DAMS

Estimating the weight of concrete, that will fill the opening above the water level, taking the weight of good crete as 144 lb. per cu.ft., we have $8(8 \times 13)144 = 119{,}808$ lb. This makes the total weight of the concrete and the I-beams embedded in it, say 122,000 lb.

For a head of 38 ft., the upward pressure of the water on this dam is $2{,}376\ (8 \times 13) =$ say 247,000 lb. Deducting the weight of the reinforced concrete dam, gives for the lifting force due to the pressure of the water, 247,000 — 122,000 = 125,000 lb. In order to realize the full strength of the reinforcing I-beams, these must be embedded in the concrete, as indicated in the figure, where we have shown the method adopted to overcome the excess of lifting pressure, previously estimated as 125,000 lb.

Referring to the figure, it will be observed that the side and endwalls of the sump opening have been roughened so as to present a saw-tooth surface that will assist in holding the concrete mass in place. In addition to this, heavy wooden stringers, 8 x 12 in. in section, are laid over the I-beams. The stringers are tied together temporarily by rods to prevent their slipping.

The entire structure is anchored by diagonal rods $1\frac{1}{2}$ in. in diameter. Each rod has a safe breaking strength of 17,500 lb. but, being diagonal exerts a resistance of about 12,500 lb. against the lifting pressure of the water. It will be safe to estimate on using ten of these rods, five on each side, anchored to a depth of 5 ft. in the solid rock, or 40 times the diameter of the rod.

All being in readiness and a temporary floor, having been laid at the surface of the water to support the concrete while setting, the entire space is filled with good concrete, consisting of one volume of clean sharp sand, 3 volumes hydraulic cement and 5 or 6 volumes of broken rock. The concrete is well rammed as it is put in, and brought up to the level of the pumproom floor.

Calculation of the Larger Dam

In regard to the larger dam closing the opening to the pumproom, 16 x 23 ft., this dam is restricted to a thickness of 4 ft., in order to give the necessary clearance for changing the piston rods. On this account the concrete will need to be heavily reinforced by large I-beams, laid horizontally and embedded in the concrete wall, in the manner shown in the cross-section of this dam. The head effective at the top of the dam is 14 ft. giving a pressure of 144 $(14 \times 0.434) = 875$ lb. per sq.ft. Here the span is 23 ft. and, spacing the beams 6 in. cen. to cen. gives for the uniformly distributed load on a single beam, $L = \frac{1}{2}(875 \times 23) = 10{,}060$ lb. The section modulus for this beam is

$$S = \frac{10{,}060(23 \times 12)}{8 \times 12{,}000} = 28.9$$

Referring to the table giving the strength, dimensions and weight, of I-beams, we find that 10-in. I-beams weighing 35 lb. per ft. will be required at the top of the dam. Again, for a head of 30 ft. at the floor of the pumproom, the pressure is $144(30 \times 0.434) = 1{,}875$ lb. per sq.ft. For a span of 23 ft. and spacing the beams 6 in. cen. to cen., the uniformly distributed load on a single beam, at the bottom of the dam, is $L = \frac{1}{2}(1{,}875 \times 23) = 21{,}560$ lb. The required section modulus to carry this load on a span of 23 ft. is

$$S = \frac{21{,}560(23 \times 12)}{8 \times 12{,}000} = 62.0$$

Referring to the table, we find a 15-in. I-beam weighing 50 lb. per ft. will be required at the bottom of the dam. As indicated in the figure, the size and weight of the beams can be reduced from 15-in., 50-lb. beams at the bottom of the dam, to 10-in., 35-lb. beams at the top.

We would suggest buttressing this wall by two buttresses of concrete, each 30 in. wide and 3 or 4 ft. long at the bottom, tapering to nothing at the top. These buttresses can be placed, say 10 ft. apart, on the front face of the dam, or otherwise conveniently arranged to give the necessary clearance for removing the piston rods when the occasion demands.

Examination Questions Answered

Miscellaneous Questions

(Answered by Request)

QUESTION—*What materials would you use in the construction of stoppings, in the ventilation of a mine?*

ANSWER—Permanent stoppings built on main haulage roads and air-courses should be more substantial than those on cross-entries and other headings of shorter life. The materials employed are concrete or masonry, either brick or stone laid with good cement. On the other hand, more temporary stoppings are usually built of the refuse of the seam. A double wall of shale or slate is built having an 8- or 10-in. space between filled with the dirt taken from the mine roads. All stoppings should be constructed of incombustible material and wooden stoppings should not be used.

QUESTION—*Is there any objection to shooting coal off the solid in the State of Kentucky? Explain why.*

ANSWER—Only in a few exceptional cases should the practice of shooting coal off the solid be permitted. The practice is in use in portions of the anthracite region where the coal is hard and makes little dust and the practice is not considered dangerous. In the State of Kentucky, however, the coal is soft and often friable, making much dust in the mining. For this reason coal should not be shot off the solid in that state. The fine dust accumulating at the working face is liable to cause a dust explosion if a blownout or windy shot should occur in blasting.

QUESTION—*How should a man organize a crew of rescuers when no rescue apparatus is available, and what equipment should he use in training the men and fitting them for their work?*

ANSWER—When no suitable rescue apparatus is available that would enable rescuers to enter and work in a foul atmosphere containing irrespirable, poisonous and often explosive gases the training of a rescue crew must proceed with caution. Careful instructions must be given that the mine must be entered on the intake air, and no advance must be made ahead of the restored air current. The men must be equipped with an approved type of safety lamp and taught how to prepare it for use and handle the same in gas. They must be further equipped with and instructed how to use caged birds or mice for the purpose of detecting a poisonous atmosphere containing carbon monoxide. Rescuers must be instructed to take no chances that are unwarranted, the only exception to this rule being when there is a reasonable chance of saving lives. The instructions must include the quickest and best methods of restoring circulation in a mine and the crew must be equipped with all necessary tools and supplies for that purpose.

QUESTION—*(a) What percentage of carbon monoxide in the mine air will explode? (b) How many volumes of gas to air are there when the mixture is at its lower explosive limit? (c) What is the ratio of volume at the higher explosive limit? (d) What is the ratio of volume when the mixture is at its maximum explosive point?*

ANSWER—(a) The explosive range of carbon monoxide mixed with air when no other gases are present reaches from 16.5 to 75 per cent of gas.

(b) The ratio of the volume of gas to air when carbon monoxide is at its lower explosive limit is one volume of gas to six volumes of air.

(c) A mixture of carbon monoxide and air is at the higher explosive limit when the volume ratio of gas to air is 1 : 1⅛; or when three volumes of gas are mixed with four volumes of air.

(d) The mixture of carbon monoxide and air is at its maximum explosive point when the volume ratio of gas to air is 1 : 3⅜; or eight volumes of gas are mixed with twenty-seven volumes of air.

QUESTION—*Assuming that, on taking charge of a mine, you find the following air splits: 1-2 E.N., working 18 men and 2 mules, passing 6,500 cu.ft. of air per minute; 3-4 E.N., working 14 men and 1 mule, passing 4,000 cu.ft. of air per minute; 5-6 E.N., working 10 men and 1 mule, circulating 3,500 cu.ft. of air; and 5-6 W.N., working 6 men and 1 mule, with a circulation of 1,500 cu.ft. of air; what changes, if any, would you make in order to comply with the Kentucky State Laws?*

ANSWER—The total amount of air in circulation in this mine is 15,500 cu.ft. per minute. Since the mining laws of Kentucky require a circulation of 100 cu.ft. per minute for each man employed in the mine, and say nothing in regard to the number of mules underground, the total quantity of air entering the mine is ample in this respect.

However, the air is not distributed between the several entries in proportion to the number of men and mules working in each. Many state mining laws require the circulation of 500 cu.ft. of air per minute for each mule employed underground, which makes a mule equal in this respect to five men. On this basis there is the equivalent of $48 + 5 \times 5 = 73$ men at work in the mine, and a more equable distribution of the air current would therefore be the following:

1–2 E.N., 28/73 (15,000) = say 6,000 cu.ft. per min.
3–4 E.N., 19/73 (15,500) = say 4,000 cu.ft. per min.
5–6 E.N., 15/73 (15,500) = say 3,200 cu.ft. per min.
5–6 W.N., 11/73 (15,500) = say 2,300 cu.ft. per min.

This shows that the first of these four splits is taking 500 cu.ft. of air in excess of its right proportion. In the second split no change is required in the circulation; but the third split is receiving an excess of 300 cu.ft., while the fourth or last split lacks 800 cu.ft. of air per minute.

In order to accomplish this distribution of the air it will be necessary to place a regulator in each of the first three splits, since a regulator placed in the first split will naturally increase the volume in the second split and give it an excess over its right proportion. The openings in these regulators must be proportioned so as to give the desired results.

QUESTION—*A workman worked eighteen and one-half days at $4.50 per day; how much should he receive in case of an advance of 12 per cent?*

ANSWER—An advance of 12 per cent if wages are $4.50 per day, is $1.12 \times 4.50 = \$5.04$ per day. At this increased rate, the amount due for eighteen and one-half days work is $18\frac{1}{2} \times 5.04 = \$93.24$.

Foreign Markets and Export News

To Study Argentine Coal Deposits

According to Trade Commissioner Brady, at Buenos Aires, the Argentine Congress has before it a project for the appropriation of a million pesos (normal value of peso is $0.4246 United States Currency) for the purpose of making an extensive study of the Argentine coal deposits, particularly in the provinces of Mendoza, San Juan, La Rioja and Catamarca.

It is proposed that a special section for this purpose be organized in the Bureau of Mines, and that the above amount be figured as the budget to cover the expenditures of two years. Studies of the Argentine coal fields previously made by American and British mining engineers have indicated that Argentine coal is of an inferior quality, although no thorough prospecting has ever been done.

British Export Allocations Being Made

Consul General R. P. Skinner, London, states that the resumption of work by the miners on Nov. 8 has caused a gradual revival of shipping activity. As supplies were exhausted in many ports some delay occurs pending arrival of bunkers from mines. The November allocations of coal for export are being made and chartering is being resumed. The most noticeable result of the strike is the curtailment of British export business in coal. American and German coal was purchased on the Continent during the strike at less than British export price.

Production figures available show that the output for the week ended Oct. 16 declined slightly, as shown in the following table:

October 2	4,702,800 tons
October 9	4,713,100 tons
October 16	4,611,600 tons

Belgian Prices Are Increased and Production Shows Improvement

Coal mining in Belgium is due for greater development with the exploitation of two new basins, that of Campine and of Hainaut, discovered in 1901, according to Consul General Henry H. Morgan, Brussels. Already one mine, that of Winterslag, is in operation and produces 500 to 600 tons a day. It is likely that another will be ready to work during this year, and three others in 1921. Some Belgian coal mines are now extracting more coal than in 1913. The coke situation, which earlier in 1920 retarded the operation of a number of blast furnaces, has appreciably improved, due largely to the regularity of shipments of coke and coking coal from Germany by rail and vessel, to which Belgium is entitled under the Versailles treaty.

The following table gives the commercial movement of coal, coke, and briquets during the first eight months of 1913, 1919, and 1920:

	January-August				January-August		
Kinds of Fuel, Imports	1913 Metric Tons	1919 Metric Tons	1920 Metric Tons	Kinds of Fuel, Exports	1913 Metric Tons	1919 Metric Tons	1920 Metric Tons
Coal	5,967,457	77,782	563,282	Coal	3,290,789	2,654,038	959,158
Coke	767,774	315	113,929	Coke	719,425	210,026	135,988
Briquets	320,846	20	42,491	Briquets	412,222	259,275	126,499
Total	7,056,077	78,117	719,702	Total	4,422,436	3,123,339	1,221,645

Prices have been advanced in Belgium. The advance dates from Oct. 3, and amounts to 3.75 fr. for rough coals, 5.50 fr. for washed and classified coals under 10 mm., and 8 fr. for those above 10 mm. The price of briquets, owing to the increased cost of coal and pitch, has also been advanced, current rates being as follows: Briquets type I, 152 fr.; ditto type II, 155 fr.; ditto marine type, 159 fr.; lean *boulets*, 139 fr.; semi-bituminous ditto, 141 fr. The official price list for coals is roughly as follows: *Houilles* and *gailleteries*, 121 fr.; *gailletins*, 123.50 fr.; *têtes de moincaux*, 126 fr. to 129 fr.; *greusins*, 121 fr. to 124 fr.; *braisettes*, 101 fr. to 116 fr.; washed *grains*, 88.50 fr. to 93.50 fr.; rough slack (*poussiers*), 71.75 fr. to 81.75 fr.; half-washed slack, 82.50 fr. to 86.50 fr.; washed slack, 81.50 fr. to 88.50 fr.; washed coking smalls, 93.50 fr.; rough *fines*, 75.75 fr. to 86.75 fr.; half-washed ditto, 84.50 fr. to 96.50 fr.; *menu dépoussière*, 102 fr. to 106 fr.; screened coals, 123.50 fr.; "National" household coals, 85 fr.; washed forge coals (*grains*), 103.50 fr.; ditto nuts, 108.50 fr. to 126 fr.; coal for producers, 106 fr. to 109 fr. Coke prices have also risen, as follows: Ordinary, 132.50 fr.; half-washed, 144.50 fr.; washed, 168 fr.; special, 173 fr.; *grésillons*, 120 fr.; breeze, 55 fr. In the four months, June—September, Belgium received 200,000 tons of German coal, about a-third of which were coking coals, 25 per cent gas coals, 14.5 per cent house coals, and 14.5 per cent manufacturing coals. From Oct. 1 to 10, 27,255 tons of coking coals were delivered to the account of the coke syndicate, whose new director is M. Frère, formerly commercial director of the Fontaine-l'Eveque Colliery.

Disapproves of Socialization of German Coal Mines

The mining associations in Germany, the *Colliery Guardian* says, recently adopted a resolution emphasizing that the proposals of the Socialization Commission would destroy that initiative on the part of owners which has brought the mining industry to its present state of development, and would create a new bureaucratic, compulsory organization, dependent on Parliamentary factions, and a central directorate which would restore the unsatisfactory conditions obtaining previous to 1865. The resolution proceeded to say that the assumption that socialization would result in the workers taking more pleasure in their tasks is contrary to the experience gained in the operation of the state railways, postal service and workships. Socialization would mean reduced output and greater cost, and the expense of the experiment would fall on the consumers and workers, while the necessary consequence of extending the principle to other industries would be to retard the industrial reconstruction so essential to the nation.

Following this, the Essen Mining Association has issued a pamphlet reviewing the whole question of socialization since 1918, the work and reports of the Socialization Commission, and the economic condition of the coal-mining industry. In defence of the old system it is pointed out that the alleged monopoly of the coal syndicate has no existence, and that the state was always in a position to prevent any abuse of the syndicate's economic power, being able to arrange freights so as to favor imports and restrict exports, if desirable, and also to exert a powerful influence in the fixing of prices.

Several large coal contracts have been placed with companies in China by Danish and French interests. The Danish State Rys. have ordered 50,000 tons and shipping companies at Marseilles have contracted for 100,000 tons. W. U. Zann, a prominent business man of the Orient, stated that China has not been exporting coal but has been allowing her mines to lie idle while industrial plants used Japanese coal. The high price offered by European markets and the advance made recently by Italy is arousing Chinese commercial men to action.

Coal Statistics Shown to Have National Importance—II*

Value of Distribution Records Revealed in Recent Emergency in the Northwest—Extension of Data Suggested

By F. G. Tryon†

A CURRENT record taken at monthly and in some cases even weekly intervals of the movement of coal from mine to consumer is important even in normal times as a guide to both the shipper and the purchaser of coal. Comparisons of the present movement with records in preceding years will show whether coal is being shipped into a particular locality in normal volume or not, a fact which is of value to the purchaser in laying plans for buying coal and to the shipper as a guide to his selling campaign. When the market becomes disturbed and methods of controlling distribution are being discussed, a record of this movement becomes an imperative public need.

Northwestern Crisis Taken as Example

The importance of distribution statistics can be made clear by an illustration: A cause of much concern in the present coal year has been a sharp decrease in the movement from the Northern Appalachian region to Lake Erie ports, for transshipment to the head of the Lakes. Now the Northwestern states draw their supply in part from the Lake docks and in part from the mines of the Middle West, particularly Illinois.

To know whether there will be a shortage of coal in the Northwest next winter it is not sufficient to watch the Lake shipments alone. A current record must also be kept of the quantity of coal shipped north, past Chicago, from Indiana and Illinois. For to the extent to which the latter fields are increasing their shipments to the Northwest, a decrease in the Lake tonnage may be viewed with equanimity. The illustration is a simple one and is only one of many that might be cited. Regardless of whether the readjustment of distribution be accomplished by the trade itself or by quasi-public control, a record of the principal facts from week to week is a necessity.

Two methods of recording distribution present themselves, both dependent upon the records of the railroads. The first and most complete is to assemble copies of the waybills for every car of coal shipped, and to tabulate and analyze them in some central office having jurisdiction over all the roads in a given locality. Excellent work of this character is now being carried on by the Ohio Bureau of Coal Statistics, a railroad organization with headquarters at Columbus. Although the results obtained from working up the waybills of coal loaded are accurate in a high degree and susceptible of presentation in great detail, a month or two must elapse before the figures become available.

Promptness Considered an Important Factor

The advantage of the second method of measuring distribution lies in the promptness with which results can be made public. It consists in holding up the stream of coal on wheels at critical gateways and junction points, establishing, as it were, gaging stations for the measurement of the rate of flow. An example of such gaging records are the figures of cars dumped daily over tidewater piers at the North Atlantic ports. Like the first method, this depends upon the co-operation of the railroads or of the coal exchanges where such organizations exist.

A third method of collecting distribution statistics, which may be used where no records are kept by the railroads, is to assemble statements from the operators themselves through their local associations. To make the record really valuable, however, it must be complete and completeness is difficult of attainment for an operators' organization, membership in which is never compulsory.

The part of the Government in preparing statistics of distribution should, it is submitted, be confined to co-ordinating the work of private agencies and supplementing it where necessary. At present distribution statistics are available covering the following major movements:

(1) Rail movement through Hudson River gateways to New England weekly.

(2) Cars dumped over tidewater piers—daily and weekly.

(3) Disposition between coastwise, bunker and export of coal handled at Charleston and Hampton Roads piers—weekly.

(4) Same for all Atlantic ports—monthly.

(5) Exports from Atlantic ports, by country of destination (lately established by the Department of Commerce) weekly.

(6) Cargo and bunker fuel dumped at Lake Erie ports—daily and weekly.

(7) Destination of same—monthly.

(8) Coal passing through Sault Ste. Marie canals—monthly.

(9) Coal received at head of Lake Superior—monthly.

(10) Exports to Canada—monthly.

(11) Detailed distribution statistics for coal mined in Ohio—monthly.

(12) Details of westbound movement from the "Crescent" (Western Pennsylvania, West Virginia and Eastern Kentucky)—monthly.

(13) Distribution records, more or less complete, kept by operators' associations in Indiana, Illinois and the Rocky Mountain States—weekly or monthly.

Supplemental Data Suggested

This system of distribution records requires extension and supplementing as follows:

(1) More complete figures on rail movement to New England—weekly.

(2) Complete weekly figures as to disposition of coal dumped at tidewater.

(3) Shipments by car ferry to Canada—weekly.

(4) All-rail exports to Canada—weekly.

(5) Shipments westbound from the docks at the head of Lake Superior and Lake Michigan, by destinations—weekly.

(6) Complete detailed statistics of distribution from Indiana and Illinois and Western Kentucky—monthly.

(7) Same for Northern and Middle Appalachian region not now covered—monthly.

(8) Same for Southern Appalachian, including Alabama—monthly.

With these statistics at hand, a comprehensive picture of the distribution of bituminous coal in the territory east of the Mississippi and Missouri—the part of the country where a distribution problem can be said at present to exist—would be possible. As pointed out above, the work can be done most successfully by the railroads and the operators' associations, the government confining its activities to co-ordinating the reports of other agencies and occasionally to collecting the details where no local agency exists. The Fuel Administration's records of distribution during the war period furnish a background against which to measure present performance in the distribution of coal. That the government must itself undertake the final collection and analysis of the results is clearly indicated by the jealousies between shippers and carriers which militate against the free exchange of information between them. The total cost to the government of obtaining these distribution figures would probably not exceed $10,000 a year, if the work were carried on in conjunction with other studies of coal production and distribution.

*Second instalment from a paper entitled "Control Statistics of Coal Production and Distribution." Third and last instalment will appear in a later issue.

†U. S. Geological Survey.

W. F. McKenny, formerly special agent with the Bureau of Labor Statistics, who has done most of the field work in gathering data on coal for that bureau during recent months, is now in the coal section of the Geological Survey.

Herman N. Sulliger, engineer, who was appointed during the war to make power investigations in connection with the conservation of fuel, has resigned from the service.

Substitution of Fuel Oil for Coal Is Less Than 1 Per Cent in Eleven Months

INTERESTING conclusions as to the extent to which fuel oil has been substituted for coal by industrial and electric utility plants are to be drawn from a study of stocks and consumption recently completed by the Geological Survey in co-operation with the U. S. Bituminous Coal Commission. The purpose of the survey was to ascertain the extent of consumers' stocks as an item in the requirements for necessary production during the summer of 1920. A detailed stock report may be had upon application to the director of the Geological Survey.

The questions concerning stocks were so phrased as to disclose the substitution of fuel oil for coal if the plant had made the change between April 1, 1919, and March 1, 1920.

The inquiry was addressed to representative consumers selected at random and scattered throughout the country. The replies therefore would indicate where the change from coal to fuel oil had been most common and would give an approximate idea of the extent of the change. The results are summarized in the accompanying table, prepared by F. G. Tryon.

Data Represent Half Electric Plant Consumption

Reports were received from 317 electric utility plants, which consumed about half of the total required by electric plants as a group. Of this number it was found that nine had changed over from coal to fuel oil. The quantity of coal displaced was 43,059 tons per quarter, or about 1 per cent of the quarterly consumption of the plants canvassed.

Of the 2,347 industrial plants canvassed it was found that 69 had substituted fuel oil for coal. The proportion of the total coal consumption of this group of plants displaced by fuel oil was again small, amounting to 1.1 per cent.

These facts indicate that over the country as a whole the competition of fuel oil during the period of low prices of crude following the armistice was not of serious proportions. On the average for all consumers the amount of coal displaced appears to have been considerably less than 1 per cent of the normal demand.

In certain localities, however, the competition of fuel oil was much more effective. Regions close to the great producing oil fields, and particularly the coastal belt along the Atlantic and the Gulf of Mexico, felt the competition of fuel oil keenly. An idea of the magnitude of the substitution of oil for coal in those localities may be found in the fifth column of the table, although the percentages given are to be regarded as suggestive rather than definitive. In the interior of the country, away from the coast and the producing oil fields, the quantity of coal displaced by oil was negligible.

REPRESENTATIVE PLANTS WHICH CHANGED FROM COAL TO FUEL OIL BETWEEN APRIL 1, 1919, AND MARCH 1, 1920 *a*

(Consumption in Net Tons)

	Plants Canvassed and Reporting Former Quarterly Coal		Plants Which Had Changed from Coal to Fuel Oil Former Quarterly Coal		Per Cent of Consumption Reported Which Had Changed
	No.	Consumption	No.	Consumption	
Electric utility plants:					
Alabama	9	116,142	1	2,635	2
Arkansas	6	27,598	1	1,692	6
Georgia	7	17,753	2	13,322	75
Kansas	9	109,814	1	12,384	11
Mississippi	4	14,089	2	7,682	55
Texas	7	25,756	1	1,744	7
West Virginia	8	56,159	1	3,600	6
Other States	267	4,238,530	..	.....	..
Total electric utilities	317	4,605,841	9	43,059	1
Industrial plants other than iron and steel and byproduct:					
Maine	25	160,526	1	2,791	2
Massachusetts	246	711,397	8	14,006	2
Connecticut	78	341,186	..	22,547	7
Rhode Island	64	127,540	11	13,574	11
Alabama	41	110,373	1	1,680	2
Arizona	9	27,857	1	746	3
California	4	228	7	80	35
Florida	13	14,905	6	7,573	51
Georgia	33	61,482	2	438	1
Kansas	53	183,661	10	12,723	7
Louisiana	5	47,701	3	14,279	30
Maryland	33	163,945	1	5,420	3
Mississippi	26	29,995	1	740	3
Missouri	80	399,022	4	9,161	2
New Jersey	93	652,957	3	25,874	4
Oregon	7	402	1	26	7
Texas	40	92,875	8	11,861	13
Washington	12	39,720	1	2	..
Other States	1,485	9,559,563	..	.....	..
Total industrial plants	2,347	12,725,335	69	143,521	1
Grand total — electric utilities and general industrials	2,664	17,331,176	78	186,580	1 1

(a) The 317 electric plants reporting represented about 50 per cent of the total consumption of electric public utilities. The 2,347 industrials reporting represented about 37 per cent of the total consumption of the general industrials (excluding steel and byproduct coke plants). The consumption figures given covered the quarter from January 1 to March 31, 1920.

Bituminous Coal Production in Central Pennsylvania*

(In Net Tons) †

Period	1917	1918	1919	1920
January	5,103,621	4,637,131	5,114,716	4,556,827
February	4,351,331	4,666,093	3,148,078	3,635,195
March	5,260,725	5,318,134	3,482,408	5,002,992
April	4,497,326	5,084,292	3,404,602	4,254,075
May	4,840,767	5,214,803	3,649,957	4,105,668
June	5,044,325	5,393,048	3,831,680	4,404,480
July	4,851,237	5,590,414	4,386,820	4,705,956
August	5,139,502	5,702,102	4,832,219	4,947,492
September	4,716,933	5,104,013	4,865,074	5,162,333
October	5,311,568	5,265,562	5,580,692	5,112,382
Total 10 months	49,117,335	51,975,592	42,296,246	45,721,400
Average monthly	4,911,732	5,197,559	4,229,625	4,572,140
November	5,174,841	4,137,915	1,205,294	.....
December	4,366,641	4,401,611	3,044,841	.....
Total for year	58,658,817	60,515,118	46,546,381	.....
Average monthly	4,888,235	5,042,927	3,878,865	.....

* Includes boiler fuel, coal coked and local sales.
† Figures supplied by Central Pennsylvania Coal Producers' Association.

Morrow Disputes Calder Statement Blaming Coal Profits for Housing Shortage

J. D. A. MORROW, vice-president of the National Coal Association, attending the American Mining Congress Convention in Denver, challenged a public statement of Senator William M. Calder, chairman of the U. S. Senate Committee on Reconstruction and Production, that "Excessive profits on coal have retarded building and led to the housing shortage."

Mr. Morrow said Senator Calder's allegations regarding coal are misleading and unfair. "If the Interstate Commerce Commission had not issued orders giving special preference to coal shipments over other commodities we would be facing a catastrophe today," he added.

Jesse F. Welborn, president of the Colorado Fuel & Iron Co., testifying at a hearing of the Senate Committee, contradicted the statement of James C. Bulger, president of the Colorado Federation of Labor, who had protested against "the outrageously high prices Denver pays for coal." Mr. Welborn said: "Laborers get $6.65 per day, whereas five years ago they were paid $2.05 per day. Our company receives an average net income of 17c. a ton on coal sold through our retail department in Denver, and I don't see how the general wage increases of 107 to 133 per cent can continue."

Raise British Columbia Daymen $1.15; Minimum Wage Board Being Formed

ACCORDING to the terms of the settlement of the recent trouble in the eastern British Columbia coal fields and the mining centers of the Province of British Columbia, it is understood that the day wage men have received an additional $1.15 per day, which is along the lines of their demand. This no doubt will mean an increase in the price of coal in these fields. In fact information has come from

authoritative quarters to the effect that both bituminous and lignite coal will advance 60c. a ton at the collieries affected.

Under amendments to the Coal Mines Regulation Act passed in 1919 the Minister of Mines of British Columbia is authorized to arrange for the appointment of a minimum wage board. The powers given this board include the definition of coal-mining districts, within which it may carry on investigations as to the wage scale paid to coal miners.

It also may carry inquiry to the point of ascertaining by means of evidence taken openly general working and living conditions among the miners. Although this provision was made by the Legislature of 1919 it did not become operative until July of this year. Since then the Minister of Mines has been engaged in the work of organizing the board. The coal-mine operators of the province have selected George Wilkinson, superintendent of the Pacific Coast Coal Mines, Ltd., as their representative, and the mine workers now are busy choosing by means of the ballot their representative. It is understood that the Minister looks forward to having the board well launched and able to commence its activities in the course of a few weeks.

Blow Up Tipple, Trestle and Drumhouse

AFTER a period of comparative order in Mingo County, W. Va., the tipple of the Thacker Mining Co. at Rawl was dynamited on Nov. 7, and the Norfolk & Western R.R. trestle over Grapevine Creek at Thacker was blown up on Nov. 11, the drumhouse of the Matta May Coal Co. at Ajax being similarly destroyed at the same time. The apparent reason for the attack on the property of the railroad was to stop the passage of coal. The demolition of the trestle may cause a suspension of traffic for several weeks.

Text of Second Amendment to Service Order No. 20

THE second amendment to Service Order 20, issued by the Interstate Commerce Commission at Washington, D. C., Monday, Nov. 15, is as follows:

It is ordered that the first paragraph of Service Order No. 20 be, and it is hereby, amended to read:

"It appearing, in the opinion of the commission that because of a shortage of open-top equipment which continues to exist upon the lines of each and all the common carriers by railroad subject to the Interstate Commerce Act within the territory east of the Mississippi River, and because of the inability of said common carriers properly and completely to serve the public in the transportation of coal, an emergency exists which requires immediate action."

It is further ordered that the proviso in said order No. 20 as amended by order entered Nov. 6, 1920, which reads:

"And provided further that the phrase 'coal cars' as used in this order shall not include or embrace gondola cars with solid (fixed) sides and solid (fixed) flat bottoms, having sides 42 inches or less in height, inside measurement, or cars equipped with racks, or cars which on June 19, 1920, had been definitely retired from service for the transportation of coal and stenciled or tagged for other service,"

be, and it is hereby, amended to read:

"And provided further that the phrase 'coal cars' as used in this order shall not include or embrace flat-bottom gondola cars, or cars equipped with racks, or cars which, on June 19, 1920, had been definitely retired from service for the transportation of coal and stenciled or tagged for other service."

It is further ordered that this order shall be effective at midnight, Nov. 16, 1920.

And it is further ordered that copies hereof be served upon the carriers upon whom Service Order No. 20 was served, and that notice hereof be given to the general public by depositing a copy of this order in the office of the secretary of the commission at Washington, D. C.

Destination and Source of Bituminous Coal Dumped at Lake Ports From Opening of Season to Oct. 31

THE distribution of the cargo coal actually handled at Lake Erie during the season of 1920 up to the end of October has not departed greatly from normal as indicated by past years. According to the Ore & Coal Exchange, of the 19,091,000 tons forwarded, 27.6 per cent went to Canada as against 21.5 per cent in 1919, and 23 per cent in 1918. Canada has thus received a larger proportion than normal of the cargo coal moving, though the total tonnage shipped to Candian destinations has been 11 per cent less than in 1918.

Of the coal forwarded to American ports the proportion going to Lake Superior has decreased slightly, while shipments to Lower River points have increased both relatively and in terms of tons.

DESTINATION OF CARGO COAL DUMPED AT LAKE ERIE PORTS FROM OPENING OF SEASON TO OCTOBER 31*

Destination	1918 Net Tons	1918 Per Cent	1919 Net Tons	1919 Per Cent	1920 Net Tons	1920 Per Cent
American:						
Lake Superior ports	11,542,357	45 2	9,193,128	44 3	7,604,711	39 8
Sault Ste. Marie Pt. and River points	530,438	2.1	329,256	1.6	490,085	2 6
Lake Huron-Georgian Bay ports	392,149	1.5	291,410	1.4	187,811	1 0
Lake Michigan ports	6,759,202	26 3	6,104,792	29 4	4,736,839	24 8
Port Huron and Detroit River	403,385	1 5	309,730	1 5	768,184	4 0
Lake Erie ports	99,989	0 4	59,156	0.3	44,743	0 2
Total American	19,727,520	77 0	16,287,472	78 5	13,832,373	72 4
Canadian:						
Lake Superior ports	1,990,344	7 8	1,580,589	7 6	1,704,681	8 9
Sault Ste. Marie Pt. and River points	1,086,853	4 2	804,610	3.9	1,030,988	5 4
Lake Huron-Georgian Bay ports	1,070,453	4 2	728,102	3.5	838,476	4 4
Port Huron and Detroit River	474,657	1 8	330,273	1.6	384,668	2 0
Lake Erie ports	24,394	0 1	47,481	0.2	9,678	0 1
Lake Ontario and St. Lawrence River	1,258,098	4.9	978,309	4 7	1,289,963	6 8
Total Canadian	5,904,799	23 0	4,469,364	21 5	5,258.454	27 6
Grand Total	25,633,319	100 0	20,756,836	100.0	19,090,827	100 0

* Statistics furnished by courtesy of Ore and Coal Exchange.

BITUMINOUS COAL LOADED INTO VESSELS AT LAKE PORTS AS DUMPED BY DOCKS FOR SEASON TO OCT. 31

In Net Tons

Ports	Railroads	1920 Cargo	1920 Fuel	1920 Total	1919 Cargo	1919 Fuel	1919 Total	1918 Cargo	1918 Fuel	1918 Total
Toledo	Hocking Valley	3,344,832	73,820	3,418,652	3,939,454	111,006	4,050,460	4,462,754	127,396	4,590,150
	Toledo & Ohio Central	1,508,792	56,183	1,564,975	1,158,862	33,925	1,192,787	1,951,061	50,883	2,001,944
	Baltimore & Ohio	1,337,880	38,948	1,376,828	2,101,187	50,642	2,151,829	2,707,235	58,731	2,765,966
Sandusky	Pennsylvania	1,418,843	21,775	1,440,618	1,253,718	33,382	1,287,100	2,210,663	54,487	2,265,150
Huron	Wheeling & Lake Erie	1,641,441	84,893	1,726,334	1,400,981	50,170	1,451,151	1,928,725	68,953	1,997,678
Lorain	Baltimore & Ohio	2,735,633	171,290	2,906,923	2,632,866	143,647	2,776,513	2,954,978	82,781	3,037,759
Cleveland	Pennsylvania	1,054,953	151,469	1,206,422	2,190,614	235,336	2,425,950	2,304,109	263,598	2,567,707
	Erie	364,048	17,486	381,534	305,977	9,904	315,881	618,014	20,473	638,487
Fairport	Baltimore & Ohio	.....	.....	.....	16,692	12,954	29,646	234,043	41,142	275,185
Ashtabula	New York Central	1,351,849	246,548	1,598,397	1,625,130	143,138	1,768,268	1,811,092	193,118	2,004,210
Conneaut	Pennsylvania	1,662,618	83,858	1,746,476	1,934,022	98,285	2,032,307	1,338,876	76,315	1,415,191
	Bessemer & Lake Erie	2,105,250	35,516	2,140,766	1,343,888	9,683	1,353,571	2,063,874	30,187	2,094,061
Erie	Pennsylvania—West	228,731	21,730	250,461	690,144	41,835	731,979	618,952	34,731	653,683
	Pennsylvania—East	335,957	68,672	404,629	163,301	13,181	176,482	428,943	14,802	443,745
Total		19,090,827	1,072,188	20,163,015	20,756,836	987,088	21,743,924	25,633,319	1,117,597	26,750,916

Anthracite Operators Are Speeding Up Production; Adequate Supply Expected

PRODUCTION of anthracite is now going forward at a normal rate and has been doing so since operations were resumed following the "vacation" strike of the mine workers last September. Every effort is being made to correct any inequalities in distribution which may have arisen as a result of the railroad strikes of last spring and the embargoes which followed, and unless other complications which are not foreseen should occur the operators feel confident that deficiencies will be made up and that no serious inconvenience will be experienced this winter by domestic consumers of anthracite in the territory dependent upon that fuel.

Even with the untoward conditions which the industry has faced this year, beginning with the switchmen's strike and including the loss of output due to the "vacation" in September, the shipments for the first six months of this coal year, that is, from April 1 to Sept. 30, have been approximately 33,000,000 tons, as compared with 34,440,000 tons in the corresponding period last year. The net decrease this year, therefore, is not more than 1,500,000 tons, and of course part of this decrease is in steam sizes not suitable for household use. Prompt attention is being given to all applications for relief where it is apparent that an emergency exists and immediate action is required.

Responsible Dealers Condemn Exorbitant Prices

The responsible operators and distributors who supply 95 per cent of the total tonnage of anthracite have deprecated and do deprecate the action of unscrupulous dealers who have taken advantage of the present situation to exact excessive and unwarranted prices. Their action has paved the way for placing on the consumer excessive prices for coal that left the mine at reasonable and stabilized prices.

The responsible operators and distributors have felt that a duty to the public as well as to their employees and their stockholders rests upon them; they have maintained their standards of preparation and have advanced their prices only as justified by the increased cost of production. Their books are and have been open at all times to the examination of all authorized government agencies, state or federal, and they are now, by united action, co-operating with the Department of Justice in the effort to correct abuses that have crept into the trade and that reflect discredit upon the industry as a whole.

The Fair Practice Committee of the anthracite operators held its first meeting Nov. 16 in Philadelphia, with Percy C. Madeira, president of Madeira, Hill & Co., as chairman. W. J. Thompson, secretary of the Anthracite Operators' Association, was named secretary, and the committee immediately began work on a program for the elimination of undue profits to the producer and wholesaler where such exist.

It was the decision of the committee that the resolutions adopted by the anthracite operators mean that where coal is not sold direct by the producer to the retailer there shall be but one reasonable charge added to the cost. This means the elimination of any resales which might tend to increase the price asked of the retailer or consumer.

Operators Summoned to Face Committee

The names of a number of operators alleged to be selling anthracite at high prices were laid before the committee, and these operators were notified to appear before the committee which, under the resolutions adopted for the guidance of the trade, will take immediate steps to determine the facts. So far as actual distribution is concerned means were discussed for increasing the current supplies of anthracite in those parts of the East where shortages are reported, the actual distribution in any city to be handled locally by co-operative committees similar to that now working in New York.

"Emergency coal" is being supplied in New York City by a fuel distribution committee of which John F. Bermingham, president of the Delaware, Lackawanna & Western Coal Co., is chairman. Twenty coal yards are handling the coal, which is sold in 100-lb. lots at 75c. The work of taking care of this coal after its arrival in this market is in charge of a committee headed by Arthur F. Rice, commissioner of the Coal Merchants' Association of New York.

Anthracite Fair-Price Committee at Work

APPOINTMENTS to the fair-price committee of anthracite operators, authorized at a recent meeting of producers, have been announced by S. D. Warriner, chairman of the general committee, and the new fair price body began its work at once by conferring on Wednesday, Nov. 17, with E. Lowry Humes, special assistant to the Attorney General of the United States, in Philadelphia.

Members of the price committee are E. E. Loomis, president, Lehigh Valley Coal Co., New York; J. B. Kerr, president, Scranton Coal Co., New York; P. C. Madeira, president, Madeira, Hill & Co., Philadelphia; John Markle, president, G. B. Markle Co., Jeddo; James S. McAnulty, Eastport Coal Co., Scranton; A. C. Dodson, president, Weston Dodson & Co., Inc., Bethlehem, and A. S. Learoyd, assistant to the president, Lehigh Coal & Navigation Co., Philadelphia.

The following resolutions have been adopted as a basis of the working arrangement with the Department of Justice:

(1) That producers refuse to sell to brokers or wholesalers who have no established business and clientele, to the end that outlaw buying and consequent fictitious and artificial prices cannot be created by persons not interested in the business.

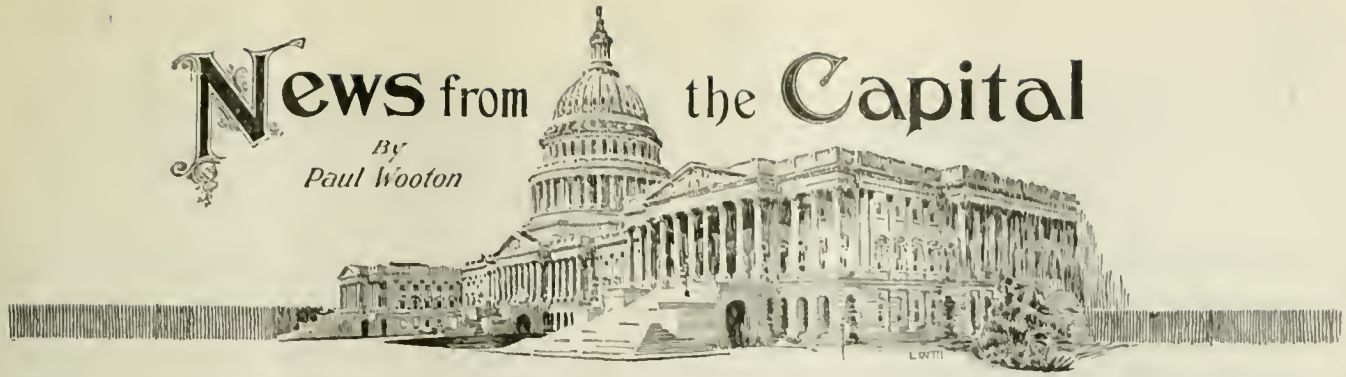
(2) That no sales of domestic sizes be made to wholesalers or brokers in the absence of an agreement that the coal will not be sold to other wholesalers or jobbers in the same market, to the end that unnecessary middlemen and their accompanying profit may not increase the price of coal to the consumer.

(3) That the local requirements for domestic use in the producing districts be provided and protected.

(4) That the fair-price committee shall advise the Department of Justice what are considered by it to be fair, stable prices for the various domestic sizes of anthracite coal, and what is considered by it to be a fair and reasonable profit per ton to govern prices exceeding the fair and stable prices. Where prices are charged by operators which are higher than those indicated by the committee, such operators should upon request of the fair-price committee file with the committee the production costs, books and other data pertaining to investment, etc., necessary to substantiate them with the committee and with the Department of Justice. These costs plus the fair and reasonable profit as above indicated can be the only justification for prices charged in excess of the fair, stabilized prices indicated by the committee.

(5) It is realized that fair distribution is closely identified with fair prices in accomplishing the general results which the Department of Justice seeks. Each operator pledges himself to an equitable distribution of his product based on the average of the last three years to the communities dependent upon his coal, so that the domestic needs of such communities may be taken care of. Where coal is sold through a wholesaler the producer should see that it is distributed to such communities as in the past have been dependent upon that producer's coal, so that such communities may continue to get such tonnage as a part of their necessary domestic supply.

(6) That the independent operators present, individually and collectively, pledge their full support to the Department of Justice in making these resolutions effective.



U. S. State Department May Protest Seizure Of American-Owned Mines in Mexico

THE State Department is considering the reported action of the Mexican government in seizing coal mines owned by American, French and British companies in Coahuila, Mexico, with a view of protesting against confiscation of the property. Word from the American Embassy at Mexico City to the effect that the Mexican Government did not contemplate confiscation of the property caused the department to withhold a formal diplomatic protest. It was explained by Mexico that temporary operation by the Government of the mines in the interest of the country was within its constitutional right and would not jeopardize title rights, the Government's action being reported to have been taken to continue operation of the mines pending adjustment of a strike.

Tidewater Movement of Coal for October Establishes a New Record

TIDEWATER shipments continued in volume during the month of October, and a new record of 5,736,000 net tons dumped was established. The increase went to meet the foreign demand for coal. While shipments to New England decreased 269,000 net tons, and the tonnage for other purposes—bunker, inside capes, and other tonnage—decreased 21,000 tons, exports from the five north Atlantic ports increased 579,000 net tons to the unprecedented record of 2,911.000 net tons for the month. This figure, it should be noted, includes no coal exported by rail. This is at the rate of 35,000,000 net tons sea-borne coal per year.

TIDEWATER BITUMINOUS COAL SHIPMENTS FOR OCTOBER, 1920 *a*

(In Net Tons)

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Totals
Coastwise to New England	295,000	65,000	112,000	267,000		839,000
Exports	9,000	529,000	800,000	1,516,000	57,000	2,911,000
Bunker	405,000	58,000	84,000	373,000	8,000	928,000
Inside capes		182,000	111,000	28,000		321,000
Other tonnage	672,000	3,000	8,000	49,000	5,000	737,000
Totals	1,381,000	837,000	1,115,000	2,333,000	70,000	5,736,000

(*a*) As reported by the Tidewater Bituminous Coal Statistical Bureau.

Coal Consumed by Public Utilities Is Constant from Month to Month

COAL consumed and power produced in public utility plants in the United States in August are reported by the Geological Survey. According to the figures collected by this bureau from about 3,000 power plants engaged in public service, including central stations, electric railways and certain other plants which contribute to the public supply 3,010,173 net tons of coal were consumed in August together with 1,090,883 barrels of fuel oil and 2,704,309 thousand cubic feet of natural gas. Approximately 2,300,000,000 kw.-hr. were produced from fuel, and 1,410,831,000 kw.-hr. were produced by water power. These figures indicate a small increase over July on all items except the water power developed.

Compared with slightly over 3,000,000 net tons of coal consumed in August by these 3,000 plants, which represent 90 per cent of the installed capacity of the United States, there was consumed 10,108,000 tons of coal in the first quarter of the year, or an average of 3,300,000 tons per month, in the winter months; 2,925,000 in April; 2,833,000 in May; 2,858,000 in June and 2,946,000 in July.

According to the Geological Survey the average daily production of electricity from all sources of power was slightly greater than in May, June and July of this year, about equal to April and February, but below January and March. Production of power by these plants this year has each month been greater than in the corresponding month of last year by from 7 to 20 per cent.

Open-Top Car Situation Easier; Continued Observance of Service Orders Advised

A SUMMARY of general conditions as of Nov. 15 by the Car Service Division of the American Railway Association shows that the percentage of freight cars on line to ownership as of Nov. 1, 1920, was 96.8, as compared with 100 on Nov. 1, 1919. The supply of box cars for grain loading has not met demands, particularly in the Northwest, although there is a supply throughout the country, generally speaking, sufficient for ordinary loading.

The necessity of exercising care in keeping ventilated boxcars moving to home territory is emphasized. Automotive cars should continue to be loaded to automobile manufacturing territory, because there are still some instances of shortages in spite of the lessened demand. Stock cars should be moved to owning lines and refrigerator cars should be promptly released and moved to loading territory, as the demand continues in practically all sections.

Owing to election day, religious holidays, Armistice Day and Thanksgiving, the production of coal this month is expected to fall as low as 11,500,000 tons per week, and while the open-top car situation is easing up necessity still exists for conscientious observance of Interstate Commerce Commission service orders.

C. E. DOBBIN has completed a geological study of the coal fields in southeastern Montana. He was assisted by W. W. Ruby.

PLANS FOR THE next international mine-rescue and first-aid meet already are being considered. The consensus of opinion seems to be that one of these meets should be held each year in the future. Washington, D. C., is being given serious consideration as the point at which the next meet may be held. Since the East has a very hazy idea of the nature of these contests, it is believed that the selection of an Eastern point would result in considerable public education as to the value of these assemblages.

A COMMITTEE OF THE Citizens' Association of the District of Columbia, after investigation of the local coal-trade situation, has absolved coal dealers in the national capital of profiteering. Some time ago the association appointed a committee to consider coal prices, and at its meeting Nov. 13 received and endorsed a report presented by Jesse C. Suter which found that "there is little if any profiteering" on the part of local coal dealers.

Internal Revenue Bureau Announces Ruling on Depletion

A RULING on allowances for depletion in case of discovery subsequent to March 1, 1913 (T. D. 3089), announced by the Internal Revenue Bureau is as follows:

"The deduction for depletion in the case of mines, oil and gas wells, as the result of discovery on or after March 1, 1913, is allowed only to the party or parties in possession at the time of discovery, and not to subsequent purchasers.

"The value which may be set up in the case of discovery of mines, oil and gas wells, pursuant to the second proviso of Section 234 (a) (9), Revenue Act of 1918, to be depleted in accordance with such reasonable rules and regulations as the Commissioner of Internal Revenue and the Secretary of the Treasury may prescribe according to the peculiar conditions in each case is, in the case of the lease, to be equitably apportioned between the lessor and the lessee."

Appeal to Retailers for Co-operation

GENERAL notice has been sent out by the Governmental Relations Committee of the National Retail Coal Merchants' Association calling attention to the statements of Senators Calder and Edge, in which Government regulation of coal is threatened. The notice says that "the possibility of drastic action is so great if the consumers' rights are not properly respected that it is necessary for us to again warn every individual member of this association that the strictest compliance with our established policy is imperative. It is to be hoped that the coal industry as a whole will overcome any conditions which might ultimately bring about Government control, but it should be clearly understood that the solution of the present situation is in the hands of each and every man connected with the industry."

No Government Action on Profiteering in Southern West Virginia Till January

IT HAS not so far been disclosed just what the intention of the Government is as to the indictments pending against the southern West Virginia operators aside from the statement made by District Attorney Kelly during the Huntington term in October that if operators conformed to what the Department of Justice believed to be fair practices there would be no effort at further prosecution of even those under indictment. Shortly after the election, however, District Attorney Kelly went to Pittsburgh, where he held a conference with E. Lowry Hume, in charge of Lever Act prosecutions, the result of which is not known.

Up until Nov. 10 there had been no "fair-practices" committees formed nor did it seem likely that there would be committees of that kind appointed in the southern part of the state, not only because prices were declining so rapidly but also because, according to the statement made by some operators, the Department of Justice, through its duly constituted representatives was lending little encouragement to the organization of fair-practices committees.

Postponement of all cases on the docket for the term of Federal Court for the southern district of West Virginia until some time in January makes it certain that no further action can or will be taken at the September term of court at Huntington on the indictments returned against about forty operators and agencies for alleged profiteering under the Lever Act. It is considered highly probable that in the meantime the U. S. Supreme Court will render a decision as to the constitutionality of the Lever law.

THE DEPARTMENT OF LABOR reports the settlement of a strike of mine workers in the western Kentucky coal fields. The strike was over wages and affected 5,000 miners.

THE BUREAU OF MINES soon will go the British one better by producing an oxygen breathing apparatus which weighs less than 29 pounds. The Bureau of Mines has been working at its Pittsburgh laboratory ever since the Gibbs apparatus was put on the market in efforts to improve that apparatus and to reduce its weight. This work has been done under the immediate direction of George S. McCaa, one of the bureau's coal mining and mechanical engineers. It is understood that Mr. McCaa has developed an apparatus which will be known as the American Oxygen Breathing Apparatus. It is said to possess a number of advantages over present standard apparatus and will be lighter than the recently developed British apparatus.

COMPLAINT HAVING BEEN MADE in some quarters that shipments of anthracite to Baltimore this year have been below requirements, the following figures on Baltimore shipments are submitted from the files of the Anthracite Bureau of Information:

	Gross Tons
Six months of the basic coal year, 1916-17	318,893
Actual shipments, first half, 1918-1919	354,549
Actual shipments, first half, 1919-1920	378,552
Actual shipments, first half, current coal year	298,913

THE FIRST CARGO of Pennsylvania anthracite destined for Palestine was shipped out of Philadelphia Nov. 13 on the bark *Carioca*. It will be landed at the port of Beirut, and thence the 1,200 tons will be taken by camel caravan to various points in the Holy Land. Fuel is reported as being unusually scarce in the Levant, which in normal times derived its coal from Germany.

THE NORFOLK & WESTERN RAILROAD CO. has asked the Interstate Commerce Commission for authority to lease and operate four railroads in Pike County, Kentucky, which connect with the road's main line in West Virginia by bridges across the Tug River. The principal commodity moving over these four lines is coal, the road operating them as feeder lines during Federal control.

COAL DUMPED INTO vessels at Port Richmond piers of the Philadelphia & Reading during October aggregated 529,213 tons, the greatest figure ever reached and comparing with a total of 395,868 tons in October, 1919. Last month's tonnage was divided into 428,241 tons of bituminous and 100,972 tons of anthracite.

THE JOINT CONFERENCE of operators and representatives of the anthracite mine workers to adjust any inequalities which may be found in the present wage agreement, signed Sept. 2, was in session in Philadelphia Monday and Tuesday, Nov. 8 and 9, and on Monday, Nov. 15. No anouncement of the result of the meetings has been made.

THE NEXT ANNUAL questionnaire to be sent out by the U. S. Geological Survey, in addition to the regular questions concerning production, labor, etc., will contain questions concerning methods of mining. The new questionnaire also will ask as to the percentage of extraction obtained. In England more than 90 per cent of the coal is recovered. It is believed that there are large areas in the United States wherein the extraction does not exceed 50 per cent. It is believed that accurate information in this connection will be of value to the industry.

MUNICIPAL AUTHORITIES of New York City have requested the I. C. C. to issue a priority order on anthracite coal to meet an acute shortage of coal in the metropolis. The commission has taken the request under advisement.

ACCORDING TO INFORMATION obtained at the British Embassy at Washington American ships need no longer to take aboard at home ports sufficient coal to make the round trip to England, because, as a result of the settlement of the English coal strike the restrictions imposed on the supply of bunker coal at British ports have been removed.

THE BUREAU OF MINES plans to investigate oil-burning devices which are being introduced into homes for heating purposes.

Railroads Remiss in Attention to Coal Traffic; Correct Cost Data Needed

IN ADDITION to drawing up conclusions as to the steps necessary to the stabilization of the bituminous coal-mining industry the Stabilization Committee of the American Institute of Mining and Metallurgical Engineers at its meeting in Washington Saturday, Nov. 20, discussed several of the current problems of the industry. Those in attendance were Edwin Ludlow, who presided; Bradley Stoughton, Percy E. Barbour, A. H. Holbrook, W. S. Barstow, George Otis Smith, George S. Rice, F. G. Tryon, Eugene McAuliffe, J. H. Allport, R. S. Norris, T. T. Reed and Erskine Ramsay.

The attention of the committee was called to the increase in absenteeism at mines in many of the districts. One of the members of the committee expressed the opinion that this is being done as part of a systematic plan to hold down earnings. Attention was called to the fact, however, that Mr. Hoover is at present negotiating with officials of the American Federation of Labor in an effort to devise means for eliminating the tendency of labor to retard production.

The committee deplored the lack of attention given the coal traffic by most of the higher railroad officials. In normal times, it was pointed out, the closest attention was given to the efficient handling of grain, manufactured articles and certain other commodities, but coal traffic received little special attention. Because of inability to obtain service from railroads, many private enterprises have had to undergo great expense to supplement the service of the railroads. A notable case of this kind was cited in the expenditure of $32,000,000 by the United States Steel Corporation to insure adequate transportation facilities for its plants.

The increasing use of private cars in the transportation of coal also was discussed. It was pointed out that the public is certain to object to the monopolization of any considerable portion of the facilities of a common carrier by private equipment.

The suggestion had been made that the committee should do something to acquaint Senators Calder and Edge with the disadvantageous features of nationalization of coal mines. It was the sense of the meeting, however, that since the operators had made no such suggestion to the committee it might be gratuitous for the committee at this time to make any observations in that connection. It was decided, however, that a copy of the conclusions as to stabilization should be sent to Senator Calder's Committee on Reconstruction and Production and to Senator Frelinghuysen, the chairman of a sub-committee of the Interstate Commerce Committee of the Senate, who is expected to enter upon an active continuance of his investigation of the legislative needs pertaining to coal. In this connection it is brought out that the American Institute of Mining Engineers, as such, may have no part in legislation, but it seemed to be the impression that the Committee on Stabilization is entirely within its authority in acquainting Congress with its conclusions in regard to matters of public concern.

During the course of the meeting Mr. Ludlow read the following letter from T. T. Brewster:

I am advised by your letter of the 9th inst. that there will be a meeting of the Committee on Stabilization of the coal industry at Washington on the 20th, to discuss the question of stabilization of the coal industry at this rather critical time.

There is nothing to do at this time but to provide transportation. With adequate transportation, the supply of coal will become abundant and the opportunity for speculation destroyed.

Next spring, when the industry will be confronted with the difficulty of finding a market for the coal it can produce, a period of demoralization and instability will ensue, which will have to be endured because of the existence of the Sherman law. If it were not for the Sherman law, the coal industry of this country could be stabilized, public property protected, and the interest of labor and the proprietors properly conserved. But so long as the Sherman law exists, or until such time as we have some way of regulating trade agreements, instability will be the normal condition of the coal business.

Reverting again to the immediate present, doctrinaires and practical men should appreciate that the short factor in the coal industry for the past three years has been transportation, and that the effect of this short factor has from time to time been aggravated by miners' strikes.

One of those in attendance at the committee hearing suggested that statistics, along the line of those collected by the Federal Trade Commission, on the cost of coal production, are and should be compiled. It is correct, and not fake, data, he said, that is needed. It was asserted that the early reports made by the Federal Trade Commission were distorted in the zeal to obtain bases for certain conclusions.

Edge Wants Government Intervention, Not Nationalization, in Coal Industry

INTERVENTION by the Government, rather than the nationalization of the coal industry, is the desire of Senator Edge, of New Jersey. The announcement made by the Senate Committee on Reconstruction and Production caused a general assumption that Senator Edge is willing to see the coal mines nationalized, if the industry itself does not clean house before Dec. 6. To correct any misunderstanding of this point, a formal statement was made public at Senator Edge's office Nov. 20. The statement follows:

Of the innumerable national evils bred by the world war, probably none, basically and fundamentally, has been more harmful than the prevailing forgetfulness and even contradiction of the incontrovertible fact that "the Government" of the United States is the people of the United States, or the people are "the Government," as one may choose to put it. Throughout the Great War many Government officials and other persons cultivated a keen distinction between "the Government" and "the people." In the floating of Liberty and Victory loans and in other activities "the people" were urged to support "the Government," as distinguished from the people themselves, and that false distinction has been emphasized and encouraged by administration officials with such success that the people now must be reminded and re-taught that they are "the Government."

For instance, in the period of the war when the Government assumed management of the railroads and lost millions of dollars a month in their operation, advocates of government ownership, apostles of the Plumb plan and even administration officials cheerfully chirped, "Oh, the Government can pay those losses." And "the Government" did pay those losses—but, to such an intimate degree are the people "the Government" that the administration found it necessary to tax even the little children of the land on their ice cream and toys and candy to erase the red-ink entries in "the Government's" railroad balance sheets.

Theoretically, government ownership of any business, even essentially private in its nature, may sound attractive to some persons, but in practice it is economically and politically unpractical and harmful. The U. S. Government never was designed to conduct any business; it was framed to exercise purely governmental functions. It was not intended "to make money," and when it attempts "to make money" it invariably loses money. The "nationalization" of any industry, using the interpretation that this means turning an industry over to the workers to run on a co-operative plan for their own benefit, without regard for the rights of the original investors, never, of course, can appeal for a moment to any man or woman of sane and sound economic and political thought. Nor is even temporary Government control or intervention to be invoked except in case of dire necessity of the people.

Yet occasions well may arise when the Government—that is, the people—must intervene in the conduct of some business, for their own protection, and in their own protection, moreover, is involved the true protection of the very business involved. If the people suffer, that business is bound to suffer, also.

For instance, in the recent and prevailing high prices and shortage of coal, both bituminous and anthracite, a condition has arisen in that industry which, unless soon corrected, will in my judgment compel the people to intervene. Who is to blame for these high prices—these apparently unreasonable and unjustified prices—must be determined, and those to blame must be brought to reason, even if it be necessary for the people, through

their own agency in "Government," to take steps toward that end. Apparently, the various elements engaged in the coal industry are unable to place this blame where it belongs. So much time, energy and ingenuity are expended in the merry sport of "passing the buck" that the man on the sidelines is inclined to wonder how the industry finds time to provide coal.

"I'm not to blame," says the miner; "It's the operator." Then, "Not guilty" says the operator; "It's the middleman," and he in turn blames the railroads for car shortage and the gladsome game of "Here we go round the mulberry bush" continues with enthusiastic cheer. But, with each of these groups accusing the other, the people are moved to wonder whether, after all, each one of them is not somewhat to blame, and whether all may not be involved in the boosting of prices.

At all events, the people have been suffering and are suffering from high prices and short supplies. The average American citizen is the most patient mortal of all the peoples of the earth, but even his patience has a limit. The cold fact is that the people now look on the coal industry as a private oppressor of the public, and when the American people are driven to this extremity of view their alleged oppressor may do well to pause and ponder. As I said, when the people suffer, the business which causes that suffering is bound to suffer also.

When recently I spoke of possible "Government intervention" to remedy the apparent evils in the coal industry, the ogre of bureaucratic intervention arose to plague some folk at interest. So dim is the recollection in these days that the people are "the Government" that such folks saw visions only of some autocratic agency despotically taking possession of their business and "meddling in their affairs." The truth would be that the people themselves had rebelled against oppression and had instructed their chosen representatives in the legislative and executive departments to act for them in relieving such oppression.

The situation is desperate. In my own state, New Jersey, coal is unobtainable in many sections, and where obtainable, may be purchased only at sky-high prices. Identical reports come from virtually every state in the Union. Who is to blame for this situation? If the component groups of the coal industry cannot ascertain, then the people, through their chosen representatives, must do so. If the coal industry will not, or cannot, immediately remedy conditions, the people through their chosen representatives must and will do so.

Sound business men and the average citizen will hope that such intervention may be only temporary and even of short duration, and that the Government, which is the people, soon may be relieved of the task of directing an industry of a private nature. But, in their extremity of suffering, their experience of Government management of the railroads is nearly forgotten and the possibility of Government control of coal does not appal them. For the people have been accustomed to seeing the Government, under the present administration, intrude into numerous lines of private business. They have seen the Government engaged in the real estate business, in hotels and boarding houses and theaters, in the wholesale and retail grocery trade, in women's hosiery handled by the War Department—in everything, from cough drops to coffins and from antiques to ziziths. They still disapprove Government ownership or control, but they may be driven to a state of willingness to try the experiment.

The people do not ask much; only reasonable prices and adequate supplies for the consumer, legitimate profits for the operators and distributors, fair wages and treatment for the miners, and reasonable dividends for the owners of the railroads over which coal is transported. No one asks more, no one asks less, than this.

Anthracite Exports from New York Expand: Bituminous Trade Shrinks

REPORTS show that 18,336 tons of anthracite coal were sent to foreign countries through the Port of New York in September of this year, notwithstanding the shortage that existed that month in this market. This is the largest tonnage shipped to foreign countries through this Port in September since the corresponding month of 1917, when 26,998 tons were exported.

The French West Indies led the list of countries with 6,284 tons. French was second with 5,278 tons to its credit and Canada received 4,150 tons. Argentina received 98 tons while 446 tons was sent to far-away Egypt.

Shipments of bituminous coal dwindled to the insignificant total of 414 tons. This is more than 6,000 tons below what was sent abroad from New York in September of last year, when 6,742 tons was shipped.

Of the total of 2,388 tons of coke sent abroad Sweden received 1,156 tons, the balance being divided among ten other countries, 165 tons going to Belgium.

American Economic Society to Get Facts Regarding the Coal Situation

IN AN effort to secure more information in regard to the coal situation, the American Economic Society is inviting a number of representatives of the coal industry to speak at its convention to be held at Atlantic City, Dec. 27 and 28. George H. Cushing has been asked to speak on the problems which have faced the wholesalers. A. G. Gutheim, of the Car Service Commission of the American Railway Association, is to present some of the transportation phases of the situation and F. G. Tryon has been asked to present some significant statistics and to explain what additional statistics are necessary to a complete understanding of current developments in the handling of coal.

C. E. Lesher, editor of *Coal Age*, will lead the discussion with a paper setting forth the broad general features of the bituminous-coal industry today.

Coal Men to Form Research Committee; Seek Data on Price and Distribution

A RESEARCH committee is to be formed by the National Coal Association, the American Wholesale Coal Association and the National Retail Coal Merchants' Association. The committee is to be composed of equal numbers of representatives from each of the three associations. The plan is to compile those data which can be secured best when the records of each organization are available.

The first work to be undertaken is the compilation of figures to show the amount of coal which moved on contract and the amount which was sold on the open market during the current coal year.

It is a generally-held belief that the amount of free coal mined during the current year is very much less than is generally supposed. It is believed that the actual figures will show that the so-called fancy prices applied to a very small percentage of the total tonnage.

In order to work out accurately this and other problems it is necessary that the records of producers, wholesalers and retailers be available to the joint committee.

Indiana Fuel Commission Cuts $2.56 Off Retail Coal Price

PRESENT retail prices for Indiana coal in out-state cities average $2.56 a ton less than prices prevailing prior to the price-fixing orders of the fuel and food commission, according to a report submitted to Jesse E. Eschbach, chairman of the commission, by A. L. Donaldson, engineer-examiner of the State Board of Accounts. Retail dealers now are buying Indiana coal at an average cost of $2.30 less a ton than before state regulation went into effect, the report shows.

The investigations of Mr. Donaldson, who is making special reports for the commission, covered more than fifty retail yards in various sections of the state. Mr. Donaldson said that the yards he visited were typical of the entire state, though no investigation has been made in Indianapolis to date.

Mine prices for coal produced by approximately 125 small, unclassified wagon mines in Indiana are to be fixed by the State Special Coal and Food Commission soon and the commission has announced a public hearing for the operators on Nov. 23 at 10 a.m.

These mines heretofore have not received attention because of their small production and because of the press of more important business. Their cases will be handled as were those of the larger mines and their classifications will be fixed.

Jesse E. Eschbach, chairman of the commission, said that reports indicate coal is moving more freely into homes. He said that more than 80 per cent of the operators are complying with the orders of the commission, and that all except a few of the jobbers and retailers are obeying the law and orders of the commission.

Mining Men Discuss Standardization Plans

By R. Dawson Hall

FROM such a large program as the American Mining Congress set itself to consider at Denver on Nov. 15-19 everyone will naturally select that part which accords with his own needs. To me the meeting resolves itself largely into a standardization congress. This is a recent development of the activities of the organization, but an important one nevertheless. Those who have it in charge have for the most part given it much time and patient effort, and something safe and sane seems likely to spring out of it.

The first meeting of importance was held on Nov. 15 with Thomas B. Stearns in the chair. Dewey C. Bailey, Mayor of Denver, made the address of welcome to the city, and George E. Collins welcomed the delegates in the name of the Colorado Chapter of the American Mining Congress. Bulkeley Wells, the president, then read a telegram from President Wilson in which he declared that "The work of the congress in co-operation with the Federal Government with mine operators and others interested in the development and utilization of our mineral resources has been and will be of immense benefit."

Would Revive War Finance Board

E. P. Mathewson, of New York, made a response on behalf of the American Mining Congress, and Eugene F. Meyer, of the War Finance Board, made a plea for the extension of the board's activities, which had been suspended by the Secretary of State. Following E. F. Meyer, Clay Tallman, commissioner of the U. S. Land Office, explained the new Leasing Law, which modified the provisions of the Homestead Law of 1862 and the Mining Laws of 1866 and 1872.

Meeting again at 8 p.m., a witty address of welcome was made by Oliver H. Shoup, Governor of Colorado, whereupon Bulkeley Wells made the annual presidential address, in which he advocated a second time the incorporation of labor unions. He spoke in favor of the rights of labor to organize for protection, but he urged that contracts made by unions with employers should be enforceable by law, or, failing such enforcement, the union should be financially liable for breach of contract.

He declared that the American Mining Congress was no longer impotent from lack of funds. During the last year its returns had been $150,000, and in consequence it had been able to afford active service for those who were members of the organization and for the mining industry in general.

In the absence of Governor Henry J. Allen, of Kansas, Frank Dumont Smith, of Hutchinson, Kan., spoke on the provisions and outcome of "The Kansas Industrial Law." In a communication Governor Allen gave Mr. Smith much credit for his part in the framing of the instrument.

If the Employer Has Dr. Eaton's Eloquence

Dr. Charles A. Eaton, associate editor of *Leslie's Weekly*, addressed the assemblage on "The Present and Future Relations Between Capital and Labor." Dr. Eaton's remarks were of an inspirational character and no one is more able than Mr. Eaton to make an address of this kind. He said that the employer should be the leader of his men, that the men were ready for his leadership. Well, if the avarage employer could talk as persuasively as Dr. Eaton, Dr. Eaton is right.

The morning of the next day, Tuesday, was occupied with conferenees on standardization, gold and taxation. The Standardization Conference, which covered coal-mining, met at 9:30 a.m. and held sessions all morning, Carl Scholz being in the chair, in the absence of Colonel Warren R. Roberts, of Chicago, who was unable to attend by reason of sickness. Thomas T. Brewster stated that he had no report on cost-accounting standardization as he had made a lengthy report on this subject to the National Coal Association. This report was favorably received both by coal-mine operators and Treasury officials. He had the report with him and begged leave to submit it to the conference.

A. B. Kiser presented his report on "Underground Power Transmission." It was such a long document that he read it only in part. It draws heavily on the work of the Bureau of Mines but in two conferences, each of two hours' duration, certain changes from the bureau's bulletins' conclusions were formulated and these are embodied in the report.

Five Hundred Feet Driven in a Week

Carl Scholz reported on the results attained by the Committee on Mining and Loading Equipment, of which he is chairman. He said that with a cutting and loading machine he had driven 500 ft. of entry in one week, working three shifts. He believed that early development work should be done by such machinery as it materially shortens the time of opening up a new mine to maximum tonnage. James Needham, general manager, St. Paul Coal Co., of Illinois, said that he hoped some one would keep in mind the needs of the thin-coal longwall work of the northern part of his state. Since the rate of day laborers had increased $1.50 per day he had found the cost of brushing doubled; how that was so he did not say.

Mr. Brennan, of the Stag Cañon Fuel Co., Dawson, N. M., described the work of steam shovels at the Hanna mine of the Union Pacific Coal Co., where Thew steam shovels were used, the coal being 30 to 35 ft. thick. A 22-ton steam shovel was used first and 14-ton shovels thereafter. The shovels loaded from 200 to 250 tons in eight hours. At first it was hoped that the coal could he cut and shot at night and loaded during the day. This proved an undesirable way and finally rooms were driven low to the full length, and the shovel was provided with material by shooting down the top coal, taking care not to bring down more than could be loaded before the inevitable spontaneous combustion took place.

Four Standard Steam Shovels Load Coal

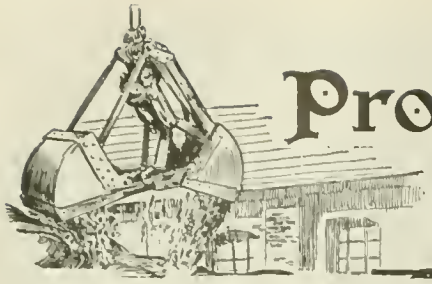
The rooms were 600 ft. long and the shovel did not leave the room till its work was done. The coal is on a 17-deg. pitch. Four shovels are in use. They are producing from 800 to 1,000 tons per day. The cost of mining by hand was 49c. per ton, the company shooting the coal and the men laying the track and doing the timbering. With the steam shovel the cost fell to from 22c. to 23c. a ton, when the cost of repairs and power was considered.

Mr. Scholz remarked that at five of his mines he had carried 2,300-volt alternating current along his roadways in an armored cable and transformed it inside the mine into a low-voltage current. Two mines were in Oklahoma, one in Illinois and two in West Virginia. In Mr. Roberts' absence Mr. Needham made the report on "Outside Coal-Handling Equipment." He said that the committee had decided that 18 in. clearance should be allowed between the sides of railroad cars and stationary objects and that 2 ft. was desirable where two tracks ran side by side. The railroads were usually quite excessively anxious for overhead clearance.

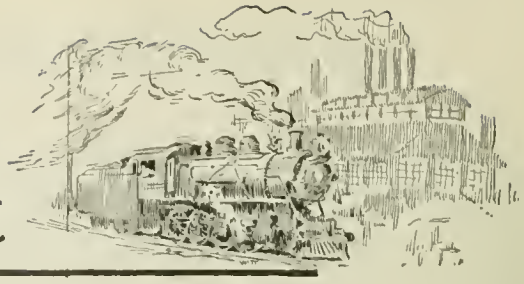
This Railroad Wanted "Some" Clearance

One railroad having fifteen to twenty miles along its tracks wanted 22 ft. from the rail to the nearest fixed object. The committee was disposed to make no recommendations, as the danger is not removed by large clearance, for if the loading booms are lowered the men will get caught in any event. It is not well to promise them a degree of safety which might be illusory should some tipple hand fail to raise the loading device till it is as much clear of the car as are the nearest of the fixed objects on the tipple.

Nor could the committee arrive at a conclusion as to the overwind clearance which should be allowed. Speed of hoisting had much to do with that provision.



Production and the Market



Weekly Review

FROM anxiety over excessively high prices the coal men have turned to fear an abnormal shrinkage in prices that may have an unwarranted effect on the contract market of next spring. For months the market has been pounded downward by those who believe that the price structure has been too high for the ultimate good of the industry, and now there are those who would conceal the truth about present low prices in an effort to bolster the market.

Spot Demand Drops; Contract Movement Grows

The present fact is that except for some retail trade spot buying has about ceased save as the coal is being urged on the buyer by the seller. With the falling off in spot demand shipments on contract have increased. There is now no difficulty in obtaining supplies of soft coal, for, save what may be but a temporary condition of continued car shortage in western Pennsylvania and eastern Ohio, all districts, even those on the Louisville & Nashville, are being well cared for by the railroads.

Reports to the Geological Survey for the week ended Nov. 6 show no general break and so far little mine operating time has been lost because of no orders. It can be anticipated that operators generally will operate their mines and if necessary hold the cars unbilled, forestalling the inevitable condition of no market, as long as possible. This practice can be followed but a short while and more than any other factor will put prices below cost of production while doing no one any good.

In the effort to supply the demand for lump coal, screenings are in abundance throughout the West and are being disposed of with some difficulty.

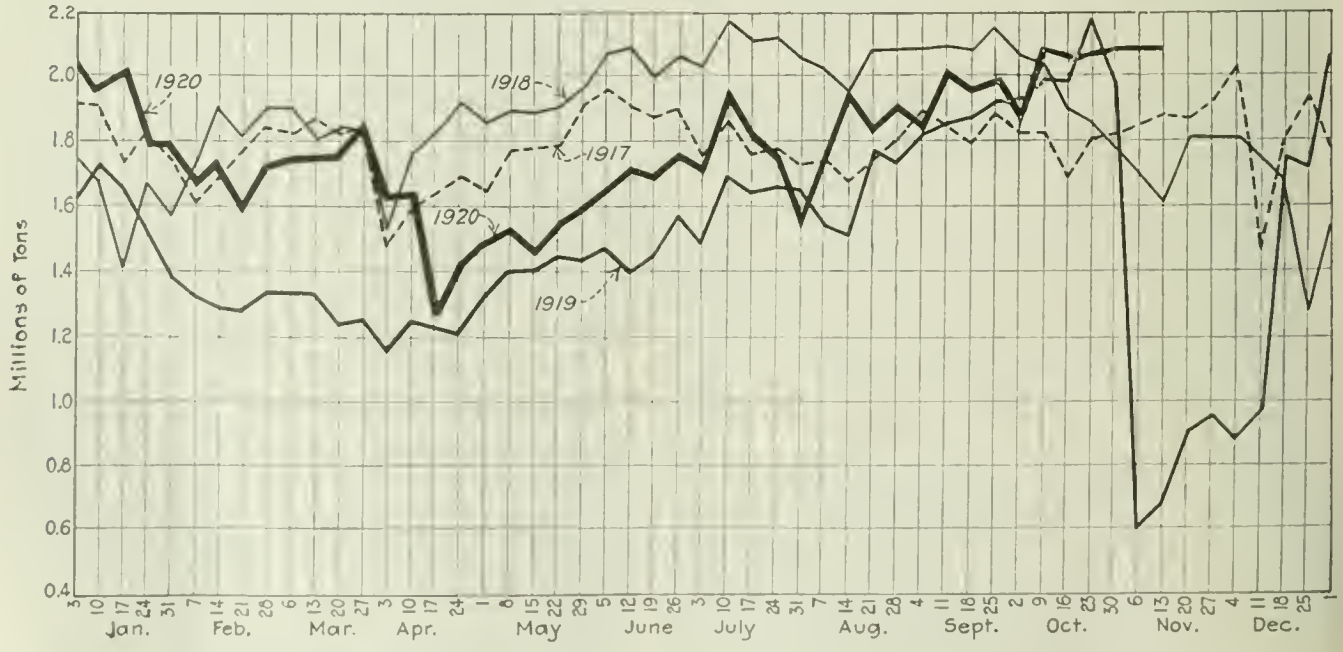
A feature of the Eastern market is the inactivity in exports; inquiries are few and but little business is being closed. A continued heavy movement on contracts is expected for some time, while the export shippers size up the situation for next year's business.

Anthracite is still in urgent demand; this market is now in the stage in which last August saw the soft-coal situation. A large part of the frenzy over anthracite shortage is unwarranted and by the first of the year this will be fully evident to all. Premium prices on independent coal are breaking under pressure from all sides.

BITUMINOUS

In spite of the interruption in operation caused by the Armistice Day celebration production during the week ended Nov. 13 continued heavy. According to the Geological Survey the week's output is estimated at 12,091,000 net tons, with a daily average of 2,120,000 tons, or an increase of 671,000 tons as compared with the preceding

Average Daily Production of Bituminous Coal*



*From weekly report of Geological Survey.

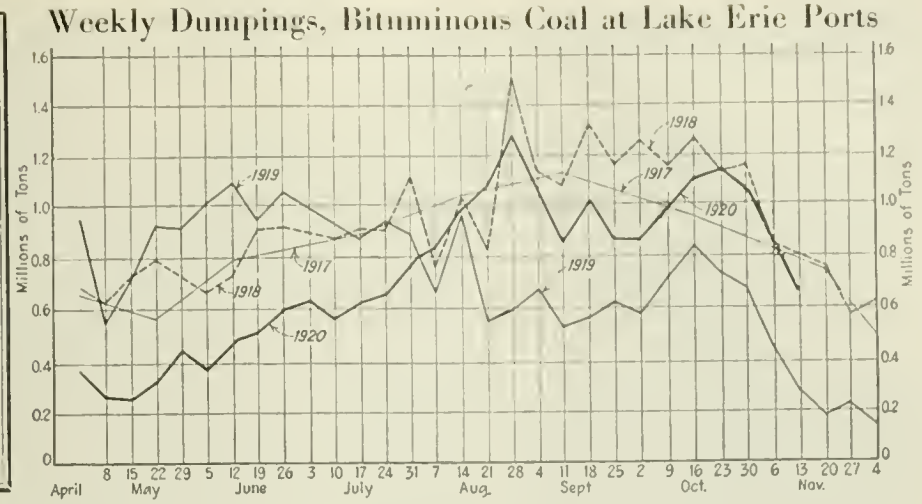
Lake Coal Dumped Season to Nov. 13

(NET TONS)

	1919	1920
Total	22,385,789	21,561,951

Week of Nov. 13, 1920

Cargo	627,157
Fuel	41,793
Total	668,950



week. The year 1920 is now within 6,000,000 tons of production for the corresponding period of 1917. Loadings for the first two days of the week of Nov. 15-22 show a decline in output.

Decline Continues in Tidewater Movement

Tidewater movement continued to decline during the week. The Geological Survey reports show dumpings of 1,157,000 net tons, a decrease from the preceding week of 11,000 tons. New England shipments declined 64,000 tons, while exports and bunker loadings increased 30,000 and 19,000 tons respectively. Tonnage dumped at Tide was handled as follows:

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Totals
Coastwise to New England	47,000	12,000	25,000	78,000	.....	162,000
Exports	.....	79,000	139,000	309,000	15,000	542,000
Bunker	108,000	16,000	14,000	84,000	1,000	223,000
Inside Capes.	.....	38,000	27,000	4,000	.....	69,000
Other tonnage	160,000	.....	.....	.....	1,000	161,000
Totals	315,000	145,000	205,000	475,000	17,000	1,157,000

All-rail New England shipments were at about the same rate as during the first week of November. Car loads forwarded through the five rail gateways numbered 4,773.

There has been no material improvement in transportation conditions, in fact the improvement in car supply recorded generally for the last seven weeks has been lost in the Pittsburgh, Pa., Panhandle, W. Va., and No. 8, Ohio, districts. This recurrence of acute car shortage in these important districts is attributed to the release of open-top equipment for use other than coal by the recent modification of Service Order No. 20. A further factor accounting for lack of cars is that with the Lake priority order off, cars are being shipped to longer haul points, so that more equipment is tied up in originating the same quantity of coal. In the Middle Applachian region the New River and Logan fields, on the Chesapeake & Ohio, report increased car shortage. The Thacker field, on the Norfolk & Western, where a strike has been in effect for months, reports time lost because of lack of cars, which is taken to indicate that production there is rapidly reaching normal.

Labor Increases; Production Loss Decreases

Because of the industrial contraction, much labor is turning to the coal-mining industry for employment. A steady influx of new men as well as the return of old miners is reported on many sides. Skilled men are still in demand, of course, but loss of production from labor shortage is dwindling in a gratifying manner. Some indolence is still noticed in sections, although there is a growing tendency toward more efficient performance, evidenced by some complaint among the men about short running time. In the strike zones of both the Alabama and Thacker fields there was a satisfactory increase in tonnage produced.

Smaller operations are feeling the pinch of lowering price, as their high costs are making profitable production a doubtful matter. Prices are somewhat lower, when compared with preceding week, although there is greater firmness shown than for some time. In some districts affected by poorer car supply, prices have even been advanced. Colder weather has greatly strengthened the domestic market, while steam users are buying on a hand-to-mouth basis, apparently feeling out the market for possible lower levels.

There is some activity in railroad fuel, and confiscations are heavy, causing no little confusion and inconvenience at the mines. Contract shipments are strong. There has been a marked slump in the export demand and coal is accumulating at Tide, resulting in tightening of embargoes and permit restrictions.

The following table shows the trend of the steam spot market in various coals:

	Nov. 1919*	May 1920	Aug. 5 1920	Oct 28 1920	Nov. 18 1920	Nov. 25 1920†
Pittsburgh steam	$2 30	$4 00	$10 00	$8 00	$4 00	**$5 00**
Pittsburgh gas	2 30	4 50	12 00	8 50	5 50	**5 75**
Hocking	2 50	4 75	9 00	6 00	4 50	4 50
Franklin, Ill.	2 35	3 75	6 50	6 00	5 25	*5 00*
Indiana 4th Vein	2 35	3 40	7 50	6 00	3 75	**4 25**
Eastern Ohio, No. 8	2 35	4 50	10 50	6 00	5 00	5 00
Fairmont	2 50	6 75	13 50	10 00	5 00	*4 75*
Kanawha	2 60	6 75	14 00	7 50	4 75	4 75
S. E. Kentucky	3 00	6 00	10 50	6 00	6 00	*5.00*
Western Kentucky	2 35	3 50	5 25	6 25	5 00	*4 25*
Clearfield	2 95	6 25	12 00	8 25	5 25	*5.00*
Cambria and Somerset	2 95	6.75	13 50	9 25	6 00	6 00
New River	2 70	6.50	14.00	10.75	5.25	*5.00*
Pocahontas	2.35					

*Government Prices.
†Advances over the previous week shown in heavy type, declines in *Italics*.

ANTHRACITE

Observance of Armistice Day seriously affected production, which amounted to 1,753,000 net tons, practically the same as the last week in October, which contained the Mitchell Day holiday. Cumulative production for the present coal year stands at 53,873,000 net tons, as against 57,610,000 during a like period of 1919.

Emergency Shipments Relieve Eastern Shortage

Inland West centers report a better supply of hard coal. Shortages continue at Eastern points although the situation has been somewhat relieved by emergency shipments. Prices for independent coals have declined slightly, quotations of $12 and less having been made during the week. At this writing there are no developments on the wage question, although some announcement may result from the hearing which was held early this week.

COKE

Production increased 4,000 tons for the week ended Nov. 13, an output of 389,000 net tons being reported to the Geological Survey. The Connellsville market declined a shade; furnace $8@$8.50 and foundry $10@$10.50. Demand is light, with buyers and sellers far apart on contract figures for the first half of the new year.

Reports From the Market Centers

New England

BOSTON

Market Shows Little Change — Prices Are Less Erratic — Inferior Grades Not Wanted — Bunker Coals in Fair Demand — Hampton Roads Call Is Dull — Anthracite Shipments Still in Arrears.

Bituminous—On the whole the trade situation here continues without material change. Inquiry is only scattering. The only buying is in small lots and for transient needs. Retail dealers who either neglected to make contracts or who failed to get shipments are buying casually and those who normally take delivery by water are finding conditions much more to their liking than they could have anticipated three months ago. Large consumers for the most part are indifferent. Rigid curtailment is the rule in all kinds of manufacturing. Even the paper mills are showing signs of accumulated output.

Notwithstanding the narrow market there has been a certain stabilizing in prices. Quotations have almost settled down into grooves and more than a few operators have decided either to net what they regard as a satisfactory return or shut down. In other words, they are about to do precisely what manufacturers are doing.

While the market is glutted with many kinds of steam coal there is no great surplus of the grades most in demand for bunker and export use, at least, so far as Baltimore, Philadelphia and New York are concerned. Several agencies are behind on contract deliveries and are likely to owe coal at least for the next 30 days.

On the other hand the medium to poor grades are going hard. Few shippers are willing today to take the chance of sending high-volatiles to Tidewater on the market and orders all-rail are few and far between. Certain Fairmont coals offering at $4 net ton at the mines are not meeting with any comprehensive business.

There has been a notable falling off in the demand for Hampton Roads coals. The piers at Newport News are dumping barely 40 per cent. The pressure from off-short buyers has gone glimmering and those agencies consider themselves fortunate who have orders enough today to take care of their credits in the Exchange.

Several have been embargoed because of accumulated coal and it will be interesting to see the effect upon prices the next fortnight. Coastwise the spot demand is practically inl. Trans-Atlantic freights have receded to $7.75 to ports like Rotterdam.

Current quotations on bituminous at wholesale range about as follow:

	Clearfields	Cambrias and Somersets
F.o.b. mines, net tons	$4.50 @ 5.50	$5.00 @ 6.50
F.o.b. Phila., gross tons	7.70 @ 8.80	8.25 @ 9.90
F.o.b. New York gross tons	8.15 @ 9.25	8.70 @ 10.35

Pocahontas and New River are quoted $9.50@$10.50 f.o.b. vessel depending upon whether first or second grade. On cars at Providence and Boston sales are still being made $12.75@$13.50, these prices as well as those at Hampton Roads being for gross tons.

Anthracite—There is still much uneasiness over the shortage of domestic sizes. It is the opinion here that in cities like Boston more than 60 per cent of the season's supply has been housed. The difficulty is that while nearly two-thirds of the consumers have a seasonable supply, the other one-third have coal only for a short period. Beginning Dec. 1, shipments here are expected to improve, and the situation to get better within a reasonably short time.

Tidewater

NEW YORK

Anthracite Conditions Are Practically Unchanged — Improvement Expected Within Next Few Weeks — Quotations for Independent Coals Slightly Lower —Bituminous Prices Go Lower — Buyers Quiet.

Anthracite—Conditions are practically unchanged. Coal is needed and shipments have not increased. So far there has been no suffering but local coal men are prepared to meet any emergency that may arise.

With mines producing at a normal rate, a supply sufficient to meet all ordinary requirements is expected within the next few weeks. The West continues to absorb a heavy tonnage which to a large extent, will be distributed throughout the Eastern section when the Lake season ends.

Whether as a result of investigation or otherwise the situation so far as quotations from some individual coals are concerned, was slightly easier. As low as $12 was heard and some operators were quoting still lower prices, provided the buyers placed an order for some steam sizes.

The clamor of the public for more coal has not caused retail dealers to rush into the market for the high-priced coals, especially when it would result in a higher price to the customer.

The mining fields continue to hold many out-of-town buyers anxious to close contracts. Steam coals are easier both in supply and quotations. Some railroads are using heavy tonnages of buckwheat.

Quotations for buckwheat range $4.75 @$5.75. Rice ranges $3@$4 and barley up to $2 at the mines. Prices for company coals are unchanged.

Bituminous — The market is easy. Wholesale dealers complain of lack of orders and the absence of inquiries. From reports heard from salesmen it is believed that consumers are waiting for lower prices and that when they are a fact, orders will be plentiful.

Prices took a further drop during the week. There was a slight stiffening in demand but not from sources that would warrant stronger prices. The railroads have again entered the buyers' lists and it was said that at least one of the big roads was confiscating heavily.

With quotations on their present basis small operators stand a chance of selling at a loss at the present cost of production. It was pointed out that if many of these small operations were suspended the loss in production would amount to considerable.

Low quotations for anthracite steam have had some effect upon bituminous quotations. Many users of the latter have already bought some steam sizes and are using them in conjunction with soft coal.

Spot coal could be gotten at lower prices than long-time contracts could be made for early in the week, operators and shippers not being willing to take a chance on the future.

Quotations at the mines range about as follows: Pool 14, $4.50@$4.75; Pools 71 and 9, $5.75@$6.25; Pool 10, $4.75@$5.50 and Pool 11, $4.50@$4.75. Loaded boats were numerous with quotations ranging $8@$9.25 alongside, according to grade and quality. Pool 4 was quoted $9.20 alongside, and Pool 10, $9.25.

PHILADELPHIA

Cold Weather Taxes Retail Trade—Shipments Light, but Improving — Retail Prices Are Stable — Bituminous Trade Light, but Price Firmness Evident — Car Supply Unsatisfactory — Tide Business Is Moderate.

Anthracite—With seasonable weather prevailing the retail demand is exceptionally strong. However, it cannot be truthfully said that this city is in a serious shape. Often the lack of fuel has been due to reluctance of the consumer to take any but a certain size.

The chief concern of the retailers is that portion of their trade who have received only a few tons. Should the cool weather continue these small stocks will soon be exhausted and the city must receive some big shipments soon to meet the situation. All the yards are going along with the lightest kind of stocks, although there has been some little increase in shipments this week. However, the coal is moved from the yards about as rapidly as it arrives. The small stocks of pea have

about vanished and this is now one of the most wanted sizes.

Despite the demand retail prices remain unchanged and there has not been the least semblance of a desire to take advantage of the situation. Unfortunately, the dealers are much hampered in their efforts to serve the public by the propaganda being spread by a local newspaper, which has given ear to a labor agitator.

Every dealer is compelled to meet all sorts of arguments at the same time he is endeavoring to keep his customers warm. The fact that a committee of operators is acting with the Government representative as a Fair Price Committee also leads the buying public to believe that they are paying excessive prices.

Bituminous—There is very little activity, although there is a distinct feeling that prices are approaching a firmer basis. For a week, prices have held very much the same, the range being $4.50 for ordinary coal up to $6 for the best steam grades. Late in the week there was actually a slight advance. At this time Pool 9 is about $6.25 at mines. Pool 10 moved up to $5.75, and Pool 11 is sold $5@$5.25. For the ordinary coals, such as Pool 18, $4.25 is asked, with little tonnage moved. The Fairmont coals show even more strength, Pool 34 being $5.50.

This strengthening has been attributed to the fact that much coal is being rushed to the Lakes before navigation closes. Car supply has been anything but good recently. The allotment of empties in some districts has been so light that the men have made bitter complaint that they are not able to work sufficient time to earn a living.

Business at the piers continues moderate, with the railroads still maintaining embargoes. In the meantime the roads are in the market and are taking in a big tonnage.

There is much talk of contracting, but with the situation so badly confused both sides find it very difficult to arrive at an understanding. From an operator's standpoint $6 still seems to be a fair contract price, while the consumer talks $4.50 coal.

Coke—There is only a light demand, with foundry grades being quoted $10.25, and furnace $9.25. As these prices are close to the figures on which contracts were made last spring, there is little difficulty in getting full shipments.

BALTIMORE

Soft Coal Market Takes Stronger Tone —Car Supply Is Poor—Hard Coal Situation Badly Complicated.

Bituminous—There is undoubtedly a stronger tone to the market. During the week the car supply on the B. & O. dropped on Eastern lines as low as 41 per cent, and was generally below 60 per cent. The Western Maryland was a little better. Best coals are in strongest demand and there is a wide difference in quotations as between grades. Pools 9 and 71, are quoted variously $6@$7 per net ton f.o.b. mines, Pool 10 is quoted $5.50, while Pools 11 and 18 are selling low at $4.35 @$4.50.

At Tide there is new evidence of strength, and quotations for future delivery are frequently somewhat above the line trade. Only about a dozen ships are now noted daily astream for coal. The export movement for the last half of the month will fall far short of that for the opening days. Another export record for loading was broken the current week when the British ship Wendland was loaded with 14,674 tons for Rotterdam at the Curtis Bay pier of the B. & O. This was 132 tons in excess of the last previous record cargo loaded Sept. 30 on the steamship Sauerland.

Anthracite—An inquiry is being made as to the shortage by the governor and the aid of the police force has been enlisted to take a house to house canvass of coal cellars. Meanwhile the Baltimore Coal Exchange has taken up the work of making a survey through its members, who are answering a questionnaire as to the amount delivered to them since April, amount ordered and not delivered and the amount they estimate needed to complete the deliveries to their customers. The Mayor of Baltimore has also started a general inquiry, and has been joined by the Baltimore Federation of Labor in a drive. There are so many cooks that the broth is being unduly stirred.

The past few days the daily receipts have been 40@60 cars over the three roads, and it is announced that this will be increased. This is now about a normal run, but is not filling the big shortage gap, although aiding greatly and about double the former daily receipts for several weeks. A special shipment of 30 cars has been made to take care of schools and fire houses without fuel here.

The usual talk of official, state or government control has of course cropped up. Meanwhile the dealers have not raised prices and are apportioning coal as best they can.

Lake

BUFFALO

Heavy Snow Increases Anthracite Demand—Supply Is Better—Bituminous Prices Still Sagging—Cars Plentiful—Demand Is Light.

Bituminous—Prices are weak and slowly declining. Several new low levels have developed this week. And the tendency is still downward. Allegheny Valley mine run is selling for $4.75, lower than slack, on account of so little screening being done. Pittsburgh is a little stronger.

Car supply is good. The worst side of the trade is the disposition of consignees to refuse a car if they hear of a lower price and then it has to be resold at a loss. In this connection, mention should be made of the practice of contracting coal in time of wide price fluctuation. Immense losses have been sustained by the heavy contracting of coal last spring. Not only has much of it been delivered all summer at less than $4 a ton, mine price, but the failure in filling contracts has also created much difficulty.

Quotations are $7 for Youghiogheny gas; $6.50 for Pittsburgh and No. 8 lump, $5.50 for mine run and slack; $6 for Allegheny Valley lump, $4.75 for mine run and $5.25 for slack; $9 for Cambria County smithing;

Anthracite—The situation is easing up somewhat, due to the delivery of 8 000 tons on the solicitation of the Chamber of Commerce. A good many families are poorly supplied, but that is said to be because too much has been given to early customers.

The tension will gradually ease up from this time on, though the Lake trade will continue perhaps ten days into December if the weather is not too severe. At the same time, the independent operators are sometimes demanding immense prices for their output. One jobber reports receiving a quotation of $16, when the regular mine price was a fraction over $8.

Lake—Shipments were heavier, though it will be impossible to reach last season's figure. The amount for the week was 144,200 net tons, of which 55,300 tons cleared for Duluth and Superior, 24,400 for Milwaukee, 22,500 for Chicago, 15,100 for Sheboygan, 9,400 for Port Arthur, 6,000 for Fort William, 6,000 for Hancock, and 5,500 tons for Marquette.

Freight rates are strong at $1.75 to Hancock, $1.50 to Chicago, $1 to Marquette, 75c. to Milwaukee and Sheboygan, 60c. to Duluth, Fort William, Port Arthur.

Coke—The market is only moderately active and prices declined about on a par with bituminous. Jobbers get orders in a sort of irregular way when consumers' contracts run short. They quote 72-hour Connellsville foundry at $10, 48-hour furnace, $8.50 and off-grades and stock at $7.50; domestic sizes are $7.50 for furnace, $10.50 for nut and $2.75 for breeze.

CLEVELAND

Cold Weather Starts Rush for Coal—Domestic Grades Slightly Advanced, but Receipts Improve—Steam Drug on Market—Car Supply Limited.

Bituminous—A vigorous rush for domestic coal has checked the decline in some grades which has been under way for the last few weeks. No. 8 Pittsburgh advanced from $9.50 to $9.65 at retail. Such increases as have taken place are believed to be purely temporary, reflecting the sudden drop in temperature and some hindrance to coal movements due to lack of adequate car supplies. After the ending of the Lake season a marked change in the situation is expected to appear. Some dealers point out that winter traffic tie-

ups may rise up to keep coal receipts under normal. The attitude of miners toward their work, described as a disinclination to produce steadily and efficiently, is another retarding feature.

Against a normal figure of 576,000 tons weekly, No. 8 district mines produced only 372,000 in the week just closed, which is less than 65 per cent of normal. The car supply on the B. & O. continues most inadequate of all. The unfavorable conditions are beginning to spread to the other service in the district. The shortage is believed to have been caused, in part at least, by the withdrawal of many open-top cars from the coal trade.

Coal men believe that the bottom price will be reached after navigation closes and that it will not be lower than $4@$4.50 a ton at the mines. Steam coal is in little demand due to the industrial slackening. Prices for soft coal at mines of the No. 8 district average $5@$6.50 a ton.

Anthracite and Pocahontas — All grades of anthracite have been advanced 10c. Mine run Pocahontas, however, has fallen off 15c. as a result of better receipts. The colder weather is causing an inrush of orders and retailers are kept busy in an effort to keep up with deliveries. Only 13 cars daily of anthracite are coming into Cleveland as compared with a normal of 45 cars at this season.

Lake—An embargo has been placed on all coal for shipment after midnight Nov. 20, except in the case where special arrangements have been made for a permit from H. M. Griggs, manager of the Ore and Coal Exchange. Coal movements up the Lake have been curtailed as a result. After Nov. 24 insurance expires and the season formally closes. Retail prices of coal per net ton delivered in Cleveland follow:

Anthracite—Egg, grate and stove, $15.10. Pocahontas—Shoveled lump, $11.75; mine run, $11.10.

Domestic Bituminous—West Virginia splint, $11.75; No. 8 Pittsburgh, $9.65; Cannel lump, $15.

Steam Coal—No. 6 and No. 8 slack, $9.50; No. 6 and No. 8 mine run, $0.65; No. 8 3-in. lump $9.65.

MINNEAPOLIS

Some Shortage in Outlying Territory—Mild Weather Aids—Situation Now Depends on Volume of All-Rail Receipts.

Even the few days of severe weather, so far experienced develops that there are a number of small towns in the Northwest which have not been able to secure any coal. Half a dozen or more reported being wholly out of coal, though some had orders placed since March. They are not all on obscure branches as in former years, showing that delivery has not caught up completely, despite easier car situation.

It has come to be accepted that the danger of a severe coal shortage is fairly well past. This does not mean that there will be no scarcity. It is almost impossible to make the supply of soft coal available serve through the winter, despite the various ways that some saving will be effected.

Of course, if the Illinois mines should be able to furnish double their accustomed tonnage to the Northwest, and at a price lower than the dock figure, there might be some surplus of dock coal. But this is a rather unlikely contingency. In all probability, the dock supplies available will not equal the demand, and spring will find them bare and buying being diverted to any point where coal may be obtained.

For the present the trade is awaiting developments. The close of the month will determine what the stocks will be. The month is a hard one for navigation and there have been several wrecks already, which shows the uncertainties of getting heavy tonnage of coal up the Lakes during the month of November.

Rumors continue regarding the chance of lower prices. Dock men insist that there is not a possibility of dock figures going any lower during the present season. All that has moved to date has been high-priced coal. An early reduction of price at the mine could not affect the coal already delivered. On Illinois coal there is less certainty about prices. Their market is a little more given to fluctuation and change.

However, the test of the market remains for the next few weeks. When real winter is at hand, it will develop whether there is much chance of congestion and lower prices, which so far seem to be unlikely for the near future. A prolonged mild winter might even upset values through an accumulation of stocks which would depress the market. It seems early to anticipate anything of the kind. There might be a temporary slump, but it would hardly be a market condition, because it would be so temporary.

MILWAUKEE

Moderate Winter Will See Adequate Stocks — Pocahontas and Anthracite Scarce — Prices Are Firm — Lake Receipts Gain.

The shortage scare seems to have given way to a "trust to luck" attitude. Dealers and consumers are facing the winter with apparent indifference. Much will depend on weather conditions, however.

Present demands are being satisfied with ease, and the supply on hand promises to hold out until January, after which the railways must replenish fading fuel piles. Hard coal and Pocahontas are scarce, but there seems to be ample stocks of both Eastern and Western soft coal.

There has been no change in prices. Western soft coal is due for a drop, however, when present stocks, which were bought at the peak, have become exhausted. Western coal now sells for $6.50 at the mines instead of $8.50.

The City of Milwaukee will retail coal to the poor during the coming winter. The price will be 45c. for 50 pounds and 85c. per 100 pounds, with a limit of 300 pounds to a customer at any one time.

Lake receipts for the first half of November aggregate 63,355 tons of anthracite and 226,509 tons of soft coal, a gain of 17,077 tons of the former and 29,990 tons of the latter over the same period last year. This reduces the shortage of hard coal by cargo since the opening of navigation to 38,979 tons and of soft coal to 943,474 tons.

Inland West

ST. LOUIS

Easier Market Conditions Prevail — Prices Continue To Decline—Supply of Cars Improves—Labor Is Quiet.

Steam still continues to lag, although at times there is a spontaneous call for screenings but the market is generally quoted $3@$3.50 on Standard, with mine run about $4@4.25, and lump $4@$4.50 in St. Louis proper, with outside prices perhaps 50c. per ton higher.

Light shipments are going to Chicago and the North, while movement to Omaha and Western territory is better. Car supply has been about 2½@3 days a week and showed some improvement the last week. There has, however, been a decline in tonnage on account of the miners still insisting on a Saturday holiday. Very few labor troubles are noted at present. Railroad tonnage still continues good.

Similar conditions prevail in the Mt. Olive field, where working time is better and the railroad tonnage heavier.

In the Carterville field of Williamson and Franklin County the car supply shows some improvement and general conditions are better. Operators show that they are gradually catching up on their older orders, although they are sold up for a couple of months ahead. The regular circular price of most of the operators ranges $4.50@$5, with the independents asking as high as $7 on all sizes.

The local situation in St. Louis is easy, with light demand for everything, caused chiefly by the weather.

MIDWEST REVIEW

Steam Prices Soften, Domestic Fairly Firm—Rumors of Export Order—Car Supply Is Satisfactory.

Steam coal continues to soften, although various grades of good domestic are standing up very well. There is no question but that the weather has played an important part in bringing the market to more reasonable levels.

Operators are once more turning their attention to proper preparation of their coal. This matter is receiving attention because it has been forcibly called to mind by the number of cars that have been refused during the past ten days. Once more the high grade coals from Indiana and Illinois are bringing a premium in the market over the poorer grade fuels.

There is a rumor floating about to the effect that an Eastern export company has bought 300,000 tons of southern Illinois coal to be exported from New

Orleans or Pensacola, sold for the account of a European Government rather than a South American. The story goes that a few of the companies in southern Illinois became a little worried over the trend of the market and when they were approached with the proposition of exporting their coal at a very good price, they accepted without delay.

The car supply, now that there is but little demand for coal, continues to be very satisfactory. There have been no labor troubles to speak of. The men now appear to be contented and are working as often as the railroads supply cars at the mines.

Southern Illinois prepared sizes are $5.25@$6.50; mine run, $4.75@$5.50; screenings $3.75@$4.25. Springfield district prepared coal, $4.75@$6.25; mine run, $3.25@$4, and screenings $2.75@$3.25. Northern Illinois $5.25@$6.25 for domestic; mine run, $3.75@$4.50 and screenings $4@$4.50. Indiana fourth vein outside the state ranges $4.75@$6.25 for prepared; $4@$4.50 on mine run, and $3@$3.50 on screenings; fifth vein prepared coal is $4.25@$6; mine run $3.25@$3.75 and screenings $2.75@$3.25.

COLUMBUS

Lower Temperature Brings Increased Domestic Demand — Steam Business Shows More Activity—Lake Trade Declines—Production at Lower Level.

The feature of the Ohio coal trade is an increased demand for domestic grades. A heavy snow storm produced a rush of orders from all dealers. The Fair Practices Committee immediately changed itself into a distribution committee and much good resulted. Retail stocks are still extremely low and many rural sections are almost without fuel. While no real suffering has been reported, energetic steps will be necessary to secure coal for all consumers.

Retail prices show a slight decline, due to slump at the mines. Hocking lump retails $8.50@$9.50 while mine run is $8@$9. Pomeroy lump is quoted $9@$9.25 with West Virginia splints $10@$10.75. Pocahontas is still scarce and retails $11.50@$13.

The steam trade is showing more briskness. While many large users have reserve stocks, others are running from day to day and this means a steady demand. Public utilities are fairly well supplied but are buying right along. Steam grades are selling at lower levels than for sometime and the tendency is still downward.

The Lake season shows a marked decline from the records of the previous week. This is due to the lifting of priority shipping orders and the fact that the Northwest is fairly well supplied. Indications point to a continuation of shipments up to the latter part of November. The H. V. docks at Toledo during the week ended Nov. 13 loaded 89,849 tons as compared with 175,188 the previous week; the total handled during the session is 3,642,017 tons which is about 600,000 tons less than last season. The T. & O. C. docks during the same week loaded 48,828 tons as compared with 90,258 the previous week, making 1,683,115 tons for the season. Mine prices of the principal coals used in central Ohio are:

Hocking lump	$4 50@$5 75
Hocking mine run	4 00@ 5 00
Hocking screenings	3 50@ 4 25
Pomeroy lump	4 50@ 6 00
Pomeroy mine run	4 00@ 5 25
Pomeroy screenings	3 75@ 4 50
West Virginia splints, lump	5 00@ 6 50
West Virginia splints, mine run	4 75@ 5 50
West Virginia splints, screenings	4 25@ 5 25
Pocahontas lump	6 50@ 7 50
Kentucky lump	5 25@ 6 50

INDIANAPOLIS

Good Call for Outside Deliveries—Price Regulations Eliminating Outside Domestic — Operators Generally Are Observing Rulings.

General disposition to produce coal ordered by the special coal commission at the price fixed has resulted in a drop of about $2.50 a ton on an average. Tho action of the state commission does not appear to have eliminated the demand of buyers outside the state for Indiana coal and contracts are being made that are not hampered by the fixed price.

Steam coal is in good demand with every prospect of an even greater call as the weather becomes more severe. Railroads, public utilities and private industries have been unable to secure sufficient coal to build up reserves and attempts are being made now to this end.

Many operators feel that coal from other states for domestic consumption will decrease in popularity because of the price. Indiana coal is reaching the consumer at about $7.50 a ton, while he is paying from four to five dollars more for coal mined outside the state. New price regulations, many operators feel, will create a demand for Indiana coal that will result in much good in future years.

Jobbers complain that there is no free coal on the market, but it is doubtful if they would handle it, were there any, for their profit is only 15c. a ton under the rulings of the commission.

Production of coal at 191 mines in Indiana during the week ending Nov. 13 is reported as 596,610 net tons as compared with 571,316 net tons at 193 mines the week preceding. These mines worked 70.09 per cent of full time. Labor trouble was responsible for 9.20 per cent of the time lost, while car shortage and mine disability accounted for 13.17 and 7.54 per cent, respectively.

DETROIT

Dull Steam Market Continues — Receipts Improve — Domestic Call Is Stronger with Cold Weather — Anthracite Shortage Is Unchanged.

Bituminous—Dullness in the demand for steam coal is partially offset by a broader inquiry for domestic stock, following the arrival of low temperature and snowfall. Though the supply of domestic is not as liberal as could be wished, it appears to be meeting local requirements without serious difficulty.

The local trade is now enjoying both an increased supply of coal and a better quality than was being sent here before. Shipments from Ohio mines now constitute the larger proportion of the receipts, though there is an important increase in the movement from West Virginia. Shipments from Indiana and Illinois mines have been substantially reduced. Not very much smokeless has yet become available and the opinion is expressed that most of this coal is still being sent to Tidewater, where better prices are obtainable. Quotations on steam show a slight reduction, though domestic coal is holding steady. Slack from the Hocking district is offered at $4.75; mine run at $5.25, and lump holds around $7.50@$7.75. Coal from other Ohio districts is available on about the same basis. Some mine run of the Jackson Hill class is quoted at $4.75. West Virginia slack is quoted $5.50, mine run is $5.85, and good domestic lump ranges $8.65@$8.85. As yet there is practically no free coal on local tracks.

Anthracite—Wintry weather has increased the demand from household consumers. Retail dealers are experiencing little improvement in supply. Shipments are small and their arrival uncertain. Having no reserve stocks, the dealers are working under a heavy handicap in the effort to supply their customers.

CINCINNATI

Rush of Domestic Orders Follows Cold Spell—Steam Demand Also Increases—No Danger of Fuel Famine.

Evidence that a large number of domestic consumers delayed ordering their winter's supply until the last moment in the hope that prices would be considerably reduced, is shown in the receipt of a large number of short-notice orders since the arrival of the cold spell.

Because of the fear of a gas famine due to the severe cold spell many steam consumers began to lay in a sufficient supply of coal to tide them over in the event of a shortage.

The extreme scarcity of smokeless and the demand for this grade continues as an outstanding feature of the market condition. Arrival by means of an artificial wave, of a fleet from West Virginia, bringing about 75,000 tons of soft coal during the week has tended in a measure to relieve the situation.

There is no decided change in the condition of the market as to price and inability to get shipments of anthracite. Wholesale dealers state that where several weeks ago it appeared as though Cincinnati would be able to obtain only 20 per cent of its normal supply of smokeless, conditions have improved somewhat and the city will receive probably 40 per cent of its usual supply. There is practically no danger of a fuel famine, for with the shipments of coal by way of the Ohio River and by rail, Cincinnati will be well taken care of,

although consumers in the rural districts will be more seriously affected.

The following prices for various grades are quoted by Cincinnati retailers:

Bituminous lump	$9.25@$10.50
Nut and slack	8.50
Mine run	8.50@ 9.25
Smokeless lump	11.25
Mine run	10.00@ 10.50
Anthracite chestnut and egg	15.00@ 16.25
Coke	14.50@ 15.00

CHICAGO

All Demands Are Weaker—Poor Preparation Causes Refusal of Railroad Fuel—Bituminous Receipts Are Larger.

The local market has probably been affected by the industrial let up and mild fall weather more than any other spot in the Middle West. There is practically no demand whatever for steam coals and but little demand for domestic, even of the better grades.

A railroad which has been buying coal very heavily on the open market has now discontinued all purchases and, in addition, has refused from 200 to 1,000 cars of coal, mostly mine run, which are now on track in Chicago. Disposition of this coal is a problem that is causing a great deal of worry to a number of jobbers, as most of it was purchased through jobbers rather than direct from the operator.

There are two stories going the rounds as to why this very large tonnage was refused. The first is to the effect that the purchaser of the coal for the railroad found almost immediately after he had made his buy that if he had waited for a few days he could have bought the coal much cheaper. He decided that the only way out was to get the price reduced and, in order to bring this about, large numbers of cars were refused on the ground of "poor preparation." The other story is that the operators have been growing very careless in their preparation. The railroad had been having a great deal of trouble on account of the poor quality of coal received, and considered that the present was a good time to call a halt and make operators toe the mark in regard to preparation. One operator admitted that his coal had been poorly prepared but said he was unable to correct it, as a complaint to his mine labor by means of fines, etc., would have lost all his men, who doubtless would have left his property and gone to the mines of some other operator who was not so particular about the preparation of his coal.

As a matter of fact it appears to some that the refusal of all this coal by the railroad referred to before is bound to have a very good effect on the trade, as it will force operators to pay some attention to the preparation of their coals, whether they wish to or not.

Eastern coals are coming into Chicago markets in fairly liberal quantities. The price on Pocahontas and New River mine run varies $6.50@$7.50 per ton f.o.b. mines. The cost of West Virginia splints and Kentucky block ranges $6@$8. Shipments of anthracite were not so satisfactory the past week.

South

LOUISVILLE

Heavy Demand for Domestic, but Little Available—Steam Prices Are Down—Domestic Quotations Are High.

Cold weather is resulting in a heavy local demand for domestic, with consumers accepting any and all sizes, after having waited for months in hopes of securing better grades of lump. Retailers are taking numerous small orders, there not being much heavy buying of sizeable lots, as consumers are looking for lower prices.

Prices of domestic sizes from both eastern and western Kentucky fields continue high, and production of eastern Kentucky block is light, as very few operators have been screening. However, prospects are that many screens will be put back in operation, as steam coal is beginning to drag, and will be in a bad slump shortly, when Lake demand is closed, and with the steel mills, auto plants, textile mills, and other consumers still further reducing buying.

West Virginia mine run has been quoted $4.50@$5, with some reports of $4.75 coal in fair quantities. This is breaking down the price of eastern Kentucky coal.

Eastern Kentucky operators are asking $5.50@$6 for mine run, although some coal has been quoted under $5. Lump is quoted as high as $9.50@$10.

The backbone of high prices has been broken. Unless operators take better care of domestic demand by producing prepared sizes the bottom will drop out of the steam market shortly, in the opinion of some, who say that industrials cannot take all offerings on the present heavy production basis. If the present margin between lump and mine run continues it is anticipated that retailers may install their own screening equipment.

Retailers cannot understand the attitude of producers in refusing to make prepared sizes at a time when steam demand is well taken care of and when the heavy demand is from consumers of prepared sizes. The present difference in market valuations alone would justify screening, even if a partly filled car or two is left on track overnight.

Some of the new operations are now getting their development-stage car supply, which is running good, and some local jobbers have arranged to handle such coal on a profitable basis to both parties.

BIRMINGHAM

Prices Weaken Further — Steam Market Continues Easy—Domestic Demand Is Good — Production Ample for All Needs — Labor Becoming Plentiful — Car Supply Is Adequate.

Industrial depression which has caused many industries to go on short time or close down entirely, has been keenly felt in this market. The demand for steam coal is rather weak, though a slight improvement has been reported over last week.

Steam consumers are remaining out of the market to a large extent, due to stocks on hand and light requirements, and buyers in the spot market take on the better grades at prices considerably under what was being paid several weeks ago for the most inferior product. The medium and lower grades are being moved with some difficulty and delay. Cahaba and Black Creek mine run is quoted $5.50@$6, Carbon Hill grades $4@$4.50, the latter prices also applying to Big Seam.

While as a whole, the output is sufficient to fill all demands, there is a scarcity of domestic grades, with practically none to be had in the spot market. Receipts are so limited as to barely meet the daily demand on retailers and no stocking has been possible. Some mine run is being sold for domestic use, though not enough has been diverted so far to boost the steam market.

With a labor supply practically normal at nearly all operations the output is now more or less regulated and restricted to the demands of the trade. Numbers of men thrown out of employment in the industrial field are flocking to the mines for employment. The present status of production is sustained to great extent by activity in iron and steel manufacture and coke making, along which lines there has been no curtailment as yet. Car supply is sufficient to meet production needs.

Strike losses are dwindling rapidly with the influx of this new labor. Agitation over union recognition still continues, but the strike has lost the "push" which was apparent in its earlier stages.

Canada

TORONTO

Price and Distribution Measures Approved—Outlying Sections Being Surveyed for Shortage—Conservation Is Urged.

The Canadian Railway Board has issued an order giving the provincial fuel administration the power, subject to the approval of the provincial government, to fix the maximum prices at which fuel may be distributed and sold within a municipality. This action has been considered necessary owing to conditions in some places from which complaints have been received.

A survey is being made of outlying points with a view to determining just where there may be any serious shortage. The situation generally is regarded as being satisfactory as regards the larger cities, but a number of the smaller places have not received the necessary supplies. H. A. Harrington, fuel controller for Ontario, states that the supply of coal for the province is 156,000 tons short of that last year and emphasizes the need of conservation.

News From the Coal Fields

Northern Appalachian

CONNELLSVILLE

Coke Market Stagnant — Spot Prices Shade — Sellers and Buyers Far Apart on Contract Ideas.

As to actual business, the coke market has been extremely quiet. Coke operators and furnacemen are far apart in their views as to future prices, the furnacemen insisting that prices must come down to bottom, profits being telescoped all along the line, while coke operators are disposed to hold out for relatively high prices. The coke operators are in much stronger position than in previous periods of industrial depression, having made large profits and being in no need whatever of banking accommodations. The market has weakened a shade, furnace being $8@$8.50 and foundry $10@$10.50. Spot demand for furnace is extremely light while foundry is far from heavy, and the failure of prices to decline further is plainly attributable to the mental attitude of the operators, rather than to conditions of supply and demand. As operators are unwilling to think of coke at as low as $6 there is no opportunity for serious negotiation on furnace contracts for the first half of the new year.

The *Courier* reports slightly decreased production in the Connellsville and Lower Connellsville region in the week ended Nov. 13 at 201,810 tons. Merchant ovens alone, however, show an increase of 5,700 tons, the furnace oven output being correspondingly decreased.

PITTSBURGH

Fresh Car Shortage Developed — Release of Flat Bottom Gondolas May Be Felt — Domestic Demand Is Heavy — Spot Prices Higher.

Beginning with an acute car shortage on the Pan Handle division of the Pennsylvania Nov. 12, shortage has spread to the whole Pittsburgh district, and in the past few days there has been a much stiffer market, amounting to an advance of 50c.@$1. Demand on the whole has been practically uniform. A further decrease in calls from the industries has been balanced by heavier domestic demand, while there has been larger buying for export and the railroads have been commandeering more coal than formerly.

The release of flat-bottom cars 42 in. and under from the coal priority order appeared to be intended effective Nov. 7, but as a matter of fact the order read "fixed-bottom gondolas" whereby the effect of the order was nullified. The phraseology was changed, effective Nov. 16, to cover the drop-bottom type. Whether this change will seriously affect car supplies at coal mines remains to be seen. The whole priority order may be discontinued soon.

Domestic demand continues brisk and most retailers are behind in filling orders, even though throughout the period of car shortage they were well served by river shipments. The domestic demand is much greater than in previous seasons, on account of widespread predictions of a great decrease in natural gas supplies this winter.

With the recent advance we quote the spot market at $4.75@$5.25 for steam mine run and $5.50@$6 for best grades of screened gas coal.

CENTRAL PENNSYLVANIA

Labor Situation Improves — Prices Remain Firm—Car Supply Is Adequate—Smaller Operations Are Closing Down.

Greater stability in the labor situation exists at the present time. Practically all demands for increased wages have been eliminated. There is no shortage. The only unsettled condition is at Morrisdale, where 500 men are out, with no immediate prospect for a settlement. Reports from all over the field indicate an increase of 2 per cent in the number of men employed.

The drop in coal prices has not affected production. Spot prices range $4.75@$5.50. A number of wagon mines have closed, but this only has the effect of increasing the output in larger operations. Contract prices are in the neighborhood of $4. Not many contracts are being negotiated. Spot quotations are very likely to reach contract levels in the very near future.

Car supply is adequate and mines supplied through the Baltimore & Ohio, Pennsylvania and New York Central lines are getting all the cars needed to supply the demand both for contract and spot coal.

FAIRMONT AND PANHANDLE

Confiscations Continue—Fairmont Cars Are Adequate—Growing Congestion at Tide—Fairmont Market Is Weak—Panhandle Prices Are Firm.

FAIRMONT

Confiscation of coal by the Baltimore & Ohio R.R. during the second week of November had become so flagrant that operators were threatening retaliation by tearing the B. & O. cards off cars on which they had been tacked. It was claimed that Vice President Galloway of the B. & O. had promised the Interstate Commerce Commission that an order would be issued stopping the wholesale confiscation, but up until the end of the week no such order had been issued.

During the greater part of the week there was an ample car supply. The middle of the period found about 50 mines idle on the Monongah Division of the B. & O. because of a shortage. There was a somewhat better run on the Monongahela and Western Maryland railways than on the B. & O.

Prompt movement was retarded by a serious congestion. This congestion was at Tide, where there appeared

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

BITUMINOUS COAL

	1920 Week	1920 Coal Year to Date	1919a Week	1919a Coal Year to Date
Oct. 30b	12,407,000	452,964,000	12,111,000	401,762,000
Daily average	2,068,000	1,756,000	2,019,000	1,558,000
Nov. 6b	11,420,000	464,384,000	3,582,000	405,344,000
Daily averagec	2,076,000	1,763,000	597,000	1,536,000
Nov. 13d	12,091,000	476,475,000	4,024,000	409,368,000
Daily averagee	2,120,000	1,771,000	671,000	1,517,000

(a) Less one day's production during New Year's week to equalize number of days covered for the two years. (b) Revised from last report. (c) Counting election day, November 2, 1920, as 0.5 of a working day. (d) Subject to revision. (e) Counting Armistice Day, November 11 1920, as 0.7 of a working day.

ANTHRACITE

	1920 Week	1920 Coal Year to Date	1919b Week	1919b Coal Year to Date
October 30	1,727,000	50,705,000	1,588,000	53,742,000
November 6	1,415,000	52,120,000	2,008,000	55,750,000
November 13	1,753,000	53,873,000	1,860,000	57,610,000

(a) Figures revised from last report. (b) Less 2 days' production during first week of April to equalize number of working days covered for the two years.

BEEHIVE COKE

United States Total

Week Ended Nov. 13c 1920	Week Ended Nov. 6b 1920	Week Ended Nov. 15 1919	1920 to Date	1919a to Date
389,000	385,000	400,000	18,462,000	16,974,000

(a) Less one day's production during New Year's week to equalize number of days covered for the two years. (b) Revised from last report. (c) Subject to revision. All figures in net tons.

to be a shortage of boats, Curtis Bay being embargoed.

Further recessions of prices were observed. On line shipments $4.75 was the prevailing price at the end of the week, though some tonnage was being moved at $4.50. The price on export was about $5. In neither market, however, was there a very brisk demand.

NORTHERN PAN HANDLE

Mines found their production cut somewhat in the period ended Nov. 13, the run of cars being not quite so good either on the Pennsylvania or the B. & O. Shortage on the latter was due in part to the congestion on that system and to the reduced number of empties coming from Western points. Unfavorable weather conditions also affected the supply, although operators reported the rail movement as being good.

Prices have become fairly well stabilized. There was a very light demand throughout the week for block. The cold snap at the end of the week, however, stiffened prices somewhat, particularly on screened grades. Car supply was adequate.

EASTERN OHIO

Car Supply Is Inadequate — Labor Situation Unimproved — Cold Weather Hampers Movement — Price Decline Continues.

It was expected when Order 10 was first modified and later cancelled that there would be sufficient production to entirely take care of local contracts

However, the fact seems to be that although the amount of coal going to the Lakes is considerably less than it has been for some time, labor situation and car supply have materially interfered with the anticipated progress. Colder weather of the last few days has resulted in the hampering of the railroads to an extent that the car supply has been reduced to a point where there have been few cars for other than railroad fuel loading, and prior to that period the available supply was very much reduced.

It is reported that the weather has almost crippled the railroads, resulting in most of the sidings in the mine fields being completely filled with loaded cars, many of which are destined to the Lakes and fear is expressed that navigation may close before these are delivered.

Prices continue to fall off; lump being quoted $5@$5.50 with the prospect that the price will be lower as soon as navigation is entirely over.

Middle Appalachian

HIGH-VOLATILE FIELDS

Car Supply Is Unimproved—Price Recession Is General — Steam Demand Weaker, but Domestic Call Stiffens — Good Western Movement — Buyers Are Inactive.

KANAWHA

There is little or no demand for free coal, inquiries for steam being limited in volume. Such inactivity of course is conducive to even lower prices but operators generally showed no disposition to push their coal, feeling that buyers are deliberately playing a waiting game.

However, dullness in the market kept prices around $4.75@$5. Tidewater coal commanded a price of $8. Little coal was moving however, owing to the general congestion at points along the Atlantic coast, resulting in retention of the embargo on high-volatile shipments over the C. & O. There was no suspension of operations, owing to the large tonnage due on contracts. Western shipments were unusually heavy because it was impossible to ship coal eastward. Lake shipments were light.

Owing to poor transportation facilities, there was not more than a 50 per cent production in the period ended Nov. 13. The third week of the month was ushered in with an extremely poor run of cars, mines having on the first day a placement of only 70 per cent.

There were some signs of life to the domestic demand, with the result that domestic lump was commanding a somewhat better figure than run of mine, the general price being about $6 a ton.

NORTHEAST KENTUCKY

There was a spurt in production during the second week of November, the gain amounting to 7 per cent. There was still a loss of 35 per cent because of car shortage. Although the percentage of losses from a car shortage had been decreased 2 per cent there was an actual increase in the tonnage loss. The gain was due to the fact that there was a full week available, for losses from labor shortage, mine disability, etc., were reduced to 3 per cent.

A special effort is being made to supply the needs of Kentucky consumers. While there has been little activity in the spot steam market yet there has been no inactivity in production as a result of the limited demand and prices remained on about the same level.

LOGAN AND THACKER

The Logan output was far below normal, being less than 50 per cent. Cars were even more scarce than during the opening week of the month.

By Saturday movement to the Lakes had dwindled to only 300 tons. The spot call was extremely inactive, steam buyers being largely out of the market, and in view of general industrial inactivity in Western markets producers were not sanguine there would be any change for the better during the balance of November. At the same time they believed that buyers were "playing possum" to some extent in order to further depress prices. There was a heavier demand for domestic, which was moving to Western market, as Eastern points were closed to a great extent by embargoes. For such steam coal as was sold a price of about $5 was obtained. Lump brought $6 a ton.

Because mines were not being operated in full owing to the strike, the Williamson field was little troubled by a car shortage. Labor shortage and strike losses were still in the neighborhood of 40,000 tons each. Gains had been made during the week to some extent in production and in the number of men at work, despite the fact that property was being destroyed by those still connected with the strike movement. Prices in the Williamson field were running about the same as in other high-volatile districts, the average in the spot market being $5. By far the larger part of production was flowing to Western markets. As wagon mine operators were unable to produce coal at $5 there had been a general suspension of operations at team-track mines.

VIRGINIA

Mines were able to speed up production in the period ended Nov. 13, output reaching 140,000 tons, with 23,000 tons additional produced for use in coke ovens. Labor shortage losses were reduced but the car service was not as good as it had been averaging.

Market conditions were satisfactory although there was not a particularly strong demand. There was a fair call for Inland, and a more insistent market for prepared sizes but such were hard to obtain. For lump, prices were holding around $5, with mine run about $4.50.

Owing to the decreased demand for coke, ovens in many instances are being blown and the surplus coal ordinarily used is being applied on contract. The cold wave increased the domestic demand.

LOW-VOLATILE FIELDS

New River and Gulf Output Still Curtailed by Car Shortage, Other Districts Much Improved—Price and Demand Still Weak—Labor Is More Plentiful—Scarcity of Boats Restricts Tide Movement.

NEW RIVER AND THE GULF

A shortage of cars was especially marked in the New River field throughout the entire week, Monday alone excepted. Mines were not producing at a rate greater than 50 per cent of potential capacity, the entire loss being attributable to a scarcity of equipment.

Little of the output was going to the Lakes, shipments not amounting to more than 1,500 tons per day. Most of the output was bound Tideward, but there was no marked demand for either export or bunkerage. Demand, however, was perhaps stronger there than Inland. There was a disposition among producers to regard the present lull as largely temporary. On the other hand, they rather welcomed prevailing prices, such as $5 for mine run and $6@$6.15 for prepared sizes, with export prices about $9.

Chesapeake & Ohio mines in the Gulf region were still operating on a limited basis, having a car service about 70 per cent of normal, Virginian mines

being accorded an 80 per cent supply. Orders were sufficient despite the inactive market to utilize the entire output, virtually the entire tonnage going to Eastern destinations, much of it for bunkering and export. Some of the output was moving to Virginia markets and there was also a considerable tonnage for the navy.

POCAHONTAS AND TUG RIVER

Coal loaded in the Tug River field during the week ended Nov. 13 totaled 94,900 net tons, being the largest weekly output during the present calendar year with the exception of the third week of July. The cold wave which made its appearance had no apparent effect on domestic demand or prices, both of which began to slow up some time ago.

Wagon mines are experiencing difficulty in selling all their coal on the open market. Some such coal has been set out in the Bluefield yards because of the inability to find a market even at $4.50. As a matter of fact the average wagon mine cannot market its product profitably under $5 a ton.

Tipple operators say that these small mines produce inferior coal which is of no material benefit to the industry.

The attitude of labor is improving and that may be hastened by the fact that agents are now in the field endeavoring to place a large number of men with mining experience who have been laid off by industrial works in Michigan and the Mid-West.

As quiet as was the spot market it failed to slow up production in the Pocahontas region. Contract deliveries together with such spot orders as were received took up the entire supply produced. Such losses as did develop were attributable to car shortage, yet even these losses were not so large as they had been during election week. That fact and reduced labor shortage losses tended to increase the output.

There was only a weak demand at home and abroad, and vessels at Tidewater were none too plentiful for the large contract tonnage which was moving eastward. Coal sold on the open market was bringing about $5 a ton. The demand for Pocahontas fuel in the West had undergone a change downward so that there was not much coal moving in that direction or to the Lakes.

Middle Western

WESTERN KENTUCKY

Domestic in Good Call—Steam Weakens Further — Operators Seek Competitive Rates.

Demand for lump has increased as a result of colder weather. This has made for a slightly better price.

Operators are strongly in hopes that the Interstate Commerce Commission will soon be able to correct the discrimination that exists in handling shipments into Indiana in competition with Indiana operators, who are getting very low intrastate rates. Jobbers and manufacturers in other lines are also making a fight on this.

A better field for shipments is in prospect in connection with the petition of the West Kentucky Coal Bureau for through rates to northern Missouri and Arkansas. The I. C. C. has arranged a formal hearing at Louisville on Dec. 1, when operators will contend for a through rate of 25c. over the rate from southern Illinois. The operators of the latter field will file an intervening petition as they are fighting every attempt at a competitive rate.

The best price on lump is $7.50, with mine-run, $4.25. Steam is moving fairly well, but industrial demand is much lighter.

DUQUOIN

Slight Decline in Car Supply—Demand Is Sluggish—Railroad Buying Curtailed —Prices Weaken Further.

There was a possible slight falling off of the car supply. During the latter part of the week especially, many of the mines did not receive sufficient cars to operate full time, while some were idle. Production averaged about 70 per cent.

Some of the operations shut down on Nov. 11 as a holiday and every effort was made to make up for the tonnage which was lost on account of this.

The demand still seemed sluggish and was rather unusual after the sudden cold spell. Steam demand fell off considerably, probably due to the fact that three of the large railroads have temporarily withdrawn from the market. Prepared sizes were in better demand. The largest part of the output is moving into Chicago and other northern cities, while very little or none is being shipped toward St. Louis. Labor conditions seemed unusually quiet. Prices on screenings were around $3.50@$4; mine run, $3.75@$4.25, and lump, $4@$4.25.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Car Supply Is Finally Increased—Domestic Demand Is Good — Steam Call Weakens.

Production for week ended Nov. 20 showed marked increase over prior weeks although an unprecedented snowfall severely hampered efforts of operators to promptly load cars furnished. Many mines report three full days' car supply with prospects for an equally good supply this week.

Demand for prepared sizes is strong with price quotations around $6 for domestic and $5 for mine run. Southern demand is rather light with many cotton mills seeking to cancel contracts, due to their shutting down.

Kentucky, Ohio and Indiana are the principal buyers of domestic with the trade willing to take any kind of railroad equipment. Some mines are even resorting to loading box cars, which are plentiful and are not charged against the mine rating of open-top cars.

Western

UTAH

Car Situation Is Now Improving—Labor Supply Is Adequate—Influx of New Men.

The car situation in Utah is improving. In addition to the relief furnished by the Interstate Commerce Commission, which was appealed to for cars, many empties which have been used for hauling beets are being diverted to the coal fields.

The labor situation continues satisfactory. High wages paid at the mines are attracting many men from other lines, a great proportion of whom, however, are not found suitable for coal mining. Operators are able to use all experienced men.

Operating Conditions at Indiana Coal Mines, October, 1920

PREPARED BY JONAS WAFFLE, SECRETARY INDIANA COAL TRADE BUREAU

Railroads on Which Mines Are Located	District	No. of Mines	Tons Produced	Full Time Capacity (Tons)	Tons Lost and Cases Therefor — Total All Causes	Car Shortage	Labor Trouble	Mine Disability
Big Four	Terre Haute	6	81,311	116,481	35,170	28,685	4,636	1,849
B. & O. S. W.	Vincennes	2	33,830	44,903	11,073	1,422	9,360	291
C. & E. I.	Clinton	26	316,951	461,460	144,509	82,987	51,064	10,458
	(1) Sullivan[2]	18	214,304	291,108	76,804	56,835	11,291	8,678
	Total	44	531,255	752,568	221,313	139,822	62,355	19,136
C. I. & W.	Dana	1	10,075	10,075				
Cent. Ind.	Brazil	1	3,666	3,823	157		157	
C. T. H. & S. E.	Clinton	14	220,917	346,919	126,002	116,527	7,003	2,472
	Linton[3]	28	281,835	435,021	153,186	115,421	9,317	28,448
	Total	42	502,752	781,940	279,188	231,948	16,320	30,920
E. I. & T. H.	Clay City, Petersburg	13	130,401	237,324	106,923	79,998	11,970	14,955
E. & E.	Evansville	2	12,753	13,740	987	512	475	
E. S. & N.	Evansville	4	29,505	37,186	7,681	6,123	1,248	310
Ills. Cent.	Linton	6	79,784	109,854	30,070	23,943	2,761	3,366
Monon	Linton[4]	21	234,704	363,282	128,578	80,342	14,055	34,181
P. C. C. & St. L.	(5) Main Line	20	228,545	331,637	103,092	65,437	7,603	30,052
	(6) Vincennes	20	510,945	663,851	152,906	112,797	8,908	31,201
	Total	40	739,490	995,488	255,998	178,234	16,511	61,253
Southern	Ayrshire	7	72,595	108,212	35,617	15,409	7,781	12,427
	Boonville	9	80,678	101,875	21,197	4,095	7,454	9,648
	Total	16	153,273	210,087	56,814	19,504	15,235	22,075
Totals		198	2,542,799	3,676,751	1,133,952	790,533	155,083	188,336
Totals for month ending Sept. 30, 1920		195	2,315,621	3,493,005	1,177,384	906,098	105,645	165,641

(1) Includes all mines South of Terre Haute. [2] Mines served by two railroads. [3] Mine served by two railroads. [4] Four mines served by two railroads. (5) Includes all mines on St. Louis and Michigan Divisions. (6) Includes all mines on Vincennes Division and Dugger Branch.

MINE And COMPANY NEWS

ILLINOIS

The Southern Gem Coal Co. has purchased the mine operated by the **Ritchey Coal Co.**, of Pinckneyville. The deal was made through the officers, Jesse Dimond and Thomas Horn, of the Southern Gem Co. The company has recently purchased several other mines along the Wabash, Chester & Western R.R., and it is reported that they intend to sink a new mine about two miles west of the Ritchey mine. The deal was made for $300,000.

The Henrietta mine, near Edwardsville, which has not been operated for several months, has been leased by two St. Louis men, **A. J. Fleming** and **W. H. Chapple**, who intend to reopen the mine and operate it. **The I. X. L. Coal & Mining Co.**, of St. Louis, owns the mine and it was partly destroyed by a windstorm early last spring. The lease covers 450,000 tons of coal to be mined.

The summarized annual report of the **Illinois Department of Mines and Minerals** shows that 73,920,653 tons of coal were mined in Illinois during the last year. Mines in Illinois worked an average of 159 days, and 88,899 men were given employment. The total amount of coal mined is a decrease as compared with the next previous year, on account of the shortage in coal cars. No miners in the state are on strike at the present time and all labor troubles among the men are apparently settled. The general situation among the miners is favorable.

The drift mine near Crainville, south of Duquoin, which has been operated for the past two years by **Pratt Bros.**, is reported sold to the **Tanner-Rome Coal & Iron Co.**, of Chicago.

The Union Fuel Co., of Chicago, which operate a number of mines in central Illinois, has recently purchased the plant of the **Greenridge Mining Co.**, near Carlinville, Macoupin county. The new owners have announced their intentions of developing the mine to its fullest extent and will no doubt make many repairs and improvements on the plant.

The following commission composed of representatives of miners, operators and the public, appointed by Gov. Lowden to recommend amendments or revisions of the state mining laws to the next General Assembly, has been announced. Operators: **A. B. McLaren**, Marion; **Rice Miller**, Hillsboro, and **H. C. Perry**, East St. Louis. Miners: **Joseph Sommers**, Zeigler; **Dennis Morefield**, Duquoin, and **Charles McMahon**, Carrier Mills. Representatives of the public: **Charles Woodward**, Ottawa; **Thomas Hudson**, Galva, and **P. H. Donnelly**, Chicago.

The Lumaghi Coal Co., of St. Louis, operating a mine near Collinsville, northwest of Duquoin, is installing a new 200 kw. Rigeway Motor-Generator Engine Set which will aid greatly in increasing the tonnage of the plant. The new outfit will be ready for use within a few weeks.

In accordance with the plans of many of the largest coal companies in the state, the **Peabody Coal Co.**, is now making arrangements for the erection of 100 houses at Kinkaid. Several years ago when the site was laid off, many more houses were planned than were built and the industry has grown to such an extent that the house building proposition is the only relief in sight.

INDIANA

The McClelland Coal Co., of Terre Haute, has filed suit to prevent the enforcement of the coal rulings of the Indiana Fuel and Food Commission. Action was taken in the Vigo County superior court Nov. 2, naming Perry Douglas, prosecutor of the Forty-third judicial district, and Otto L. Klauss and Jesse E. Eschbach, both of the commission, as defendants. The complainant asks that the commission be enjoined from interfering with the operation of the mine and its products. The complaint sets out that prior to July 31, the company signed a contract with the Bickett Coal Co., of Cook County, Ill., and, according to the terms of the contract, the Bickett company was to receive coal at a stipulated price, which contract is jeopardized under the commission. The company alleges it can not operate at a profit under the jurisdiction of the commission.

Articles of incorporation have been filed by the **Montezuma Coal & Mining Co.**, a new organization formed at Clinton. The company is capitalized at $50,000 and the directors are Silas Jones, David Reed, Mordica Jones, Samuel Holechko and Jaspar N. **Frist.**

Announcement was made recently of the formation of the **Jacksonville Coal Co.**, with a home office at Terre Haute. The directors are Paul E. Turk, Clifford H. Neukom and James A. Wallace.

The Old Massie Coal Mines, on the Big Four R.R., about eight miles south of Petersburg, which have been abandoned for the past 10 years, will be reopened. Work of clearing the old switch right of way has been started and the mine shafts are being cleaned out preparatory to the construction of new tipples. Commodore Bugg, an Oakland City coal operator, has charge of the work.

The Sargeant Coal Co., of Newburg, has ordered of Krehbiel Co., Chicago, a three track Jacobsen horizontal screen and picking table for their Mine No. 2.

The Glendora Coal Co. has started sinking a shaft for a new mine near Sullivan. A four track Jacobsen horizontal screen and picking table, having a capacity of 4,000 tons per day, has been ordered of Krehbiel Co.

KENTUCKY

Recent incorporations in Kentucky include the following:

The King Blue Gem Coal Co., Manchester, increasing capital from $3,000 to $10,000.

Verda Harlan Coal Co., Verda, $25,000, Julian Brugh, George Sharpe and C. L. Smith.

Devonian Coal Co., Ashland, $35,000, Oliver M. Elam, James G. Serey and J. T. O'Neil.

Robinson Coal Co., Madisonville, $50,000, J. T. Terry, L. R. Robinson, and F. O. Baker.

Landrum Coal Co., Pineville, $125,000, W. B. Landrum, John A. Creech and C. F. Wheeler.

The St. Bernard Mining Co. has placed a contract with Krehbiel Co., of Chicago, for modernizing their Shamrock Mine, near Providence. The contract includes a steel head frame, tipple and a three track Jacobsen horizontal screen and picking table.

Reports from Pikeville are to the effect that the **Kanawha Elkhorn Coal Co.** has purchased the properties of the **Lower Elkhorn Coal Co.**, and the **Peerless Elkhorn Coal Co.** and plans purchase of larger holdings in the Elkhorn City district on the C. & O. The company is a $2,000,000 corporation, with large holdings in Kentucky and West Virginia.

The October Grand Jury at Louisville was unable to find any evidence of coal profiteering, and so reported in its final report, although it alleged that prices were unreasonably high, and there should be investigation. It was stated that no evidence could be found against any local operator or dealer.

Fire near the opening of the Arnold mine owned by the **St. Bernard Coal Co.** of Evansville, Ind., one-half mile east of Earlington, Ky., entrapped 16 men, and with the conflagration growing in extent little hope exists for rescuing them. A call was sent to Evansville for the mine rescue car there, but the car was at Winslow, Ind., too far from the fire to be taken there in time for use. It was later learned that five miners were killed in the fire. The bodies of these men were recovered. The rescue, effected by tunneling around the fire which had shut off the single entry to the mine, came 20 hours after the flames broke out. Three white miners among the 16 trapped are among the dead, all of the rescued being negroes, as is the one missing man.

The mine rescue section of the Pittsburgh station of the Bureau of Mines, immediately ordered a mine rescue car at Seco, Ky., to proceed to the scene of the disaster and give all possible aid in rescuing the entombed men.

OHIO

A number of **new Ohio coal mining companies** have been chartered during the past month. Among the number are:

Economy Coal Co., Atwater, capital $15,000, incorporators, G. W. Murphy, C. H. Bartholomew, L. H. Duston, J. C. Mathieus and J. B. Workman.

Blue Ridge Coal Co., Dillonvale, capital $10,000, incorporators, H. T. Roe, L. Roe, H. C. Rogers, J. H. Hess and J. Meister.

Shawnee & McCunesville Coal Co., Shawnee, capital $10,000, G. S. Robinett, B. Jones, W. H. Jaynes, R. M. O'Hare and E. Cox.

Roach Creek Coal Co., Cincinnati, capital $1,000,000, incorporators, L. R. Townsend, C. Slough, E. A. Spreen, G. Erau and J. Ridell.

Drayer Coal Co., Dayton, capital $140,000, incorporators, I. I. Hauer, I. F. Craig, H. C. Kemper, T. Ruttmann and M. L. Kuhlman.

Helen Coal Co., New Philadelphia, capital $100,000, incorporators, J. U. Horger, H. I. N. Stafford, M. W. Stafford, N. D. Lamberson and C. A. Lamberson.

Duck Run Coal & Refining Co., Portsmouth, capital $500,000, incorporators, W. E. Tripp, H. H. Morgan, P. H. Harsha, W. S. Kent and C. F. Duteil.

Official announcement has been made of the **proposed $2,000,000 coke plant** to be located on what is known as Campbell's Island, north of the Ford Plant at Hamilton.

Monsarrat Bros., coal operators of Columbus, will soon open a new mine at Glenville, located on the T. & O. C. A shaft has been sunk.

PENNSYLVANIA

The Western Maryland Ry. Co., Baltimore, will install electrically operated machinery at its new coal pier, now in course of construction at Port Covington, Md., including hoisting loading, conveying and other machinery. The pier will have a capacity of 40 cars per hour, or a daily output of about 25,000 tons, and is estimated to cost about $1,000,000.

One coal land deal reported recently, which has caused considerable interest, is the sale to **Josiah V. Thompson**, of Uniontown, by **Ingham Cummins** of 270 acres of Whiteley and Franklin townships lands for a total consideration of $75,950. The sale brought $285 an acre.

The Workmen's Compensation Board, in the case of George Ashfield, of Mahonoy City, vs. the Philadelphia & Reading Coal & Iron Co., which came up on the claimant's petition for a review of his compensation agreement, ruled that in view of the facts the final receipt was set aside and the agreement, thus reinstated, is suspended.

Damage of more than $1,000,000 and complete abandonment of the Katherine mine of the **Union-Connellsville Coal & Coke Co.** at Simson, near Brownsville, will result from a disastrous fire which broke out recently. A statement to this effect was made by James R. Cray of Uniontown, president of the company. The fire originated in the main shaft where burning timbers ignited the main workings, the blaze spreading rapidly to all sections of the mine. All the 200 workmen escaped. Grave danger exists, however, that the fire may never be extinguished. There are at least six burning mines now in Fayette County that have been in flames for more than thirty years. In this case the damage would easily run to $5,000,000. The plant is modern, having been erected in 1908. In addition to the big coal workings a battery of 118 push ovens, equal to 200 beehive type, have been built.

The Commissioners of Navigation report the exports of coal from the Port of Philadelphia up to Nov. 1 as equal to the entire tonnage of last year, the total for this year being 2,104,000 tons, this being 1,099,490 more than shipped in the same period of 1919. This tonnage was divided into 2,021,017 tons of bituminous coal and 83,923 tons anthracite. Shipments via the Phila. & Reading Ry. and the Penn. R.R. ran about 150,000 tons each for September and October.

WYOMING

Arguments have been heard in the Supreme Court in the case of the government against the **Diamond Coal & Coke Co.** of Wyoming from the 8th circuit, involving alleged fraud in patenting coal lands. Suit was brought by the government to cancel patents to coal lands which it is alleged the coal company procured through fraud. While admitting the fraud the coal company plead the statute of limitations as the suit was not instituted by the government until thirteen years after the commission of the alleged fraud. The limit fixed by the statute is six years unless the government can prove that it had exercised reasonable care and diligence in discovering the fraud and that it had no knowledge of the fraud, and further that the coal company concealed the fraud by trick and artifice. The government having failed to prove these exceptions, the lower court held the action to be barred by the statute of limitations, from which the government appealed to the Supreme Court. An early decision in the case is expected.

Production throughout the state is better than during 1919, particularly in the southern Wyoming mines. If the present ratio of increase is maintained for the remainder of the year, Wyoming will close 1920 with 1,500,000 tons in excess of the 1919 figures, according to Robert T. Sneidding, coal mine inspector for District 1. Coal mined in the five counties in his district during the first six months was 2,220,639 tons, an increase over a similar period last year of 768,883 tons.

WEST VIRGINIA

The Champion Collieries Co., Wheeling, Cleveland, Ohio, recently organized with a capital of $1,000,000, is planning for the development of its coal lands in Wheeling to increase its daily capacity. Electrical equipment for all features of operation will be installed at an early date.

The Kanawha Cannel Coal Co. is a new Kanawha concern, having a capital of $50,000, which will engage in the business of producing coal in the cannel fields of the Kanawha district. Principals in the new concern are: A. M. Straughan, Fannie M. Straughan, J. F. Greenleaf, C. M. Carson and W. C. Barger.

Several large West Virginia coal companies figured in a merger of all the Paisley interests in West Virginia and other states, under the name of the **Connellsville By-Products Coal Co.**, a $5,000,000 concern. One of the largest companies taken in under the merger plans is the Kelly's Creek Collieries Co. operating in the Kanawha field. Other companies absorbed were the Elm Grove Mining Co. of Wheeling, W. Va.; Valley Camp Coal Co. of Cleveland, Ohio, in Elm Grove, W. Va., and in the Allegheny River Valley; Arkwright Coal Co. of Fairmont, W. Va.; Great Lakes Coal & Dock Co., Superior, Wis.; Fort William Dock Co. of Ft. William, Can. The Connellsville Co. will now have on its pay-rolls about 10,000 men. This concern recently acquired about 13,000 acres of coal land in the Monongalia field upon which development work will be started in the near future. The president of the Connellsville By-Products Co. is James A. Paisley of Cleveland, Ohio, John McCartney Kennedy of Pittsburgh, Pa., being the secretary.

Futher development of West Virginia's coal resources on a very large scale was reflected in the large number of coal corporations formed in West Virginia in the month of September. More than half of the 106 resident charters issued by the Secretary of State to newly organized resident corporations of all descriptions were issued to new coal companies, there being 54. But the total capitalization of the new coal companies organized—most of them to be operating companies—amounting to $9,689,000 was decidedly more than half the combined capitalization of all companies formed, amounting to $14,469,000.

If the five non-resident coal companies organized be added to the total already given, it brings the total capitalization of both resident and non-resident coal corporations launched up to $10,404,000, as the combined capitalization of the non-resident coal companies was $725,000. The largest coal corporation organized during the month was the Connellsville By-Product Coal Company, with a capitalization of $5,000,000, in which James A. Paisley and others of Cleveland and Pittsburgh are heavily interested.

Other new coal corporations chartered in September, together with the capitalization and general headquarters, insofar as it is possible to give such information, are shown in the following table.

NEW COAL CORPORATIONS IN WEST VIRGINIA

The Happy Hollow Coal Co.	Charleston	$5,000
J. Lee Hornor, Inc.	Clarksburg	50,000
East Wheeling Coal Co.	Mannington	100,000
Craig Coal Mining Co.	Kingwood	200,000
Thomas Smokeless Coal Co.	Meadow Bridge	100,000
Glencoe Coal Co.	Mt. Hope	200,000
The Pure Coal Co.	Charleston	100,000
North Matewan Coal Co.	Matewan	50,000
Howard Coal Co.	Fairmont	75,000
Comfort Coal Co.	Charleston	50,000
Rex Coal Co.	Wheeling	50,000
Ranger Coal Co.	Wheeling	50,000
Eskins Coal Co.	Chelyan	20,000
Yale Coal Co.	Montgomery	50,000
Shriver Coal Co.	Morgantown	300,000
The Anns Run Coal Co.	Fairview	25,000
Lick Branch Coal Co.	Charleston	25,000
Marteny Coal Co.	Morgantown	25,000
Lick Fork Collieries Co.	Huntington	500,000
Pocahontas-Bradshaw Coal Co.	Dan	10,000
Mohican Coal Land Co.	Princeton	10,000
S. & L. Coal & Coke Co.	Clarksburg	150,000
Julian Coal Co.	Julian	50,000
Man Mining Co.	Man	100,000
H. & H. Fuel Co.	Charleston	50,000
Dents Run Coal Co.	Morgantown	50,000
City Fuel Co.	Fairmont	50,000
The Hub Coal Co.	Morgantown	50,000
Berkeley Coal Co.	Hughey	100,000
J. W. Miller Coal Co.	Three Mile	25,000
Brewer Coal Co.	Morgantown	100,000
Peerless Smokeless Smithing Coal Co.	Morgantown	100,000
Green Coal Co.	Stollings	50,000
Rogers Colliery Co.	Ottawa	50,000
Fairmont-Reynolds Collieries Co.	Clarksburg	75,000
Ferndell Coal Co.	Fairmont	25,000
H. H. Lough Coal Co.	Lumberport	50,000
Lester Smokeless Coal Co.	Beckley	10,000
Pan Handle Fuel Co.	Wheeling	25,000
Comfort Coal Co.	Charleston	50,000
Eden Park Coal Co.	Sand Creek	10,000
Wierton Coal Co.	Wierton	25,000
Mary Coal Co.	Kingwood	100,000
Lancaster Coal & Coke Co.	Kanes Creek	35,000
Triad Coal Co.	Reedsville	25,000
Schell Coal Co.	Hubbard	50,000
Alcoue Coal Co.	Williamson	4,000
Suddarth Coal Co.	Grafton	25,000
Roaring Creek Collieries Co.	Kingwood	50,000
Beckley Pocahontas Coal Co.		1,000,000
Tompkins Byproduct Coal Co.	Huntington	100,000
Pearl Coal Co.	Williamson	100,000
Penn American Coal Co.	Pittsburgh, Pa.	100,000
Oceanic Coal & Coke Co.	Philadelphia, Pa.	250,000
Daleport Coal Corp.	Huntington	100,000
The Clermont Coal Co.	Punxsutawney, Pa	250,000
Stafford Coal Co.	Kimball	
chief works	Kentucky	

The following companies increased their capital stock in September.

	From	To
Sunbeam Coal Co.	50,000	150,000
Thermo-Pocahontas Coal Co.	100,000	200,000
Osage Coal Co.	225,00	500,000
Abrams Creek Coal & Coke Co.	275,000	500,000
Monongahela Coal Co.	500,000	700,000
Manhasset Coal Co.	10,000	30,000
Inter-Mountain Coal & Lumber Co.	500,000	1,000,000
Mount Morris Mining Co.	25,000	75,000
Hopkins Fork Coal Co.	300,000	400,000
Higgins Coal Co.	20,000	40,000
Follansbee Gas Coal Co.	150,000	175,000
White Oak Fuel Co.	1,200,000	1,250,000

Association Activities

Central Pennsylvania Coal Producers' Association

The subcommittee of the committee of operators appointed at the conference held in Altoona, Pa., last week and composed of Chairman James H. Allport of Barnesboro, Secretary Charles O'Neill of Altoona and H. J. Meehan of Johnstown, has drafted a set of rules for the elimination of unwise practices and these have been submitted to the whole committee for consideration. The aim is to prevent unnecessary middlemen and their accompanying profit from increasing the price of coal to the consumer.

Northeast Kentucky Coal Association

At a meeting held early in November, the association adopted a resolution endorsing those passed by the bituminous operators at the Cleveland meeting, pledging the association through a Fair Practices Committee to eliminate insofar as possible unreasonable prices as well as practice inimical to the industry and to the public so that there might be no occasion for investigation or prosecution at the hands of the Department of Justice.

The association designated its president—Charles W. Connor, of Esco, Ky., as chairman of the committee. The chairman appointed the following operators to act with him on the committee: J. G. Smyth, Jenkins, Ky., Kentucky Manager of the Consolidation Coal Co.; Henry LaViers, of Paintsville, Ky., second vice president of the association; Cadwalader Jones.

Southwest Virginia Operators' Association

Thirty-five producing companies representing about 90 per cent of the production of the Southwest Virginia districts recorded themselves through association action recently as fully concurring with the sentiments expressed by coal operators at the Cleveland meeting.

Having expressed its approval of the Cleveland resolution, the association immediately proceeded to adopt resolution creating a Fair Practices Committee, so that there may be full co-operation with the Department of Justice and its representatives in the movement to discontinue and prevent high prices and any unwise or unfair practices which may exist.

Seven operators were selected to serve on the committee, the St. Charles district, the Wise County district and the Carolina, Clinchfield and Ohio district being represented. Operators and consumers alike have been invited to report any cases of unfair practices to the committee, which is composed of the following operators: C. J. Creveling, general superintendent Blackwood Coal & Coke Co., Blackwood, Va., chairman; Grover E. Orr, Benedict Coal Co., St. Charles, Va.; Otis Mouser, vice president Stonega Coke & Coal Co., Big

Stone Gap, Va.; D. A. Patterson, general superintendent Virginia Iron, Coal & Coke Co., Toms Creek, Va.; C. B. Neel, general manager Raven Red Ash Coal Co., Red Ash, Va.; Vice President Long of the Clinchfield Coal Corporation, Dante, Va.: R. S. Johnson, Elkhorn City, Va.

Northern West Virginia Operators' Association

With the appointment of George S. Brackett as commissioner for the Fair Practices Committee of the Northern West Virginia Operators' Association, investigation of complaints is proceeding more expeditiously in view of the fact that an organization is being perfected for that purpose.

A uniform dead work scale is to be drafted by a commission appointed specifically for that purpose, such a course having been decided upon by the directors of the Northern West Virginia Operators' Association held in Fairmont Oct. 20. Such action was deemed necessary by the association because of the frequent disagreement between miners and operators as to what should be paid for different classes of dead work, particularly in the Elkins district.

While no decision has been reached as to the size of the commission its membership will be equally divided between operators and miners. President Fleming of the association will name the commissioners who will act for the operators. When duly organized the commission will be expected to gather information and data sufficient to cover any case which may arise as to dead work.

There has been much individual interpretation of the rate of pay for different kinds of dead work resulting as might be expected in much confusion. It is believed that the commission to be appointed will insure greater uniformity.

Traffic News

Canadian Pacific Ry.—The shortage of fuel oil is causing some concern to western transportation officials. The Canadian Pacific Ry. is reported to be seriously considering reverting to coal for its locomotives. The Union Oil Co. has a contract to supply the railway with oil until the end of the year, and is of the opinion that it can still continue to keep the company supplied after that. In view of the uncertainty, however, the C. P. R. men are making such arrangements that in the event of a definite shortage of fuel oil they will be able to carry on without inconvenience. The Pacific Great Eastern has four locomotives that can be readily converted to coal burners. In the meantime this company is fortunate in having secured a large reserve of fuel oil.

New 120-Ton Coal Cars—The Norfolk & Western shops at Roanoke will build 1,000 steel coal cars of a capacity of 120 tons each. The largest car now in use on this road is 100 tons. Almost 34,000 coal cars are now owned and in use by the Norfolk & Western.

Ohio Public Utilities Commission—Cincinnati coal men, while interested in the suspension by the Public Utilities Commission at Columbus of the new coal freight rates on the roads operating in Ohio, scheduled to take effect Nov. 18, expressed the belief that cities north and west of Cincinnati would be more affected than Cincinnati as most coal sold here comes from West Virginia and Kentucky. The suspension of the new freight rates by the Utilities Commission was made on the ground that the railroads had advanced rates more than the 40 per cent increase recently authorized by the commission.

Ohio River Coal—There was a movement of 1,946,000 bushels of coal or about 77,840 tons down the Kanawha River to the Ohio during the month of October, according to figures compiled by the United States Engineer's office at Charleston. While the tonnage moving over the water route was less than the August tonnage of 127,280 tons and the September movement of 113,160 tons that was because of the low stage of water in the Kanawha River. On Nov. 5 a conference of officials of the central West Virginia coal companies and United States engineers was held at Wheeling with a view to arranging for an artificial wave on the Ohio River in order that a large tonnage of coal now awaiting movement along the Kanawha River may be transported, low water having held up millions of bushels.

In complaints to the I. C. C. the Oliphant-Johnson Coal Co. of Indianapolis and Vincennes, Ind., attacks as unreasonable the rates on coal from Seifert and Turner, Ind., to Sandusky, Ohio, and requests refund of $3,600 on former shipments.

The Interstate Commerce Commission has assigned for oral argument at Washington the cases of the Central Illinois Coal Traffic Bureau and the Fifth and Ninth Districts Coal Bureau vs. the Director General.

Utah Coal Lands.—The District of Columbia Court of Appeals reversed a decision of the District Supreme Court which had granted a mandamus against Secretary of Interior Payne to compel him to grant a patent to William F. Olson for coal lands in Utah. The secretary had decided that Olson was entitled only to the mineral content and that the surface of the land belonged to the state of Utah. Olson declined to accept and sought mandamus for the whole title to the lands, claiming that the secretary's decision was arbitrary and beyond his jurisdiction. The Court of Appeals upheld the right of the secretary to exercise equitable jurisdiction in deciding controversies over public lands.

The Interstate Commerce Commission has cancelled the hearing scheduled for Nov. 16 at Washington in the matter of regulations governing dumping, skidding, trimming and leveling coal and coke at Virginia ports, and will hear the case at a date to be announced later.

The Evansville, Indianapolis and Terre Haute Ry., which is an important coal-carrying road, has asked the I. C. C. for authority to acquire and operate the line of railway formerly known as the Evansville and Indianapolis R.R., which extends from a point known as Straight Line Junction where it joins the Chicago & Eastern R.R. about four miles from Evansville to a connection with the line of the Cleveland, Cincinnati, Chicago & St. Louis Ry. in Terre Haute.

Industrial News

Philadelphia, Pa.—The Seaboard Fuel Corporation have opened offices at 437 Chestnut St., where they will engage in a general coal and coke trade. They also announce the opening of a branch office at Fairmont, W. Va., under the management of **Gordon B. Late.**

The U. S. Shipping Board used considerable display space in local papers advertising for offers on 3,577 tons of Pool 33 bituminous coal on the basis of a price for the entire lot "as is where is." The coal is on the dock at Pier 98, south, foot of Oregon St. The coal was removed from the S. S. Alderman.

The Cortright Coal Co. announce that they have been appointed sales agents for the Hastings Fuel Co., with mines at Hastings, Pa. The Cortright company will market this fuel under the trade name of Beaver 6.

Personals

R. E. Alexander has been appointed superintendent of mines 50, 62 and 84 of the West Virginia division of the Consolidation Coal Co., according to an announcement just made by C. H. Tarleton, manager of the West Virginia division of the above-named company, succeeding **Charles Clayton**, resigned. Mr. Alexander has been in the service of the Consolidation for some time, having acted in many capacities at the 62 mine of the company.

Arch Coleman, chairman of the County Republican Committee, and his brother, **P. W. B. Coleman**, as campaign manager for Walter Newton, congressman from the Minneapolis district, received a great deal of praise for the efficient work of their organizations in the recent election. The Colemans are of the City Fuel Co.

Max G. Eddleman of the Union Colliery Co., at Dowell, Ill., has resigned to accept a similar position with a large company at Coffeen, Ill.

Clyde Justice, who has held several positions with various coal concerns, has accepted a position in the offices of the Jewel Coal & Mining Co., at Duquoin, Ill.

The silver cup won last month by **J. Bert Ross** in the Buffalo Coal Men's Golf Tournament was presented on Nov. 9 with appropriate address by C. J. Renwick of the committee of arrangements. **Grant H. Jones**, who was one stroke behind the winner, was given a gold pencil as consolation prize.

M. R. Campbell has returned to the Washington office of the Geological Survey after an investigation of coal fields in Wise County, Va.

James Miller, mine manager of the mine of the Madison Coal Co., at Divernon, Ill., has resigned and will be succeeded by the assistant manager **James Thain.**

Thos. J. Kennedy, civil-sanitary-mining engineer, Scranton, Pa., has opened up an office in connecton with J. H. Rittenhouse & Son, consulting engineers.

Frank Kennard, of West Liberty, Ky., was perhaps fatally injured in an explosion at his mine on Rock House Creek, on Oct. 20. Mr. Kennard is state representative from Morgan County.

The Geological Survey has detailed **George W. Holland** to Colorado, Wyoming and Utah to collect data on commercial coal leasing practice, which is necessary to assist in advising the department in the administration of the coal sections of the land leasing law. **M. R. Campbell** is inspecting co-operative work in the coal fields of Wise County, Va. **J. B. Eby** has returned from field work in the Wise County, Va., coal fields. **G. W. Stose** has gone to the Lehanon, Pa., coal field to study the relation of the limestone formations.

J. W. Noble, a life-long member of the city coal trade, has retired. He has in late years given most of his time to anthracite jobbing and retailing. He was formerly a member of Frank Williams & Co., coal operators and shippers, now retired.

Charles B. Ebbert, general manager of sales of the White Oak Coal Co., has returned after six weeks spent in England and France.

J. D. A. Morrow, vice-president of the National Coal Association, discussed current coal problems in an address before the Eastern Ice Manufacturers' Association on Nov. 11. The ice manufacturers held their annual convention at Atlantic City Nov. 10, 11 and 12.

Obituary

J. Howard Patton, well-known coal and coke man died recently in his home in Greensburg, Pa. He had been in poor health for some months. Mr. Patton organized the Claridge Coal Co. and directed its operations 20 years. Mr. Patton also was interested in many other concerns. At his death he was president of the Howard Gas Coal Co.

Arthur E. Hauck, president of the Hauck Manufacturing Co., manufacturer of oil-burning appliances, kerosene torches, furnaces, forges, Brooklyn, N. Y., died at his Flatbush home, Brooklyn, N. Y., recently.

Coming Meetings

West Virginia Coal Mining Institute will hold its annual meeting Dec. 7 and 8, at Melzure Hotel, Wheeling, W. Va. Secretary, R. E. Sherwood, 1001 Kanawha Bank Building, Charleston, W. Va.

Coal Mining Institute of America will holds its annual meeting Dec. 8, 9 and 10, 1920, in the Chamber of Commerce Auditorium, Pittsburgh, Pa. Secretary, H. D. Mason, Jr., Chamber of Commerce Bldg., Pittsburgh, Pa.

Taylor Society will hold its annual meeting Dec. 2, 3 and 4 in the Engineering Societies Building, 29 West 39th Street, New ork City. This society tends to promote the science and the art of administration and of management. Managing director, H. S. Person, 29 West 39th Street, New York City.

The Wholesale Coal Trade Association of New York, Inc., will hold its annual meeting in New York City Jan. 18, 1921. Secretary, Charles S. Allen, 90 West Street, New York City.

American Society of Mechanical Engineers' annual meeting will be held in the Engineering Societies Building, 29 West 39th Street, New York City, Dec. 7 to 10 inclusive. Secretary, Calvin W. Rice, 29 West 39th Street, New York City.

COAL AGE

The Weekly Journal of the Coal and Coke Industries

Volume 18 NEW YORK, THURSDAY, DECEMBER 2, 1920 Number 23

You Can't Fight if Your Claws Are Trimmed

SENATOR CALDER calls on the coal industry to correct unfair practices, that is, practically to make fair prices for the public, but the public has decided that combination is illegal and so has trimmed the claws of the coal industry. No muzzled dog can put up a valiant defense of his master. No industry forbidden to combine can resist the irregular action of certain of its members. Can the coal operators restrain the action of bellhop speculators who this year invaded the coal business, and prohibit their fellow producers from dealing with middlemen who will give bellhops opportunities such as these? It cannot prevent irresponsible men from becoming speculators, nor can it hinder them from becoming operators. There are inherent difficulties in the Sherman Act. Designed to hinder those who would use combinations to raise prices, it hinders also those who would use it to lower them. Why condemn the industry for wearing the muzzle that the laws have clapped upon it?

Whether Senator Calder is using petty politics must remain a question. Perhaps his motives are above cavil, but he certainly has chosen an excellent time for his threats. Just as prices are falling from decreased demand and increased supply he and Senator Edge have started a campaign of threats. No better time could be chosen. He is like the youngster who, seeing a tree about to come crashing down under the strokes of the lumberman, calls on it to fall and turns to his companions, declaring "See what I did!" Market conditions are depressing the price of coal and Senator Calder by his widespread threats of nationalization seeks to credit himself with the results of an economic condition with which he had nothing whatever to do. Unfortunately the public, always lacking discrimination as far as coal is concerned, may believe the Senator.

Hydraulicking for Coal

A LITTLE hydraulicking has been done in the Danville district of Illinois in the uncovering of coal, but not much use has been made of the practice elsewhere. Where it has been employed only drift and surface soil have been sluiced, and nothing has been done toward the removal of blasted material.

Only in small degree has the method of removal by water been followed in the iron regions. Hydraulicking seems to have been left entirely to those who were seeking gold or platinum. It would be well if experiments were made to introduce this method of stripping into the anthracite region, although it might be necessary to impound the washed gravel and in places sluice the material through tunnels.

There is a large amount of drift in the anthracite region. The first work could be done in this material and then, with courage born of experience, something might be attempted upon the stratified materials below. Many locations are ill-suited and many not suited in any way to the use of hydraulic stripping. Each location must be judged on its merits, but surely in the length and breadth of the anthracite region are some deposits which hydraulicking might at least assist in uncovering.

Hydraulic stripping is the quintessence of labor saving. Two or three men, nozzle in hand, are seen giving battle to a mountain. By comparison even the steam shovel, yes, even the electric shovel, seem wasteful of labor. Only the expense of raising water for this purpose stands in the way and even that difficulty is not insuperable. It would seem advisable to call in hydraulickers of experience, have them look over the matter and determine what can best be done and how.

The Consumer's Rôle in Stabilization

COAL is like food, in that a certain minimum is always required to maintain life, and further, a large quantity is regularly required to operate industry and the railroads even when business is dullest. Unlike clothes, automobiles and even housing, the country cannot postpone coal buying indefinitely, using the old beyond its usual span of usefulness. It is unfortunately true, however, that the public is temperamental in its buying of coal and either rushes into the market pell mell, as this year, or stays out, eating up stock piles, as in 1919. Both courses are dangerous—for the 1920 coal panic was due to the consumers' refusal to buy in order to meet ordinary needs in 1919, coupled of course with the miners' strike of last November and the switchmen's strike of this April.

Coal is a stranger in the usual and regular market reports, where one may find cotton, copper and money currently listed, yet coal is one of the commodities in which there is trading involving large sums and large tonnages. When coal is quoted in the daily press the statistics are those of high prices and the comment there is far from complimentary to the trade and the industry. One may learn from the financial journals that copper is going down in price, that stocks are large, and that producers are curtailing output. The same may be learned of wheat, flour, cotton and many other basic commodities, but not of coal.

Those who feed market statistics to the public have yet to take up coal and the public has yet to learn to read the signs that could easily be given, for the basic data are available—the signs which would tell them to buy or not to buy, to add to or detract from stocks. Coal is not the only industry that would enjoy a stable market, an even progress in production and distribution, equitable price at all times; but coal cannot enjoy these in any measure until there is more intelligent use of marketing statistics.

The price of soft coal is declining and will continue

on the same path for some time. Will the consumer take advantage of the market and pile up fuel for next January, February and March? Probably not; more likely he will run true to form—having outbid his neighbor this summer and fall he will use his surplus acquired at high price and will forget the coal market until his reserves are very low. Then, *en masse*, he will again rush into the market and create another price flurry.

The producer may know full well that the consumer is not buying when he should be, but he cannot, as does the copper producer, the miller, the textile industry, store his product handy against a future but certain demand. He must close his mine, as he did for more than six months after Nov. 11, 1918, and let his men loaf.

Did consumers of coal, especially the larger ones, but study the market statistics on coal as they do on other raw materials, they would profit, the country be saved such spasms as that of this year's coal shortage and the industry prosper sanely likewise.

Surmising and Seeing

WHAT Dr. Garfield saw in prospect Frank Dumont Smith, of Hutchinson, Kan., has seen in retrospect. But, strange to say, what one prophesied and the other beheld never happened. Nothing extraordinary about that, by the way; those who write about coal prophetically and retrospectively have a way of seeing facts as they are not far more often than as they are.

Frank Dumont Smith, speaking for Governor Henry L. Allen of Kansas at the American Mining Congress, said that the Industrial Relations Court was preferable to arbitration as usually conducted in wage disputes. In such affairs, Mr. Smith said, the employers and employees each named an ex-parte representative and the Government named a third person supposed to represent the people. This third person was an uninformed individual, who could not possibly learn enough in the short time covered by the investigation to make him a capable judge. The representatives of the employers and of employees both knew their mind and invariably soon came to an agreement to give the employees what they wanted and to let the employer pass the cost on to the public. Dr. Garfield foreshadowed that same *dénouement* in the bituminous-wage controversy, but it didn't occur, nor did it happen in the anthracite dispute.

If the truth were known, the employers' representative made up his mind from the first to help the people's representative to see the case as he saw it and to accept the decision of the latter if it were at all reasonable. The mine workers' representative, on the other hand, went to the board determined to get all that the union demanded of him. When he couldn't get it he made a minority report, and the union and the workingmen did all they could to have the majority report laid aside and the minority report accepted.

The decision in both cases lay with the people's representative, the employers' nominee accepting the decision and making it his own. Thus the prognostication of Dr. Garfield and the statement of Mr. Smith were both wrong.

The public usually pays the bill. Mr. Smith is right about that. It is only right that it should, where prices are at the time reasonable and fixed on the past cost of production, as were the contract prices of bituminous at the time of the soft-coal decision and as were circular prices of anthracite when the hard-coal decision was rendered. Spot prices of bituminous coal subsequently went wild, but the increased wage cost was not the cause. The prices were the outcome of a demand that could not be supplied. The circular prices of anthracite, which had been raised to meet the needs of the expected retroactive decision, were such as to meet the situation without unfairness and were not changed.

The Industrial Relations Court, as it is termed—it is really an administrative board and not a court—is doubtless doing a good work. At least rumor so represents. Kansas is quieter than for years. Mining is a more peaceful occupation. But it is not necessary for advocates of the court to misrepresent the facts about arbitration boards.

Exit Alex Howat

OUR reformers are determined that all the evils of the world are reflections merely of wrongs performed, that the weeds which grow in the field of labor are, one and all, the outcome of seeds energetically sown by the sordid hand of capital. As a matter of fact, however, much of the disorder exists because there is someone whose business it is to creat it. Such a man was Alex Howat, district president, in Kansas, of the United Mine Workers of America. He was the storm center in that state, Oklahoma and Missouri.

Possibly there may occasionally have been some shadow of cause for the disorders in those states, but it is generally recognized that the reason why there were in Kansas thirty-four coal-mining strikes in some thirty months, of which thirty-three were in violation of contract, was because of Alex Howat and his perpetual troublemaking. He was as a thorn in the side of the whole union, of the Kansas operators and of the officials of the state in which he lived and plotted.

At length the Industrial Relations Committee has put its hand upon him, and things are quiet. Unfortunately, part of his evil work still remains. The industrious workers have long ago left the state or the industry, convinced that it could not offer any chance to men who were willing to work. The men who were left were in a large proportion men of that kidney who live to "argify" and quarrel.

Like with like, a mine which has eighty per cent of loafers tends always to reach one hundred per cent, and the mine with eighty per cent of real workers tends to eliminate the twenty per cent of idlers. George Wolfe's estimate, at the American Mining Congress, that 85 per cent of the men in a mine are industrious and 15 per cent are of a worthless type, confirmed as it was by Carl Scholz, is nevertheless true of only some mines—the non-union in particular. Certain of the more unfortunate mines have suffered from a reversion of the percentage numbers. Slowly the industrious and intelligent have left for happier climes and steadily those whom no one would have have drifted in—the derelicts of society.

We trust that Kansas has started anew and is about to regain its industrious mine workers, or seek them in the other industries of the state. The principal troublemaker is removed, temporarily at least. Law and order may, in his absence, plant their feet firmly once more, and those who meanwhile have known peace and learned the advantages of steady toil may make Alex Howat put on jeans and double himself to work if he tries to raise trouble again in the Sunflower State.

Methods of Operation Followed at the Largest Anthracite Stripping

A Deposit of 9,000,000 Tons of Coal Was Discovered by Accident—Development Has Been Made by Both Stripping and Underground Mining—The Largest Pit Will Ultimately Be Somewhat Over a Mile Long and a Quarter of a Mile Wide

By Dever C. Ashmead
Wilkes-Barre, Pa.

ABOUT forty years ago an outcrop of the Buck Mountain coal bed was discovered on the top of Locust Mountain, near the city of Shenandoah, Pa. In this a small slope was sunk, but practically no workings were driven off it, and it was abandoned shortly afterward. In 1910 the Girard Estate, as it did not have at that time sufficient water in its reservoirs, sunk a borehole in this locality to obtain a further supply. Instead of finding water, coal was discovered. Another hole was started for water, but again coal was found, this time two beds of it. It was then deemed advisable to test the deposit and the search for water was discontinued.

As a result, by means of boreholes and test pits the Girard Estate proved the value and extent of the coal deposit that it had discovered on the top of the mountain. It was found that about 9,000,000 tons of coal was in sight. This estimate was later proved to be a trifle too large. In this work the estate employed ten section lines, some of which are shown in the accompanying illustrations.

Work Was Commenced in the Year 1913

B. Snyder, Jr., obtained a lease for the property as soon as it was offered, and turned it over to the Locust Mountain Coal Co., of which he was then the vice president and general manager. On March 17, 1913, work was commenced upon this coal deposit, but Mr.

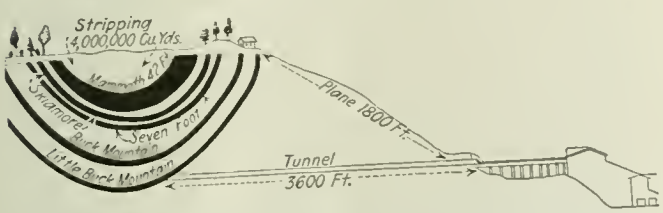


FIG. 1. IDEALIZED CROSS-SECTION OF PROPERTY
A tunnel which extends inward 3,600 ft. drains the lowest point in the Little Buck Mountain bed, the lowest of all the seams. Here, as often happens, the top of the mountain is occupied by a deep syncline.

Snyder was killed on June 1 of the same year. Development has, however, been continued according to his ideas. One interesting fact that might well be noted in passing is that when the company opened the property and drained off the water filling the old slope, which had been driven forty years before, it found that the timbering was in as good condition as when first placed.

Locust Mountain rises from the valley to a height of 500 ft. On its top lies a level plateau about a mile wide which extends its full length. The cross-sections already referred to revealed that the coal lay in a different basin from that existing in the Shenandoah Valley. Furthermore, it was proved that the bottom of the basin in the mountain was above the bottom of the valley. This made it possible to drive a tunnel that would reach the lowest point in the basin, and so drain the whole mine.

Five Beds Aggregating Seventy-Five Feet

Five workable beds of coal were found; namely, the Mammoth, Skidmore, Seven Foot, Big Buck Mountain and Little Buck Mountain. The Mammoth bed in this locality is about 42 ft. thick; the Skidmore 10 ft.; the Seven Foot about the thickness its name implies; the Big Buck Mountain 10 to 12 ft. in thickness and the Little Buck Mountain about 6 ft. thick. Fig. 1 shows in general the relationship existing between the various beds, as well as the mountain and the valley. It also shows how the drainage tunnel taps the lower bed. This drawing is not to scale but is rather a picture intended to give the general "lay of the land."

In determining the system of mining to be followed in this property a decision had to be reached as to what portion of the property could be stripped and what portion worked by ordinary underground-mining methods. Furthermore, the fact that the lease expires in 1928 had to be taken into consideration, as it was, of course, desirable to move, if possible, the whole of the 9,000,000 tons of coal by that time.

It was comparatively easy to determine that the three upper beds in the eastern basin should be stripped and that the lower measures should be mined from below. It also was easy to decide that some of the beds in the western basin should be stripped, but a portion of this second basin lay in such shape that it was extremely difficult to determine which would be the more economical, stripping or underground mining.

Although no stripping has been done on the Little Buck Mountain bed, Fig. 2 shows the outcrop of this measure. This illustration is presented to show the full extent of the coal measure, as it is the lowest coal bed in the series. Fig. 3 is a surface map showing the extent of the strippings, all of which except Nos. 4, 5 and 6 are either now being worked or have already been finished.

Biggest Anthracite Stripping in World

The East Basin stripping probably is the largest of its kind in the world. If it is not the largest now it soon will be. The present excavation is about 4,000 ft. long and half a mile wide at its widest point. Fig. 4 gives some idea of the size of this pit. When it is considered that what is here shown is only the preliminary stage it can be realized that ultimately the stripping will be little short of stupendous. The final strip

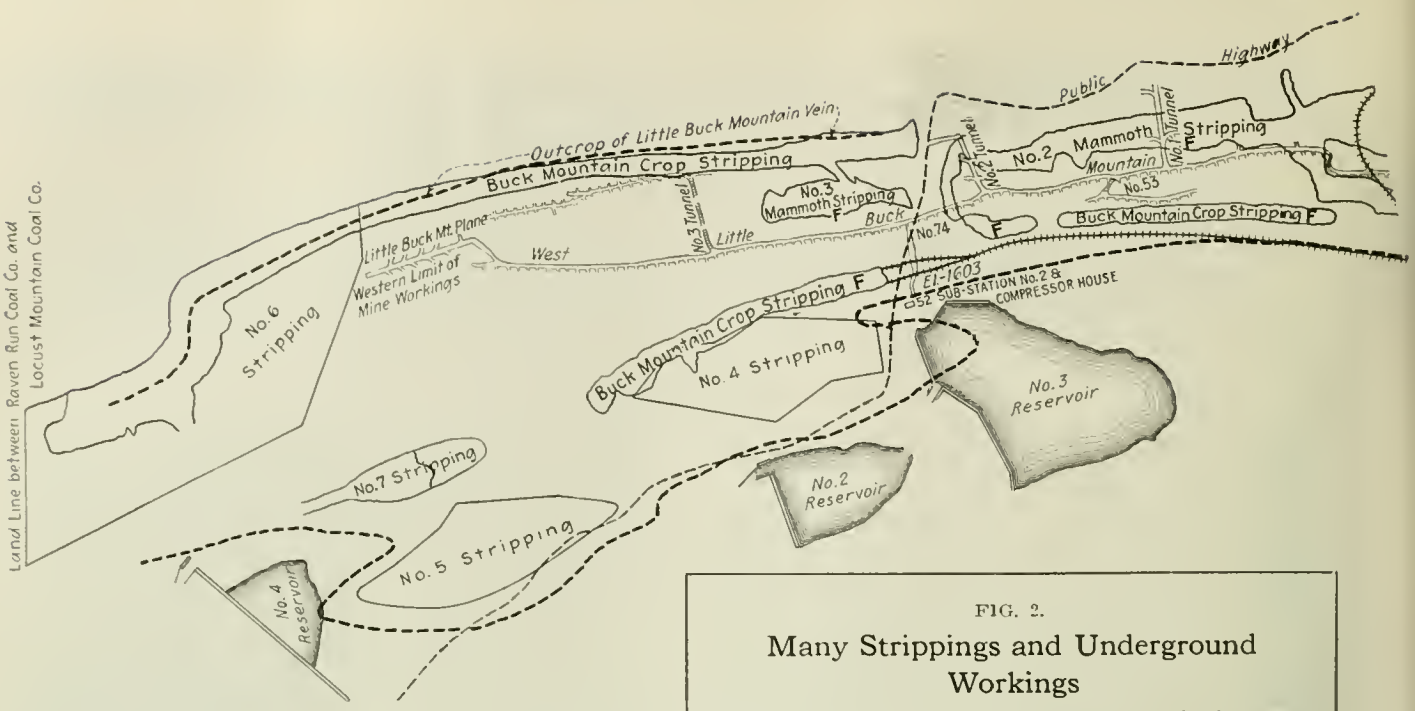


FIG. 2.

Many Strippings and Underground Workings

Of these the East Basin stripping is the largest. Strippings Nos. 5, 6 and 7 were described in article which appeared in the issue of Nov. 18.

pit will be 3,000 ft. longer than it is at present, or 7,000 ft. in all, and will go to a depth of 250 ft. Yet this pit is only a portion of the area that remains to be excavated on Locust Mountain.

Some further conception of the amount of work already performed, as well as that yet remaining to be done, can be gained from the three sections of the coal measures shown in Figs. 5, 6 and 7. These reveal that at present a large amount of the Mammoth bed is yet to be removed, but they also show that to a large extent the cover over this measure has already been stripped. Where the overburden has not yet been removed it has been blasted loose, and by the time winter sets in a large portion, if not all of it, will have been loaded and hauled away.

From Fig. 7 it will be seen that only a comparatively small portion of the Seven Foot and Skidmore beds has been stripped, leaving a tremendous tonnage still to be handled. The 3,000-ft. extension to the eastward beyond the limits of the present pit contains none of the Mammoth bed, but only the lower measures.

Water Will Eat Out Pipe in Three Days

Cross-section, Fig. 7, shows a rock tunnel driven from the workings in the Big Buck Mountain bed to prove the coal in the overlying deposits. At the present time this tunnel is exceedingly valuable, as it is used to drain the main stripping. Pumps are required in this pit only to force the water from local dips to this tunnel, through which the water flows into the mine workings and thence to the outside. Incidentally this method of drainage saves much besides power costs, as the water is so acidulous that it will eat out a 2-in. pipe line in three days.

It will be noted in the illustrations that many other strippings exist besides that constituting the main pit, but as these have nothing to do with the big operation, no consideration will be given them here; instead they will be discussed in a later article which will deal with the underground mining, of which they really form a part.

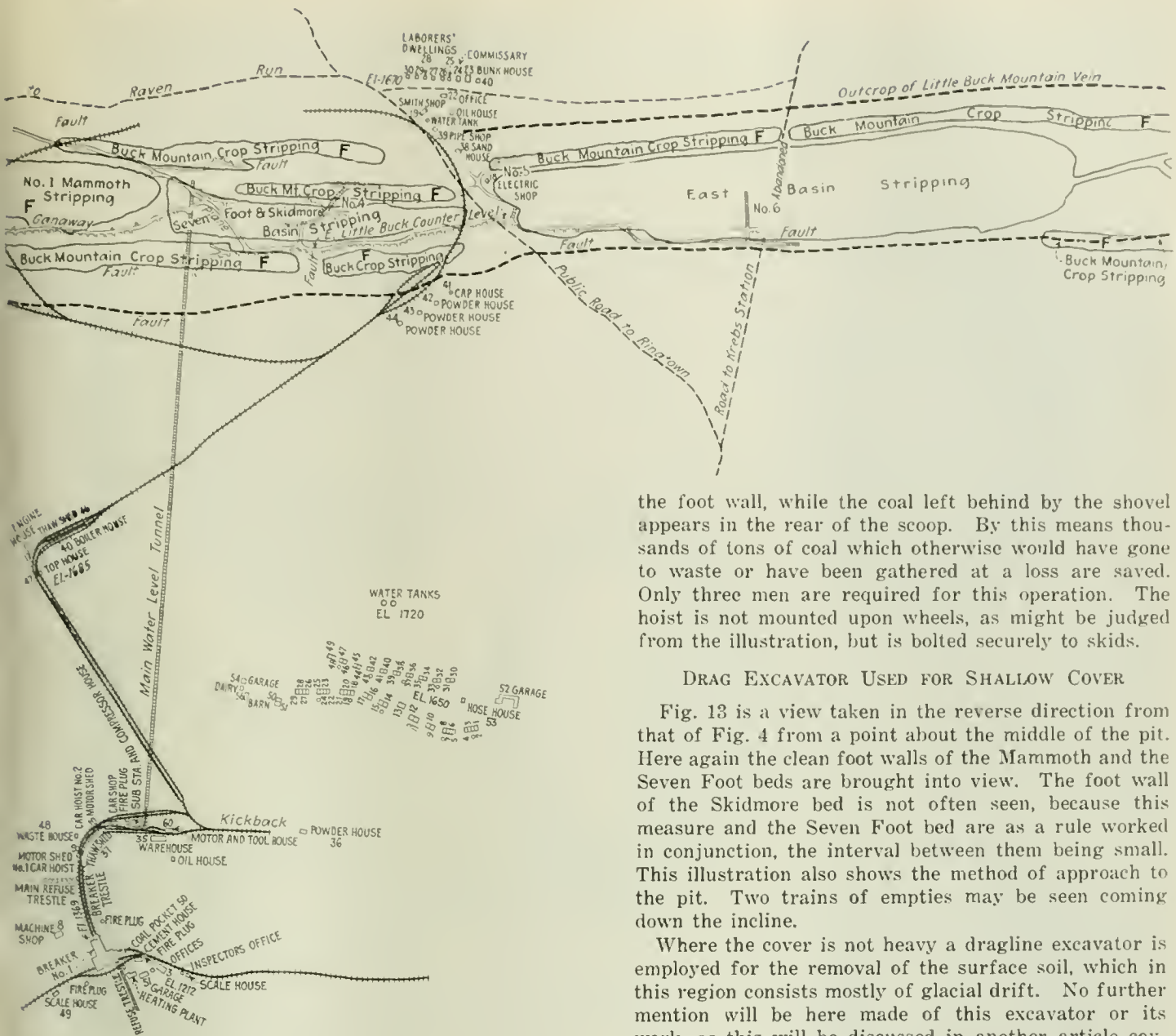
On the southern side of the pit the beds are much more steeply inclined than they are along the northern border; in fact on the southern side they are almost vertical, as may be seen in Fig. 8. This illustration gives a good idea of the present depth of the excavation on this side of the stripping. The vertical or almost vertical rocks here shown are the foot wall of the Seven Foot bed. The man standing at the base of the "cliff" is Mr. Brown, superintendent of the stripping operations, and from his relative size can be obtained a graphic idea of the height of the cliff. Approximately in the middle of the picture it will be noted that some of the coal has been left. This was done because of a local weakness in the foot wall. On the return trip of the shovel this coal will be removed.

Guard Shovel Men by Keeping Them from Bank

Formerly the shovel traveled from west to east. This procedure, however, placed the shovel runner and dipper man on the side of the machine near the almost vertical foot wall and introduced an element of danger, for, in case of a fall of rock from the cliff, these men were likely to be injured or killed. Accordingly, in order to protect them the shovel will hereafter travel from east to west. This will place the men on the side away from the foot wall, where they will be protected by the shovel itself in case an accident of this kind should occur.

At one point a 70-ton Bucyrus shovel is now loading coal from the Mammoth bed into mine cars. In this operation a locomotive can handle a trip of ten loaded cars from the pit. These cars are of 5-cu. yd. capacity and may be so loaded as to hold about five tons of coal.

Another type of shovel employed in this operation is a 35-B Bucyrus caterpillar electric machine. This shovel is exceedingly valuable in this kind of work, for it can go almost anywhere and travel with fair rapidity. In three days one of these shovels was moved from the Seven Foot and Skidmore stripping, shown in Fig. 3, to its present position almost at the extremity of the large strip pit. This machine is at present working on



the rock intervening between the Mammoth and Skidmore beds.

Fig. 11 shows an interesting operation wherein a piece of underground machinery is being employed on the surface. After a steam or an electric shovel has loaded all the coal it can reach it naturally leaves behind it an appreciable amount of broken material that it cannot pick up. Unless some method is provided for reclaiming this coal it will be wasted. In this instance a scraper has been employed for gathering up this coal, and Fig. 11 shows this machine in operation. A steel pin or post bearing a snatch block is set up, and the rope attached to the scraper is passed through the sheave and thence to the hoisting engine. This acts as a tail rope, while the main rope attached to the bail of the scraper is led direct to the hoist. By means of this outfit it is possible to clean all the coal from the rock bottom.

The coal gathered by this scraper is dragged to a point near the hoisting engine and left in a pile, so that the shovel upon its next trip will be able to pick it up and load it into mine cars. To the right of the illustration may be seen how thoroughly the scraper cleans the foot wall, while the coal left behind by the shovel appears in the rear of the scoop. By means of this thousands of tons of coal which otherwise would have gone to waste or have been gathered at a loss are saved. Only three men are required for this operation. The hoist is not mounted upon wheels, as might be judged from the illustration, but is bolted securely to skids.

Drag Excavator Used for Shallow Cover

Fig. 13 is a view taken in the reverse direction from that of Fig. 4 from a point about the middle of the pit. Here again the clean foot walls of the Mammoth and the Seven Foot beds are brought into view. The foot wall of the Skidmore bed is not often seen, because this measure and the Seven Foot bed are as a rule worked in conjunction, the interval between them being small. This illustration also shows the method of approach to the pit. Two trains of empties may be seen coming down the incline.

Where the cover is not heavy a dragline excavator is employed for the removal of the surface soil, which in this region consists mostly of glacial drift. No further mention will be here made of this excavator or its work, as this will be discussed in another article covering the underground-mining methods.

In addition to the main stripping a number of smaller pits are being excavated. Referring to Fig. 3, it will be noted that the strippings Nos. 1, 2 and 3 Mammoth have been completed. As the Skidmore and Seven Foot beds are too deep at this point to warrant stripping, their contents were recovered by underground mining.

On the map a number of strip pits will be noted, and many are marked Buck Mountain strippings. As these relate entirely to the underground workings, they will not be taken into account here, but will be dealt with in a future article.

Most of Overburden Removed in Summer

As many of the shovels and other pieces of machinery employed in this operation are actuated electrically, the company has placed power lines around the different pits, so that they can be readily reached by cables. Several of the illustrations in this article show these lines close to the upper rim of the pit.

The work has been so planned that a large part of the removal of the overburden is done during the

summer months. In the winter the frost on Locust Mountain penetrates several feet below the surface. Last winter the ground in this pit froze to a depth of as much as 8 ft. Such frozen ground is as hard as rock and has to be blasted. On the other hand, the coal must be shot regardless of the season, so that it may be mined almost as cheaply in winter as in summer.

In order to carry on this work eight shovels are employed; three are No. 18-B Bucyrus machines, operated by steam and fitted with buckets of ¾ cu.yd. capacity, and two are 35-B Bucyrus electric shovels. All these machines are of the caterpillar type. Two 70-C Bucyrus shovels of the railroad type, operated by steam, also are employed. In addition to these shovels there is the 175-B dragline excavator already mentioned. This is supplied with a 125-ft. boom and is operated electrically. It handles a 3½ cu.yd. bucket.

Thirteen miles of track is necessary to reach all parts of operation, and nineteen 20-ton locomotives are required to handle the rock and coal. For coal removal 115 mine cars of 5-cu.yd. capacity are employed. For transporting overburden twenty 8-cu.yd. Kribaw dump cars, fifteen 4-cu.yd. Western Wheeled Scraper cars and forty Koppel cars of the side-dump type are in use. Two Cyclone well drills, one operated by gasoline and one electrically, are employed as well as one Ingersoll-Rand wagon-type blast-hole drill, and seven Ingersoll-Rand tripod drills. About 250 men are employed.

Excellent shops are located near the stripping, where exerything, except castings, necessary for the repair and upkeep of shovels, locomotives and cars is made. These shops even build the booms, dipper handles and buckets for the shovels, as well as the boilers for the locomotives, and in addition make all other necessary repairs.

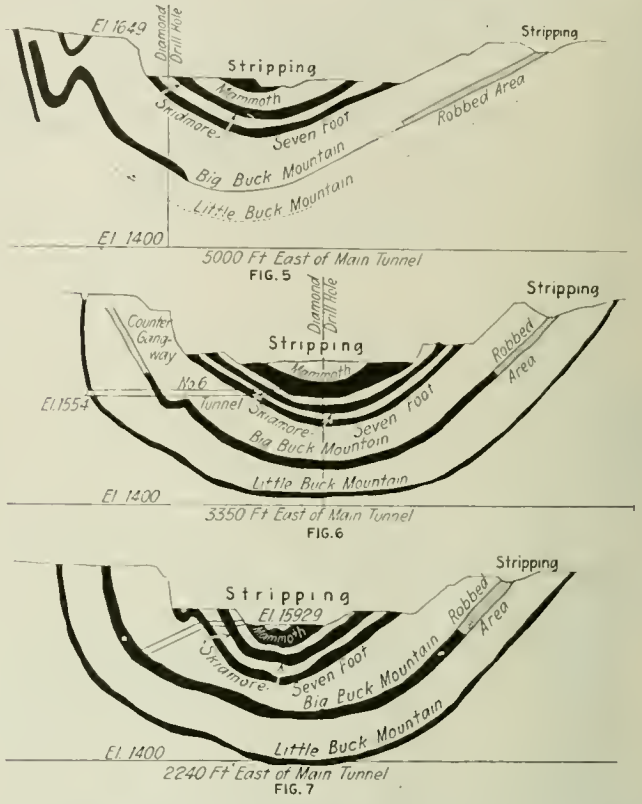
About Half the Coal to Come from Open Pit

Some figures showing the work performed and that yet remaining to be done may be of value in forming a conception of the magnitude of this undertaking. The original estimate of the amount of coal in the basin, as has been already stated, was 9,000,000 tons. About one-half of this will be recovered by stripping and the other half by underground mining. At the present time 815,707 tons of coal have been taken from the large strip pit, and to obtain this tonnage 3,020,364 cu.yd. of rock have been hauled away. To recover the remainder of the coal in this pit it will be necessary to remove 1,065,645 cu.yd. of rock.

Thus far from the Seven Foot and Skidmore strippings 63,454 tons of coal have been recovered, and after the removal of 276,553 cu.yd. of rock 39,046 cu.yd. of overburden still remains to be stripped. The West Mammoth basins Nos. 1, 2 and 3, as shown in Fig. 3, have been entirely stripped, 406,000 cu.yd. of surface being removed and 452,921 tons of coal obtained. Another stripping, known as the Buck Mountain pit, so far not mentioned in this article, but to be taken up in a later one, is located near the western edge of the property. From this 250,000 cu.yd. have thus far been removed and 62,781 tons of coal have been obtained. In this pit 1,173,314 cu.yd. of rock have yet to be removed.

Nothing as yet has been done on stripping Nos. 4 and 5 shown on the map in Fig. 3. No. 4 stripping will produce 60,382 tons of coal and will require the removal of 261,759 cu.yd. of rock and surface drift. Stripping No. 5, on the other hand, will produce 86,688 tons of coal and require the removal of 257,397 cu.yd. of rock and surface material.

In order to present these figures in a somewhat more concise fashion Table I has been prepared. This shows some rather interesting facts. Furthermore, if it is assumed that 4,000,000 tons of coal were available for stripping, this table shows that 2,600,000 tons yet remain, all of which must be procured before the expiration of the lease in 1928.



FIGS. 3, 4 AND 5. CROSS-SECTIONS OF EAST BASIN

Fortune seems to have put the big seams near the surface as if to make stripping easy. Unfortunately, the biggest of all strippers, bigger by far than the Locust Mountain Coal Co., has been at work for millions of years hydraulicking and by glacier removing all the beds, especially those that, like the Mammoth, were near the top of the series.

TABLE I. AMOUNT OF WORK DONE AND TO BE DONE

Name of Stripping	Rock Removed, Cu.Yd.	Rock Remaining, Cu.Yd.	Coal Recovered, Tons
East Basin	3,020,364	1,065,645	815,707
Seven Foot and Skidmore	276,553	39,047	63,454
Buck Mountain Basin	250,950	1,173,314	62,781
West Mammoth	406,000	.....	452,921
	3,953,867	2,278,006	1,394,863
Stripping No. 4		261,759	
Stripping No. 5		257,397	
Total		2,797,162	

It is estimated that 553,000 tons of anthracite are recoverable from all the several deposits outside of the Seven Foot and East Basin, so that if the output of the strippings is to equal 4,000,000 tons, 2,000,000 tons of coal still have to be removed from the large East Basin.

At the present time this coal is being produced at the rate of a little less than 500 mine cars a day, and as each car of coal as normally loaded contains slightly less than four tons, the rate of removal approaches 1,800 tons a day. On a single day, when I was present at the plant of the Locust Mountain Coal Co., 500 mine cars were loaded. This broke the record.

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How to Test the Fitness of Coals for Coking

To Determine the Suitability of a Coal for Coking Purposes It Is Necessary to Examine and Test It Thoroughly, Preferably at the Mine—For Such Testing a Hand-Operated Jig Is Almost Invaluable

By G. H. Elmore
Philadelphia, Pa.

THREE prime requisites of a good metallurgical coke such as would be suitable for use in modern blast furnaces may be stated, without reference to the order of their importance, as low ash, low sulphur and suitable structure.

In determining what are the possibilities of obtaining any of the three items mentioned complete reliance cannot be placed on a mere chemical analysis or on a visual examination of the coal. This is because both ash and sulphur are associated in coal with the volatile matter and fixed carbon in such an unlimited variety of ways that it is practically impossible to lay down definite invariable rules.

Experience is showing that not only are there limits to the percentage of slate and sulphur that can be removed from coal but that with some coals the beneficiation that can be obtained is so small that it is not profitable to attempt it. Furthermore, where coal is needed for special purposes three products should be obtained from the washery: select coal, middlings and refuse. The second product should be used for boiler or other purposes.

It is the purpose of this article to outline and define the procedure to be followed for accurately determining the adaptability of any given coal to the production of metallurgical coke, and to follow the discussion with an explanation of some simple methods by which the investigation may be pursued and the results confirmed.

Ash Is Present in Four Distinct Forms

Percentage of ash in any raw coal is not indicative of its coking possibilities. The problem does not lie in the quantity of ash contained, but rather in the manner of its association in and with the coal. Generally speaking, ash may be present in four forms:

(1) As well-defined pieces or particles of rock, slate or fireclay, each with relatively high specific gravity and breaking free from the good coal when put through a suitable crusher.

(2) As "rash" and "mother of coal," usually high in ash and of relatively low specific gravity.

(3) In such fine mechanical combinations in the high-ash coal or "bone," that separation is impossible. The specific gravity may lie anywhere between that of the good coal and that of the slate.

(4) As non-combustible matter in the good coal.

By "good" coal is meant that portion of the product of a mine which remains after rock, slate, fire clay, rash and bone have been removed by the best-known means of separation. If this good coal runs low enough in ash to make good coke, this portion of the problem has been solved.

The quantity of ash present in those forms having high specific gravity, whether its amount be 10 per cent or 30 per cent, will not affect the resultant good coal. In such cases difficulties in producing a low-ash washed coal lie wholly in the bone or rash, where the specific gravities come close to that of the good coal.

The economic importance of obtaining low-ash coke for a blast furnace is revealed by the fact that under pre-war conditions, when the cost of raw materials at the large pig-iron-producing centers maintained a definite average relation, each unit of ash in the coke added approximately 20c. per ton to the cost of the pig. This increase in cost is due to four causes: (1) More limestone is required to flux the increased ash in the coke, with a consequent increase of slag. (2) More coke is required, each unit of ash decreasing the heat value of the fuel. (3 Increased labor is necessary for handling limestone, coke and slag. (4) Decreased daily output of the furnace will result, the high-ash coke permitting less ore to be charged.

Much of the coke used in blast furnaces runs above 10 per cent of ash. If by proper preparation this can be reduced to 7 per cent, the saving for a modern blast furnace, yielding above 500 tons of pig iron per day, easily can be estimated—bearing in mind that at this writing (1919-20) pre-war figures are about doubled.

Investigations Reveal Facts About Sulphur

Not until recently have the investigations made by the U. S. Bureau of Mines,[1] the University of Illinois and other experimenters produced evidence that seems conclusive concerning the origin of sulphur in coal. Briefly stated, these are:

(1) All sulphur found in coal either now is or originally was deposited in organic form, the exact chemical nature of which is not known except that it was extremely complex. The sulphur had its origin in the plants from which the coal bed was formed, and the amount present is easily accounted for when the sulphur content of many known plants and the great quantity of vegetation laid down per unit of thickness of any coal deposit is considered.

(2) A portion of the sulphur found in coal is still organic. The remainder is largely in combination as pyrites of iron and sulphate of lime, the prime agent in this transformation from organic to mineral combination being certain bacteria.

(3) Appreciable quantities of iron pyrite may be present in the form of microscopic crystals.

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[1] "Some Factors That Affect the Washability of Coal," by Thos. Fraser and H. F. Yancey; "Forms in Which Sulphur Occurs in Coal," by A. R. Powell and S. W. Parr; "Sulphur in Coal Geological Aspects," by G. H. Ashley; "Occurrence and Origin of Finely Disseminated Sulphur Compounds in Coal," by Reinhardt Theissen; and "Mechanical Separation of Sulphur from Coal," by J. R. Campbell.

It is evident that no mechanical means can remove such sulphur in coal as is present in organic combination or that exists in such fine particles as to be microscopic. Coal-washing plants are ineffective for this purpose. Only non-microscopic or the coarser iron pyrite is removable by washing.

It is well known that, when crushed, pyrite breaks to cubical form. A portion of these cubes may easily be as fine as flour, these being known to those engaged in coal washing as "flowers of sulphur." Sometimes the sulphur crystallizes in the laminations of the bed in small, thin disks. The practical difficulties encountered in removing these "flowers" and "disks" are great, particularly when large tonnages must be treated. However, these obstacles have to a great extent been overcome. There is no difficulty whatever with the granular and larger portions.

Coke Must Be Cellular, Hard and Strong

A coke of good structure must be of such cellular formation as to be rapidly combustible in the blast furnace, also of the proper hardness and strength to withstand the weight of the furnace burden. Formerly it was held by many operators of furnaces that coke carrying less than 10 per cent of ash could not meet these requirements. This is now known to be an error, as constituents other than ash determine the hardness and strength of this fuel. It also is clearly established that pieces of ash in the form of rock or slate charged to the oven will in the resultant coke form centers from which fractures radiate. These detract from the strength of the coke, cause increased breakage in handling and add materially to the quantity of breeze formed. This emphasizes the necessity for charging ovens only with good coal.

How Coals for Coke Should Be First Tested

Examination of a coal with reference to its availability for coking purposes must begin at the mine. An accurate sample of the coal must be taken and the examination directed by an engineer of experience, with a clear understanding of the elements entering into the problem. It is well known that both the ash and sulphur may vary greatly in different portions of the bed and in different locations in the mine. Consequently several samples should be taken. If the mine is not sufficiently developed, samples should be taken from numerous borings over the entire tract. Each of these samples should undergo a series of float-and-sink tests followed by assays. These investigations should determine:

(1) The highest specific gravity allowable for the good coal. This usually lies between 1.35 and 1.40, although it may vary from 1.25 to 1.45 for some coking coals.

(2) The highest specific gravity allowable for the secondary or bone coal. This usually will be no higher than 1.55.

(3) The degree of fineness to which the sample must be crushed in order to properly free the impurities from the good coal, keeping in mind the economics involved. In most cases it has been found that crushing all the coal to pass a ¾-in. round hole will be ample. However, the accurate determination of this point is vital, and no general rule can be laid down.

(4) The proportionate tonnage of good coal, secondary coal and refuse in each size of each sample.

(5) The assays both of the raw coal and of each product obtained from every size of every sample tested.

Then Follow Jig or Concentrator Tests

With these results in hand and properly arranged, a fairly accurate idea may be obtained as to the impurities that can be eliminated, as well as how fine the coal should be crushed. These results should be confirmed by treating a much larger sample either on a hand jig of the type used in the Missouri, Kansas and Oklahoma zinc fields, or a full-sized coal-washing jig, or, if the coal must be crushed extremely fine, on a suitable washing table. If possible, these larger tests should be conducted at the mine by one thoroughly familiar with the art.

It is important that these trials be conducted at the mine, for nowhere else can a sufficient supply of raw coal be readily obtained such as will permit experiments and investigations to be conducted until the problem in all its phases has been solved. If the proposed investment is large, careful preliminary investigation is imperative, and in that event the owner of the property, through his selected engineers, should carefully test the merits of the various means of coal washing to be found in use in the many coal fields of this country. He should then proceed to erect at the mine a full-sized machine with the necessary crushing equipment, feed bin and feeder, to operate on a thoroughly commercial scale. This will give positive information on a vital point involved in the building of a full-sized unit and the flow sheet that should be followed.

Testing Plant Should Produce Fair Tonnage

The output of an experimental plant of this kind should be from forty to sixty tons of washed coal per hour. This affords ample tonnage for coking tests on a large scale. Regular blast-furnace runs with this coke may then be made and confirmed as many times as may be desired. If such a test proves a failure, another machine may be substituted and the test repeated.

The main detail to be noted is this: If the results obtained by a testing plant of the character outlined are satisfactory, and if the same machines are used in the construction of the contemplated plant, it can be built with confidence, and when put in commission the disappointments that have attended many operations of this kind will be averted.

The importance of good engineering in all other departments of the washery should not be overlooked. The crushing, elevating, conveying, transmission and power applications are each vital elements in a successful plant, the crushing problem sometimes being quite difficult. After all is said, however, it is the washing machines alone that make the separation of the impurities from the good coal, and they are, therefore, the real heart of a coal-washing plant.

Four Ways of Disposing of Middle Product

Reference has been made to the intermediate, or secondary, high-ash coal that is found in most mines. This material may be disposed of in four ways, which one of the four is adopted being a matter of great importance:

(1) The separation may be made in such a manner that the high-ash, or intermediate, coal will go with the good coal. This increases the ash, and usually the

sulphur, in the resultant coke, and should not be considered except under compelling conditions.

(2) It may be thrown out with the refuse. This means a waste of real fuel value, and the time will come when such a procedure will be prohibited by Federal law, for in the last analysis it is nothing short of a crime.

(3) The separations may be so made in the washing plant that the lighter, or low-ash, "bone" will go with the good coal, and the heavy—high-ash—portion with the refuse. This is a compromise between the two evils, and is not a satisfactory solution. However, there may be times when it is justified.

(4) A three-part separation may be made in the washing plant. The three products consist of good coal, intermediate coal and refuse. This corresponds to the practice of making concentrates, middlings and tailings, prevalent in the concentration of metalliferous ores, and it is the only logical and economical procedure.

Even Tables Will Reject Some Combustible

Ore middlings are always reground, then passed over some type of fine concentrator, which separates them into concentrates and final tailings. This can be done with the intermediate coal.

Several makes of coal-washing tables that perform this service satisfactorily are now on the market, but the refuse from these tables when treating bone will still contain a large amount of combustible matter. In a large operation total rejection of this material would mean a great waste of heat value.

The one economical and correct method of disposing of the intermediate coal is to burn it as fuel, either under boilers or in gas producers. Lack of a market, difficulty in hauling or small boiler capacity may sometimes preclude this disposition, but careful calculation should be made before any other manner of utilizing the intermediate coal is adopted. This is particularly true in designing new operations or in remodeling older ones. When the whole plant is co-ordinated, from the mine face to the finished steel, a place can be found wherein to use this intermediate product and utilize its fuel value.

It is free-burning, as it contains only a small amount of fines and no dust. This is because it is harder than the good coal and consequently does not break into fine pieces. All evident pyrite has been removed and so it works well on grates, particularly in modern stokers of the traveling-grate type. It may vary in ash all the way from 12 to 25 per cent, but is practically free from pieces of rock or slate.

A bulletin by the writer, "The Preparation of Coal for Coking," describes the method of successfully and automatically accomplishing the three-part separation. Proper treatment of the intermediate product is of real importance. The two prime factors are the conservation of the fuel values in the mined coal, and the present high cost of all fuel, a condition that probably will be permanent.

Simple Hand Jig for Coal-Washing Tests

Reference has been made to the type of hand jig used for separating certain metalliferous ores from the gangue with which they are associated and which I have found to be useful in determining the characteristics of any coal, as they affect jigging.

This equipment in its very nature is, of course, rather crude, and yet when operated by a competent man the results obtained approach closely the best that can be attained by a full-size automatically-controlled jig. Such machines are, therefore, to be recommended for making such investigations as have been hereinbefore discussed, when other and more accurate means are not available.

The complete jig can be built at any mining operation for a cost not to exceed $60. All the ironwork except the sieve bottom easily can be produced by the blacksmith on the job, while this remaining element can be obtained from any concern making perforated metal.

Referring to Fig. 1, the jig consists of a tank (1) constructed of matched flooring, with standards (3) at each side. In the top of these standards rocks the jig-pole mechanism (2), at one end of which is suspended the jigging sieve frame (5) by the adjustable arms (4). At the other end of this pole is the handle which is grasped by the operator and held high over his head, with his arms as nearly vertical as they can be worked. This man, standing on his toes and poised on a springboard, with knees slightly bent forward and with elbows unbent, by the muscles of his feet and limbs produces an upward and downward motion of the jig pole at the rate of about 120 strokes a minute.

Method of Operating the Hand Jig

The tank is first filled with water to a height sufficient to submerge entirely the jigging sieve and frame when the pole is held over the operator's head. It is then filled to within about 2 in. of the top of the sieve frame with raw coal of the size that is to be treated. The jigging operation is conducted for a period of approximately two minutes.

By rolling up one edge of a small piece of sheet steel, as shown at *A*, a scraper that can be grasped by both hands is made. The top portion of the coal as it lies in the jigging sieve frame is evenly scraped to one end, where it is removed by a flat shovel, care being taken not to dig into the bed any deeper than the level to which the bed has been scraped.

More coal is then added, the jigging operation repeated and the good coal removed as before. A layer of clean slate, or refuse, will begin to accumulate on the perforated sieve bottom, while above it a layer of intermediate high-ash, heavy coal will accumulate. None of the slate should be removed until a layer at least 4 in. thick has been formed. By this time there will usually be a layer, from 2 to 3 in. thick, of intermediate product, or bone, above which will appear the good coal.

Will Know Good Coal, Intermediate and Waste

In order to make a thorough separation between the good coal, the intermediate coal and the refuse, the operator who uses the scraper must cultivate an ability to judge by visual examination what constitutes these three preparations. There is no difficulty whatever in instantly recognizing the refuse or slate, and it will take only a short time to quickly see the difference between the good and the intermediate coal.

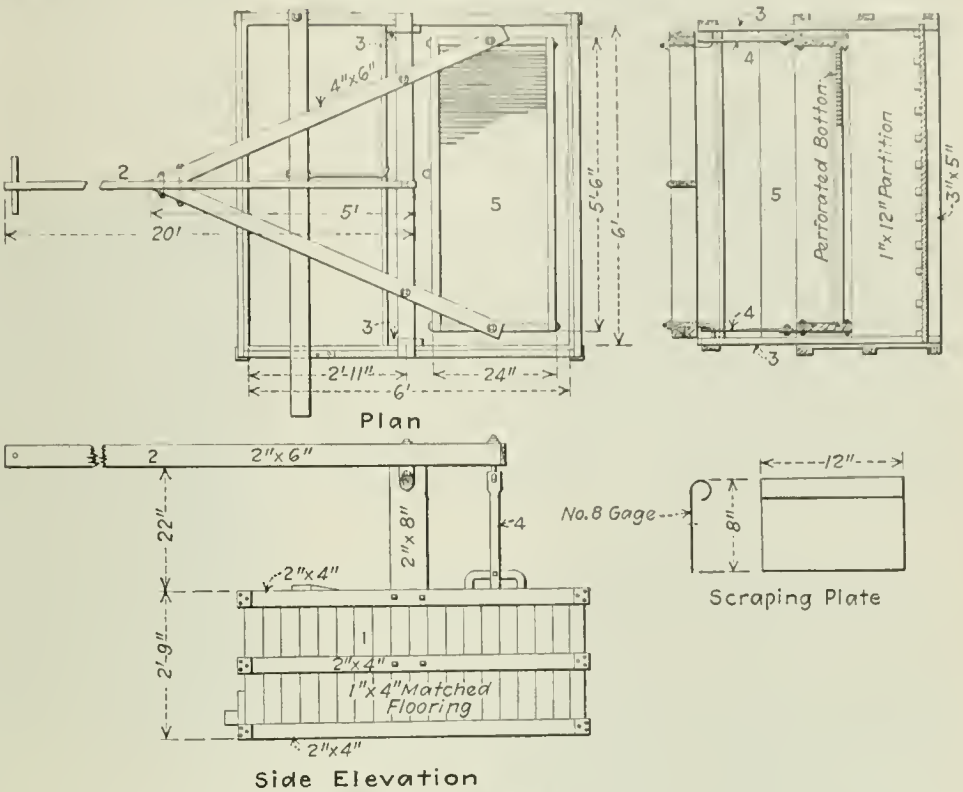
When the good coal has been removed, the operator should then use his scraper at one of the sieves, going down as far as it is safe to go without disturbing the refuse, and remove a shovelful or two of the intermediate coal, taking off only a comparatively small amount at each scraping, or perhaps removing the interme-

diate coal only every second or third time the good coal is withdrawn. When the pure refuse is to be removed, the intermediate coal should be scraped from the top and the shovel should be thrust into the refuse and part of it withdrawn. This should be repeated as often as it is necessary to keep the refuse from accumulating to a depth of more than 4 in. or thereabout.

The size of the perforations in the sieve bottom will depend somewhat on the problem in hand. If the coal contains the fines that come from grinding, the perforations in the sieve should not be larger than $\frac{5}{16}$ in. If it has all gone through a $\frac{3}{4}$-in. round hole, they should not be larger than $\frac{1}{8}$ in. The perforations should be in good stiff metal, not lighter than No. 8 steel. If, when the jig is operated, the sieve bottom has a spring effect, the whole process will be upset and the stratification will be unsatisfactory. The sieve bottom must be absolutely rigid.

It is advisable to have two men operate this machine—one to handle the pole and the other to scrape the bed and to fill and discharge the jigging sieve. The latter man will quickly become competent to determine whether the pole is given the proper stroke, and he should collaborate with the pole operator to get the best gratifying effect. This is determined by holding the hand, with fingers extended, immersed in the coal as it is jigged in the sieve.

If the action around the fingers and wrist is light and loose, without being violent, he will know the proper stratifying effect is present; if the bed is hard and leathery, he will know it is not present. Such a condition indicates that the stroke should be made a little longer so as to increase the jigging action. Should the coal be moving too violently around his fingers and wrist, he will know the stroke is too long. The proper jigging action will not be obtained until a suitably heavy bed of refuse has accumulated on the sieve.



HAND JIG FOR DISCOVERING HOW MUCH WASHING MAY BENEFIT COAL

A rough and ready homemade machine that two men can operate, one working the end of the pole and the other filling and discharging the jigging sieve and scraping the bed for good coal.

I have gone thus into detail in describing the operation of the jig in order that anyone who wishs to try it may perform the work in such a manner as to assure success.

As indicating what can be done in this regard the following table shows the results that were obtained in an apparatus of this kind at a large operation in eastern Tennessee. This mine is extracting coal from several beds where the quality varies greatly, and an effort was made to determine what kind of coal could be obtained by jigging the product from these various places, and what would be the result if certain of the coals were mixed in the coking operation.

RESULTS OF EXPERIMENTS MADE AT TENNESSEE MINE WITH TEST JIG

Coal from No. 2 Entry	Ash	Volatile and Combustible Carbon	Fixed Carbon	Sulphur	Moisture
Natural coal	26 05	27 72	46 08	0.58	1.49
Washed coal	12 70	31.45	55 70	0.50	2.70
Intermediate coal	18.81	29 02	51.02	0.54	5 26
Refuse	59.32	17 25	23 28	0.58	2 12
Coke from No. 2 Entry Coal					
Washed coal	14 38	2 22	83 25	0.54	5 26
Intermediate coal	32.96	2 15	64 74	0.60	5 33
Coal from No. 8 Entry					
Natural coal	25 76	26.68	47 71	0.58	2 90
Washed coal	10 89	30.98	57.98	0.50	4 94
Intermediate coal	20.68	27 10	52 07	0.78	5 20
Refuse	56 92	19 75	23.18	0 63	2 24
Coke from No. 8 Entry Coal					
Washed coal	14 11	1 82	83.92	0.48	3 70
Intermediate coal	32 68	1.90	65 27	0.78	4 60
Coal from No. 9 Entry					
Natural coal	12 91	30 48	56 46	0.47	1 51
Washed coal	9 66	31.95	58.24	0.47	3 57
Intermediate coal	12 68	30.85	56.32	0.52	5 48
Refuse	53 04	21 14	25.67	0 38	3 09
Coke from No. 9 Entry					
Washed coal	11 28	1.62	86 95	0 50	5 55
Intermediate coal	14 35	1 60	83.90	0.48	4 84
Mixture of Equal Parts by Weight of No. 2, 8 and 9 Entry Coals					
Washed coal	9 03	32 06	58.76	0.48	2 60
Intermediate coal	20 68	27 70	51.47	0.52	2 98
Coke from Mixture of Equal Parts by Weight of No. 2, 8 and 9 Entry Coals					
Washed coal	15 28	1 62	82 95	0.50	4 61
Intermediate coal	22 82	1 43	75 60	0 56	1.78

MEN SOON BECOME FAMILIAR WITH PROCESS

I was present when only one of these tests was made. The men about the mine quickly became familiar with the process and succeeding runs were performed without further instructions.

The table is in the preceding column.

It should be noted that after the bed of good, clean slate and refuse has accumulated on the jigging sieve little, if any material, excepting fine refuse will go through the perforations of the sieve and into the tank underneath. What does pass through the sieve may be removed from time to time with long-handled shovels either by tilting the sieve backward and holding it there or by reaching in from the rear of the tank.

In jigging a material as light as coal difficulty is sometimes experienced when using this kind of apparatus in making the frame of the jig sieve have a truly vertical motion at each stroke. This must be maintained. Proper stratification will not take place if the sieve oscillates horizontally, and in order to insure only vertical movement guides should be nailed on the side of the tank between which the sieve frame may travel up and down.

Attention is called to the column in the above table showing the sulphur content. This strikingly illustrates some of the points previously raised in this discussion. The sulphur in the raw coal from all three entries is practically the same.

When this coal is separated into its three grades—washed coal, intermediate product and refuse—it will be noted that the sulphur in each of these portions is practically the same as in the raw coal. This is, indeed, an unusual condition and simply means that the sulphur in the raw coal is uniformly distributed throughout the entire bed and through all the material in the seam in such form that it is not affected in any way by mechanical separation. This signifies that it exists as an organic compound or as microscopic crystals of iron pyrites, or both.

Colonel Leckie, Well-Known Coal Operator Of Southern West Virginia, Dies

COLONEL WILLIAM LECKIE, one of the pioneer coal operators of southern West Virginia, died Tuesday, Nov. 16, at his home in Bluefield, W. Va., after a brief illness. News of his death came as a distinct shock to Colonel Leckie's many friends and acquaintances.

Funeral services were held at Bluefield Thursday afternoon Nov. 18, in the Bluefield Presbyterian church, the Masonic lodge of that city being in charge.

Colonel Leckie is survived by his wife, three sons and two daughters. His sons are Andrew F. Leckie, of Welch; W. S. Leckie, of Aflex, and Douglas E. Leckie, of Huntington. His daughters are Mrs. S. J. Kell, of Welch, and Mrs. M. B. Moore, of Huntington.

Although a prominent figure throughout Southern West Virginia for many years, Colonel Leckie became more widely known through his purchase of the Maynard property opposite Williamson and the development of Leckieville and Aflex.

Was a Man of Varied Interests

While Colonel Leckie was largely interested in other lines his great success was made in the coal business, and his career, which was one of the most distnguished in the section, really began with the formation of the West Virginia Pocahontas Coal Co., which he organized in 1907. From that time until his death he was active in the organization of companies and the development of coal properties.

Colonel Leckie was president and general manager of the Leckie Fire Creek Coal Co. Leckie Collieries Co., Pond Creek Coal and Land Co., Leckie Smokeless Coal Co., Douglas Coal Co., Panther Coal Co., West Virginia Pocahontas Coal Co. and Leckie Coal Co., the latter a selling agency with offices at Columbus and Norfolk. In all of these companies he held a controlling interest. He also was president of the First National Bank of Anawalt, the Bluefield National Bank, the Leckie Realty Co., and was a director in the First National Bank of Welch.

On Oct. 4 he celebrated his sixty-third birthday. He began life as a coal miner in Scotland, where he worked in the same colliery with Harry Lauder, whose stage career he watched with keen interest. When a very young man he came to America and went to work in the hard-coal regions of Pennsylvania, living at Shenandoah. He became mine superintendent in the anthracite fields, and afterward went to Pocahontas as superintendent of the Consolidated plant at that place. He probably had as wide an accquaintance as any man in the coal business and was popular and highly esteemed by all who knew him.

To Educate Public in Southwest on Miners' Position on High Coal Prices

COAL miners of district 21, United Mine Workers of America, which includes Oklahoma, Texas and Arkansas, at a recent special meeting in Muskogee, Okla., voted to inaugurate a campaign of education to acquaint the general public with the real position of the miner with reference to the high price of coal, and also took steps for the erection of a permanent headquarters building at some point to be selected by a referendum vote of all the locals in the district.

The special meeting was called to adjust differences between the miners and operators and, if possible, to avert threatened "vacation" strikes. After adopting resolutions recommending that district officials of the United Mine Workers continue their efforts to adjust any inequalities in wage disagreements by mutual agreement without cessation of work, the meeting also voted to inaugurate an educational campaign at once in order that the general public might be informed that the coal miner is not the beneficiary of the high prices that prevail in the coal industry. The resolution directed union officials to make investigation of what it costs the operator to produce a ton of coal in the various fields of the district, such costs to include wages paid the miner, transportation costs, insurance and all other expense items encountered up to and including the loading of the coal on the railroad cars outside the mines.

The convention voted to continue in office Edward Cunningham, of Bridgeport, Texas; Edward Grandon, of Huntington, Ark., and John Casey, of Dewar, Okla., as a committee to investigate co-operative store enterprises and report to the next convention.

Uses Twin-Bulb Cap Lights with Hard-Rubber Battery Case

One Bulb Used at a Time—When One Is Extinguished the Other Is Switched On and Work Continued—Rubber Is Not Rusted by Perspiration

AS THE amount of light furnished men when working is an extremely important factor the Kingston Coal Co., of Kingston, Pa., has experimented with a number of different lamps of the flame and of the storage-battery type, some of which, notably the Edison, have given several years of satisfactory service. Like all companies, it has found that the electric cap lamp gives more light and therefore assures greater efficiency than the flame safety lamp.

LAMPROOM WITH ITS DIVERSITY OF EQUIPMENT

Several different kinds of lamps have been and are still used at this mine. Two racks are here plainly visible. These accommodate the old safety lamps and the newer electric lamps.

The electric lamps being used in the mines of the Kingston Coal Co. today are the Wheat, Edison and Witherbee, though how long the last will continue in use is questionable, as the manufacture of this lamp has been discontinued.

The Wheat lamp is manufactured by the Kohler Manufacturing Co. It has been in use at the No. 4 plant of the Kingston Coal Co. for almost a year and is giving excellent results. It employs an acid type of battery with lead plates and the apparatus possesses several noteworthy advantages. In the first place the case covering the battery is made of hard rubber and is consequently not affected by perspiration as is a metal-incased battery. Of course if the case receives a hard blow it may be more readily broken than one made of metal. But the men, knowing this fact, somehow give the lamp better care and protection than they otherwise might. As a result the battery cases are giving satisfactory service.

Another advantage possessed by this lamp is that the reflector contains two bulbs. Consequently, if one breaks the miner can turn a small switch and pass the current through the reserve bulb. Consequently he does not have to grope his way out in darkness. The battery, like some others, has a device enabling it to be used in shot firing. This outfit weighs about six ounces more than other types now on the market and the bulbs employed are of four-volt potential.

The lamproom of this colliery readily reveals the variety of lamps that are and have been in use. The two large racks in the foreground of the illustration support the old-fashioned safety lamps. The Davy is the only type of safety lamp now used at this mine. It is used only for the detection of gas. The other safety lamp rack has been altered so that it is now adapted to use with electric lamps.

An important detail in the issuance of these is the fact that a record is kept so that it is known at all times just what lamp each man has. Consequently, if any damage is done to a lamp, the proper man may be held responsible. A check is given to each miner, and his name is recorded on the lamp rack under the number of that token. He cannot draw a lamp unless he presents his check in exchange for it. The number of the lamp corresponds to the number of the check. Furthermore, in order to prevent a man from getting the wrong check, the lamproom attendant places the lamp on the issuing rack in the place marked with the corresponding number and the name of the man to whom the lamp is to be issued.

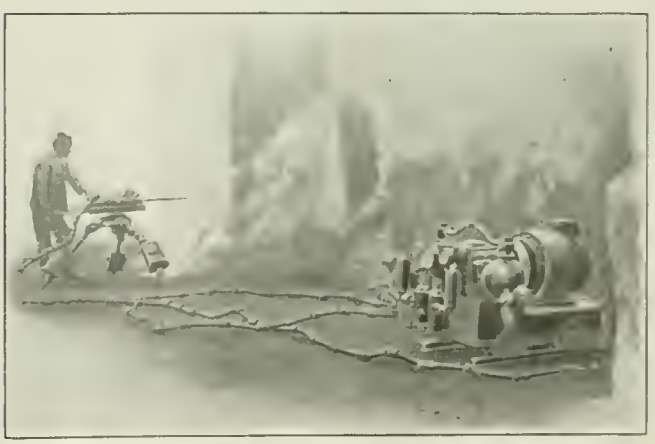
Thus, in case a man tampers with a lamp while it is in his possession and in so doing damages it, the lamproom attendant can tell who had the lamp. As a disciplinary measure, when the man comes the next morning he is issued not his regular lamp but one that does not emit the same volume of light. According to the extent of the damage done the man may be required to use this duller type for as much as a week before his regular lamp is re-issued to him.

In the rear of the lamproom is a charging rack for the Edison and Witherbee lamps, while in the extreme corner is placed a rack for charging the Wheat lamp. In this latter charging rack each row of lamps has its own control with its individual switch and ammeter.

Power May Be Transmitted by Wave Motion

POWER usually is transmitted by one of five methods: By steam, direct mechanical action, electricity, compressed air or hydraulic pressure. Wave transmission furnishes a sixth method, which utilizes for the transference of energy waves or pulsations set up in a confined liquid.

In its simplest form the apparatus consists of two



WAVE-POWER GENERATOR WITH ROCK DRILL

By the generator on the right are provided the pulsations which are carried by the jointed "Flexstel" piping to the rock drill.

cylinders, each fitted with a plunger and connected by a pipe, the entire system being filled with water, oil or other liquid. If one of the plungers is moved rapidly to and fro it will set up at each stroke impulses or waves of compressed water. These traveling along the pipe with the speed of sound (about 4,800 ft. per second) exert their energy upon the plunger at the further end, causing it to move with simple reciprocating motion in exact synchronism with the movements of the first piston.

This method of transmission is at present being utilized in such devices as rock drills, riveters and the like. Tools of this kind are extremely simple in construction and deliver to the point of application an unusually large proportion of the energy developed. Consequently the efficiency of the transmission is high.

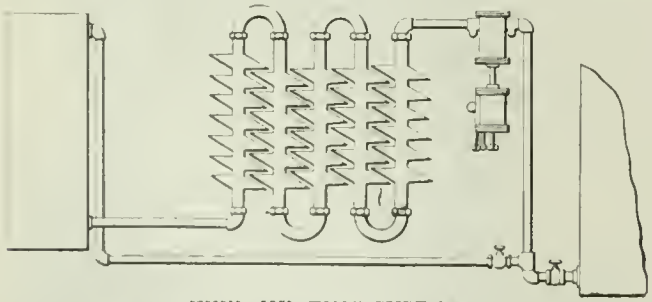
The devices operating upon this principle as manufactured by W. H. Dorman & Co., Ltd., of Stafford, England, at present perform only those functions that heretofore have been filled by compressed air. It is thought, however, that this wave motion can be applied to serve many other useful purposes. While now used only to transfer reciprocating motion, it is believed that it may be successfully used for the transmission of both rotary motion and heat.

Heating Feed Water Cools the Grate

IN THE accompanying illustration is diagrammatically shown a new device for heating water for boiler feed or other purposes. The arrangement is extremely simple, consisting chiefly of hollow grate bars through which the water is made to circulate either automatically or by means of a pump. By this latter method the circulation is positive and rapid, and consequently the heating is highly effective.

As may be seen in the illustration, the basic idea consists in making the grate bars of the furnace hollow and causing the water to circulate through them. The water is drawn from the bottom of a supply tank and after traversing the grate bars is either forced into the boiler or returned to the top of the tank.

Making the grate bars hollow and forcing water through them has other advantages besides merely heating the water. By this means the grate bars are kept cool and consequently free from warping. Furthermore, the cool grate prevents clinker from sticking. It would be quite possible also, although this is not shown in the illustration, to arrange the bars so that they can be rocked or shaken as is the ordinary grate bar. This water-heating grate is the invention of George A. Bynum, of Denning, Ark., and is readily adapted to use on locomotive or stationary boilers. A patent upon it has been applied for.



FEED HEATING SYSTEM

Circulating the boiler feed, either naturally or by means of a pump, through the grate bars not only heats the water but cools the bars.

Army Gas Mask of No Value in Carbon Monoxide or Oxygen Deficiency*

By George S. Rice†

THE American army in France successfully used the gas mask to combat the poisonous gases emitted by German shells, and this caused many army men to feel that the gas masks were proof against any kind of gas which might be encountered. The result has been that from time to time the press has reported deaths of former army men who have attempted to use their masks as a means of enabling them to enter safely various unbreathable atmospheres such as those containing illuminating gas, gasoline vapor, and the gaseous products of mine fires. Such a case has just been reported from a mine in Copperopolis, Cal., where a former army man lost his life in descending a mine shaft which was filled with the fumes from a mine fire. Another man who in attempting to rescue him merely used a dust respirator lost his life also.

Army Mask Has Serious Limitations

Though the American type of the army gas mask was developed by the Bureau of Mines for the War Department and although since the war a section of the bureau's investigative force has been developing industrial gas masks for certain specific gases, the bureau has repeatedly called to the attention of the public the fact that such masks have serious limitations and that in no case should a gas mask be used in underground workings, for the reason that in the atmospheres encountered there may be an insufficient amount of oxygen to breathe (and the gas mask does not supply oxygen) or carbon monoxide may be present, which the army mask will not remove, for some carbon monoxide is always produced by a mine fire or by a coal-mine explosion, or by a blast of dynamite or other explosive.

It is true that the bureau has been developing a mask which may take care of a small percentage of carbon monoxide—that is, 1 per cent and under—but around mine fires and after explosions there may be, and frequently is, a much larger percentage of carbon monoxide in the mine atmosphere. Masks such as these, limited as they are in their scope, may be used in the presence of small percentages of carbon monoxide and associated gases and are designed for those working in surface industrial plants. They are suited, for example, for use on the top of a blast furnace or around gas producers in the open air.

Even when a test has shown only a small amount of carbon monoxide present in a mine, one cannot tell, on account of the rapidly changing conditions caused by the fire, whether within a short distance there may not be high concentrations fatal to life.

Mask Can Help Where Oxygen Is Lacking

Finally, it cannot be stated too positively that a mask is not the slightest help when there is a deficiency of oxygen, and in the immediate vicinity of a mine fire oxygen is always deficient and usually is accompanied by the presence of both carbon dioxide and carbon monoxide. In many places in mines the presence of carbon monoxide is frequently unaccompanied by any condition from which its presence may be suspected, and if a man enters a place in a mine which contains

*From article entitled "Danger In Using Army Gas Masks In Mines," U. S. Bureau of Mines Reports of Investigations.

†Chief mining engineer, Bureau of Mines.

less than 8 or 10 per cent of oxygen he is likely to drop in his tracks without receiving the slightest premonition of his collapse.

Numerous instances have occurred where gas, such as firedamp (methane), has gathered into a pocket in the roof and men entering the place have immediately lost consciousness. Where they have been dragged out immediately and revived the victims have declared that they were under the impression that they had been knocked down. In case of the Copperopolis mine it is reported that a miner undertook to go down the shaft of a mine in which there was a fire, using the army gas mask which he had used overseas. It later proved that he was overcome and fell off the ladder into the sump. As he did not return two rescuers attempted to go down, wearing ordinary dust respirators, which, of course, are valueless against gases. One of these men fell off the ladder into the sump; the other man managed to get back into a skip and give the signal to hoist, but when he reached the surface he was unconscious and had to be revived by artificial respiration. The two bodies were later recovered from the sump by rescue crews, wearing breathing apparatus of the Bureau of Mines and working under the supervision of Bureau of Mines engineers.

This striking case presents an illustration of the absolute failure of the army gas mask and the success of the self-contained oxygen breathing apparatus in an irrespirable mine atmosphere.

Where Anthracite After Preparation Was Dropped Back Into Mine

SEVERAL interesting features in the stripping of anthracite are shown in the accompanying illustration. This picture was taken at one of the Cranberry Creek Coal Co's. old strip pits near Hazleton, Pa., where the Mammoth has been uncovered. The rock in the foreground and to the right, looking like a part of the roof of an observatory, is the foot wall of the coal measure, which at this point outcropped at or near the summit of a sharp anticline.

In the background, in the central portion of the picture, is seen the mouth of a breast that was driven up from the underground workings. When this pit was being worked the surface was stripped off, but the coal was mined from below and taken down the breasts into the mine, there to be loaded into cars and sent to the breaker for treatment.

To the extreme right of the illustration are seen the remains of an old abandoned washery. In this building coal was only partly cleaned, the large rock alone being removed; after which the coal was sent back into the mine down one of the breasts, where it was loaded into mine cars and taken to the breaker.

Now that practically all the coal has been removed from the stripping the pit is being used for a rock dump. This dump can be seen in the center of the picture and at the top.

WHERE THE OCCURRENCE OF AN ANTICLINE MAKES STRIPPING POSSIBLE

Anthracite stripping often differs from bituminous in the unevenness in level of the material to be stripped and in the fact that the strip material is all hauled out to a spoil bank, whereas in bituminous stripping as practiced the operation is one of casting. As the shovel in the latter pits has a long handle—about 90 ft. long—the casts of the shovel are large, but the operation is casting nevertheless.

Problems of Operating Men

By James T. Beard

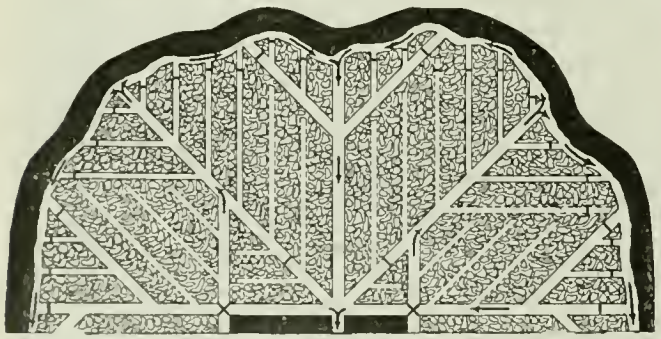
Greater Economy Needed in Working Thin Seams of Low Coal

The longwall method of mining is urged for the working of low coal, because of the greater economy afforded by that system.

REFERRING to the inquiry of L. E. R., *Coal Age*, Aug. 19, p. 403, regarding the working of a 35-in. seam of coal, allow me to suggest that the longwall method of mining presents features that will afford the greatest economy in the operation of the mine and yield a maximum production of coal at a minimum cost.

It cannot be denied that economy of working is an important feature in mining low coal. Not only is it important to obtain complete extraction of the coal, but the cost of operation must be reduced to a minimum, in order to realize a profit and make the undertaking a success.

The general plan of working coal by longwall is shown in the accompanying figure, which illustrates the advancing system where diagonal roads are driven to the



PLAN SHOWING DIAGONAL ROADS AND GATEWAYS

right and left of the main haulage road and working places or gateways are maintained by building good packwalls on each side of these roads. From time to time, the gateroads are cut off by other diagonals, from which new gateways are opened. The gateroads are driven on 42-ft. centers, and two men load coal at the head of each road. This affords a 21-ft. face of coal for each man and gives him a good day's run.

Longwall work requires an experienced man to have charge of the mine, as great care and watchfulness is needed to make this method of mining a success. The miners must understand that good packwalls have to be built in a solid substantial manner. In my opinion, this method is the only one that can be successfully applied to the working of low seams of coal.

Let me say that, in this instance, the advancing system should be adopted because of its giving quick returns, which will be needed to make up the daily payroll. I fully agree with the suggestion of Mr. Bain, however, who states in the issue of Oct. 21, p. 856, "Very much depends on understanding the movement of the overburden and keeping a proper control of the roof pressure, so that it shall be just sufficient to break down the coal." Without this knowledge and acquaintance with the work, I want to say the undertaking is liable to prove a costly operation.

Rock Forge, W. Va. WILLIAM HOWCROFT.

Lower Seam Worked in Advance of an Overlying Seam

Working out the coal from the lower of two seams separated by a considerable thickness of strata caused the floor in the upper seam to sink a few inches away from the coal, and again, in places, the coal in that seam dropped a few inches away from the roof.

MUCH interest has attached to the discussion of the question of what effect the working out of the lower one of two seams of coal that are separated by 250 ft. of strata would have on the later working of the upper seam, as suggested in the inquiry, *Coal Age*, Sept. 16, p. 594. The inquirer should have given more data regarding the nature of the intervening strata, the inclination of the seams, etc.

A question asked in a colliery managers' examination in England some time since shows the effect that may result from even a fairly slight inclination of the seam by causing the break to draw over a considerable distance on the rise side of a shaft pillar. In the same manner, any inclination in the two seams mentioned in this inquiry would have an effect to extend the break further than if the seams were level. However, this may not be in line with the discussion.

I recall an incident that occurred not long since in my own experience in the working of two seams of coal. I do not remember the exact thickness of the strata separating the seams, and it may have been some less than the 250 ft. mentioned in this case. However, we started the work in the lower seam first, mining that seam by the longwall method. The gateroads turned off the slant roads were driven 14 yd. apart with 9-ft. roadpacks built on each side of the road and leaving 24 ft. of waste between them, which was allowed to cave in as the face advanced.

EFFECT PRODUCED IN THE UPPER SEAM

Notwithstanding the fact that every precaution was taken to build solid packwalls the subsidence of the overburden was felt in the upper seam, as was found when mining was commenced later in that seam. The work in the lower seam was kept well in advance of that in the upper seam.

In working the upper seam, however, it was found that the floor had fallen away from the coal in places from one to three inches. In other places the coal had dropped with the floor leaving about the same vacancy at the roof. Again, in other places the strata remained solid and intact.

An important advantage resulted from the previous mining of the lower coal, however, in the draining off of the water and gas from the upper seam, leaving that coal of a hard woody nature and making it more difficult to blast. More explosives were required to break down the coal in the upper seam, but its commercial value was not injured. WILLIAM DICKINSON, SR.

Oak Hill, W. Va.

Training the Assistant Foreman

Every assistant foreman should be in constant training for the position of mine foreman in order to enable him to assume the duties of that office at any time when he may be required to do so by reason of the absence of the foreman.

WHEN reading the letter of Oliver Young, *Coal Age*, Oct. 7, p. 756, I could not help but feel that he had outlined very fully the many duties of an assistant mine foreman. It has always seemed to me, indeed, that the work performed by the assistant makes him of as much importance as the foreman himself and it would be well if he came into closer touch with the superintendent.

There is little doubt but that the best results are obtained when the mine foreman and his assistants work together; but, from the nature of the case, this is often far from being true. Human nature is naturally selfish, and too often it happens that the assistant foreman is simply a buffer for the foreman. Occasionally, however, one will find an instance just the reverse of this condition.

Owing to his greater ability and practical knowledge the experience and judgment of an assistant foreman may and frequently do prove of more value than the same qualities in the foreman, who has come to hold little more than a nominal position in the eyes of his superintendent because of his lack of initiative. Observing, from time to time, instances where the foreman was a mere figure head and the responsibility rested largely on the assistant, led me to suggest his closer touch with the superintendent.

THE WISE FOREMAN TRAINS HIS ASSISTANTS

A good and wise foreman who is worthy of the position he holds will train his assistants to such an extent that he can call upon them at any time to act in his place when he is unavoidably detained or called away on other business. Foremen with this trait, however, are not as numerous as one would wish.

An incompetent foreman, on the other hand, is prone to be selfish in this respect. He prefers having around him assistants who he knows do not stand a ghost of a chance of ever becoming foremen. After being absent from the mine for a day it pleases him to know that things did not move along as usual and certain work awaits his return. The fact seems to impress him with a sense of his importance.

It has always been my contention that when the operation of a mine does not proceed as regularly in the foreman's absence as when he is present there is something wrong with the foreman. Evidently he has failed to train his assistants to perform the duties of the office in his absence, as the law requires.

I once knew of a superintendent who would frequently remark that he did not care to take a vacation because nothing went right while he was away. At the same time it was generally conceded that a 16-year old boy could have filled his place with equal satisfaction, so little did that superintendent have to do that was of a responsible nature.

As mine foremen, let us take another and broader view. Let us call to mind the time when our own ambition was to become a mine foreman. No man must think that he is so important that things cannot go on without him. When a fellow drops out there are a hundred others ready and able to fill his place. I often look back and think how eager I was to learn things that my foreman pointed out to me, and it makes me now feel for every ambitious assistant foreman or fireboss who is struggling to learn and to train himself for a higher position.

It is hard to understand Mr. Young's reference to the difficulty of determining who of two or more assistants wrote a certain report. In the anthracite region each assistant foreman and each fireboss must have a book of his own, in which he notes everything he has observed or done that day. Every report is signed by three persons, the assistant or fireboss making the report, his foreman and the superintendent.

SUPERINTENDENT CHECKS UP ALL REPORTS

At one of our large collieries there are twelve firebosses employed to examine the mine every morning and the superintendent insists that each of their books shall be on his desk before 7:30 a.m., together with the assistant foreman's report for the day previous. He examines the firebosses' reports of the morning and makes his first visit that day to those places where "gas" is reported, his purpose being to ascertain the cause of the unusual condition reported.

We have made a great advance in handling gaseous mines. I remember the time when 4 ft. of gas would be reported by a fireboss and the men allowed to take off their coats and brush it out. Today men are held out and not permitted to proceed to work if gas has been found in their places.

Mr. Young's remark that assistant foremen come into closer contact with the men than the foreman does not describe my experience. I believe that the bossdriver who is an old hand at the business is the "Information Bureau" of the entire mine. He can tell you anything you want to know and is able to give a good guess when his knowledge fails. In my opinion, what a bossdriver does not know cannot be ascertained from the foreman or any assistant. RICHARD BOWEN,

Plains, Pa. Special Investigator, Hudson Coal Co.

Miners and Their Bosses

The human factor in coal mining is an important element of success. Encourage all mine workers to read and study. The boss is not the only one on the job who has brains.

IT WAS with great pleasure that I read the article that appeared in *Coal Age* Sept. 2, p. 495, by G. E. Daugherty, who I think must hail from the mountains of Kentucky. This and similar articles that have appeared from time to time in *Coal Age* show that the writers have at heart the best interests of the coal industry and are seeking the good of their fellow men.

We have everything to gain and nothing to lose by close familiarity with those about us. Along this line, I have often noticed the appeal made in *Coal Age*

asking the practical miner to give his views gained by experience in the mine; and I have thought that if *Coal Age* was thoroughly canvassed in the several mining communities, as I have seen done with other mining magazines, there would great benefit result to the miner.

The man with a limited education must depend largely on the reading of simple articles that give the practical experience of men in positions similar to his own. Their experiences always help him in his daily vocation and go very far to eliminate accidents that he is taught to avoid. It is unfortunate that in the mountain districts, where many coal mines are located, only the officials and bosses ever see *Coal Age*.

Unfair to Treat Workers as Children

No wonder some bosses conclude that since the miners have no papers to read they have no brains; and it is left to the boss to direct the miner and watch him as he would a child. This classification of men, as the result of conditions that surround them, is often unfair and leads to misunderstanding and friction between the men and their bosses.

For myself, I have every respect for the boss, but there are times when sent to do a certain work I feel I know where to start and how it should be done. Yet, as has been stated in *Coal Age*, orders must be given and obeyed. I always take my orders with good grace, though it may be like taking medicine when not needed.

Naturally an intelligent man feels that he would like to use his own judgment in some matters, particularly where it affects his personal safety. Often when the orders given by the boss differ from my own practical knowledge I cannot but think how the company's money is being spent needlessly, when there is an easier and perhaps a safer way to perform the work. Always in my mind are the three essentials in mining: safety, production and economy. PICKPOINT.

Cranberry, W. Va.

Hindrances to Mining Coal in the Mines of Great Britain

Physical conditions alone explain fully why the British coal miner working in mines in Great Britain is able to mine less coal per day than the American miner at work in the mines in this country.

WITH much interest I read the letter of H. S., which appeared in *Coal Age* Sept. 30, p. 687, where he gives a few only of the many reasons why the British coal miner puts out less coal a day than the American miner.

The question is not difficult to answer, provided one has had considerable experience in the mines of both countries. Allow me, then, to give a few of the instances that affect the relative producing ability of two miners working in the mines of Great Britain, as compared with the work of the same miners in American mines. I can best illustrate this by citing the experience of myself and brother who, a few years ago, were mining coal in Great Britain, but have now been engaged a number of years in the same work in this country.

First, let me say that the average American miner does not realize what is meant by the term "soft coal," as applied to the bituminous coal fields of Great Britain. Indeed, I have seen anthracite in this country that was far easier to mine than much of the soft coal in England.

My brother and I when working a chamber more than 60 ft. wide, in the bituminous coal regions of South Wales, found it necessary to undercut the coal with a pick for a distance of three feet or more. The work would take one man two days to mine the coal across the face of the chamber and he would have to work hard at that. Working together, my brother and I took turns at mining and loading the coal. While I used the pick my brother would load a car of coal; and again I would load a car while my brother worked with the pick.

One would naturally think that when a breast of coal had been mined to this depth it would fall of its own accord; but more often we would have to use wedges to force the coal down. This was known as "plug-and-feather." Our later experience goes to prove that had we been able to drill and blast the coal as we do here we would have mined more coal in a day than we did then in a week. But, as the use of explosives for blasting coal in the mines was prohibited, we had no other choice than to wedge down the coal that would not fall when mined.

Wages and Working Hours in British Mines Differ from Those of Today

There was no minimum wage there at that time, nor was the working day limited to eight hours. The miner was paid one shilling and four pence per ton, or about 33c. per ton of coal mined. It was necessary to lift about eighteen inches of bottom, which was done with a pick and hammer. The price per yard for that work was a "Thank you." The road being carried up the side of the chamber made it a long distance to handle the coal at the face. The miner loaded the coal into what was called a "curling box," holding about 50 lb. of coal. This was pushed or dragged along the floor; or the box was carried to the car if the headroom was sufficient along the face.

Besides these drawbacks it was necessary to work, in some of the deeper mines, by the light of locked safety lamps. In those mines the coal was worked by the longwall system and it was necessary for the miner to spend much time standing props with crossbars or booms to support the roof at the face.

In most of the mines the conditions were such that it was impossible to load coal with a shovel. Indeed, many times the timbers were stood so close to the face that there was no room to use the shovel. In such mines little undermining was necessary, but instead the miner was obliged to sprag his coal or brace it to prevent its falling and bringing the rock down with it.

For the most part these seams contain cleavages or "slips," as they are called by the miners. The slips would range from three to five or six feet apart and occurred in a generally east-and-west direction. Most of the chamber or "barry work" is driven north or south across the slips. At times the slips form an acute angle with the floor of the seam and are termed "face slips"; but if they form an obtuse angle with the floor the miner is said to be "working on the back."

Under these conditions the work must be performed with great care, and I believe it could be done more quickly if naked lights could be used. The miner is also obliged to build wooden "cogs" about every ten

yards apart and on each side of the road in his place. If one of our anthracite miners was told to build a cog at intervals in his chamber he would, I believe, soon be wending his way homeward.

In closing let me say that any British miner on coming to this country finds little difficulty in keeping up with his American cousin in any branch of the work. However, such are the hindrances, due to the physical conditions that exist in British mines, that I doubt if an American miner going to that country could keep pace with the miners employed there and who have long been accustomed to the difficulties with which they have to contend.

Without any desire or intention of flattering ourselves, I will say that my brother and myself have loaded six cars of coal a day in the old O. S. Johnson slope of the Scranton Coal Co., at Priceburg, Pa., far more easily than we ever loaded four cars, in a similar field of coal, in South Wales.

In the first place, here we have good roof, work with naked lights, drill and blast the coal, and have our cars placed by the driver at the face ready for loading, in chambers only 24 ft. wide. There is also a large scoop with which to load the coal. Above all, the mine foreman and his assistants treat us as men, which has been new to us, as the British mine manager (foreman) is little better than a Kaiser Wilhelm.

Plains, Pa. RICHARD BOWEN.

Inquiries Of General Interest

Firing a Boiler Under Varying Load

It is desired to know what saving of fuel can be effected through the proper firing of a boiler when the average day load is much greater than that during the nightshift, and in what manner the boiler should be fired to realize the greatest economy.

WE HAVE two 270-hp. McEwen engines, each operating a General Electric generator. The steam is furnished to the engines by a 400-hp. Babcock & Wilcox boiler, with grates 9 ft. long and 9 ft. wide. The generators give a current of 400 amp. for 16 hr. during the nightshift; but during the day the current consumed will vary from 500 to 1,200 amp. Both engines are operated during the eight-hour dayshift, while a single engine only is run at night.

What I desire to ascertain is the best method of firing the boiler under these changing conditions. Having regard to the varying load, which is far greater during the dayshift than at night, would it be possible to save fuel at night by carrying a steam pressure of only 60 lb. instead of the 100-lb. gage required throughout the day? Also, should the fire be kept high in front and low in the rear or made level over the entire surface of the grate? JOHN O. BERKEBILE,

Kimmelton, Pa. Engineer, Reading Iron Co.

Since there are a greater number of heat units (B.t.u.) per pound of steam, at 100 lb. gage pressure than at 60 lb. gage, there will be consumed a lesser weight of steam, per horsepower hour, at 100 lb. gage than at 60 lb. For this reason, there is greater efficiency in using steam at the higher pressure, even when operating but a single engine, driving one generator and consuming less power. It should be remembered that, assuming a practically constant efficiency of boiler and engine, the consumption of fuel per hour is about in proportion to the power required or weight of steam generated in the same time.

In reference to firing a boiler, a good thickness of coal should be maintained over the entire grate, the coal being evenly spread and no holes or hollows permitted to form in the bed, which would allow comparatively cool air to reach the boiler. It is important to keep as nearly an even temperature as possible in the firebox. To this end, it is not the best practice to spread a large amount of fresh coal over a hot firebed.

What is known as the "coking method" of firing is largely used by experienced firemen. This consists of throwing the fresh coal on the fire near to the furnace door and allowing it to become ignited before spreading it evenly over the fire. In any case, the furnace door must be kept open as short a time as possible, as the entry of cold air into the furnace would lower the production of steam very rapidly.

The principle involved in good firing is to furnish just what air is needed to burn the weight of coal required for the generation of the steam. Any excess of air beyond this amount lowers the temperature of the furnace by absorbing the heat that should go to generate steam in the boiler but instead passes out into the stack and is lost. An insufficiency of air supplied to the furnace likewise causes a loss of heat through the incomplete combustion of the coal and production of carbon monoxide which passes into the stack.

Inclination of Chute in Handling Bituminous Coal

The inclination of a chute, in order to permit the coal to slide freely, depends on the size and condition of the coal as being wet or dry, the manner in which it is dumped and the lining of the chute.

AWHILE ago I read somewhere information relating to the proper inclination to be given chutes to enable the coal to slide readily. I cannot now recall where this information was given, but am very much in need of it at the present time. Will *Coal Age* kindly assist me in the matter? ENGINEER.

Poweroy, Ohio.

The majority of coal chutes today are metal lined, sheet iron or boiler plate being used for that purpose. Assuming the coal is to be dumped from the car into the chute, the inclination required to cause the coal to run freely will depend on the size of the coal and its condition whether wet or dry. Dry coal slides more readily than when it is wet and requires a less inclination of the chute.

For mine-run bituminous coal, an inclination of 26½ deg. will give good results where the dry coal is dumped from the car into a chute lined with sheet iron. The larger sizes of dry lump coal slide freely on an inclination of 26 deg., while chestnut and pea coal will generally require an inclination of 30 and 35 deg., respectively. If the coal is wet, these inclinations should be increased by 5 deg. for the larger sizes and 8 or 10 deg. for the smaller sizes.

Examination Questions Answered

Anthracite Mine Foremen's Examination
Eighth District, May 4, 1920

(Selected Questions)

QUESTION—*What are the advantages and disadvantages in using electricity for power or other purposes in mines?*

ANSWER—Where electricity can be used with safety in mines not generating gas the system has the advantage of being more flexible. That is to say, an electric system can be more readily installed and changed as conditions may require than either compressed air or steam. Again, the cost of installation is generally less taking everything into account. Electricity can be used for more purposes in the mines, being available for lighting, signalling and blasting, as well as drilling, coal cutting, pumping and hauling. Electric power can be produced and distributed from a central power station, or purchased from an independent power company.

The disadvantages pertaining to the use of electricity in mines are the danger of contact of men and animals with live wires; also the danger of ignition of gas accumulated in the mine; or the ignition of any combustible material through the sparking of wires, blowing out of fuses, short-circuiting of the current, etc.

QUESTION—*State the conditions under which the presence of the various mine gases may be expected. How may each be detected?*

ANSWER—Methane or marsh gas may be expected to accumulate at the faces of pitches and in rise workings, in mines generating gas and where the air current does not sweep the face in quantity sufficient to carry away the gases generated. The gas is found in larger quantity in live workings where fresh faces of coal are constantly exposed, especially if the ventilating current is inadequate.

Carbon monoxide may be expected in poorly ventilated abandoned areas, particularly where the coal is soft and makes much fine dust, or where spontaneous ignition has taken place in the gob and the waste areas of the mine, unless such places are thoroughly ventilated with an ample air current.

Carbon dioxide is found in poorly ventilated mines and abandoned places and where gob fires exist and there is a good supply of air.

Hydrogen sulphide may be expected in mines where the coal contains much sulphur that has disintegrated under the action of water or dampness.

Methane is detected by observing the flame cap formed in a safety lamp, when that gas is present in the mine air. Carbon monoxide, by observing the effect of the gas on small caged animals, as birds or mice. Carbon dioxide, by the dim burning of the lamps or their complete extinction. Hydrogen sulphide, by its smell.

QUESTION—*Under what conditions in a mine does the Anthracite Mine Law require a mine foreman to withdraw the men under his charge?*

ANSWER—The anthracite law (Art. 12, Rule 8) requires the mine foreman or other person in charge to withdraw the men from the mine or any portion thereof when it is found to be dangerous from the presence of gas or other cause whatsoever. The only persons permitted to remain are those removing the danger.

QUESTION—*Suppose you were about to examine a mine for explosive gas, what would you consider your first duty as a fireboss, before you entered on your rounds through the mine?*

ANSWER—Before entering the mine, the fireboss should carefully prepare and examine his lamp to see that it is filled and in safe condition. He must also see that the mine ventilating apparatus is working in the usual manner and that the customary amount of air is passing into the mine. He must place a suitable danger signal at the mine entrance to prevent anyone from entering the mine before his examination is completed. When he has finished and made his report, he should remove the danger signal and permit only those men to enter the mine whose places he has found to be safe for work.

QUESTION—*Two airways, one circular and the other square, each have an area of 81 sq.ft. and the length of each is 2,500 ft.; what is the difference in the rubbing surfaces of the two airways?*

ANSWER—First, find the difference in the perimeters of the two airways and multiply this difference by the common length. Thus, the perimeter of the square airway is $4\sqrt{81} = 36$ ft. The radius of a circular airway whose area is 81 sq.ft. is $r = \sqrt{\frac{81}{3.1416}} = 5.078$ ft. The circumference of a circle having this radius is $2 \times 3.1416 \times 5.078 = 31.9$ ft. The difference in the perimeters of these airways is, therefore, $36 - 31.9 = 4.1$ ft. The difference between the rubbing surfaces of the airways is then $4.1 \times 2{,}500 = 10{,}250$ sq.ft.

QUESTION—*What is the amount of rubbing surface in an arched airway 2,000 yd. long, the top being semicircular; the height from the floor is 10 ft. and the width 14 ft.?*

ANSWER—The radius of the semicircular arch is half the width of the airway, or 7 ft., and the perimeter of this arch is $7 \times 3.1416 =$ say 22 ft. The sidewalls are each $10 - 7 = 3$ ft. high and the total perimeter of the airway is therefore $22 + 14 + 3 + 3 = 42$ ft. Hence, the rubbing surface of this airway is $2{,}000 \times 42 = 84{,}000$ sq.ft.

QUESTION—*If in making your examination you discovered a place with 10 in. of gas at the face and tailing back along the roof 20 ft. to a point, what would be your duty in such a case?*

ANSWER—This is a dangerous body of gas and far too much for a fireboss to attempt to remove before completing his examination of the remaining portion of the mine or section in his charge. It is his duty therefore to "danger off" the place by the proper signs to prevent anyone from entering there unwarned. On returning to the mine entrance or shaft bottom, the fireboss must enter the danger in the book kept for that purpose and then proceed to take up the checks of the men who work in that place and also the places adjoining so as to prevent these men from going into the mine or starting to work, till the danger has been removed and the places again examined and found safe for work.

Besides entering his report in the book, the fireboss must report verbally to the foreman what dangers he

Mining Executives at Denver Continue Discussion of Business Problems*

At Meeting of American Mining Congress Interesting Discussion of Standardization Is Continued—Cottrell Would Let Government Regulate Use of Patents—Boyle Advocates Right to Combine Where Public Interest Is Not Jeopardized—Morrow Outlines Coal Situation

By R. Dawson Hall

CONTINUING to discuss the report of the Standardization Committee on "Outside Coal-Handling Equipment" at the meeting of the American Mining Congress, the assemblage was informed that the committee had given consideration to, but had come to no conclusion on, the vexed question of shaft fireproofing. The law of Illinois calls for a fireproof shaft, but is a shaft really fireproof when covered merely with a ☆-in. or a ½-in. coating of asbestos board nailed to the shaft timbering? The question has often arisen in connection with the determinations of the Mining Board of the state. Further consideration was given to the question of cages and skips with provisions to prevent the fall of the cage on the severance of the cable and to make overwind and excessive speed impossible. However, no recommendation was made by the committee.

In the discussion of tipple clearances Carl Scholz declared that the prospect of larger railroad cars made it necessary to make clearances ample. For some time the largest railroad coal cars have had a maximum capacity of 200,000 lb., but the Virginian Ry., anxious apparently to keep its cars to its own line, has bought a number of cars of 120-ton capacity. These are 10 ft. 3 in. in width over clearances. J Milliken, president of the Industrial Car Manufacturers Institute, of Pittsburgh, Pa., stated that the Pennsylvania R.R. was buying similar cars.

Safety Men on Clearances

H. M. Wilson, director of the department of inspection and schedule rating of the Associated Companies, of Pittsburgh, Pa., said that the safety men who drafted schedules were satisfied with the 2-ft. clearance suggested, as between moving bodies, but wanted more than 18-in. between the edge of the car and stationary objects. The safety men were asking for 20 in. They also want 5 ft. between the top of the car and the stationary parts of the tipple. He believed that there should be some rule for overhead clearance, though, of course, the clearance was lost if a boom was allowed to hang down below that level.

As to fireproofing James Needham remarked that the Attorney General of Illinois had decided that a gunited shaft is fireproof. If so, is not a shaft lined with asbestos board also fireproof, or one covered with sheet-iron? In the discussion it was contended that while *in situ* these would be perfectly proof against fire, but what would happen if a car was dropped down the shaft on the top of the cage, causing a short circuit, or if an explosion took place? Either might wreck any other than a concreted shaft, exposing and perhaps ripping out the board backing on which the fireproofing had been erected, thus making it possible for the flames to attack the inflammable material.

Perhaps less forcibly it was questioned whether the backing would develop either dry rot or wet rot and so become unequal to the continued support of the fireproofing material. This is a less obvious danger with a tight material like gunite, for the air would be excluded and deterioration of the wood would be negligible. Mr. Needham said that the Attorney General had permitted the use of wood guides in such shafts as were otherwise fireproof.

Recommends 42-In. Track Gage

The Underground Transportation Committee made its report through C. E. Watts, chairman. Mr. Watts for his committee advocated a 42-in. gage, whereas, just before, the Mining and Loading Committee had expressed the idea that three gages might be provided—36-in., 42-in. and 48-in. It was stated that 80 per cent of the new trackwork already was of 42-in. gage. The committee recommended a radius of curvature on the main haulage of 28 ft., which was that of a No. 2 track frog. The wheelbase of new cars, it said, should be 42 in. The over-all length over sills, not bumpers, should be not more than 126 in.

It urged that the overhang of a car be not greater than a third the length of the car, that is, the car should never be longer than three times the wheelbase. The height of the coupling center it set as 10 in. Again the longwall men were forced to break in, this time in the person of J. A. Ede, of the Illinois Zinc Co. He felt that the longwall miner needed a car of somewhat less generous dimensions.

The report on ventilation was read by W. A. Rowe, chief engineer, American Blower Co., Detroit, Mich., in the absence of W. L. Montgomery, chairman. He stated that he had not seen the report till early that morning, and he considered that the parts referring to the conditions and size of the mine airways were beyond the province of the committee. In general, he was not in full sympathy with the report. It recommended that the speed of the air in the shaft should not exceed 1,000 ft. per min., and in the airways should be kept at or below 2,000 ft. per min. where union regulations were not such as to make the providing of sufficient airways too burdensome. It recommended that booster fans be used only in remote portions of the mines and be installed only to meet temporary exigencies.

The report advocated a second fan. This, Mr. Rowe said, would be an admirable provision for the American Blower Co., and so he hesitated to criticize it. The recommendation was made that two separate drives be provided for every fan, so that in case one failed, the other would be available. The report urged that the fan be fireproof and readily reversible. No report was made by the Drainage Committee.

Tilt on Screw and Gear Dimensions

Occasionally there were some lively but friendly tilts between the mine executives and the representatives of the manufacturing interests, the former suggesting that the machinery men used bolts and gears that were not standard, so that the purchasing agents did not venture to go into the open market to buy repairs, but were compelled to buy of the firm by which the machinery was supplied. The manufacturers denied that this was true.

The executives declared that it was sufficiently frequent to make the purchasing agents who were not skilled mechanics extremely doubtful as to the expediency of buying of any but the machine manufacturers. Carl Scholz declared that the only standardized feature was the price. This charge is either true or untrue, and it would seem possible to ascertain the facts and so relieve purchasing agents of this harassing uncertainty and the manufacturers of this aspersion.

In the afternoon the metal-mining standardization conference was held. Arthur Notman, superintendent of the mine department of the Phelps-Dodge Corporation, Copper Queen Branch, Bisbee, Ariz., reading a remarkably close analysis of drilling machines and drill steel. Mr. Notman is one of the members of the committee of which Norman B. Braly, of the North Butte mine, is the distinguished chairman. It appears that standardization of the bolts on any given machine is desirable, so that one or two wrenches will serve for setting up and ease of erection will be promoted. This seems to be of equal importance with the necessity of obtaining a reduction in the number of spare parts carried. Charles A. Mitke, consulting engineer, of Bisbee, Ariz., presided.

In the evening the third general session of the congress was held with Bulkeley Wells in the chair. Dr. F. G. Cottrell spoke on "The Bureau of Mines and the Industry." He concluded his

*Continued from issue of Nov. 25, article entitled "Mining Men Discuss Standardization Plans," p. 1109.

remarks by saying that patents are not treated in the same way as other monoplies. The railroad and the street-car lines, the gas and electric companies have franchises from the Government and certain rights in the courts; nevertheless, the Interstate Commerce Commission and Public Utilities Commissions exercised jurisdiction over their operation. Patentees, however, are given monopolies just as complete, and yet no control is exercised over the liberal rights thus granted. He believed that there should be some such restraint provided.

Analogy Close But Ill-Chosen

It might here be said that though there have been one or two important patents where an attempt has been made to take an excessive advantage of the public needs, yet on the whole the path of the patentee is long and difficult. If the advantage of his patent is provided beyond question, he is kept busy combating infringers of his right. The defence of such a patent is expensive and keeps him from concentrating properly on the development and marketing of the device. If its success is obvious, the difficulties of merchandising are such as to make the patent yield a meager return or involve the inventor in a more or less heavy loss.

It may become of recognized utility just when the expiry of the patent gives opportunity to a horde of imitators to invade the field and profit by the sales work of the patentee. Mining is a hazardous business, but the handling of a patent has even greater risks. The railroads and public utilities have been rendered unsuccessful and inadequate by reason of excessive regulation. Why destroy the patent business by an equally imprudent control? The analogy Dr. Cottrell uses is to the point, but it hardly helps to establish his argument. Rather it confutes it. Regulation has demoralized every industry to which it has been continuously applied, and it will do a like disservice to the industry of promoting patents.

Legal and Moral Obligations Differ

General L. C. Boyle, who is the attorney at Washington for the lumber interests, addressed the delegation on "Industry and the Government," urging the remission of the excess-profits tax and surtax, which have borne so oppressively on wasting industries. He spoke favorably of the Sherman law, but thought that combinations for the good of the public, entered into with the approval of the Government and supervised by it, should be permitted and even encouraged.

Recently, lumbermen had offered to meet for the purpose of regulating prices downward, but the Attorney General, while personally favorable to such a combination to lower prices, declared that it would be in violation of the Sherman law, and that the lumbermen would take this remedial action at their own risk. Needless to say, they did not take it, though a few individuals at their own initiative continued to sell below the market price. Mr. Boyle pointed out that it was dangerous to conspire to lower prices, because such a combination may be held by the courts to be a conspiracy to drive high-cost or financially weak producers out of the market by what are known as "dumping" methods.

He approved the exemption of labor unions from the operation of the Sherman Act, provided those unions were reasonable in their demands and responsible to the public. Organization he held was not morally a crime either on the part of capital or of labor, provided that the combination thus formed did not abuse the powers which organization provided.

Favors Curtailment of Production

He believed that a combination to curtail production and maintain a reasonable price in the face of a stagnant market was beneficial to capital, labor and the public; to the latter because it prevented the waste of material that always accompanied operations conducted with an insufficient profit margin or a loss. He noted from the newspapers that the farmers were forming an organization to control prices, and the Government seems disposed to permit it. He could see no harm in farmers thus manipulating the selling of the products of their industry, provided excessive profits were not sought.

The lumbermen would take the decision of the Supreme Court with all due deference, but if it goes against them they will feel justified in seeking by proper means such a revision of the law as will make their combination and other combinations than theirs permissible if not conducted in such a manner as to be incompatible with the public interest. They feel that their action has been morally justified in view of the fact that the Bureau of Forestry in a report has practically absolved them of any attempt to exact the payment of unfair prices.

To Stop Sale of Worthless Mines

The fourth general session was held at 2 p.m. on Wednesday with Carl Scholz in the chair, A. C. Mackenzie opening with an address on "Blue-Sky Legislation," urging the repeal of all state laws of this type and the enactment of federal laws in their place. State regulation, he said, was valueless, as the people within a state are protected by their local acquaintance with conditions and the approval given by a state with a blue-sky law often serves to give a specious value to a worthless property and to make it possible to sell poor stock beyond the state confines.

Judge E. Finney, member of the Board of Appeals, Interior Department, spoke on "The Interpretation of the Mining Laws" and James G. Fitch, of Socorro, N. M., on "State Taxation of Metal Mines." D. Vance Sickman, a mining engineer, of Denver, Col., read a paper describing "A Powderless Mechanical Process for the Mining of Coal." An abstract of this article will soon be published. Mr. Sickman in well-chosen words referred to the way in which machinery drives the man. He must either let it work or let it rest, and if the operation of the machine does not involve labor he would rather let it run to its capacity than stand idle. Mr. Sickman dislodges the coal by water pressure. A plant is being installed at Rock Springs Mine 4 of the Union Pacific Coal Co.

Losses from Death and Sickness

Dr. Arthur L. Murray, of the U. S. Bureau of Mines, Washington, D. C., discussed in broad terms "Industrial Medicine and Health Conservation." The two principal points made were that physical defects are rarely irremediable but can be corrected and that the industry sustains a heavy loss in the number of skilled men removed by death, accident and sickness.

In reference to the first contention he pointed out that of eighty-one applicants for hoisting engineers' licenses in the State of Utah, twenty-nine persons, owing to physical defects, were found unfit for employment of that character. Twenty men had defective vision, three had hernia, four had minor defects of the limbs and two had constitutional diseases. Only these last two were ultimately rejected, the other twenty-seven having their defects corrected. He said that sickness laid off employees on an average nine days every year. This appears to be only a small loss of time, but for 100 men the loss is 900 days, or the equivalent of three whole years for one man.

The fifth general session was placed under the chairmanship of Thomas T. Brewster, of St. Louis, Mo. Robert N. Miller, a solicitor in tax settlements, spoke, urging the mining men to demand that a board be appointed so capable and so distinguished that it would not hesitate to use its powers and make tax settlements which the lesser men in the present Internal Revenue office were afraid to make. These relatively inexperienced men did not feel assured of their ability to make decisions. Low salaries were filling the service with men of inadequate practical training and the better men were fast being drawn elsewhere by liberal offers.

How to Maintain Open Shop

George Wolfe, secretary of the Winding Gulf Operators' Association of Beckley, W. Va., surveyed "The Conditions of Operation and Production in the So-Called Open-Shop Districts." He declared that if the operators would sit tight they would have no difficulty in maintaining the open shop.

To illustrate the reasonableness of his contention he referred to the experiences of a West Virginia operator, John D. McKell of the McKell Coal & Coke Co., who declared to his men that he would not collect the check-off but would close his mines until his men were willing to work open shop. The men could stay in the company's houses

and work wherever they wished, but if they wanted to work in *his* mines they would have to do so without the check-off. After sixty days of striking they returned to work at Mr. McKell's terms.

In the Beckley district non-union and union mines are found on opposite sides of the track from each other. The non-union and union districts dovetail. Thus E. E. White runs a mine without the check-off, while just across the track is a plant of the American Smelting & Refining Co., where the check-off is in operation.

According to Mr. Wolfe about 85 per cent of the mine workers are reliable, desirable citizens. The other 15 per cent are men whose mission it seems to be to make trouble. The non-union mines gather the men who want to work, the unionization of neighboring mines driving them to places where they can labor without interference.

Sinister Influence Appears

Following Mr. Wolfe, E. W. Parker read a paper on "What Happened in the Anthracite Region in 1920." Dr. Parker declared that almost everything happened that could happen, but the most sinister matter was the advent of the consulting economist. A settlement had been practically effected, but the men, lured away by the specious figures of the consultant, were determined to hold out for larger gains. Their decision cost them heavy losses, the $40,000 paid to the economist being easily the least of those losses. Dr. Parker stated that the shortage of anthracite was greater than statistics showed, for the use of hard coal had increased while its production had decreased. A continued shortage of bituminous coal had further increased the use of anthracite. Furthermore, in prompt production statistics, no differentiation was made between various sizes of anthracite. It was certain that the percentage of the domestic sizes had decreased, for much—how much is not known—more small-size anthracite was made in 1920 than in previous years, this fine material coming largely from culm banks. Just what is the shortage of domestic sizes is not known.

Carl Scholz in speaking on "The West Virginia Appellate Court Decision," said that at his Illinois mine of about 1,000 men the check-off amounted to about $50,000 a year, each man paying roughly $6 per month to the union. The annual collection of dues probably will run from $25,000,000 to $30,000,000, some of which is locally distributed. He approved the declaration of George Wolfe that 25 per cent of the men in the mines were little disposed to support the union.

During the last year the mine workers checked out money to support Samuel J. Montgomery for Governor, Sam running on a third, or labor, ticket. Thousands came up to Charleston to march in a procession in his honor. Yet when the ballots came in Montgomery made a poor showing. The quiet men who endure the union in silence voted against the man whom they had been unwillingly aiding with their money. The labor voters of West Virginia are not to be coerced, though where opposition to the union cannot be secret they yield somewhat readily and weakly to the noisy 15 per cent.

J. D. A. Morrow, executive vice-president of the National Coal Association, spoke on "The General Coal Situation." He declared that a shortage of 5,000,000 tons of bituminous coal still exists, but it is rapidly being wiped out by the large production which the action of the Interstate Commerce Commission's service orders have made possible. The high prices for coal were not due to manipulation of the market but to frantic bidding by purchasers.

As an instance he cited four men who went out to buy coal to supply a single railroad. They knew that their jobs depended on their success. Consequently they bid against one another, each raising the price 25c. a ton. The railroad got the coal but at an unnecessarily high rate.

What constitutes a fireproof shaft? What is a proper clearance on a tipple? Which gage of track should be preferred? How much may mine car overhang wheels? How fast is it well to speed the mine air? Are machines, screws and gears usually standard?

The high price for coal severely crippled some buyers, but, being readily paid by others, they spent their money without any scruple as to the effect of their action on others. One concern sold its product at $100 per unit. The cost of coal even when figured at $20 a ton meant to that firm an increase in cost of only 30c. per unit. It therefore saw fit to conclude a contract at that high figure, arguing that it would be high enough to assure it of all the coal it wanted no matter what happened, for the company that entered into the agreement to supply the fuel would go into the market and get it if a strike at the mines of the company temporarily shut off production.

When a New Englander Prays

The New England difficulties were due largely to the fact that all the coal that New England wanted could not be taken through the Hudson River gateways. As the rate of transportation by water, owing to shortage of bottoms, was $1.50 a ton more than by railroad, the canny New Englander refused to buy water-borne coal at that higher rate, and when, owing to delay, he could not get any coal by water or rail, he made a bitter outcry. To quote Mr. Morrow, to be obliged to pay $1.50 more than another man is enough to make "the New Englander offer a prayer." Finally New Englanders demanded of the operators 1,250,000 tons a month. They were told then that the demand was excessive, but they insisted upon their estimate. In a short time they were declaring it was so much more coal than they needed that they could not find any place to put it. Mr. Morrow ended by condemning Senator Calder's plan for nationalizing the coal mines.

Callbreath Urges Higher Dues

On the morning of Thursday, Nov. 18, the members held their annual meeting, at which the secretary, J. F. Callbreath, made his annual report. He stated that the receipts during the fiscal year were $150,432 and the cash on hand $9,232. He believed that the by-laws no longer met with the growing needs of the organization and he suggested that the president name a committee of three to revise them.

Especially did it seem well to ask members to pay more than $10 for membership, for at that figure a member is a liability and not an asset, so expensive was the service now being afforded. There were two classes of members, those who paid $10 and those who attained membership by the contributions of companies and associations. There were roughly 900 of the one class and 2,500 of both classes.

The following directors ended their terms of office: Walter Douglas, of New York City; Samuel A. Taylor, of Pittsburgh, Pa.; L. A. Friedman, of Lovelock, Nev.; Carl Scholz, of Charleston, W. Va.; Charles S. Keith, of Kansas City, Mo. In their places the following were elected: James A. Douglas, of Bisbee, Ariz.; Robert Linton, of Butte, Mont.; W. F. Loring, of San Francisco, Cal.; Carl Scholz, of Charleston, W. Va., and Hugh Shirkie, of Terre Haute, Ind.

W. J. Loring Elected President

The president for the ensuing year is elected by the directors from their body, and later in the day W. J. Loring, of San Francisco, Cal., was chosen to succeed Bulkeley Wells. D. B. Wentz, of Philadelphia, Pa., was elected to succeed Harry L. Day, of Idaho, as first vice-president; E. L. Doheny, of California, who was third vice-president last year, this year becomes the second, the place he vacates being occupied by T. T. Brewster. J. F. Callbreath was unanimously re-elected secretary.

The first address at this conference was one written, but not presented, by H. H. Stock, dean of mining of the University of Illinois, on the proper place of English in the engineering curriculum. No one doubted for a moment that English was needed, but the general sentiment seemed to be that it should be taught under the supervision of the engineering department and not as a broad cultural study. The main desideratum was the acquisition of simple, lucid English that would readily convey the correct meaning of the speaker or writer. The average student regarded English as an unnecessary grind and did not see why

he should be compelled to give time to it. Dr. A. X. Illinski, president of the New Mexico School of Mines, read a paper on mathematics contributed by Prof. Robert Peale, of the Columbia School of Mines. As that paper advocated the use of mathematics for its cultural quality it was quite forcefully attacked, Dean F. A. Thompson, of the Idaho School of Mines, who presided, declaring that all studies had this cultural value and that, as all could not be studied, only those should be given attention that were helpful to the student in his life work.

It was urged that success in teaching mathematics was attained only when it was taught by engineers, and some said the very names of the branches of mathematics should be eliminated, as trigonometry, analytical geometry, calculus and the like. The engineering student should get the training in seeking solutions to problems with which he would be confronted in his mining experience.

Conference Elects Officers

After a round-table lunch Charles H. Fulton, director of the Missouri School of Mines, was elected chairman; A. X. Illinski, president of the New Mexico School of Mines, was elected vice-chairman, and Francis A. Thomson, secretary. C. H. Clapp, president of the Montana School of Mines, and D. A. Lyon, U. S. Bureau of Mines, were elected to the Executive Committee.

Addresses were made in the afternoon by Morton F. Leopold, safety engineer, U. S. Bureau of Mines; Dr. David White, chief geologist, U. S. Geological Survey; Dr. F. L. Ransome, also of the Survey; Henry Landes, geologist for the State of Washington, and Edward Higgins, who spoke on the safety code of the State of California.

In the evening the congress held its annual dinner at Daniels & Fisher's restaurant with Thomas B. Stearns in the chair. At its close a letter from President-elect Warren G. Harding was read and J. F. Callbreath was presented with a scarfpin in recognition of his labors as secretary. A life membership was awarded to D. W. Brunton. Thomas B. Stearns then became toastmaster, calling on U. S. Senator Charles S. Thomas of Colorado, who in his response said that American individualism was fast being sapped. The American no longer relied on himself for extrication from his difficulties, but whenever business did not go to his liking he went whining to the government. Thus the government was rapidly being centralized in Washington and so many laws have been passed that a man has to be a student in order to be sure that he is not a criminal.

Emmett D. Boyle, Governor of Nevada, presented a watch on behalf of the congress to Bulkeley Wells, and addresses were made by Carl Scholz, W. J. Loring, T. A. Rickard, E. B. Grey, who, by the way, had walked 175 miles to be present, being a resident at Fairbanks, Alaska, and chairman of it. chapter; E. P. Matthewson, W. G. Bierd, president of the Chicago & Alton R.R.; L. C. Fisher from the Philippines, Governor B. B. Brooks of Wyoming and T. T. Brewster.

The sixth general session assembled on Friday in the convention hall, with Bulkeley Wells presiding. Arthur Notman spoke on the relations of the Phelps-Dodge Corporation with its employees. He related, among other matters, the selective-service system adopted in reducing its forces at Bisbee, Ariz., to meet the declining needs of the copper market. The discharge of large numbers of men was a regrettable expedient made as fair as circumstances allowed, but involving loss and discomfort to those discharged.

The bituminous coal industry works irregularly but does not discharge well-meaning and industrious workmen. It might well be questioned whether the way of the coal industry or that of the metal industry is to be preferred. Herbert Hoover seems to think that the metal industry is functioning better than the coal industry when it discharges men.

Copper Industry Functions Ill

To judge by Arthur Notman's talk neither he nor the Phelps-Dodge Corporation considered the copper industry as "properly functioning" when it faced such a necessity. Only Mr. Hoover seems to have discovered the peculiar malfunctioning of the coal industry. It might as well be admitted that most industry is badly functioning most of the time and that slow working is not the only form of failure to function. A discharge of workmen is quite as grievous, and no company more regrets its necessity than the Phelps-Dodge Corporation, which has done much to better the living conditions of its men.

Charles A. Chase, manager of the Liberty Bell Mines at Telluride, Col., discussed "Why Colorado Mining Engineers Adopted the Open Shop," and L. Ward Bannister, of Denver, Col., spoke to the title of "Denver and the Open Shop," advocating with much ability that the laws should be so written that a process served on an officer of a voluntary association should be regarded by the courts as a process served on every one of its members. This would make the association amenable to laws to which incorporated bodies are subject. He said that the plea of operators for the rights of non-union men was disingenuous, but added that he believed the public was quite ready to accede to the proposition that there was a menace to the employer and the nation in 100 per cent organizations.

Railroad Head on Labor Unrest

W. G. Bierd, of the Chicago & Alton R.R., spoke lengthily to the title "The Relation of Industry to Industry." He believed that workingmen would not give up readily the advantages gained during the war. But, as a matter of fact, has labor in general gained anything in the years that have just passed? A few industrials, like those in the coal-mining industry and the railroad industry (especially the more lowly day laborers), have gained at the expense of all other classes of workers, but labor in general has gained nothing. It has higher wages but no increased purchasing power. But if unhappy in his remarks about wages and unrest, Mr. Bierd's plea for no more government control contained elements in its favor and deserved greater amplification. James Lord, president of the mining department of the American Federation of Labor, was not present, and though on the program did not send an address.

A seventh session was called to hear the report of the Resolutions Committee. Bulkeley Wells' resolution for regulation of the use of patent rights was approved. It calls only for a committee of the congress to consider the matter and co-operate with government committees appointed to report on it. The preamble, however, speaks plainly in favor of the proposition. Another resolution by Carl Scholz, advocating that in the event of a department of public works being formed, the Department of the Interior be continued with control of Western lands, also was approved, as also a resolution emanating from the same source and urging that the Henderson bill, which would unite the U. S. Bureau of Mines with the U. S. Geological Survey, be enacted into law. Another resolution having the same author urged the formation of the department of public works.

Condemns Mine Nationalization

C. E. Debeque's resolution in favor of an appropriation for scientific inquiry into the technique of oil-shale development received approval as did also George Wolfe's resolution against the nationalization of the coal-mining industry. The blue-sky resolution failed of passage though backed by Sidney Norman and A. G. McKenzie. However, Mr. McKenzie induced the congress to avoid any expression of approval of the blue-sky laws already in existence.

Another resolution declared that, as it had been decided that the net proceeds of mines constituted profits and were all taxable without deduction for depletion, the Bureau of Internal Revenue is not justified in its rule that, regardless of actual conditions, actual facts and valuations, the invested capital of mining corporations should be ascertained by deducting from profits for each unit of minerals removed between the commencement of mining operations and the year 1916.

Congress May Meet in Pittsburgh

Pittsburgh, Chicago and Atlantic City were discussed as places for next year's congress. Pittsburgh appears to have the preference, but the matter is entirely in the hands of the directors. About 700 persons registered at this meeting. Probably 1,000 were in attendance.

Mexican Coal Miners Return; Get 20 Per Cent Increase

The coal miners' strike in the State of Coahuila, Mexico, ended Nov. 25, when the diggers returned to work on the Mexican Government terms, according to reports received at Eagle Pass, Texas. The terms include a wage increase of 20 per cent. The strikers, who numbered about 11,000, quit work Oct. 11, when their demands for a 100-per cent wage advance were refused. The mines were returned Nov. 22 to their owners by the strikers who seized them the preceding week.

Living Cost Receded 2 Per Cent During October

The cost of living declined nearly 2 per cent between Oct. 1 and Nov. 1, 1920, according to figures collected by the National Industrial Conference Board. This decrease, added to that which had already occurred, marks a total drop in the average cost of living of 5 per cent since the peak of price increases was reached in July, 1920. Rents and the average cost of fuel, light and sundries rose a little over July prices for these items, but the average cost of food and clothing continued to fall.

Railroads Continue to Surpass Pre-War Traffic Figures

Freight movement on American railroads during September continued to exceed records for bulk, according to a statement Nov. 23 by the Railway Executives' Association. It amounted to 40,999,843,000 ton-miles, which was more than the total moved in any one month either prior to or during the war, though it was 1,701,992,000 ton-miles less than the roads handled in August of this year.

Belgium Coming Back

Belgium's output of coal in September, 1920, equalled the output for September, 1913.

Federation of Labor to Move Against Lever Act

The American Federation of Labor will seek to have Congress at the coming session repeal the Lever Food and Fuel Control Law, under which the Government sought to restrain the late coal strike.

Automobile Plants Resume Work

Two thousand men have been put back to work in the parts department of the Willys-Overland Automobile Co., according to a recent announcement by Vice-President Kilpatrick, in charge of production. The Chevrolet Motor Co. will reopen its plant at Tarrytown, N. Y., on Dec. 1 and will operate at the rate of 100 cars daily. The plant has been practically shut down for the past month with only about 200 of its 2,000 employees at work. The Dodge Brothers Automobile Co. also announces an early resumption of work in its plants.

Charges Discrimination Against Mexical Labor Leaders

Canuto Vargas, secretary of the Pan-American Federation of Labor, on Nov. 29 charged that labor leaders of Mexico are being barred from the United States, instancing the refusal of immigration authorities at Laredo, Texas, to admit J. M. Tristan, of the Mexican Federation of Miners. The coal miners of Mexico were called out on strike by Tristan's organization and Tristan was coming to this country on a mission from the Mexican government.

NEWS BRIEFS

Terse Items Chronicling Events of Interest to the Industry

September Gasoline Output Sets New Record

All gasoline output records were broken during September, the Bureau of Mines announces. Refineries produced a daily average of 15,000,000 gallons, making the output total for the first nine months of 1920 3,500,000,000 gallons, as compared with 2,900,000,000 gallons during the same period in 1919. Consumption and exports continued high, the bureau said, so that while storage tanks on Sept. 30 held 298,000,000 gallons, the amount on hand then was less than on Aug. 30.

Employees' Bank Sets Example In Economy

The Shipbuilders' Co-operative Bank at Quincy, Mass., claims to hold the record for economical running expenses, with a total expenditure of $80.96 for the first nine months of its existence. The bank was formed by employes of the Bethlehem Shipbuilding Corporation to lend themselves money to build homes and to encourage thrift. The bank lends sums ranging from $50 to $8,000 and charges 6 per cent interest.

British Rail Freight Rates Are Three Times Those of U. S.

British freight rates applied to American rail traffic would have cost American shippers virtually $20,000,000 a day more in the first six months of 1920, according to an article prepared by the Bureau of Railway Economics in the *Railway Age*. Statistics quoted show that government controlled British roads had an average freight rate a ton-mile for the half year of 26.3 mills, while the American average was 9.7 mills. The larger-sized units in which American roads handle freight is given as the principal reason why this country's roads haul freight more cheaply.

Santa Fé Will Return to Eight-Hour Day

Announcement was made at the Santa Fé Ry. shops at Topeka, Kan., the largest on the Santa Fé system, of a reduction from nine to eight working hours a day. The nine-hour day was established two months ago to meet an urgent demand for repairs to cars and locomotives to expedite the movement of the wheat crop.

Spanish Coal Miners Ask Share of Profits for Education

The National Federation of Spanish Miners has passed a resolution calling on every miner in the country to join in a general strike on May 1 next and remain idle, unless the mine owners grant them fixed minimum wages according to working conditions in each mining district. The men also are requested to claim participation in the profits from each ton of coal mined, this money to be utilized for educational purposes. The mine owners regard the fixing of the time of the proposed strike at such a distant date as an indication that the miners are satisfied with their present conditions.

New Hampshire Utility Commission Urges Railway Economy

The New Hampshire Public Service Commission gave out a letter Nov. 23 to the Interstate Commerce Commission relative to the financial condition of New England railroads. While admitting that some readjustments of rates and changes in the present divisions of income might be necessary, the New Hampshire Commission also suggested that much might be saved by the roads themselves by rigid economies and curtailment of expenditure. Reductions of wages might be necessary, it was added, but the abolition of free passes now granted to employees and their families was urged.

Average Retail Prices of Coal in Principal Cities of the United States

AVERAGE retail prices of coal on Jan. 15 and July 15 of each year, 1914 to 1920, inclusive, and on June 15, 1920, by cities are shown in the table below, abstracted from the *Monthly Labor Review* for September, 1920, of the Bureau of Statistics of the U. S. Department of Labor. The prices are those quoted by the retail trade for household use.

In addition to the prices for Pennsylvania anthracite, prices are shown for Colorado, Arkansas and New Mexico anthracite in those cities where these coals form any considerable portion of the sales for household use.

The prices shown for bituminous coal are averages made on the several kinds. The coal dealers in each city were asked to quote prices on the kinds of bituminous coal usually sold for household use.

The prices quoted are for coal delivered to consumers, but do not include charges for storing the coal in cellar or coal bin where an extra handling is necessary. The bureau hopes to publish coal prices monthly hereafter instead of semi-annually, as heretofore.

Retail Prices per Ton of Coal for Household Use

City, and kind of coal	1914 Jan.	1914 July	1915 Jan.	1915 July	1916 Jan.	1916 July	1917 Jan.	1917 July	1918 Jan.	1918 July	1919 Jan.	1919 July	1920 Jan.	1920 June	1920 July
Atlanta, Ga.:															
Pennsylvania anthracite—															
Stove	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	$14.667	.....	.....	$18 500
Chestnut	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	14.667	.....	.....	18.500
Bituminous	$5.295	$5.083	$5.250	$4.575	$5.050	$4.500	$7.000	$7.050	$7.444	$7.778	$8.029	8.250	$9 050	$12.545	13.250
Baltimore, Md.:															
Pennsylvania anthracite—															
Stove	1 7.700	1 7.280	1 7.620	1 7.138	1 7.650	1 7.800	1 8.160	1 8.542	1 9.600	110.450	111.983	111.750	112 500	113.500	113.750
Chestnut	1 7.950	1 7.520	1 7.870	1 7.363	1 7.880	1 7.950	1 8.310	1 8.700	1 9.750	110.550	112.042	111.850	112.600	113.600	113.850
Bituminous	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1 7.540	1 6.893	1 7.500	1 8.786	1 8.938
Birmingham, Ala.:															
Bituminous	4.228	3.833	4.090	3.646	3.913	3.644	5.080	5.607	5.616	6.461	6.741	7.286	7.496	8.791	9.431
Boston, Mass.:															
Pennsylvania anthracite—															
Stove	8.000	7.500	7.750	7.500	8.000	8.000	9.500	9.500	9.850	10.250	12.000	12.000	12.750	14.500	14.500
Chestnut	8.250	7.750	8.000	7.750	8.250	8.000	9.500	9.500	9.850	10.250	12.000	12.000	12.750	14.500	14.500
Bituminous	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10.250	9.000	9.500	13.500	13.250
Bridgeport, Conn.:															
Pennsylvania anthracite—															
Stove	..	..	..	..	..	..	10.000	8.667	10.500	10.400	12.370	11.750	12.500	15.000	15.000
Chestnut	..	..	..	..	..	..	10.000	8.667	10.500	10.400	12.370	11.750	12.500	15.000	15.000
Bituminous	...	...	...	...	...	...	.....	.....	.....	.....	9.125	8.000	8.500	12.000	.....
Buffalo, N. Y.:															
Pennsylvauia anthracite—															
Stove	6 817	6.650	6.850	6.650	6.850	7.010	7.600	8.138	8.830	9.180	10.400	10.700	10.890	12.000	12.080
Chestnut	7 067	6.900	7 100	6.900	7.100	7.260	7.850	8.163	8.830	9.240	10.500	10.800	10.990	12.000	12.080
Bituminous	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6.000	8.000	.....	11.000	12.000
Butte, Mont.:															
Bituminous	.....	.....	7.417	6.750	7.125	7.125	8.222	8.598	9.188	9.083	9.377	9.836	10.381	10.444	10.908
Charleston, S. C.:															
Pennsylvania anthracite—															
Stove	1 7.750	1 7 750	1 7 750	1 7.750	1 7.750	1 7.875	1 8.750	111.500	112.275	.....	(2)	113.400	113.400	116.200	116.325
Chestnut	1 8.250	1 8.250	1 8 250	1 8.250	1 8.250	1 8.375	1 9.250	111.750	112.475	.....	(2)	113.500	113.500	116 300	116.400
Bituminous	1 6.750	1 6.750	1 6.750	1 6.750	1 6.750	1 6.750	7.000	8 000	8.000	8.375	8.500	8.500	8.500	12 000	12.000
Chicago, Ill.:															
Pennsylvania anthracite—															
Stove	8.080	7.900	8.100	7.900	8.100	8.240	9.750	9.583	10.350	10.900	11.808	12.200	12.590	14 150	14 675
Chestnut	8.330	8.130	8.350	8.150	8.350	8.490	9.670	9.667	10.338	10.975	12.016	12.300	12.690	14.288	14.788
Bituminous	5.000	4.850	5.068	4.708	4.938	4.800	7.083	6.813	6.671	6.475	6.700	7.017	8.020	8 414	8.946
Cincinnati, Ohio:															
Pennsylvania anthracite—															
Stove	8 000	7.917	7.917	7.667	8.000	7.875	10.000	.....	9.500	11.660	(2)	12.000	12.500	.....	14.000
Chestnut	8 250	8 167	8 167	7 833	8.083	8.125	10.125	.....	9.500	.....	(2)	12.000	12.667	14.000	14.000
Bituminous	3 750	3 500	3.500	3.500	3.688	3.500	5.500	5.958	6.098	6.725	6.478	6.139	6.739	8.000	8.000
Cleveland, Ohio:															
Pennsylvania anthracite—															
Stove	7 500	7 500	7.650	7 400	7.650	7.850	9.688	9.667	9.825	.....	11.050	11.538	12.300	13.525	14.050
Chestnut	7 750	7 750	7 900	7 650	7.900	8 100	10.000	9.667	9.575	.....	11.175	11.650	12.233	13.500	14.025
Bituminous	4 400	4.571	4.643	4.607	4 643	4 946	8.227	7.000	6.901	6.443	6.821	7.710	7.911	9.200	11.357
Columbus, Ohio:															
Pennsylvania anthracite—															
Chestnut	..	.....	..	.....	..	.....	.....	.....	.....	.....	.....	12.000	12.000	14 650	14.650
Bituminous						3 640	6.400	6.031	5 943	6.179	6.088	6.056	6.513	9.982	9.458
Dallas, Tex.:															
Pennsylvania anthracite—															
Chestnut	.	.	.	.	.	.....	.....	.....	.....	.....	18.000	20.000	22.000	.....	.....
Arkansas anthracite—															
Egg	.....	.....	.....	8.250	9.000	8.375	11.500	11.000	14.334	14.250	15.800	14.500	18.500	17.000	17.000
Bituminous	7.929	7.150	7.545	6.950	7.458	7.208	10.167	8.583	10.139	10.386	10.980	11.083	14.583	14.000	14.083
Denver, Colo.:															
Colorado anthracite—															
Stove, 3 and 5 mixed	10 500	8.929	9.214	9.071	9.333	8.786	9.600	10.750	11.750	12.325	12.650	13 150	14.000	14 600	14.875
Furnace, 1 and 2 mixed	11.000	9 071	9.286	9.071	9.333	9.071	9.900	11.000	11.750	12.325	12.650	12.650	13.500	14 530	14.875
Bituminous	6.474	5.300	5.641	5.192	5.250	5.019	6.000	6.500	7.598	7.995	8.148	8.348	8.908	9 371	9 469
Detroit, Mich.:															
Pennsylvania anthracite—															
Stove	8.000	7.500	7.938	7.500	7.950	8 000	9.750	9.125	9.880	10.150	11.600	11.890	12.650	14 250	14 625
Chestnut	8.250	7.750	8.188	7.750	8.200	8.250	9.800	9.313	10.080	10.520	11 710	11 980	12.750	14 200	14 625
Bituminous	5 200	5.188	5.179	5.237	5.237	5.611	7.583	7.500	8.267	8.180	7.732	7.988	8 781	10 933	12.417
Fall River, Mass.:															
Pennsylvania anthracite—															
Stove	7 750	7.688	8 000	7 750	8.750	8.438	11 000	10.688	10.750	11 000	12 700	12.500	13 000	14 500	14.500
Chestnut	8.000	7.688	8.000	7.750	8.750	8.438	11.000	10.438	10.750	11 000	12.383	12.250	12 750	14 250	14 250
Bituminous	.....	.....	..	.	.	.....	..	.	.....	.....	.....	10 000	10.250	9 500	10 000	12.250	12 875
Houston, Tex.:															
Bituminous	.				...	.	.	.	.	9.000	.	.	10 000	10.000	12.000	11.500	11 900
Indianapolis, Ind.:															
Pennsylvania anthracite—															
Stove	8 300	7 750	8 250	7 650	8 250	8 500	10 167		9 825	10 250	12 250	12.250	13 000	13 750	14 375
Chestnut	8 500	7 950	8 450	7 900	8 450	8 688	10 333		9 925	10 500	12 333	12 250	13 167	14 250	14 875
Bituminous	4 611	4 000	4 673	4 208	4 411	4 568	6 800		7 107	6.163	6.875	7.375	8 188	9.313	9.625

[1]Per ton of 2,240 lb. [2]Zoned out by Fuel Administration.

Retail Prices per Ton of Coal for Household Use—Continued

City, and kind of coal	1914 Jan.	1914 July	1915 Jan	1915 July	1916 Jan.	1916 July	1917 Jan.	1917 July	1918 Jan	1918 July	1919 Jan.	1919 July	1920 Jan	1920 June	1920 July
Jacksonville, Fla.:															
Pennsylvania anthracite—															
Stove	$9 000	$9 125	$9 000	$9 000	$9 000	$9 000	$11 000	$12 000	$12 000	..	[2]	$15 000	$17 000		18 000
Chestnut	9.000	9 125	9 000	9.000	9 000	9 000	11 000	12 000	12 000	.....	[2]	15 000	17 000		18 000
Bituminous	7.125	6 875	7 500	7 000	7 500	7 375	8 000	8 500	9 333	$9 825	$10 000	10 000	11 000	$14 000	$15 000
Kansas City, Mo.:															
Pennsylvania anthracite—															
Stove	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	16 210	17 400	.....	.....
Chestnut	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	16 470	17 625	.....	.....
Arkansas anthracite—															
Furnace	8 286	7 917	8 333	7 833	8 333	8 125	9 292	.....	12 592	13 700	15 107	13 593	15 950	15 150	15 750
Stove, or No. 4	8 929	8 500	8 833	8.375	8 833	8 667	9 958	.....	13 150	14 200	15 550	14 550	16 583	15 750	16 500
Bituminous	4.276	4 093	4.200	4.056	4.515	4.353	6.438	5 700	6.703	6 700	7.354	7 469	8 625	9 118	9 600
Little Rock, Ark.:															
Arkansas anthracite—															
Egg	.....	.....	.....	.....	7.625	7.625	9.000	.....	11.500	12 750	12 975	12 500	.....	.....	14 500
Stove	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	13 333	13.250	.....	.....	.....
Bituminous	6.250	5 833	5.972	5.361	6.000	5.750	8.000	7.857	8.250	9.155	9 414	9 250	10 375	11 950	12 591
Los Angeles, Calif.:															
New Mexico anthracite—															
Cerillos egg	17.000	.....	15.000	15.000	18.000	16.000	.....	.....	22.000	20 000	21.150	.....	21.000	.....	.....
Bituminous	13.500	12 000	13.600	11.375	13 700	12.900	15.000	14.375	14.881	14.700	14 688	14 583	16 000	17.000	17 000
Louisville, Ky.:															
Pennsylvania anthracite—															
Stove	8 750	8 450	8 700	.....	.....	.....	.....	.....	.....	.....	[3]	12 750	13 750	.....	.....
Chestnut	8.750	8 450	.....	.....	.....	.....	.....	.....	.....	.....	[2]	12 750	13 750	15 000	.....
Bituminous	4.377	3.953	3.997	3.478	3.816	3.737	5.734	6.583	6.038	10 640	6.743	6.816	6.836	9.813	9.531
Manchester, N. H.:															
Pennsylvania anthracite—															
Stove	8 750	8.500	8 750	8.500	9 000	8.750	11.000	11 000	11 000	10.500	12 500	12 750	13 417	15.000	15 000
Chestnut	8.750	8 500	8.750	8.500	9.000	8.750	11.000	11.000	11.000	10.500	12 500	12 750	13 417	15 000	15 000
Bituminous	.....	.....	.....	.....	.....	.....	.....	.....	.....	10.000	10.000	10 000	10 000	12.000	13 000
Memphis, Tenn.:															
Pennsylvania anthracite—															
Stove	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15 000	16.000	16 000	17.000	18.000
Chestnut	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15.000	16.000	16 000	17.000	18 000
Bituminous	[3] 4.219	[3] 4 219	[3] 3.883	[3] 3.833	[3] 3.904	[3] 4.083	[3] 6.222	[3] 7.018	6.539	7.171	7.221	7.528	8,000	8.850	9.563
Milwaukee, Wis.:															
Pennsylvania anthracite—															
Stove	8.080	7.930	8.100	7.900	8.100	8.300	9.020	9.167	9.500	10.968	12.286	12.400	12.600	14 688	14 800
Chestnut	8.330	8.180	8.350	8.150	8.350	8.550	9.270	9.367	9.650	10 904	12.378	12.500	12 700	14 788	14.900
Bituminous	6.143	5.714	6.143	5.625	6.000	5.875	7.743	8.000	7.385	7.385	7.814	8.144	8 960	11.469	12.167
Minneapolis, Minn.:															
Pennsylvania anthracite—															
Stove	9.350	9.133	9.307	9.150	9.350	9.900	10.350	10.650	10.826	12.238	13.708	13 800	14.000	16.440	16.520
Chestnut	9.600	9.383	9.557	9.400	9.600	10.150	10.600	10.900	10.926	12.328	13.786	13.900	14 100	16.480	16.560
Bituminous	5 875	5.846	5.990	5.960	5.977	6.375	8.077	8.600	8.888	8.474	9.000	9.189	10.425	11.918	12.044
Mobile, Ala.:															
Pennsylvania anthracite—															
Stove	.....	.....	.....	.....	.....	.....	.....	.....	14.000	.....	.....	17.000	17.000	.....	.....
Chestnut	.....	.....	.....	.....	.....	.....	.....	.....	14.000	.....	.....	17.000	17.000	.....	.....
Bituminous	.....	.....	.....	.....	.....	.....	.....	.....	8.000	9.000	9.429	9.722	10.333	11 400	11.900
Newark, N. J.:															
Pennsylvania anthracite—															
Stove	6.500	6.250	6.500	6.250	6.500	6.750	7.208	7.250	8.100	8.500	9.750	10.050	10.483	11.750	11.767
Chestnut	6.750	6.500	6.750	6.500	6.750	7.000	7.292	7.250	8.100	8.500	9.750	10.050	10.483	11.750	11.767
New Haven, Conn.:															
Pennsylvania anthracite—															
Stove	6.571	6.579	7.000	6.750	7.500	7.742	9.500	9.000	9.750	10.100	12.050	11.333	12.250	14 250	14.583
Chestnut	6.571	6.579	7.000	6.750	7.500	7.742	9.500	9.000	9.750	10.100	12.050	11.333	12.250	14 250	14.583
New Orleans, La.:															
Pennsylvania anthracite—															
Stove	10.000	10.000	10.000	10.125	10.500	11.700	13.100	.....	13.067	.....	[2]	16.000	17.500	.....	19.000
Chestnut	10.500	10.500	10.500	10.625	11.000	12.200	13.500	.....	13.300	14.550	[2]	16.000	17.500	18 500	18 833
Bituminous	[3] 5.944	[3] 6.071	[3] 5.950	[3] 6.083	[3] 6.091	[3] 6.063	[3] 6,944	.....	8.040	7.789	8.900	8.292	9.269	10 333	10 857
New York, N. Y.:															
Pennsylvania anthracite—															
Stove	6.857	6.850	7.143	6.907	7.107	7.393	8 500	8.440	9.958	9.300	10 757	10.800	11 536	12 800	13.067
Chestnut	7.000	6.993	7.286	7.057	7.250	7.421	8.500	8 420	9.083	9.293	10 764	10 857	11.600	12 814	13.067
Norfolk, Va.:															
Pennsylvania anthracite—															
Stove	.....	.....	.....	.....	.....	.....	.....	.....	10 000	9 500	11 700	12.500	13 000	14 500	14 500
Chestnut	.....	.....	.....	.....	.....	.....	.....	.....	10.000	9 500	11 700	12 500	13 000	14 500	14 500
Bituminous	.....	.....	.....	.....	.....	.....	.....	.....	7 750	7 750	8 250	9 375	9 750	11 727	12 125
Omaha, Neb.:															
Pennsylvania anthracite—															
Stove	10 700	10 700	10 750	10.700	10.750	11.750	13 200	13 250	13 188	.....	.....	16 450	17 275	19 940	21.300
Chestnut	10 950	10.950	11.000	10.950	11.000	12 000	13.400	13.500	13.330	.....	.....	16.550	17 450	20 080	21.400
Bituminous	6.125	6.125	6.083	6 167	6.042	6.000	7.857	7.750	7.950	7.388	8.471	8 930	10 108	11.168	11.465
Peoria, Ill.:															
Pennsylvania anthracite—															
Stove	...	...	...	...	...	...	...	...	10 250	11 000	.....	11 667	13 000	.....	14 000
Chestnut	...	...	...	...	...	...	...	...	10 500	11 025	.....	11 750	13 000	.....	14 000
Bituminous	...	...	...	...	...	...	...	...	5 500	.....	5 850	5 550	6 000	6 375	7 429
Philadelphia, Pa.:															
Pennsylvania anthracite—															
Stove	[1] 7 281	[1] 7 050	[1] 7 250	[1] 7 013	[1] 7 250	[1] 7 494	[1] 7 969	[1] 8.319	[1] 9 594	[1] 9 806	[11] 244	[10] 850	[11] 881	[13] 286	[13] 469
Chestnut	[1] 7 531	[1] 7 300	[1] 7.500	[1] 7 263	[1] 7 500	[1] 7.744	[1] 8.188	[1] 8 519	[1] 9.681	[1] 9 888	[11] 319	[10] 950	[11] 906	[13] 250	[13] 438
Pittsburgh, Pa.:															
Pennsylvania anthracite—															
Stove	[1] 7 713	[1] 7 550	[1] 7 875	[1] 7 567	[1] 7 967	[1] 8.000	[10] 500	[10] 625	...	[11] 000	[12] 750	[12] 750	[13] 750	[15] 250	[15] 250
Chestnut	[1] 7 775	[1] 7 550	[1] 7 933	[1] 7 567	[1] 8.017	[1] 8 100	[10] 850	[10] 650	[10] 150	[11] 050	[12] 700	[12] 663	[14] 000	[15] 125	[15] 175
Bituminous	[4] 3.188	[4] 3 158	[4] 3 225	[4] 3 225	[4] 3 326	[4] 3.450	[4] 4 857	[4] 5 750	[4] 5 278	5 656	6 000	5 833	6 179	7 333	7 375
Portland, Me.:															
Pennsylvania anthracite—															
Stove	...	...	...	...	...	...	...	...	10.890	11 040	13 000	12 200	13 440	15 360	15 360
Chestnut	...	...	...	...	...	...	...	...	10 890	11 040	13 000	12 200	13 440	15 360	15 360
Bituminous	...	...	...	..	...	...	...	...	10 453	10 890	10 853	8 573	9 370	12 650	14 810
Portland, Ore.:															
Bituminous	9 625	9 729	9 382	9.224	9 438	9.263	10.276	9 659	10 181	10 442	10 566	11 493	11 618	11 800	11 955
Providence, R. I.:															
Pennsylvania anthracite—															
Stove	[5] 7.750	[5] 7.450	[5] 7.750	[5] 7.500	[5] 8 750	[5] 8.500	[10.000	[5] 9 500	[10 500	[11 375	[12 400	[12 000	[12 950	[14 500	[14 500
Chestnut	[5] 8.000	[5] 7.700	[5] 8.000	[5] 7.750	[5] 9 000	[5] 8.500	[10 000	[5] 9 500	[10 500	[11 375	[12 400	[12 000	[13 000	[14 500	[14 500
Bituminous	.....	.....	.....	.....	.....	.....	....	..	..	..	[10 500	[5] 9 000	[10 000	[5·3 167	[13 625
Richmond, Va.:															
Pennsylvania anthracite—															
Stove	7 750	7.542	8.000	7.500	7 900	8.000	9.450	9 500	9 500	9 900	11.500	12.000	12 125	13.500	13 500
Chestnut	7 750	7.542	8.000	7.500	7 900	8.000	9.450	9 500	9 500	9 900	11.500	12 000	12.125	13.500	13 500
Bituminous	5.423	5.042	5.444	5.023	5.364	5.063	7 268	7 250	7.686	7.811	8.222	8.464	8.931	10.286	10.882

[1] Per ton of 2,240 lb. [2] Zoned out by Fuel Administration. [3] Per 10-barrel log, (1,800 lb.) [4] Per 25-bushel lots (1,900 lb.) [5] Fifty cents per ton additional is charged for "binning." Most customers require binning or basketing the coal into the cellar.

Retail Prices per Ton of Coal for Household Use—Continued

City, and kind of coal	1914 Jan.	1914 July	1915 Jan.	1915 July	1916 Jan.	1916 July	1917 Jan.	1917 July	1918 Jan.	1918 July	1919 Jan.	1919 July	1920 Jan.	1920 June	1920 July
Rochester, N. Y.:															
Pennsylvania anthracite—															
Stove	.....	.....	.....	.....	.....	$7.200	$7.750	$8.150	$8.550	$9.050	$10.300	$10 600	$10 800	$12 100	$12.200
Chestnut	.....	.....	.....	.....	.....	7.450	7.900	8.250	8.650	9.150	10.400	10.700	10.900	12.200	12.300
St. Louis, Mo.:															
Pennsylvania anthracite—															
Stove	$8.150	$8 175	$8.333	$8.033	$8 583	8.500	9.816	10.250	10.433	11.000	.....	12.900	13.100	14 433	14 350
Chestnut	8.350	8 363	8.500	8.200	8.750	8.750	10.050	10.563	10.533	11.250	.....	12.900	13.225	14.433	14 350
Bituminous	3 288	3.056	3.214	3.050	3.179	3.073	4.615	4.788	5.444	5.893	5.463	5.425	5.970	6.650	6.675
St. Paul, Minn.:															
Pennsylvania anthracite—															
Stove	9.333	9 183	9.350	9.150	9.350	9.883	10.350	10.675	10.727	12.248	13.453	13.800	14.000	16.380	16.483
Chestnut	9.583	9.433	9.600	9.400	9.600	10.133	10.600	10.883	10.827	12.417	13.543	13.900	14.100	16.420	16.517
Bituminous	6.121	6.089	6.167	6.153	6.203	6.610	8.213	8.568	9.162	9.148	9.582	9.875	11.531	13.277	13.258
Salt Lake City, Utah:															
Colorado anthracite—															
Furnace, 1 and 2 mixed	11.500	.....	11.500	11.563	11.714	11.429	12.000	12.875	14.000	15.000	15.333	16.000	16.313	17.833	18.375
Stove, 3 and 5 mixed	11.472	.....	11.500	11.571	11.786	11.429	12.000	12.875	14.000	15.000	15.333	16.000	16.583	18.167	18.375
Bituminous	5 580	$5.552	5.462	5.462	5.464	5.464	5.658	6.368	7.250	7.303	7.875	7.205	8.236	9.256	9.250
San Francisco, Calif.:															
New Mexico anthracite—															
Cerillos egg	17.000	17.000	16.833	16.833	17.000	17.000	19.000	19.000	20.750	18.600	21.550	20.500	23.000	23.000	24.000
Colorado anthracite—															
Egg	17.000	17.000	16.833	16.833	17.000	17.000	19.000	.....	18.600	18.600	19.400	19.400	21.750	21.750	23.000
Bituminous	12.091	12.400	12.273	12.333	12.250	12.250	13.429	14.500	13.867	14.083	14.200	13.591	15.100	15.643	16.643
Savannah, Ga.:															
Pennsylvania anthracite—															
Stove	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15.100	16.067	17.500
Chestnut	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15.100	16.067	17.500
Bituminous	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	11.100	13.233	14.440
Scranton, Pa.:															
Pennsylvania anthracite—															
Stove	4 500	4 313	4.438	4.125	4.375	4.800	5.250	5.250	6 113	6.050	7 475	7 683	8.233	9.100	9.275
Chestnut	4.750	4.563	4.688	4.313	4.625	4.800	5.250	5.250	6.150	6.150	7.563	7.783	8.300	9.100	9.275
Seattle, Wash.:															
Bituminous	[6] 6.167	[6] 5.800	[6] 5 906	[6] 5.313	[6] 5.528	[6] 5.750	[6] 5.850	[6] 6.133	[7] 7.867	[7] 9.133	[7] 9.163	[7] 9 103	[7] 9.588	[7] 9.463	[7] 9 843
Springfield, Ill.:															
Bituminous	.....	2.646	2 078	2.094	2.563	2 750	2.706	3.455	3.711	3.661	3.832	3 976	3.950	4 420	4.450
Washington, D. C.:															
Pennsylvania anthracite—															
Stove	[1] 7 588	[1] 7.419	[1] 7 731	[1] 7.400	[1] 7.625	[1] 7.725	[1] 8.206	[1] 8.567	[1] 10.100	[1] 9.960	[1] 11.890	[1] 11 911	[1] 12.447	[1] 13.650	[1] 13.793
Chestnut	[1] 7 738	[1] 7.569	[1] 7 881	[1] 7.550	[1] 7.775	[1] 7.856	[1] 8.200	[1] 8.625	[1] 10.190	[1] 10.064	[1] 12.019	[1] 12 011	[1] 12.538	[1] 13.729	[1] 13 857
Bituminous	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	[1] 7.700	[1] 7.974	[1] 8.050	[1] 8.267	[1] 9.840	[1] 9.694

[1] Per ton of 2,240 lb. [2] Zoned out by Fuel Administration. [3] Per 10-barrel lot (1,800 lb.) [4] Per 25-bushel lots (1,900) lb. [5] Fifty cents per ton additional is charged for "binning." Most customers require binning or basketing the coal into the cellar. [6] At yard, delivery $0.50 to $2, according to distance. [7] Prices in zone A. The cartage charge in zone A is $1.85, which has been included in the average. The cartage charges in Seattle range from $1 85 to $2.90, according to distance.

Coal Statistics Shown to Have National Importance—III

Consumers' Stocks the Most Significant Barometer of Supply—Survey by Fuel Administration and Bituminous Commission Reveals Interesting Possibilites

By F. G. Tryon*

THE subject of consumers' stocks of fuel is almost a virgin field. Prior to the war it had remained entirely unexplored. Yet when a sufficient store of data concerning stocks is available for comparison, stocks are likely to prove the most significant single barometer of the coal supply, for stocks constitute the consumer's reserve against an interruption to his line of communication.

In the United States it is not customary to store coal above ground at the mine, nor is there any present indication that the practice will be adopted in the future. It has been aptly remarked that the cheapest place to store coal is underground in the coal bed. Every rehandling of coal adds greatly to the cost laid down at the consumer's door.

Distribution Program Dependent on Stocks

Stocks are the final proof of whether or not production has been keeping pace with consumption. Other things being equal, very large stocks are a sign that the market has been oversupplied and forecast a season of low prices. Depleted stocks, on the other hand, show that production has fallen behind consumption and forecast a period of active demand and consequently of high prices. Data on stocks would, therefore, furnish a fact basis for the ordinary commercial transactions of buying and selling coal. Moreover, in formulating a program of distribution, a knowledge of consumers' stocks is indispensable. When in June, 1920, representatives of New England and of the Northwest appeared before the Interstate Commerce Commission, praying for priority in the distribution of the limited quantity of coal then being produced, the most significant test of the solidity of their claims was the general level of stocks in the two localities.

The task of taking a complete count of stocks is great. The number of commercial consumers was found by the Fuel Administration to exceed 90,000. Only a large statistical office, devoting its primary attention to the maintenance of a mailing list of commercial consumers of coal, could hope to obtain a complete count of stocks, and even then completeness would be purchased at the sacrifice of rapid publication of results. The very magnitude of the task suggests that better results could be obtained by sampling. An experiment in this direction, begun by the Fuel Administration in the first quarter of 1919 and repeated by the Bituminous Coal Commission in co-operation with the Geological Survey in June, 1920, indicates that by addressing a limited list of perhaps 5,000 representative consumers well scattered over the country, and ascertaining both stocks on hand and current consumption, it is possible to express the stocks in terms of weeks' supply, a common denominator for all localities, periods and types of consumers.

Having obtained the average weeks' supply at the current rate of consumption for the major groups of consumers we may approximate the total quantity of coal in commercial storage by weighing the stocks of each group by their weekly requirements. Calculations of this sort are necessarily estimates and are subject to a considerable margin of error, but it is possible to check the results against the known production and the apparent consumption, taking into account exports and imports. Subjected to this test, estimates of total commercial stocks which were wide of the mark would involve sudden and erratic changes in rates of consumption which did not square with other facts of record.

In obtaining statistics of stocks, the most uncertain element in future requirements will be cleared up also. We are accustomed to speak of the extraordinary increase in fuel consumption during the war period, and of the slump in consumption during the year 1919. The figures of pro-

*U. S. Geological Survey.

duction for the two years, 1918 and 1919, are indeed startlingly wide apart—579,000,000 tons in the war year, and 458,000,000 tons in the year of reconstruction. But of the difference—121,000,000 tons—probably not more than 51,000,000 tons represented a variation in the rate of consumption, the larger part—70,000,000 tons—being changes in stocks. For during 1918 there was a net addition to stocks of 30,000,000 tons, and during 1919 a net draft on stocks of 40,000,000 tons. In other words, any one attempting to forecast requirements at the beginning of 1919 would have been more concerned with the stocks then on hand than with the depression in business activity, great as the latter was to prove.

Consumption Can Be Accurately Judged

The consumption of coal is a fairly constant quantity, except as affected by the seasons and by business depressions. We are constantly adding to our store of information concerning the normal seasonal fluctuation in consumption, but we cannot yet predict whether the winter will be cold or mild. The forecasting of business depressions is beyond the ken of the coal producer. However, given information as to stocks, a certain season of the year, and a healthy tone of business, the monthly consumption of fuel may be predicted with a considerable degree of success.

The importance of current records of prices is so obvious as to require no comment here. They are watched intently not only by buyers and sellers of coal but as a measure of the social justice of the producers' profits.

Quite apart from the social justice of a prevailing price of coal prices have an immediate significance in coal distribution and consumption. The demand for coal is notably inelastic. As the ultimate source of most of our power and heat, it has no competitor or substitute on a large scale. In consequence even a slight maladjustment between demand and supply creates abnormal prices for free or non-contract coal. This principle is well illustrated by the experience of the spring and summer of 1920. During this season there have been few authenticated instances of plants actually closing down for lack of fuel, yet the difficulty of obtaining coal and the apprehension of a possible interruption of supply during the winter have induced purchasers to pay spot prices from 100 to 500 per cent above the government maximum.

Exorbitant Prices Upset Distribution

The minute prices reach such extravagant levels, inequalities and irregularities in the distribution of coal develop. Consumers, like public utilities, operating under a fixed return, cannot compete with prosperous manufacturers who are able to increase the price of their product and with whom, as often happens, coal is a minor item of expense. Even the prudent consumer, whose requirements are covered by contract, finds difficulty in obtaining deliveries on the contracts he holds. The result is that in addition to the general draft upon stocks, which occurs in a time of scarcity, some consumers run out of their supply long before others, and if a tie-up of transportation occurs, occasioned perhaps by a great storm, the results are much more serious than if the same amount of coal had been evenly distributed as far as possible among all consumers.

Despite reluctance on the part of the railroads it is expected that they will yield in the matter of allowing a return to normal reconsignment practices. The matter was brought before the Interstate Commerce Commission Nov. 16 by the American Wholesale Coal Association. Time would be required for the formal complaint to go through regular channels, but the situation may be met by voluntary action on the part of the railroads. The railroads have indicated that their best judgment is that the present reconsignment order should remain in force for the present, but in view of the insistent demand it seems probable that they will yield. It was pointed out that an increasing number of cars are being unduly held out of service because of refusal of coal by consignees.

Indiana Fuel Commission Orders 600 Cars of Coal Sent to Relieve Emergencies

More than 600 carloads of coal were sent to various points in Indiana Nov. 15-20 for emergency use on orders of the Special Coal Commission. Jesse E. Eschbach, chairman of the commission, said that about 200,000 tons of Indiana coal were distributed throughout the state during the week at the price fixed. Arrangements were made by Mr. Eschbach recently for thirteen cars for Indianapolis. He said that an additional supply of Indiana coal for this city would be obtained shortly. Retail coal dealers of the state have been instructed by the commission to report each week the name of the mine from which their coal has been obtained, the price paid and other information of value to the commission in determining the general situation.

Confiscation by railroads of coal ordered sent to various localities in Indiana by the State Special Coal and Food Commission will be fought to the limit by the commission, Jesse E. Eschbach, chairman, stated recently.

To Protest Confiscation by Railroad

Word reaching the commission's offices is to the effect that the railroads have sufficient quantities of coal on hand to run them and that there is no necessity for confiscation of supplies sent to various cities on order of the commission to relieve shortages. A car of coal consigned to a down state city on order of the coal commission was confiscated by the Monon R.R. and steps will be taken, probably by the commission, to have the coal replaced. Most of the railroads have agreed not to molest coal that is being shipped on orders of the commission should the car be so labeled.

The order of Judge John E. Cox in the Vigo County Superior Court, granting an injunction restraining the Special Coal and Food Commission from enforcing an order directing the McClellan Coal Co. to supply a certain quantity of coal each month for use of customers, will not affect the commission as it merely prohibits the prosecutor of Vigo County from prosecuting the company for failure to carry out the order.

The Ogle Coal Co., wholesaler, Indianapolis; the Vigo Coal Products Co. and the Vigo Mining Co., both of Terre Haute, alleged to have violated the orders of the commission, were cited to appear before it Saturday, Nov. 20, at 10 a.m., and show why their licenses to do business in Indiana should not be revoked. It is alleged that thousands of tons of coal were sold at prices or margins higher than are legal in Indiana.

Coal operators' attorneys have said they are waiting for the commission to revoke a license so they may have a basis for a test case against the law creating state jurisdiction over the coal industry.

The Federal Grand Jury has been summoned to convene Monday, Dec. 6. This will be the first Federal Grand Jury to meet since the sessions of the special jury that returned indictments on March 11, 1920, against 125 soft-coal operators and miners. Preparation for the jury has been under way for several months. For about a week Mr. Van Nuys has devoted practically every day solely to matters that are to be brought to the attention of the jury.

Testimony given by Mr. Van Nuys at the recent investigation of Attorney-General Palmer's connection with the conspiracy case against the operators and miners indicated that indictments might be drawn against additional defendants as a result of the information obtained during the summer in preparation of the conspiracy case.

The establishment of a municipal coal yard in Indianapolis was urged in resolutions adopted recently by the Central Labor Union and a committee composed of Charles Kern, A. J. Fritz and William Neu was appointed to go before the City Council to represent the interests of labor.

The Supreme Court at its sitting on Nov. 22 did not announce a decision in the Lever law case and announced a recess until Dec. 3.

Kentucky May Have Coal Tonnage Tax

THE move in the State of Kentucky to tax coal and oil production, which was killed before the spring session of the Legislature, is coming to life again as a result of efforts of S. Thurston Ballard, coal operator and miller, of Louisville, as Lieutenant Governor of Kentucky, to do something for the Republican standard bearers. Mr. Ballard defended the coal-production tax last spring, but after a 50c. per gallon tax was placed on whisky, a 1c. per gallon tax on gasoline, and motor licenses were raised, all for state roads, he felt satisfied.

Later the courts held the whisky tax unconstitutional. Now Mr. Ballard, who is a good-roads enthusiast, is endeavoring to have a special session of the General Assembly called to take up the question of a 10c. a ton production tax on coal and a similar tax on oil, asserting that these industries are taking away the state's natural resources and shipping them elsewhere, the operators getting all the benefits, and the state none. It is held that the coal operators pay a small tax in proportion to their operations and the business done.

Mr. Ballard has favored similar taxes in all coal-producing states to relieve unfair competition which would exist if operators in other states were not taxed, and has favored a convention of Governors on this subject. However, as some of the other bituminous states can't see the idea, Kentucky may have to labor under a tonnage tax alone.

Investigating Committee Gives Causes for High Coal Prices in New York

A JOINT committee representing the Department of Health, the Real Estate Board of New York, the Building Managers & Owners Association, and the Advisory Council of Real Estate Interests, appointed to investigate the coal situation in New York City, submitted its report to Health Commissioner Royal S. Copeland on Nov. 20, in which it found that high prices were caused by:

"The greater difficulty of mining as the mines become deeper and more extended.

"The greater cost of shoring and pumping, in some instances fifteen or twenty times as many tons of water as of coal being removed.

"The cost and inefficiency of labor.

"Strikes, vacations and holidays.

"Faulty administration of car service.

"Excessive royalties paid owners of coal lands, which, based on Girard estate mine leases, are on a percentage basis and increase with the cost of mining and price of coal, so that some collieries pay $1.26 per ton royalty.

"The purchase of coal at mines by speculators and middlemen, who sell a car over and over again before it reaches the consumers.

"Profiteering by retail dealers.

"Excessive cost of delivery from the yard to the consumer."

The committee was of the opinion that the prices charged for domestic sizes in Manhattan—$12.75 to $13.50 and $14—were fair, and that prices beyond this were excessive.

The committee made the following recommendations:

"That definite and enforceable contracts be made with the mines direct or with duly authorized distributing agents by the local coal distributors for weekly deliveries beginning April 1 of each year.

"That steps be taken at once for the establishment of reserve storage yards sufficient to contain at least one month's supply of coal.

"That state legislation be enacted for the incorporation of labor unions and trade organizations and that strikes and lockouts, unless authorized by a majority vote of the organizations, either labor unions or business, and taken by secret ballot under the supervision of local election officials, be declared felonies.

"That before such ballots be taken two weeks' proper legal notice be given the members of such organizations and the public generally.

"That the mutual agreement zones of delivery be fixed by the local coal distributors so as to preclude, if possible, long delivery routes, with their delay and expense.

"That during a coal emergency such as now exists priority orders be issued by the Interstate Commerce Commission for coal shipments to great centres of population such as New York or Chicago.

"That the Anthracite Producers' Association be requested to direct their constituent members to sell coal only to regularly-established dealers or distributors."

The committee reported that the shortage is not likely to be lifted before Dec. 15; that New York had received only 2,310,000 tons of anthracite against its allotment from the Coal Producers' Association of 8,000,000 tons and that a large portion of the tonnage received was steaming sizes—buckwheat and rice—and was obtained from washeries.

Commissioner Copeland announced that he did not approve of the committee's recommendation regarding strikes and vacations.

Coke Co. Cites Car Shortage Asking Supreme Court Review of Damage Award

IN THE U. S. Supreme Court Nov. 22 the Producers Coke Co., of Pennsylvania, requested a review of the decision of the Circuit Court of Appeals, Third Circuit, which awarded $60,000 damages against the coke company in favor of the McKeefrey Iron Co., of Delaware, for failure of the coal company to deliver part of the coke specified in three contracts in 1918. The coke company argues that the case was decided by the lower court on erroneous assumptions, among them that the contracts, being between dealer and consumer, should not receive the same consideration as would like contracts between manufacturer and consumer. It says the contract is in general use in the coal and coke trade and the extent of the questions involved are of great importance.

It also is set out that the Court did not give due consideration to section 44 of the Uniform Sales Act of Pennsylvania of 1915, which provides that where the seller delivers to a buyer goods less than he contracted to sell, the buyer may reject them, but if the buyer accepts or retains the goods, knowing the selling will not perform the contract in full, he must pay for them at the contract rate. The coke company says the payment of the contract price was voluntary and a waiver of the right to recover damages for short deliveries, which were caused by a car shortage. It is also insisted that it was the duty of the buyer to furnish cars. In this case 4,000 tons were contracted for, of which 3,597 tons were delivered.

LARGE STOCKS OF Turkish coal are accumulating at the mines, causing considerable inconvenience to the producers, according to a report of the National Bank of Turkey. The market was well stocked with Turkish coal early in October. American coal was also well stocked. Several cargoes were shipped to the Mediterranean, but could not be sold there, and have come on the market, the result being that New River Standard Navy could be obtained at 210s. per ton f.o.b. Considerable quantities of coal have been purchased by the Crimean Government for its mercantile fleet, railways and for domestic use. As much as $41 was paid for Pocahontas, although a later cargo was purchased at $33 c.i.f. Sebastopol.

CHINESE COAL HAS recently been shipped to Great Britain as an experiment. Over 100,000 tons has been consigned to Newcastle-on-Tyne. It is said that the coal is "of excellent quality, and, imported in larger quantities, could be sold at cheaper rates than British coal."

A REPORT FROM Paris says that in view of the necessity of increasing the purchases of American coal in order to constitute winter stocks, the rebate on such coal is increased to 150 francs per ton up to Jan. 1, 1921. This rebate will be paid on all coal discharged in French ports between Nov. 1 and Dec. 31, 1920. This rebate consists of a refund to importers of American coal. On the other hand, a surtax is applied to French, Belgian and Saar coal so as to compensate for the rebate on American and British coal.

Foreign Markets and Export News

Japan Inquiry Is Quiet; Kaiping Shipments Restricted; Fushun Coal in Better Call

According to the report of Wheelock & Co. issued Oct. 7 at Shanghai the Japanese coal market continues very quiet. There has been no new business done of any sort and native dealers are not inclined to buy.

Fushun coal has been a little more active lately, with some cargoes selling for delivery to Shanghai and outports.

Military requisition of rolling stock is still restricting the regular transportation of Kaiping coal from mines to port of loading, thereby limiting deliveries locally.

Coal prices are quoted as follows:

JAPAN COAL

		Taels per Ton
Miike lump	ex wharf	Contracted for
Miike small	ex wharf	Contracted for
Miike dust	ex wharf	Contracted for
Kishima lump	ex wharf	15.00
Shakano lump	ex wharf	13.00
Arate lump	ex wharf	12.00
Shimoyamada Kirigomi	ex wharf	11.00
Shin Shakano Kirigomi	ex wharf	11.00
Yoshinotani No. 1 lump	ex wharf	12.00
Yoshinotani No. 2 lump	ex wharf	10.00
Ochi lump	ex wharf	12.00

KAIPING COAL

	Taels per Ton ex Wharf
No. 2 lump	13.50
Washed nuts	13.50
Washed slack	10.50
No. 1 slack	9.00
No. 2 slack	8.50

FUSHUN COAL

	Taels per Ton ex Wharf
Dust	Contracted for
Dust Kirigomi	Contracted for
Dust lump	No stock

The coal output for the first three months of this year is given as 6,768,000 tons from mines in Japan, Korea and Formosa. This is an increase of 211,000 tons over the output of the corresponding period of last year. Kyushu mines produced 4,309,000 tons, a decrease of 109,000 tons as compared with the corresponding period of last year. Tokiwa mines produced 725,000 tons, showing a decrease of 27,000 tons as compared with the corresponding period of last year. The Hokkaido output is the only one that has increased. The output for the first three months was 1,018,000 tons, showing an increase of 259,000 tons.

Sarre Coal Output Improves Under French Rule

(Special to Coal Age)

The Sarre district, the third largest of Germany's coal resources, is, according to the Peace Treaty, under French administration. One of the first steps of this administration was to see that the miners were paid in French currency, which at the present rate of exchange means that their wages are considerably higher than the corresponding German wages. This fact was severely felt by the other industries as the workmen naturally are envious of the high wages the miners receive and ask equal wages in French currency. This movement in the course of a short time will put the highly developed machine-building industry of the Sarre district beyond competition as far as Germany is concerned and will make it part and parcel of the French industries.

The result is that the Sarre mines have no great difficulty in obtaining all the labor they want. Besides they enjoy the advantage of a 9- and 10-hour shift as compared with the 7- and 8-hour shift in Germany. Labor conditions under the strict French rule have been settled, but the railway strike caused a loss of output estimated at 125,000 metric tons. The monthly output of the Sarre mines in 1920 was at an average 750,000 tons. The highest output, 860,000 tons, was in July. The total production of coal of the Sarre mines in the first eight months was more than 6,000,000 tons. This is a slight improvement compared with the previous year when the total production was 8,970,000 tons. The output of the pre-war years, which averaged 11,000,000 tons and was highest in 1913, has, however, not been reached yet.

Increased production in the Sarre has lately enabled the French administration to reduce the price of Sarre coal for delivery to France, Luxemburg and Switzerland.

Freight Market Is Steadily Crumbling

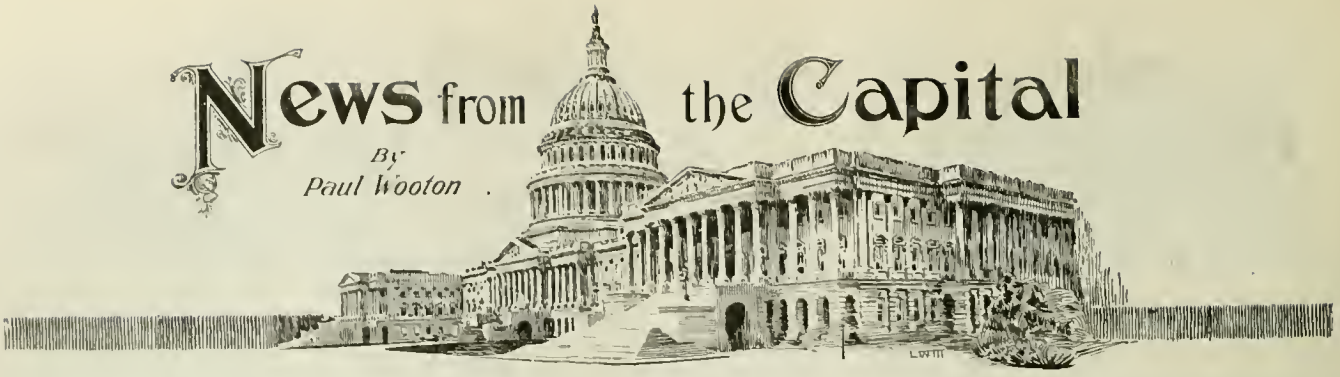
According to W. W. Battie & Co.'s weekly coal trade freight report, new low levels are being reached almost every day, the freight market steadily crumbling. Steamers are offering freely and the only sign to indicate that the market will not drop to very much lower levels is the fact that some owners had already commenced to tie up their steamers as they say they are unable to operate profitably on the present basis of freights.

Freight rates by steamer follow:

	Nov. 15	Nov. 22	Tons Discharged Daily
Malmo	about $12 00	$10 50 11 00	1,000
Copenhagen	about 11 50	about 10 50	1,000
Stockholm	about 11 50	about 10 50	800
Gothenburg	about 11 50	about 10 50	1,000
Antwerp/Rotterdam	8 25 8 50	7 00 7 50	1,000
Hamburg	about 9 50	about 8 50	1,000
French Atlantic ex Rouen	8 75 9 00	7 75 8 25	700
Algiers	about 11 00	9 50 10 00	800
West Italy	about 11 00	9 50 10 00	1,000
Marseilles	about 11 00	9 50 10 00	1,000
Piraeus	about 12 50	about 11 50	1,000
Trieste Venice	13 50 14 00	12 50 13 00	1,000
Port Said	12 00 13 00	11 00 12 00	1,000
Constantinople	about 14 00	about 13 00	500
Gibraltar	about 10 50	about 9 50	1,000
Pernambuco	about 11 50	10 25 10 75	500
Bahia	about 11 50	10 25 10 75	500
Rio	about 10 50	about 10 00	1,000
Santos	11 00 11 50	10 25 10 50	600
Buenos Aires, Montevideo or La Plata	about 10 50	about 10 00	750
Para	about 11 50	about 10 50	500
Rosario	11 00 11 50	10 25 10 50	750
To Nitrate Range	8 00 8 50	7 50 8 00	500
Havana	about 6 00	about 6 00	500
Sagua or Cardenas	about 7 50	about 6 75	300
Cienfuegos	about 7 00	about 6 75	500
Caibarien	about 7 00	about 6 50	300
Guantanamo	about 7 00	6 50 6 75	500
Manzanillo	about 7 50	about 7 50	300
Bermuda P. c. and dis. free	about 7 00	about 6 50	300
Kingston	about 8 25	about 7 50	400
Barbados	8 00 8 50	7 50 8 00	500
St. Lucia	8 00 8 50	7 50 8 00	500
Santiago	about 7 00	about 7 00	500
Port of Spain, Trinidad	8 00 8 50	7 50 8 00	500
Curacao	about 8 00	about 7 00	500
Free p. c. Curacao St. Thomas	about 7 25	about 7 00	500

FRENCH COAL IMPORTS during October amounted to 1,670,000 tons, an increase of 500,000 tons over September. Of this amount the United States furnished 614,000 tons against only 307,000 in September. The remainder comprised 803,000 tons from Great Britain and 253,000 from Germany.

WITH COAL AS high as $40 a ton Sweden is interested in getting the greatest use out of coal and its conservation. With this end in view it has sought the advice of the U. S. Bureau of Mines. Prof. Axel F. Enstrom, Director of the Royal Swedish Academy of Scientific Industrial Research of Stockholm, Sweden, recently conferred with Assistant Director Holbrook of the Bureau of Mines on matters pertaining to fuel research and conservation. He was referred to the National Research Council for further counsel.



Anthracite Joint Scale Board to Confer with Secretary Wilson on Disputed Points

SECRETARY OF LABOR WILSON has invited the joint scale committee of the anthracite operators and miners to a conference with him in Washington at 2 p.m., Dec. 1, on the disagreement between the miners and operators as to adjustment of alleged inequalities in the wage award among the anthracite miners. A committee representing the miners saw the Secretary of Labor Nov. 24 and requested interpretation of the President's letter reopening the wage award, over which the conference of miners' and operators' representatives at Philadelphia became deadlocked.

Mr. Wilson decided to ask both parties to the controversy to confer on the question in the hope of reaching an adjustment of the disputed points. Thomas Kennedy, president of the miners' scale commitete; John Collins and C. J. Golden, district presidents of anthracite miners' unions, and P. F. Hanaway, international representative of the United Mine Workers, comprised the miners' committee which took up the question Nov. 24 with Mr. Wilson.

Army Offered Bituminous at $4.50 Per Ton; May Place Contracts in Spring

ALTHOUGH the army has placed contracts for its coal requirements until June 30 next an occasional offer of coal is being received. Last week an operator offered the army 50,000 tons of bituminous at $4.50 a ton. It is estimated that the army camps and stations have a 169 days' supply of bituminous coal on hand and 130 days' supply of anthracite, which is sufficient to meet all needs for fuel until next year's purchases are made. It is estimated the army saved $4,800,000 over the market prices in its fuel purchases this year. War Department officials are said to have no part in the criticism which is being leveled at coal operators because of high prices. It is understood they feel that the operators are not profiteering but that the exorbitant level of prices is due in large measure to the methods of unscrupulous middlemen between the producer and consumer.

Anthracite fuel briquets as a substitute for anthracite coal for army posts, stations, camps and hospitals in the Central and Southeastern departments is being considered by the War Department. Colonel J. P. Barney, in charge of fuel for the army, believes the briquets offer a solution to the problem of supplying anthracite coal to these sections of the country and is looking into the matter with a view of using briquets to save the freight rates on anthracite coal from the East to the Central and Southeastern sections.

Colonel Barney has taken up the matter with manufacturers of briquets located on the Norfolk & Western R.R. in Virginia; in Superior, Wis., and Kansas City, Kan. He has purchased a carload of the briquets at $7.50 a ton and will have tests made of the fuel at a number of selected army camps.

Colonel Barney believes the briquets will be satisfactory for army requirements, stating that tests made of the fuel by the Bureau of Mines has proven satisfactory, the briquets having a B.t.u. analysis higher than the average anthracite, the briquets running better than 14,000 B.t.u.

The War Department estimates that it will require 2,000,000 tons of bituminous and 400,000 tons of anthracite coal for the year beginning July 1 next, and will ask Congress to permit it to place contracts for this coal in March and April instead of after July 1, when the appropriation will become available. The plan is to have the coal delivered to the camps in the summer months, when more reasonable prices could be obtained than in winter, and to relieve the demands of railroads and operators at a time when commercial demand for coal is heavy.

Engineers Urge Seasonal Differentials in Prices and Freight Rates

CONCLUSIONS of the Committee on the Stabilization of the Bituminous Coal Industry of the American Institute of Mining and Metallurgical Engineers, which have the approval of Herbert Hoover, have been published. This statement, which follows in detail, was forecast in Mr. Hoover's address before the Federated American Engineering Societies and in the report of the meeting of this committee, published in *Coal Age* of Nov. 25, p. 1107:

(1) That the bituminous industry by the nature of its organization functions economically in a too inefficient manner. Employment in the industry averages less than 220 days per annum, with a minimum district average of less than 200 days. Thus a labor staff and capital investment of fully 30 per cent more is required than otherwise would be necessary. From this flow a high daily wage, a considerable portion of the just complaints of labor and a higher cost of coal to the consumer.

(2) The causes are very largely: (a) Intermittency in seasonal demand; (b) irregularity of car supply, and (c) lack of storage facilities and incentive for their use.

(3) The cure lies in:

(a) The co-operation of railroads in the establishment of seasonal differentials in rates that will induce summer demand.

(b) Increased transportation facilities and more efficient and equitable distribution of cars.

(b¹) Increased use of central and interconnected electric power plants.

(c) Lower selling prices in dull seasons, made possible by differentials in profits, freight rates and wages.

(d) Recognition by the larger consumers, such as the federal, state and municipal institutions; railroads, public utilities and industrial plants, that not only continuity of operation, but also the safety of the public from the stoppage of supply, demands that they provide adequate storage to be replenished in the dull season.

(4) Such storage is feasible and can be made financially remunerative by differential rates and prices. Public safety demands the installation of storage facilities at the place of consumption.

(5) No adequate solution can be found except through organized co-operation of operators, labor, railroads and large consumers. Under existing laws as to combinations such co-operation cannot be carried on. Therefore we believe that some federal legislation is necessary permitting such co-operation under competent governmental authority.

U. S. Judges Enjoin Indiana Fuel Commission

Temporary Injunction Granted in Vandalia and Vigo Companies Case Limits Board's Authority to Coal Bought Since the Commission's Creation — Foreshadows Death of the Law Next March

IN ONE of the most important coal rulings of the last decade, three federal judges granted a temporary injunction in Indianapolis Nov. 27 in the suit of the Vandalia Coal Co. and the Vigo Coal Products Co., two Vigo County companies, against the Special Fuel and Food Commission created by the last special Legislature of Indiana to fix prices and govern distribution of coal mined and sold in Indiana.

The order enjoins the commission from issuing any orders allocating to consumers in Indiana coal which was contracted for interstate delivery before the creation of the commission two months ago. The price-fixing power of the commission was not interfered with by the court order.

The principal point involved was the question as to whether the state had taken the property of one person, firm or corporation and given it to another, the property not having been used for a public purpose. It was evident early in the hearing that this was the main question to be decided. Judge Francis E. Baker of the Circuit Court of Appeals, of Chicago, Ill., held that there is no debate to the contention that the Legislature is legally without power to take over the property of one individual and give it to another for a "private purpose."

Resort to Police Power Held Unwarranted

The arguments were heard also by Judge George T. Page, of Peoria, Ill., and Judge A. B. Anderson, of the U. S. District Court of Indiana. For the plaintiffs arguments were made by Charles Martindale, of Indianapolis, and George Sutherland, formerly U. S. Senator from Utah. James W. Noel and Howard S. Young, both of Indianapolis, presented arguments for the Fuel Commission.

Mr. Sutherland for the plaintiffs asserted that coal mining does not have sufficient public interest to warrant a resort to police power by the Legislature in enacting a law for the regulation of prices and distribution. He contended that the operators have a right to sell their coal for whatever price they can get on contracts and to the market at the market price. He added that he referred to a "free market." He indicated that in case an injunction was not granted the case would be appealed to the U. S. Supreme Court.

While state officials would make no statements, it is generally understood that the direct effect of the ruling will be to permit the law to die a natural death March 31 next, when it expires under the wording of the Legislative act unless the next general session continues the commission, which is not likely in view of the court decision.

The attorneys for the Fuel Commission in their brief and arguments submitted that private property is clothed with a public interest when used in a manner to make it of public concern and when the use of it affects the community at large. When that is the case, private property becomes subject to regulation under the police power of the state, they asserted, and regulation then is not in violation of the fourteenth amendment to the Federal Constitution. They further contended that the police power of the state is not a fixed quantity, but is the expression of social, economic and political conditions, and is an established principle in social science, which must be elastic and capable of development in application to meet changed conditions and commercial progress.

The bill of complaint which the plaintiffs filed showed that the plaintiffs have a capacity to produce more coal than all their contract requirements, their alleged orders and emergency orders of the commission combined. The bill also attacked the constitutionality of the law and of the orders of the commission made under the law. At a former hearing the court upheld the right of the Legislature to enact the law, and the present hearing dealt particularly with the administration of the law.

Mr. Martindale in his argument for the plaintiff companies reviewed the causes leading to the passage of the act and declared that the plea of his clients showed that the only causes for complaint were due to the mine strike in 1919 and in the early part of 1920, the disruption of transportation facilities as the result of the railroad switchmen's strike, and insufficient cars.

"Nothing has been done to remedy the underlying causes of the evil," he contended. "Nothing has been done to supply cars. If such action had been suggested prior to 1914 the person suggesting it would have been declared a dangerous and an undesirable citizen. The power here exercised is arbitrary and enforces unreasonable restrictions on private business."

Plaintiffs Allege Unreasonable Interference

Some of the main points brought out by the attorneys for the plaintiffs were: That the act of the Legislature is invalid because it permits of arbitrary and unreasonable interference with the rights of the plaintiffs to freely engage in business; that the $25 license fee required is in excess of the cost of issuing the license; that section 7 of the act is invalid because it requires the plaintiffs to pay a license fee beyond the period fixed for the expiration of the commission; that it prevents the coal companies from the liberty and freedom to contract for the sale of their property; that it compels the coal companies to furnish a sufficient quantity of coal to supply domestic demand regardless of existing contracts held by the coal companies; that no provisions are made to control payment for the coal by those to whom the commission orders coal to be shipped; that no mine owner could afford to disobey any order of the Fuel Commission or invoke the jurisdiction of any court to test the validity of the law, except at the risk of confiscation of its property and imprisonment for a long term; that the orders of the commission impaired the obligations now existing between the plaintiffs and the Ogle Coal Co. and the Pennsylvania Railroad Co.

The plaintiffs' attorneys showed cases where the coal companies had been ordered to ship coal to a retailer at a fixed price by the commission when often no business connections ever had been established between the operator and dealer before and his credit standing had not been ascertained.

Open-Top Cars Available to All Industries Now; Order 20 Cancelled November 29

SERVICE Order No. 20 was lifted by the Interstate Commerce Commission, effective Nov. 29. The order had been amended previously, so that at the time of its cancellation, ordered Nov. 27, it gave coal mines preferential use of hopper-bottom cars only. The Interstate Commerce Commission expressed the opinion that the coal situation had reached the point where the requirements of the country could be supplied with the cars which would be available under normal regulations. This view is not shared by many who are following the coal situation closely. It is believed that the public would have been more amply insured against inconvenience had the coal mines been assured of ample car supply for a few weeks longer. It is feared that an abnormal proportion of open-top equipment will be used to move commodities other than coal which have been accumulating during the period that this type of equipment was reserved largely for coal transportation.

On the other hand, it is pointed out that the building trades are not active during the winter months and that little highway construction is in progress. Some are of the opinion that the lifting of the order will make little difference as to the number of cars available for coal. There is at least the assurance that the order can be reinstated at any time the Interstate Commerce Commission should feel that conditions require it.

Commodities Other Than Coal Absorb Open Tops

Some are of the opinion that the demand for open-top cars for transporting commodities other than coal will be light this season of the year and that many of the flat-bottom coal cars still should be available for coal transportation. Reports are beginning to come in to the effect that all available open-top cars are being absorbed quickly for hauling other commodities. This has worked particular hardship on such roads as the Hocking Valley and the Toledo & Ohio Central, whose open-top cars are not equipped with hopper bottoms. In addition, there are scattering reports as to car shortage at the mines.

At the National Coal Association the opinion is expressed that "we are not out of the woods in the matter of coal distribution." The situation is improving markedly each day, it is said, but there is still a great deal of coal which must be in the hands of consumers before the first of the year. The unusually mild weather for this season of the year has prevented any accentuation of the shortage of supplies in the hands of domestic consumers. Sight must not be lost of the fact that only partial deliveries have been made on domestic orders, so that each consumer could be supplied with enough coal for immediate requirements.

Reports have been current that transportation on many of the coal-carrying roads is being handicapped by lack of locomotives. It can be stated quite positively, however, that there is no significant shortage of power. As a matter of fact, a number of Western railroads have more locomotives than they need at this season of the year and have tendered them to Eastern roads for temporary use. No applications for these locomotives have been received.

No Shortage of Locomotives Observable

The trouble earlier in the season on the Chesapeake & Ohio and the Norfolk & Western was due largely to difficulties on account of water, a condition which is of annual occurrence in the late autumn. No power difficulties are being experienced by either of these roads at the present time. The rapid development of coal operations on the Louisville & Nashville has taxed all the facilities of that road, but as no advantage has been taken of the opportunity to borrow engines, it is assumed that no serious shortage of locomotives exists. The percentage of locomotives in the shops is somewhat high, but it is pointed out that that usually is the case at this season of the year, when locomotives are being put in the best possible shape for the more severe service of the winter season.

The notice announcing revocation of Order 20 was as follows:

"It appearing that the emergency which caused the commission on the 8th day of October, A. D. 1920, to make and enter its Service Order No. 20 and the amendments thereto made and entered on the 6th day of November and the 15th day of November, 1920, has been measurably relieved:

"It is ordered that the said Service Order No. 20, as amended, be, and the same is hereby, vacated and set aside, effective at midnight, November 29, 1920.

"It is further ordered that copies hereof be served upon the carriers upon whom Service Order No. 20 was served and that notice hereof be given to the general public by depositing a copy of this order in the office of the secretary of this commission."

Laclede Gas Co. Denied Assigned Cars; Service Order 21 Cancelled

JUST prior to the cancellation of Service Order No. 21, authorizing the use of assigned cars by public utilities which could not get their coal through regular commercial channels, the Interstate Commerce Commission granted a hearing on what was regarded as a typical public-utility claim. The Laclede Gas Co., of St. Louis, applied for assigned cars for use in transporting gas coal from the Kentucky fields to St. Louis. The commission denied the application. It is understood that inquiries were made by the commission which developed that gas coal was available in the St. Louis market in quantities more than sufficient to meet the immediate needs of the company.

Coal Company Officials Agree To Co-operate

E. H. Mahan, president of the Southern Coal & Coke Co., E. R. Clayton, secretary of the Harlan County Coal Operators' Association; R. A. Hord, secretary of the Hazard Coal Operators' Exchange, and J. E. McCoy, secretary of the Southern Appalachian Coal Operators Association, were present at the hearing and agreed to do everything within their power to facilitate the movement of gas coal on the Laclede Company's contract.

The day following the commission's announcement denying the application of the Laclede Gas Co., Service Order No. 21 was cancelled. It is of some significance that the order was canceled rather than suspended. Apparently the Interstate Commerce Commission is firmly convinced that the emergency has passed so far as the public utilities are concerned.

The suspension of Service Order No. 21 automatically abolishes the two co-operative committees which were looking after the needs of public utilities. The National Coal Association, however, will continue to handle any complaints turned over to it by the National Committee on Gas and Electric Service and will request operators to ship coal to any utility which is unable to fill its coal needs through regular channels.

Only Utilities Using Gas Coal Now Short

The only utilities now calling on the National Committee on Gas and Electric Service for assistance are those using gas coal. Much difficulty is being experienced by utilities dependent upon the Kentucky gas coal fields. Some trouble of this character continues with companies dependent upon Pennsylvania gas coal fields.

Federal Troops Back in Matewan District

IN FACE of protests from Mingo County officials, who asserted that the situation was being well handled, Governor Cornwell on Nov. 26 called on the President for troops to patrol the county. As will be remembered, troops were kept in the county till Nov. 5. On their withdrawal lawlessness was resumed, several persons being killed, including a member of the state constabulary. The Governor accordingly refused to temporize. A provisional battalion of 400 picked men from the Third and Nineteenth infantry regiments left Camp Sherman, near Chillicothe, Ohio, for Williamson, W. Va., and arrived Nov. 28. Major R. S. Binford, of the Nineteenth Infantry, and Captain E. L. Brine, of the Fortieth Infantry, will investigate.

One of the outrages that induced the Governor to call in the military forces occurred on Thursday, Nov. 18, when Ernest D. Rippley of the state police of West Virginia was shot to death by Bill Hatfield and W. B. Cole.

Cole was placed under arrest by State Policeman William Curtis, who had been stationed at Vulcan with Rippley. When arrested Cole had one of Rippley's pistols in his possession. Rippley is the first member of the state police who has been killed while engaged in the performance of his duty.

Another more recent incident which had its effect in convincing the Governor that troops were needed was an attack on the men working at the tipple of the White Star Mining Co., at Merrimac, Nov. 22. No one was hit, but the tipple was riddled with bullets. On another occasion three "transportation" men at work for the Standard Thacker Coal Co. at Chattaroy were attacked by strikers and after being assaulted fled into nearby hills.

On Nov. 23 Taylor Munsey, a non-union miner, shot and killed Irvin Elkins on a Norfolk & Western R.R. train between Nolan and Chattaroy. Four non-union men, among whom was Munsey, were attacked at Nolan station by a crowd of strikers. State police interfered and stopped the fight, but when the non-union men got aboard a train some of the strikers jumped on, and when they termed Munsey a "scab" he pulled out his gun and shot Irvin and Joe Elkins. After Munsey had been lodged in Williamson jail, strikers assembled and threatened to remove him from the jail and lynch him.

Operators Urged to Supply East with Prepared Sizes of Anthracite

ONE of the first efforts of the Anthracite Fair-Practice Committee has been directed toward equalizing distribution. It appears that the Eastern territory is proportionately shorter of domestic sizes than the Western territory; that shipments to the West are more nearly equal to those of previous years, and that the Eastern section has suffered more than its share by the decrease in production of this year. The attention of the operators and shippers of anthracite has been called to this matter by the Fair-Practice Committee, and they have been urged to concentrate the movement of prepared sizes of hard coal to the Eastern territory for the next three weeks, at the end of which time it is believed the deficiency can be supplied.

Lifts Ban Against Reconsignment of Freight in Open Tops; Commission Issues Special Permission 51,143

ISSUING Special Permission No. 51,143, Friday, Nov. 26, the Interstate Commerce Commission lifted the ban against reconsignment of freight in open-top cars. In explaining the position of the commission in this matter Chairman Clark has written Daniel Willard as follows:

"After study of the situation and conferences the commission issued, on Aug. 9, 1920, its amended Special Permission No. 50,320, authorizing carriers to establish on less than statutory notice emergency rules applicable on all freight in open-top cars and on coal and coke in all cars. These rules were generally established shortly thereafter.

"Inasmuch as this permission was sought and issued as an emergency matter we have kept in immediate touch with the situation, anticipating the time when the emergency should have passed in such measure as to justify cancellation of measures adopted to meet the emergency. We have had this question of emergency reconsigning rules and charges actively before us for some time; we have had some conferences between representatives of the railroads and of the shippers with regard thereto; and we are convinced that the emergency which prompted the authorization of these rules has in large measure passed. This is evidenced by the fact that we cancelled our remaining outstanding Service Order No. 20.

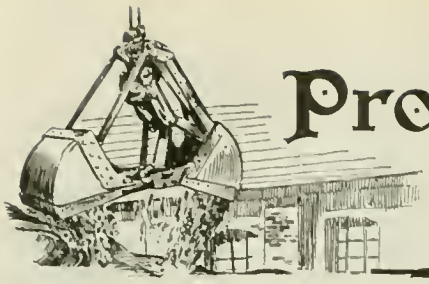
"It is admitted by all concerned that these reconsigning rules and charges were emergency measures which ought to be abated with the passing of the emergency. These rules were established in the tariffs without an expiration date. We assume, however, that, in view of the manner in which they were established, our recommendation for their cancellation will be recognized by the carriers, which recognition will avoid formal complaints against them which would certainly be filed and would perhaps be difficult to defend. I am authorized by Division 5 to recommend to the railroads generally through you that the emergency reconsigning rules and charges published by virtue of our amended Special Permission No. 50,321 of Aug. 9, 1920, be cancelled at the earliest practicable date. To that end we are issuing our Special Permission No. 51,143, authorizing the cancellation on not less than one day's notice of the reconsigning rules applicable on all freight in open-top cars and on coal and coke in all cars which were authorized by our special permission of Aug. 9, above referred to. This special permission will also authorize the cancellation of these rules in instances, if any, in which they were published on statutory notice and not by virtue of our special permission."

George H. Cushing, the managing director of the American Wholesale Coal Association, and members of his committee told the commission that the greatest difficulty is being experienced since coal is now available in such quantities that refusals to accept shipments are not uncommon. In such cases it is practically necessary to have recourse to the reconsignment privilege.

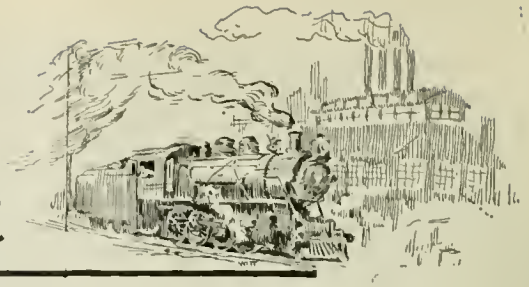
AT FIVE MINES in Tshikawa, Japan, four thousand miners went on strike for an increase in wages Nov. 26. Two labor leaders left Tokio to organize the workmen.

Shipping Board Asks for Coal Bids

BIDS to cover 2,234,000 gross tons of bituminous coal have been called for by the Shipping Board. Bids will be received until 1 p.m., Dec. 10, 1920, at the office of the Emergency Fleet Corporation, Washington, D. C. All the coal is to be supplied at fifteen designated ports from Sydney, N. S., to Port Arthur, Texas, the bulk of it, however, being required at New York, Philadelphia, Baltimore, Norfolk and New Orleans. Coal supplied north of Charleston is to be from pools 1, 2, 2B, 4, 9, 10, 11 and 71, provided, however, that not more than 20 per cent of the total quantity supplied shall be from pool 11.



Production and the Market



Weekly Review

CONDITIONS in the coal industry from a seller's viewpoint were more encouraging last week. The spot market ceased its downward movement, which had been rapidly approaching the danger mark, at least for the smaller producers. While prices sought a still lower level, there was evidence in later quotations of a fairly stable market.

Demand was extremely sluggish, but current buying had already been reduced to a minimum and producers and jobbers were not willing to make further price concessions in pushing the sale of their coal. All the larger centers are in much better shape as regards domestic stock and with the easier movement no anxiety is now felt about winter requirements.

Railroad Equipment Undergoes Repairs

Railroads are reducing their working forces or replacing inefficient men with former workers who had been lured by higher wages to industries which are now closing or curtailing operations. Despite reports given out in Washington to the contrary, motive power is feeling the strain of the record-breaking traffic movement which reached its climax late in October and engines and rolling stock are being withdrawn from service and placed in repair shops whenever possible.

Many reports have been coming in to the effect that the wave of business depression is being reflected in a declining freight movement, with corresponding decrease in railroad fuel consumption. According to *Railway Age*, in the week ended Nov. 6 the number of freight cars loaded was 910,592, the highest record ever made in that week.

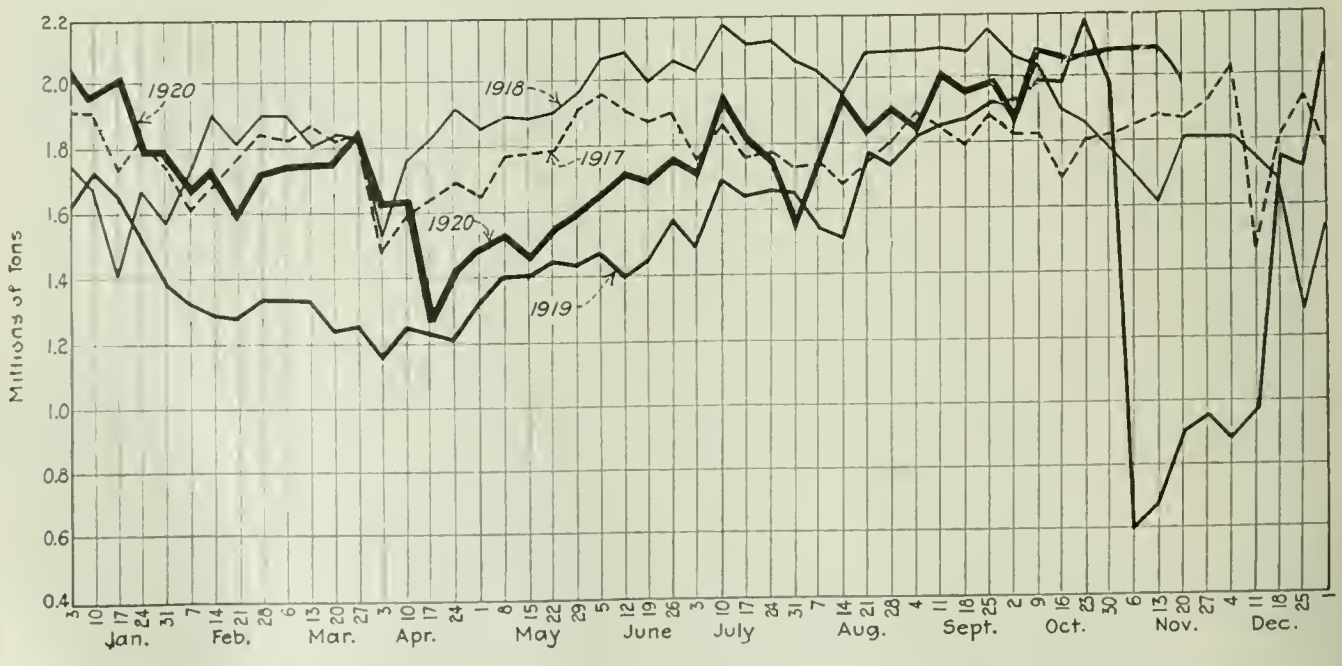
The Indiana Fuel and Food Commission has been enjoined from issuing any orders allocating to consumers in Indiana coal which was contracted for interstate delivery before the creation of the commission two months ago. This will place Indiana producers on an equal footing with others, permitting them to ship coal outside the state, where they may enjoy competitive prices.

Labor is working with a greater degree of efficiency than for some time past, as indicated by satisfactory reports from all sections. The one exception is the strike zone in the Thacker field of West Virginia, where it has been necessary to recall the Federal troops.

French Dealers Cancel Shipments

Exporters are finding an extremely quiet market abroad. France is becoming stocked to such an extent that she can await results of competitive offers of British and American coal. French dealers have canceled some shipments en route. A few vessels were diverted to Spain and Italy, but the total of 80,000 tons now on the

Average Daily Production of Bituminous Coal*



*From weekly report of Geological Survey.

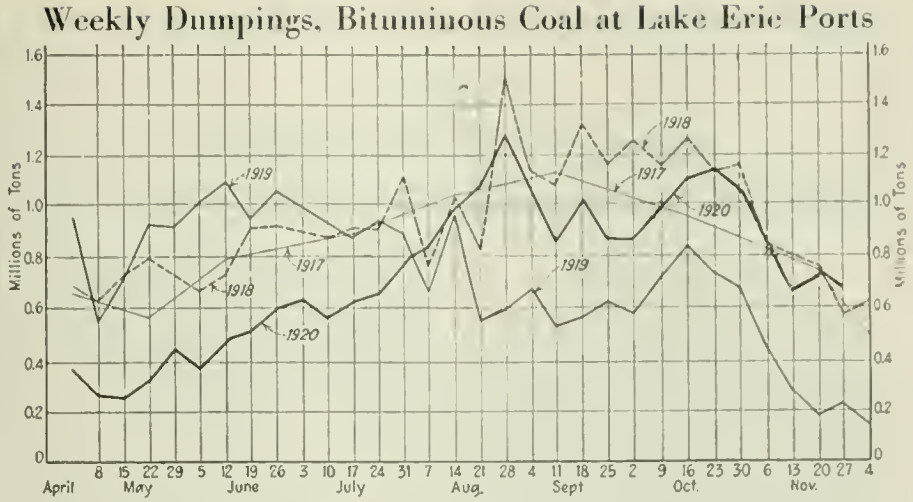
Lake Coal Dumped Season to Nov. 27

(NET TONS)

	1919	1920
Total	22,746,723	22,957,415

Week of Nov. 27, 1920

Cargo	656,472
Fuel	27,148
Total	683,620



water will have to seek markets in competition with a new British rate of less than $20.

Anthracite demand continues strong; however, Eastern stocks are much improved following the Anthracite Fair Practice Committee recommendation that shippers concentrate movement of prepared sizes to Eastern territory for the next three weeks. The Middle West is in good shape, with adequate bituminous stocks to fall back upon in the event of any shortage of hard coal.

BITUMINOUS

Production of soft coal dropped back to 11,770,000 net tons during the week ended Nov. 20, according to the Geological Survey. This is a decline of 371,000 tons as compared with the output of the preceding week. Production in the West was heavy, the decline centering in the Northern and Middle Appalachians, particularly in the Pocahontas railroad region. Late reports for the first two days of the week of Nov. 22-27 indicate heavy production. The total for the week, however, was cut by the Thanksgiving Day holiday.

Labor Shows Increased Efficiency

Labor is working much more steadily. The former indifferent attitude of the miners has almost entirely disappeared and with so many men seeking employment working efficiency is mounting daily.

Car shortage is growing throughout the Northern and Middle Appalachian regions, where poor transportation conditions further hampered the placement of empties and disposition of loads. Middle West and South report better car supply with resulting heavy production.

Prices continue to shade off slightly, although an effort apparently is being made by producers to stabilize the market. A better contract movement has followed the declining spot demand and Western centers generally are experiencing heavy receipts because of an embargo on Eastern and Tidewater shipments from the Middle Appalachian section. With the unseasonable weather which is prevailing the domestic demand has fallen off considerably, although prices for prepared sizes have remained practically unchanged. Industrial contraction continues, and this is responsible for a slight further easing of steam prices.

The following table shows the trend of the spot steam market in various coals (mine run basis, f.o.b. mines):

	Nov. 1919*	May 1920	Aug. 5 1920	Oct. 28 1920	Nov. 25 1920	Dec. 2 1920†
Pittsburgh steam	$2.30	$4.00	$10.00	$8.00	$5.00	$5.00
Pittsburgh gas	2.30	4.50	12.00	8.50	*5 75*	*5 50*
Hocking	2.50	4.75	9.00	6.00	4 50	4.50
Franklin, Ill.	2.35	3.75	6.50	6.00	5.00	5 00
Indiana 4th vein	2.35	3.40	7.50	6.00	4.25	*4 00*
Eastern Ohio, No. 8	2.35	4.50	10.50	6.00	5.00	5.00
Fairmont	2.50	6.75	13.50	10.00	4 75	4.75
Kanawha	2.60	6.75	14.00	7.50	4 75	4.75
S. E. Kentucky	3.00	6.00	10.50	6.00	5 00	**5.25**
Western Kentucky	2 35	3.50	5 25	6.25	4 25	4 25
Clearfield	2.95	6.25	12 00	8 25	5.00	5.00
Cambria and Somerset	2.95	6.75	13.50	9.25	6.00	6.00
New River	2 70	6 50	14 00	10.75	5.00	5 25
Pocahontas	2 35					

*Government prices.
†Advances over the previous week shown in **heavy type**, declines in *italics*.

Lake coal dumped during the week ended Nov. 27 amounted to 683,620 tons, as compared with 157,819 tons for the corresponding week of last year. Total dumpings so far this season amount to 22,957,415 tons; for the same period last year they were 22,746,723 tons. Interest centers in the cumulative movement for the year, which is about 7,000,000 tons behind 1918, but has overtaken 1919.

A further decrease marked Tidewater shipments during the third week in November. According to the Geological Survey total dumpings were 1,141,000 net tons, which is 16,000 tons less than the preceding week and 234,000 tons less than the third week in October, after which the decline began. The decrease was wholly in export and bunker coal, the former falling off 10,000 and the latter 34,000 tons. Shipments to New England increased 7,000 tons. Tonnage dumped at Tide was handled as follows:

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Totals
Coastwise to New England	61,000	18,000	7,000	83,000	.....	169,000
Exports	4,000	75,000	159,000	286,000	8,000	532,000
Bunker	92,000	15,000	13,000	67,000	2,000	189,000
Inside capes	...	47,000	26,000	5,000	...	78,000
Other tonnage	166,000	.....	.....	.....	7,000	173,000
Totals	323,000	155,000	205,000	441,000	17,000	1,141,000

All-rail New England shipments declined 304 cars during the week. As reported by the Geological Survey, 4,469 cars were forwarded through the five Hudson gateways, as compared with 4,773 in the preceding week. Shipments during the corresponding week of 1919 during the strike were 2,985 cars; in 1918 they were 3,039 cars.

ANTHRACITE

With an estimated production of 1,975,000 net tons during the week ended Nov. 20 the output has again reached normal. To handle this tonnage 37,762 cars were loaded, an increase of 4,238 cars when compared with the preceding week. Cumulative production for the coal year to date is 55,848,000 tons, as against 59,665,000 for the same period in 1919. Emergency shipments to Eastern points have relieved any possibility of a hard coal shortage. Some care is being exercised in apportioning receipts to needy consumers but a continuance of the diversion for a period of three weeks, as requested by the Fair Practice Committee, will provide an ample supply for all. Under the pressure of this movement premium-priced independent coal is selling off at $11.60@$13.

COKE

Beehive coke produced during the week totaled 365,000 net tons, according to the Geological Survey. This is a decrease from the revised figures of the preceding week of 15,000 tons, or about 4 per cent. The decrease was general except in the Western states where no change was reported.

The spot furnace coke market has been maintained during the week by operators blowing out ovens and adjusting production to the greatly reduced demand. Market is quotable $8@$8.50 for furnace and $9.50@$10 for foundry coke.

Reports From the Market Centers

New England

BOSTON

Market Continues Unchanged — Slack Demand in Most Directions—New England Receipts Now Practically Confined to Contract—Prices Shade Off on Ordinary Grades — Anthracite Shipments Still Discouragingly Light.

Bituminous—A careful canvass discloses no new developments. The market is as quiet as normally it would be in midsummer and there are no indications of improvement during the next few months. Industrially, New England is under vigorous curtailment and until there is a broader market for finished products, there can be nothing more than a straggling demand for steam coal. Railroads also are using less fuel than anticipated and there seems no possible change that will influence buying at an early date.

Except for moderate inquiry for bunker grades there is a dearth of business in all directions. Both all-rail and by water the light demand is confined to small steam users who are buying only for current needs. Occasionally there is a larger order in the market but the buyer is well enough informed to hammer down the price until the order is unattractive to most shippers.

Receipts are almost exclusively on contract. Movement through the Hudson River gateways holds up surprisingly well, but is likely to recede during the next fortnight. It has only gone to show that a very heavy proportion of this season's coal has been moving on contract, and that the "scare" of June and July was due rather to apprehension than to any actual shortage at that time. Shipments from Hampton Roads, although occasionally suffering delays at the loading piers, have come forward on contract consistently all through the season. The chief difficulty came through the desire of manufacturers to buy less expensive coal by the all-rail route.

On medium grades from central Pennsylvania prices have shaded off still further. On certain coals, Pools 11 and 14, $4 has been rumored and it is understood by the trade that some operators are very susceptible to offers. If anything, the margin is increasing between high grades and those of inferior quality. In the export market Pool 34, for instance, is practically unsaleable for dumping into off-shore bottoms.

At Norfolk and Newport News there has also been a further easing of prices. Shippers who were charging $11 a fortnight ago for bunker fuel are now accepting business at $8.50. Careful ship-owners are buying very sparingly and at all the piers there is a large volume of coal on hand. Export sales are increasingly difficult to effect, and the predictions in this quarter are for light business until March.

Current quotations on bituminous at wholesale range about as follows:

	Clearfields	Cambrias and Somersets
F.o.b. mines, per net tons	$4 50@5 50	$5 00@ 6.50
F.o.b. Philadelphia, gross tons	7 70@8 80	8 25@10.00
F.o.b. New York, gross tons	8 25@9 25	8 70@10 50

Spot Pocahontas and New River f.o.b. Hampton Roads is quoted at $8.15@ $9.50 per gross ton.

Anthracite—Certain producing companies suspended movement to the Lakes on Nov. 22 and it is hoped this augurs more favorably for shipments to this territory in the near future. It is recognized, however, that there are many other sections to be served and that shipments will continue to be light for some weeks. Retailers are discouraged over the slow movement, but the mild weather is a great factor in their favor.

Tidewater

BALTIMORE

Soft Coal Is Weak and Unsteady, but Short Car Supply Prevents Price Break Renewal—Anthracite Supplies Pouring In—Price Discussions Are Now Rampant.

Bituminous—The soft coal market is showing new signs of weakness here. Demand is unsteady industrially, as many plants are now working but part time. The export demand has also shaded off, apparently under the renewed belief that lower prices are to prevail later. The November record of exports, however, will be good, as there were many ships here at the outset of the month awaiting coal. The daily average of waiting vessels now runs 15@20, instead of 50@60 as was recently the case.

The pool reserve is not heavy, however, running 1,300@2,000 cars daily as a rule. This is due to the fact that the car supply has been very poor. Thanksgiving Day gave a chance to catch up a bit, it is true, but the daily average is around 50 per cent.

Prices are over a rather wide range. Best coals, both steam and gas, are offering all the way from $5@$6, which is about a dollar off the low offerings some ten days ago. Lower grade coals are offering down to $4.25 a net ton f.o.b. mines.

The export business, as spoken of above, has been pretty heavy for the month, the total on 74 foreign-bound coal ships for the first 23 days of November having been 416,604 tons cargo and 27,262 tons bunker fuel.

Anthracite — Hard coal conditions here have eased greatly. Not only has fairly mild weather prevailed, but the receipts have been the heaviest in months. There is now a little coal to go around pretty well to the many empty cellars. A considerable part of the coal coming in is of the company variety, this being the case for the first time in many weeks.

Naturally, with coal coming freely, the object is not now altogether to get supplies, but also covers price costs. This has opened some rather warm discussions of the charges of some dealers over the recognized schedules. Those dealers who, to prevent customers from being entirely left in the coal line, went out and bought high premium coal, are now getting their reward—argument for charging a figure made necessary by their basic purchase price.

It is understood that a report arranged for by the Mayor of Baltimore for "an expert" will contain some "hot shot." From rumors that have leaked out ahead of the report it is believed that the paper will place the blame of high prices for anthracite on the operators and absolve all except a few local dealers from "blame."

NEW YORK

Anthracite Receipts Increase, but Demand Continues Strong — Independent Quotations Are Easier — Demand for Steam Is Good — Bituminous Market Steady With Quotations Unchanged—Export Inquiry Is Slow.

Anthracite—There has been a slow but gradual increase in receipts. Demand remains strong but urgency of consumers has diminished somewhat and the excitement of a couple of weeks back does not now exist.

The mines are working steadily and production is running close to normal, in contrast with other industries. Operators are face to face with a demand which is country-wide and are endeavoring to make equal distribution.

Complaints of the shortage of coal is as strong in some of the cities and towns in the mine-fields as it is in New York and other parts of the country, with the result that local civic organizations have taken action to find out why consumers in these places cannot secure coal.

The Lake season has not yet come to a close because of the open winter and shipments to those ports will be continued until cold weather forces a stop.

Emergency coal, provided for relieving the local situation, is coming forward and is being distributed where most needed by the committee representing retail dealers.

Quotations for independent coals

have eased considerably but retailers continue to frown upon paying the higher prices. Quotations for coals of some independents range $11.60@$13, while the companies and larger independents adhere to their regular schedules.

Steam sizes are steady. Buckwheat and rice are in good shape while barley is long and at times hard to move. Buckwheat is being quoted at $4.75@$5.25; rice $3@3.25, and barley $1.50@$2. There has been no change in company quotations.

Bituminous—Lower temperatures and the holiday interference with production tended to temporarily stiffen quotations but not enough to make any appreciable difference in the situation. Demand continues easy while shipments have been slightly better.

Line demand for certain grades is strong and operators are having no difficulty in finding a market for these products. Many mines were closed the greater part of the week on account of the holiday.

Manufacturers are waiting for still lower prices before refilling their bins. Export business is quiet. Inquiries have fallen off and some difficulty is had in placing cargoes now on their way to foreign ports.

The easy situation in anthracite steam sizes is being reflected in the soft coal market and considerable mixing is being done.

Curtailment of industrial operations is having its effect upon market conditions and some shippers look for still lower prices. There have been many cancellations because of the business depression, while some operators are having shipments rejected.

Empty bottoms are plentiful and there are many loaded boats lying around. Pools 18, 34 and 44 are long, while Pools 9, 10, 71 and 1 are in good demand with boats held in waiting to take the coal upon arrival.

There is comparatively little coal at the upper ports with the exception of Arlington, while South Amboy is reported as holding the largest stocks of any of the lower ports.

Quotations f.o.b. piers in this harbor are based upon mine prices which range about as follows: Pool 9, $5.75@$6; Pool 10, $5@$5.50; Pool 11, $4.50@$4.75; Pool 18, $4@$4.25 and unclassified coals from $4.25 up.

PHILADELPHIA

Slightly Better Anthracite Receipts—Steam Coals Only Moderately Active—Wage Question Is Unsettled—Bituminous Trade Quiet—Prices Firm for Good Grades—Railroad Buying—Export Business Eases Off.

Anthracite—With the December business well under way, retail yards show no signs of accumulating anything like stocks of coal. Up to this time the weather has continued about normal, which means increased consumption. Dealers are doing their best to induce shippers to favor this market.

Dec. 1 has always been the turning point in the way of increased shipments, and at least one of the big companies is doing better in the way of deliveries. As evidence of this increased movement this company is now sending coal here at the rate of 100 cars daily and while this would not at first be noticeable, if kept up for two weeks would begin to show in the yards.

Most producers report the interruption due to Thanksgiving being less than usual, and outside of one day, production has gone on at the usual rate, and it was actually right after the holiday that coal began to come into the city. The P. & R. Ry. is making a strong effort to hold all their equipment on their lines, and due to this quite a little extra tonnage has been diverted to the local trade.

Consumer demand is still centered on the favorite sizes of stove and nut, and while this makes little difference to the dealers in the present condition of supplies, it does indicate that the average user is not so badly off as he pretends. The absence of pea is causing dealers as much trouble as the other sizes.

The steam trade is not as active, and while the companies are moving all their buckwheat without difficulty at $4.25, the independents have been compelled to shade their coal very much and are lucky if they can get 50c. above this figure. Rice and barley can generally be had near company circular.

Nothing definite has developed as to the agitation of the miners for an increase of 10 per cent to be added to the award of 17 per cent. The question has been again taken up by Secretary Wilson who will confer this week with both parties.

Bituminous—The market is unchanged and prices are ruling on spot coal similar to those in effect for more than two weeks. By some this is taken to mean that bottom has actually been reached. Each week shows a larger number of plants on reduced time and it was quite general for concerns to shut down for the balance of the week on account of Thanksgiving Day.

Export trade is nothing like what it was and this not only on account of embargoes which have been laid down by the railroads. With prices reaching a somewhat stable basis, indications are that the lowest figures have been reached for the present.

Recently Pool 9 has been offered at $6; Pool 10, $5.25@$5.50; Pool 11, $4.50@$5, and Pool 18 at $4. The heaviest sales have been made of Pool 10, as most buyers seem to figure that a good grade is the best to have when they are using such small tonnage.

Due to limited buying many producers are feeling around to find favorable contract business. It is believed that many of them are taking on railroad fuel orders at prices much under spot. We have heard of Fairmont coals being sold around the $4 mark, with some Pennsylvania high volatiles 50c. higher.

The coke market is quiet, 72-hour at $10 and 48-hour, $9.

Lake

BUFFALO

Bituminous Now Going Below Contract Figures—Demand Still Falling Off—Cars Are Plentiful—Anthracite Supply Is Better.

Bituminous—As prices sag a new difficulty appears. They are now coming down to the level of the spring contracts. For sometime the prices have been but little above the higher contract figures and consumers have been able to get most of the coal they wanted, so that jobbers are doing very little business. At the same time, operators are beginning to find that they have need of the jobbers.

It is estimated that production exceeds consumption by about 20 per cent, which is enough to weaken any market pretty fast. The old failure to fill contracts is now changed to a failure to "find storage room" for contract coal when it comes in.

Contracting always adds to complications in times of fluctuation like this, for it too often happens that neither party will adhere to a contract unless it is convenient, though such delinquents are the ones who complain loudest when the other party fails to come up to the agreement.

The car supply is so good that there is not much said about it. The crops are moved without difficulty and if coal fails to reach destination promptly the cause is looked for somewhere else than in car shortage.

Quotations are not easily made, but in general prices range about $5.50@$6 for Pittsburgh and No. 8 lump, $5.25@$5.50 for mine run and $4.75 for all slack, with $5.25 for Allegheny Valley mine run, which is about all that is made.

Anthracite—Distributors state that the situation is improving and that the insistent demand will soon be over. It is added now that when people who declare they are out of fuel are offered coke or are told that small orders must be paid for in advance they mostly go away without buying.

The situation has been like a run on a bank. When it is found that there is coal to be had it is not wanted so urgently. Shortly the coal will cease to be shipped by Lake and then the city will have plenty. The one item that is not yet accounted for is the natural gas supply. The city authorities have joined in the claim that the gas company is trying to force the price up before it turns out a fair supply. The deadlock promises to continue.

Lake—Shipments for the week were 100,900 net tons, of which 58,000 tons cleared for Duluth and Superior, 21,000 for Chicago, 8,000 for Milwaukee, 7,300 for Fort William, 6,000 for Menominee and 600 for Pelee Id., Lake Erie. Freight rates are unchanged.

Coke—The market continues weak and declining on account of the state of bituminous. Jobbers get a few orders, which they are able to fill at $9 for 72-hour Connellsville foundry, $8@$8.50 for 48-hour furnace and $6.50 @$7 for off-grades and stock. Domestic sizes are much more active, being $7.50 for furnace sizes, $10.50 for small sizes and $2.50 for breeze.

MINNEAPOLIS

All-Rail Supply May Cut Dock Prices —Off-Grades in Poorer Demand—Domestic Consumers Await Lower Prices.

Unmistakable signs of ultimate lower prices are developing. As dock supplies are less than the probable needs, even with a restricted winter demand, the expectation is that prices will be sustained through the season. But on all-rail coal the situation is different. Already, the poorer grades from Illinois and Indiana are not commanding as good prices as formerly. There is more discrimination now. The choicer grades of southern Illinois coal are getting more attention. The less desirable are off as much as $1.50 a ton. Mines producing the better coals are now willing to contract for delivery after Jan. 1—something they have not considered for many months.

All this points to a distinct easing up of the market. It means lower prices at once on the cheaper grades, and a gradual easing of strength of the better coals. How long and how strong prices on the better coal will remain rests with the character of the winter and the consequent demand. If there should be a continued mild and open winter, with coal accumulating, it would not be long until prices would show concessions.

It is taken as a matter of course that toward spring there will surely be a slump in values, if it does not develop sooner. As the more Southern demand of the winter eases off, production will become larger than requirements, and lower prices are regarded as certain.

Just how the dock interests will emerge from the season in the spring remains a question. It would seem as though their limited stocks ought to be all absorbed before spring. Yet the possibilities of severe competition from the all-rail trade, extended into a further stretch of territory, may cut down the consumption of dock coal, for the high prices ruling on dock coal have already allowed a greater field in which the all-rail coal sells. Should all-rail prices ease off, so they can offer still sharper competition, it might compel a reduction in dock prices or sales.

The local situation at retail is much the same as it has been. There is a small but steady movement of all grades of coal, but consumers are not stocking up. They hope for something which will bring about a change to lower prices. There is no accumulation of orders, for coal has been moving to Twin Cities yards steadily, and all are well supplied for the present. Interior points are not so fortunate and a number of towns were caught last week without coal.

MILWAUKEE

Market Is Quiet, Despite Short Stocks and Approach of Winter—Dealers Well Up and Look for New Business—No Change in Prices.

The market is remarkably quiet, considering the conditions which confront the trade. The prevalence of mild weather may have contributed somewhat to this. Nobody seems to be particularly worried over the outlook for the winter in the face of known shortage of both hard and soft coal as compared with last year at the close of the season.

While coal men are sure they do not have all the coal required for the winter, they are equally sure that they have all they cared to purchase at the inflated mine prices. They prefer to do a hand-to-mouth business with rail coal during the winter.

Dealers report that the demand has slacked up considerably. They have caught up with their orders and are looking for new business. There is only a meager supply of hard coal and domestic bituminous, but steam is holding up well. As many industries are closing down temporarily or shortening hours, it is easy to meet all requirements. Prices continue firm and unchanged. November receipts by Lake thus far aggregate 81,355 tons of anthracite and 270,229 tons of soft coal.

More trouble looms for the coal man. Somebody is going to advise the Wisconsin and Minnesota Leglislatures that coal receivers on Lake Michigan and at the Head-of-the-Lakes market coal damaged by spontaneous combustion as first class fuel and will ask for restrictive legislation. Milwaukee dealers say they sell the partially burned coal for what it is worth. The coal investigation by the State Marketing Commission is still in progress.

CLEVELAND

Limited Car Supply Continues — Coal Demand Sinking Below Production — Receipts of Domestic Grades Grow — Steam Prices Shade Off.

Bituminous—With the ending of the formal Lake season Nov. 24 a situation has arisen which will shortly mean an excess of production. With industrial demand contracting steadily, it is freely predicted that operators soon are going to be confronted with difficulty in keeping miners fully employed.

There has been no drastic drop in the price at mines within the last week, largely because of the poor car supply. The coal trade now has only hopper-bottom cars, whereas all flat-bottom gondolas with sides under 38 inches were formerly reserved exclusively for coal shipments under the Interstate Commerce Commission's orders. Another reason for the railroad condition rests in some degree on the weeding-out process indulged in by the roads. In most cases where new men on operating crews are let out, it is with the intention of replacing them with old, experienced hands, who were lured away from the railroad service by high wages. With industrial plants closing and unemployment increasing, these men are said to be glad of the opportunity to get their old places back again.

Car supply in the No. 8 district varies. Some days it is at 100 per cent on some roads, while on others it has dropped as low as 34 per cent. The average rate of operations in the district is about 75 per cent. Only about 5 per cent of the coal consumed in this community goes into domestic consumption, the remainder being used by industrial plants. Therefore, the slump in business is beginning to be felt keenly by operators. At the present time prices for spot No. 8 steam at the mines range $4.50@$5.50. Slack is around $4.75. Lower prices are expected.

Pocahontas and Anthracite—Retailers say that receipts of Pocahontas and anthracite are beginning to improve. Supplies are still below the demand, although deliveries are not so far in arrears as they were a few months ago. Pocahontas lump is almost unobtainable and mine run is being substituted. Retailers point out that they are keeping their stocks down, with a view of taking advantage of concession in mine prices as they appear.

Lake—On Nov. 24 the ordinary insurance rates on Lake shipments ceased and higher rates went into effect for subsequent shipments. It is estimated that about ten days to two weeks will be required to close up the season.

Total shipments to the Northwest to Nov. 22 were 21,200,000 tons. Fully 800,000 tons remain to be loaded and shipped. Last year's shipments were 21,750,000 tons. It was estimated at the beginning of this season that 30,000,000 tons would be needed. A smaller amount sufficed last year because of large stocks left over from the preceding season. None remained from last season, but the contraction of industrial demand has been sharp and no shortage is expected to appear in the Northwest in the coming months.

Retail prices for coal delivered in Cleveland follow:

Anthracite—Egg, chestnut and stove, $15.10.

Pocahontas—Shoveled lump, $11.75; mine run, $11.10.

Domestic Bituminous—West Virginia splint, $11.75; No. 8 Pittsburgh, $9.65; Cannel lump, $15.

Steam Coal—No. 6 and No. 8 slack, $9.50; No. 6 and No. 8 mine run, $9.65; No. 8 3-in. lump, $9.65.

South

BIRMINGHAM

Buying by Railroads and Furnaces Stimulates Steam Market, Industrial Demand Being Weak—Domestic Continues Scarce — Production Reaches High Figure—Labor Is Becoming Plentiful—Prices Weaken Slightly.

Inquiry for coal from industrial sources the past week has been rather light, but considerable buying in the spot market by furnace interests and

some of the big rail lines enabled the trade to market the heavy output, which would otherwise have been moved with difficulty. Black Creek and Cahaba mine run was quoted $5@$6, Carbon Hill, $4.25@$4.50; Big Seam, $4@$4.25, per net ton mines.

The production of domestic coal cannot keep pace with current needs, to say nothing of stocking, and some steam is being bought for domestic use, and indications are that much mine run coal will have to be diverted to domestic channels through the balance of the year, or as soon as steady winter weather sets in.

There is a great influx of labor into the mine fields of the district, due to reduced operations or shutdowns at industrial plants and the curtailing of forces in other directions. The supply of common labor is hard to absorb. Many striking miners are now returning to work as fast as openings are provided for them, and conditions as regards production have been reversed from the status which has been maintained for many months past.

The amount of coal mined is now practically controlled by the demands of the market, except that this situation does not apply to domestic operations. Figures on output for the week ended Nov. 13 showed 291,000 tons mined, which is very near a normal weekly production. The car supply was fair at all operations.

LOUISVILLE

Demand Steadily Declining, Forcing Lower Prices—Operators Now Making Prepared Sizes—Retail Prices Not Affected Much as Yet—Gas Coal in Good Demand.

Demand for steam has declined materially, and operators are beginning to have some real trouble in selling. Small mines without sales organizations or screening facilities can hardly move cars at all. The larger operators are rapidly putting in their screens, and taking up the prepared size demand.

Right now there is a general scramble for contracts. However, the buyer who formerly bought under contract in many instances has been cured. Of course, there were many operators who filled their contracts religiously, but with the market rapidly declining and still lower prices anticipated, no big buyers are placing contracts.

There is not much export business and not much expected. Industrial plants are doing next to nothing, or not buying at any rate. Railroads are buying thirty days' supply in some cases. Southern cotton plants are at a standstill. It is merely a question of time before domestic consumers will be loaded down, unless severe weather is experienced.

The best demand is for gas and by-product, as such plants are still consuming in quantities, and have been behind on deliveries. Gas coal is quoted at a steady premium over steam.

Eastern Kentucky steam is offered as low as $4.25, the better grades of Harlan, Straight Creek, Hazard Gas, and Elkhorn bringing as high as $6. Screenings are quoted $5 a ton for good grades. Lump is $7@$10 with some selling as low as $6 to regular customers. With the market weak on mine run, it is even harder to sell screenings.

The Middlesboro district has received some 30-day business from the Southern Ry. for 4-in. and under, which will enable them to produce a good quantity of block.

Retailers report that while operators are beginning to screen more coal it is not reaching here yet. Retail quotations are:

	East Ky.	West Ky.
Mine run	$11.00	$10.00
Lump	11.50	10.50
Screenings	10.50	9.50

Mine quotations are:

Mine run	$4.25@$ 6.00	$14.25
Screenings	4.25@ 6.00	3.25
Lump	6.00@ 10.00	5.50

Inland West

MIDWEST REVIEW

Market Is Very Quiet — Prices Fairly Firm—Operating Conditions Are Good —Indiana Trade Is in a Queer Predicament.

The steam market has been particularly dead and on account of the very unseasonable weather, demand for domestic has lessened. Sales of less-favored domestic coals have dropped off very considerably. It now appears that there is an abundance of coal in the Northwest, as cancellations are coming in in large quantities. These cancellations are caused by two facts. First, there is now a plentiful supply of Eastern coal on hand and Illinois mines have been able to ship very liberally on account of the improved car supply. Various farmers' elevator companies have been affected so seriously by the decline in the grain market that they are buying very sparingly. This situation also prevails in northern Iowa and southern Minnesota.

An announcement has been made that the Chicago, Milwaukee & St. Paul R.R. has practically closed a deal taking over the Chicago, Terre Haute and Southeastern R.R. The Milwaukee road will now have direct access to the very rich and extensive coal fields in Indiana tapped by the C. T. H. & S. E. This will be of very great value to the road, as it has never been able to reach any of the more important coal producing districts.

The coal situation in Indiana would be tragic if it were not so absurd. Under the benign power of the Indiana State Coal Commission it appears that dealers are unable to buy Indiana coal in sufficient quantities to keep them going, and as a result they have been forced to seek elsewhere for their fuel and have had to pay higher prices than they would have ordinarily paid for Indiana coal provided there were no state commission. The operators can hardly be blamed for this, as it is only human for them to want to get $4@$5 per ton outside of the state when they can only get around $3 inside.

There only remains two factors to be disappointed. First the householder, and second the manufacturer. It is expected that these classes will soon join with the retailers and operators and take steps to abolish the coal commission.

The car supply proved to be satisfactory enough this week, as an average will probably show that the mines received 75@80 per cent. Labor conditions continue satisfactory with practically no interruptions. Mine prices on the open market are:

Southern Illinois (Franklin, Saline and Williamson Counties)

Prepared sizes	$5.25@$6.50
Mine run	4.50@ 5.25
Screenings	3.50@ 4.15

Central Illinois—(Springfield District)

Prepared sizes	$4.75@$5.25
Mine run	3.25@ 4.00
Screenings	2.75@ 3.25

Northern Illinois

Prepared sizes	$5.00@$6.00
Mine run	3.75@ 4.50
Screenings (washed)	4.00@ 4.50

Indiana Clinton and Linton fourth vein:

	State	Outside State
Prepared sizes	$3.45	$4.75@$6.00
Mine run	3.20	3.75@ 4.25
Screenings	3.00	3.00@ 3.50

Indiana, Knox County, fifth vein:

	State	Outside State
Prepared sizes	$3.25	$4.25@$6.00
Mine run	3.00	3.25@ 3.75
Screenings	2.80	2.75@ 3.25

CHICAGO

Steam Market Is Unchanged — Good Demand Anticipated Soon — Retailers Curtail Orders, Allowing Light Demand.

There has been but little change in the market during the week. Prices are all at low levels and it is not expected that operators and jobbers will make any further concessions. Steam coals are still around $2.75 for screenings and $3@$3.50 for mine run. Lump (1¼-in.) is bringing $4@$4.50 although there are scattered sales at figures higher than this.

Retailers have come into prominence by asking that their regular sources of supply hold shipments until further notice. However, the first cold snap will bring about a situation which will be better, so far as retailers are concerned.

There have been no large sales made nor have there been any large cancellations. The consensus of opinion points toward a decided betterment in the manufacturing situation to take place probably early in January. Wholesale prices have been decreased all along the line and it is expected that new and satisfactory prices will have to be evolved to meet the changing conditions.

It is very noticeable, however, that the entire coal trade is very optimistic and looks upon the present depression only as temporary. It is predicted that the demand will be entirely satisfactory soon after the first of the year, although it is not thought that the

prices will regain the altitudes reached during the latter part of September.

Receipts of Eastern coal increase weekly. Pocahontas is now in good supply. Anthracite is coming in large enough quantities to take care of current demand and it is predicted that there will be more than enough to go around for the balance of the season.

COLUMBUS

Receipts Growing With Curtailed Lake Shipments — Steam Continues Very Weak — Domestic Demand Still Strong — Operating Conditions Are Fair.

Following the formal closing of the Lakes season on Nov. 24, the Ore & Coal Exchange gave permission for loading Lake coal until further notice. A reduced tonnage is still moving to lower ports, following a heavy shipment the preceding week.

Domestic demand is still the outstanding feature of the Ohio trade. Retailers are now getting a larger tonnage. No marked scarcity exists in any section and it is believed that there will be a plentiful supply of lump within a short time. Retail prices are still rather high, although a marked decline from the high levels of the fall is recorded. Hocking lump now sells $8.25 @$9 while mine run can be purchased $8.25@$8.50. West Virginia splints and Kentucky grades are $9.50@$10.50 but the price is declining. Pocahontas is scarce and rules fairly high.

With the closing down of many industrial concerns consumption of steam has fallen off to a large extent. Plants which are still operating have accumulated a surplus stock and are not in the market. Railroads are taking a fair tonnage, but the freight movement has declined in many ways. Taking it all in all, weakness characterizes the steam trade and lower prices are in store.

Production in Ohio fields is holding up fairly well despite adverse circumstances. The holidays, which have been rather numerous recently, have cut into the output. The Hocking Valley field has had a run of about 60 per cent and Pomeroy Bend, Cambridge and Crooksville report about the same.

Prices of principal coals used in central Ohio at the mines are:

Hocking lump	$5.00@$6.50
Hocking mine run	4.25@ 5.25
Hocking screenings	3.75@ 4.50
Pomeroy lump	5.00@ 6.50
Pomeroy mine run	4.50@ 5.50
Pomeroy screenings	4.00@ 5.00
West Virginia splints, lump	5.50@ 6.50
W. Va. splints, mine run	4.50@ 5.50
W. Va. splints, screenings	4.00@ 5.00
Pocahontas lump	6.50@ 7.00
Pocahontas mine run	5.50@ 6.50
Kentucky lump	5.50@ 6.50

DETROIT

Steam Trade Continues Sluggish — Moderate Weather Eases Domestic Demand — Receipts Improve — Prices Are Steady.

Bituminous—Buying is being conducted on a smaller scale than recently. Interest in steam business is only of moderate proportions, while in the domestic market, inquiry has become less pressing with the return of more moderate temperatures.

Steam consumers are influenced by general business conditions in industrial and manufacturing lines and are taking only sufficient coal to provide for immediate requirements. With mills and factories generally operating only on part time, the consumption of coal is very largely curtailed.

Buyers are unwilling to increase reserves and show a disposition to hold back in the belief that they will be in position to benefit from any reductions that may be made. Domestic demand is easier though buyers are still taking a considerable amount of prepared coal. Coal receipts are improving gradually, both in quantity and quality, as Lake shipments dwindle.

Hocking domestic lump is quoted $7.50@$7.75 at the mines, mine run is $5.25 and slack may be had at $4.75. West Virginia lump is $8.65@$8.85, with mine run at $5.85 and slack around $5.50.

Anthracite—There is still a deficiency in the supply of prepared sizes. Retailers have been unable to accumulate stocks while receipts continue light and irregular. Many householders have found it necessary to substitute bituminous or coke.

CINCINNATI

River Coal Strengthens Supply—Some Shortage in Neighboring Districts—Operating Conditions Are Better.

Recent heavy rains in the Ohio River Valley, which caused a considerable rise in the stage of the river, have greatly facilitated the movement of river coal, relieving the strong demand prevailing in the Cincinnati district.

With ever-improving conditions in the car situation, dealers feel confident that sufficient coal for all uses will be had during the winter.

The trade is not so optimistic as to the future supply of coal for dealers outside the Cincinnati area. Several dealers state that in many points outside of the district great difficulty is being experienced now in getting shipments of coal.

Demand for all grades continues strong. While sufficient soft coal for domestic and steam consumers can be had, anthracite coal continues a scarcity.

The car situation, which has been the great problem of the operators, while somewhat improved, still is far from normal. Many of the mines are working but two or three days a week, owing to this shortage. It is the belief of the operators, however, that with the improving conditions in the situation, sufficient supply of cars will be had at the mines soon.

Prices of coal in the retail market in Cincinnati remain practically unchanged from last week. A slight rise in the price of domestic egg coke is the only noticeable change.

Retail prices to Cincinnati consumers were quoted as follows:

Bituminous lump	$9.25@$10.50
Nut and slack	8.50
Mine run	8.75@ 9.25
Smokeless lump	11.25@ 11.50
Mine run	10.00@ 10.50
Anthracite chestnut and egg	15.00@ 16.25
Coke, domestic egg	16.00

ST. LOUIS

Market Is Easier on Account of Milder Weather—Car Supply Good and Working Time Is Better—Business Depression Felt in Steam Sizes.

The local condition is extremely easy and has caused certain anxiety among shippers as to what will happen if the winter continues open and mild. Steam demand is unusually quiet with the result that the market is somewhat heavy. In the country there is not the steam demand that there should be. The general business depression is gradually working its way to the Middle West.

The tonnage shipped to Chicago is unusually light. Railroads have been acquiring a good tonnage recently, but surplus shipments are being shut off by some roads. Domestic demand in the country continues fairly good, but in St. Louis proper is almost at a standstill.

Mines in the Standard field are working better than three days a week. Car supply is unusually good, with no labor troubles to speak of. Prices range $3@$3.50 for screenings, mine run $3.50@$4, with lump $4@$5.50. The higher prices indicate country shipments. Mt. Olive coal shows $4@$5 for domestic sizes, with steam going mostly on contract.

In the Carterville district the car supply has been unusually good, with about four days a week on commercial coal. Railroad tonnage continues heavy, Prices range $3.25@$4.50 on screenings, mine run $3.75@$4.50, and domestic $4 @$5.50 by the regular operators, and as high as $6 by independents.

A little anthracite is moving to St. Louis, but the tonnage is insignificant. A good tonnage of Alabama coke is moving through the St. Louis gateway for points North and West.

Canada

TORONTO

Supply of Hard Coal Still Short—Bituminous Plentiful With Limited Demand and Prices Easier.

Conditions as regards the supply of anthracite have been practically unchanged for some time, the limited quantities received being still inadequate to the demand. Dealers are yet considerably behind with deliveries and there is little if any coal in the yards. Bituminous has been coming forward much more freely with a steady falling off in the demand, due to slackening of industrial activity, and the close of the threshing season. The supply on hand is ample for present requirements and prices are easier.

Quotations per short ton are about as follows:

Retail	
Anthracite, egg, stove, nut and grate	$16.90
Pea	15.40
Bituminous steam	15.00@$16.00
Domestic lump	17.00
Wholesale f.o.b. at destination	
Three-quarter lump	11.00
Slack	10.65

News From the Coal Fields

Northern Appalachian

PITTSBURGH

New Car Shortage Continues — Some Belated Lake Buying — Industrial Consumption Continues To Decrease — Prices Recede a Trifle.

The fresh car shortage that began to develop Nov. 12, has not abated. On some divisions there are very fair car supplies but on others the supplies run down to low percentages. In the past week the spot market has yielded in price only a trifle, in general holding the recent advance brought about by this new car shortage.

Belated efforts to rush coal to the Northwest has had a stiffening effect on the spot market, deferring further decline that is generally regarded as inevitable.

There is additional news of reduced consumption in manufacturing, as independent steel mill operations are decreasing rapidly. In several instances mills have closed entirely, probably for the purpose of accumulating specifications so as to be able to run at a fair rate for two or three weeks upon resumption. Domestic demand continues heavy, but dealers are gradually catching up with their orders. Thus far the supply of natural gas has proved better than was predicted, and some of the domestic stocks laid in last summer are likely to last longer than expected.

The spot market is quotable at $4.75 @$5 for steam and $5.50@$5.75 for best grades of ¾-in. gas. However, one of the large companies prices remains at $3.75 for mine run and $4 for screened. Connellsville coal has sold down to $4.50 or less.

CONNELLSVILLE

Spot Furnace Coke Is Maintained — Deadlock on First-Half Contracts — Operators Curtailing Production To Meet Situation.

The spot furnace coke market has been maintained during the week, by operators blowing out ovens and adjusting production to the greatly reduced demand. Even contract shipments have been curtailed or suspended. Foundry coke has declined about 50c. in the week.

Furnacemen have made up their minds that they will not contract for coke for the first half of 1921 except at much less than the present spot market, and are willing to give coke operators such time as is necessary to yield in their price views.

It is uncertain whether contract business will be done chiefly at flat prices or on a ratio basis. Recently operators were discussing ratios of 4 to 1 and 4½ to 1, but furnacemen do not seem willing to contract even at 5 to 1. On a flat price basis, furnaces would hardly bid as much as $6, while no coke operator is willing at present to get down even to $6, so that buyers and sellers are far apart. There is no interest in foundry coke contracts, and some contracts made a couple months ago at $15 will probably have to be revised.

The spot market is quotable $8@$8.50 for furnace and $9.50@$10 for foundry. The *Courier* reports production in the week ended Nov. 20 at 200,360 tons, a decrease of 1,450 tons.

FAIRMONT AND PANHANDLE

Production Declines With Poor Car Supply—Prices Are Firm—Export Call Is Weaker—Domestic Sizes in Good Demand, but Steam Market Is Listless.

Fairmont

Transportation conditions in the Fairmont region were worse than they had been for some time, in the period ended Nov. 20, not only because of an accumulation of loads along the line of the Baltimore & Ohio but also because of the fact that anthracite regions were apparently being given the lion's share of the supply for movement East. As a result idleness was most pronounced from the very outset of the period.

The Interstate Commerce Commission has put a stop to the wholesale appropriation of coal by the Baltimore & Ohio. Following the end of the confiscation it was said that the road was endeavoring to make arrangements through the usual channels for fuel supply at $4.25@$4.50.

Prices fluctuated during the week between $4.50@$4.75. The price on spot coal for Tidewater was about $5 a ton, but shipments were more or less limited, particularly during the early part of the work, permits being hard to secure. As the Lake season drew to a close a somewhat larger volume was being rushed to Lake points, the price being about $4.75. The spot market was rather listless. However, there was no over-production, the car supply making it rather difficult to take care of contracts.

Northern Panhandle

The car supply was far from satisfactory, loss in production from such a source reaching about 25 per cent. Unfavorable weather and an accumulation of loads at various points contributed to the loss. The poor car supply interfered somewhat with the movement of coal for domestic trade and cut down Lake shipments, the latter, however, practically ceased on Nov. 20.

Prices were somewhat firmer for domestic as a result of the cold wave. There was an ample supply of fuel for domestic trade, owing to the general dullness of the spot steam market.

The range of prices on mine run was $4.50@$4.75, with prepared sizes running somewhat higher. It was difficult to find an accurate figure on export prices, owing to the fact that there was little or no call, but as nearly as can be estimated the price was about $5.

Estimates of Production

From the Weekly Report of the Geological Survey

BITUMINOUS COAL

Total bituminous, including coal coked

	1920 Week	1920 Calendar Year to Date	1919[a] Week	1919[a] Calendar Year to Date
Nov. 6[b]	11,429,000	464,393,000	3,582,000	405,344,000
Daily average[c]	2,078,000	1,763,000	597,000	1,536,000
Nov. 13[b]	12,141,000	476,534,000	4,024,000	409,368,000
Daily average[d]	2,130,000	1,771,000	671,000	1,517,000
Nov. 20[e]	11,770,000	488,304,000	5,344,000	414,712,000
Daily average	1,962,000	1,775,000	891,000	1,503,000

(a) Less one day's production during New Year's week to equalize number of days covered for the two years. (b) Revised from last report. (c) Counting election day, November 2, 1920, as 0.5 of a working day. (d) Subject to revision. (e) Counting Armistice Day, November 11 1920, as 0.7 of a working day.

ANTHRACITE

	1920 Week	1920 Coal Year to Date	1919 Week	1919 Coal Year to Date
November 6	1,415,000	52,120,000	2,008,000	55,750,000
November 13	1,753,000	53,873,000	1,880,000	57,610,000
November 20	1,975,000	55,848,000	2,055,000	59,665,000

(a) Less 2 days' production during first week of April to equalize number of working days covered for the two years.

BEEHIVE COKE

United States Total

Week Ended Nov. 20[c] 1920	Week Ended Nov. 13[b] 1920	Week Ended Nov. 22 1919	1920 to Date	1919[a] to Date
365,000	380,000	402,000	18,819,000	17,376,000

(a) Less one day's production during New Year's week to equalize number of days covered for the two years. (b) Revised from last report. (c) Subject to revision. All figures in net tons.

CENTRAL PENNSYLVANIA

Car Supply Is Satisfactory — Prices Are Firm — Labor Becoming Plentiful.

Car supply throughout the field during the past week, with but few exceptions in the western part, has continued on a satisfactory basis. Production continues at about the same rate as has been maintained during the fall and the slowing down of industry has not been reflected by any slump in coal shipments.

Prices remain around the $5 mark. Dealers in Altoona are experiencing no difficulty in furnishing coal for their customers at $8@$8.50. Dealers with sidings and tipples are asking $6.25.

Except at Morrisdale, in Clearfield County, where a strike has been in progress for several weeks, the field is free from labor trouble, and many operators have increased their forces to some extent. Many men laid off at the various industries in the district are falling back to the mines for employment.

The committee appointed some time ago has about completed the preparation of rules and regulations suggested for the elimination of unfair practices in the field. The rules were drawn by a subcommittee and have been submitted to the general committee for action.

Middle Appalachian

HIGH-VOLATILE FIELDS

Production Declines With Poor Car Supply and Inadequate Motive Power —Thacker Strike Situation Again Serious — Steam Market Is Listless, but Prices Are Unchanged — Domestic in Good Demand—Export Embargo Holds.

Kanawha

Car service in the week ended Nov. 20 was the worst afforded Kanawha mines in many a week. Before the end of that period the supply had slumped to below 40 per cent. While bad weather undoubtedly played a part, other factors operated to restrict the supply of cars, Western connections failing to furnish their share of equipment. With Tide and Eastern points largely embargoed and with more cars moving in the anthracite trade, the number of empties returned to the Kanawha field was greatly reduced, and the average daily production was cut below 20,000 tons a day.

There was little activity in the open market. The steam price prevailing on a general average was $4.50@$4.75. Demand for domestic lump picked up slightly, mainly as a result of the cold weather, and ranged $5.50@$6. There was no life to the foreign market, nor would it have been possible to meet that demand, owing to the Chesapeake & Ohio embargo, except in the larger cars. Even Lake shipments were reduced to a minimum.

In view of the small production for which the shortage of cars was responsible, producers were hardly able to care for contract obligations. Mines on the Kanawha & Michigan also were affected, not having over 30 per cent run of cars during the greater part of the week.

Northeast Kentucky

Less coal was produced in the third week of November than during any period of the month, the sum total amounting to only 44 per cent of potential capacity. The greatest loss was due to car shortage, being placed at 50 per cent.

This was largely the result of a breakdown in motive power of the Chesapeake & Ohio and also to unfavorable weather conditions.

Domestic demand was much stimulated, owing to the arrival of winter weather. With the increased demand it became apparent that producers were not prepared to meet such an emergency because of lack of screening facilities. Since prepared sizes are hard to find, domestic consumers have become more reconciled to mine-run.

The market for steam and gas was still much off-color and the general run of prices was not more than $4.50@$4.75, with prepared sizes averaging between 50c. and $1 more.

There were, at one time during the week, in the yards at Russell, sixty-odd engines out of commission, repairs having been impossible owing to a recent strike among the boiler makers.

Logan and Thacker

Production decreased in the Logan field during the week ended Nov. 20, the output showing a decline of 10,000 tons as compared with the previous week. Inadequate motive power was said to be principally responsible. In fact, the Chesapeake & Ohio was unable to accept empties from foreign lines for placement on its system.

While a small tonnage was shipped to Lake during the early part of the week, it decreased in volume as the week neared its end. Discrimination in continuation of the embargo against the movement to Eastern markets and Tidewater was charged by Logan producers. No coal was shipped from the Logan region to the East except a few 70-ton cars. Consequently, most of the tonnage was being consigned to Inland West markets.

There was a slight revival of interest in splint coal on the part of manufacturing plants, but the principal increase in demand was for prepared sizes, which averaged about $5.50, with mine run from 50c. to a dollar a ton less. Prices fluctuated a good deal during the week. Export was around $6.50 a ton but little was moving at that figure.

Production was not on quite so large a scale in the Williamson field, owing to a curtailed car supply, but aside from this, even in the area directly affected by the strike, production was running about 80 per cent of potential capacity. Taking the field as a whole, however, the tonnage loss was still overshadowing the total amount of coal produced.

While plans were under way to restore order and prevent further attacks and dynamiting, yet the situation was serious and it was considered highly probable that it would be necessary to bring the Federal troops back to Mingo County. Strikers seem to have become obsessed with the fact that they are immune from punishment for whatever crimes they may commit.

The range of prices was about the same as in the Logan field, with virtually the entire output moving to Western markets. There was little demand for free coal, however, most of the output being applied on contracts.

Virginia

The car supply was not so satisfactory as it had been during the previous week. The weather militated against the movement of equipment. Then, too, not so many flat-bottom gondolas are now available for use in the transportation of coal. Less coal was being used in coke-making than usual, being needed to take care of demand in certain quarters.

It is the wagon mines and those holding few contracts which are principally affected by the present market slump. As the demand diminishes more small mines are being closed down.

For lump coal only was there any marked demand and domestic was going at about $5. Run of mine in the open market was bringing $4.50, but there was comparatively little spot demand. The demand for export had melted away to a large extent. Contracts, however, still remain to be met, so that there is little or no idleness around any mines, except those already referred to, as a result of market stagnation.

LOW-VOLATILE FIELDS

Poor Car Supply Curtails Production— Transportation Conditions Also Poor— Spot Steam Market Very Dull—Prices Remain Firm for Domestic — Export Demand Is at a Standstill.

New River and the Gulf

There was not more than a 4 per cent production in the New River field in the week ended Nov. 20, the reduced output being due entirely to transportation disabilities preventing mines from receiving anything like an adequate car supply. From Tuesday on, the placement was down to about 30 per cent. Connections had plenty of empties for the C. & O., especially in the East, which the road was unable to handle, not only because of weather conditions but because of lack of motive power and engine failures.

While there was only a feeble demand for New River smokeless, nevertheless there was no loss in production growing out of market conditions, since mines were hardly able to keep up contract shipments. Export demand was at a standstill and while there was some Western business for prepared sizes the

prospects were for a diminution of demand.

Not many spot orders were placed; the steam price being $5@$6 and prepared sizes 50c. to a dollar higher, with export at $8.50 and falling.

Even the Virginia Ry. was unable to maintain its car supply at previous figures. During the week ended Nov. 20, the supply amounted to about 60 per cent of mine rating. The C. & O. Gulf mines worked little more than a third of the week.

Market conditions were much the same as in the New River field, mine run ranging $5@$6 dollars and with few inquiries even at that price. Both Inland and export markets were affected by the withdrawal of buyers.

Pocahontas and Tug River

In both the Pocahontas and Tug River regions during the period ended Nov. 20 there was a shortage of equipment and a poor distribution of empties owing to unfavorable weather conditions. In neither field was there any coal being sold in the open market to amount to anything.

At least a third of the normal production in the Pocahontas field represented the loss in that region owing to severe sleet storms cutting off the current from the Appalachian Power Co.'s plant, many mines in consequence finding it necessary to shut down. Engine failures combined with icy tracks made it impossible to distribute cars promptly or to move loads.

No spot business to speak of was being transacted and where buyers were placing orders they were picking their coal. There was no demand for export and the same was true to Inland markets. As nearly as could be ascertained, export would range about $7.50, steam $5@$5.50 and prepared sizes 75c.@$1 more. Large orders from retailers were being filled and the mines were about up to requirements on that business. Old export orders were being rapidly filled.

Only 70,000 tons were loaded in the Tug River field, that being the smallest production since June. Car shortage was entirely responsible for the reduced output, though more cars could have been loaded on Saturday had miners worked in a reasonable way. As an example of conditions in the field, there were some miners who would not go into the mines at all on Saturday while those who had been at work came out at noon, indicating the spirit of indifference manifested by labor.

Middle Western

INDIANA

Outside Domestic Market Is Weakening and Local Receipts Will Benefit—Indiana Commission Is Enjoined from Interfering with Contract Shipments.

Contraction of industrial operations continues. Coupled with the better production made possible by an improved car supply, this has softened the steam market to such an extent that producers are appearing in the selling field for the first time in many months.

Outside the state, domestic coal is not feeling the break to such an extent. However, Chicago and Northwest markets are beginning to weaken under the heavy receipts, and more of this Eastern and Illinois coal is now moving to Indiana. The first of the year will probably see a price reduction.

The car supply may be slightly reduced by removal of the restriction on open-top equipment for exclusive coal loading. With declining demands, however, the supply is expected to be entirely adequate.

As the shortage of domestic coal outside the state is being rapidly filled, it is expected that outside operators will divert more coal here, at prices in line with those forced upon Indiana producers. In this way, it is hoped that Indiana's domestic shortage may be quickly met.

The Food & Fuel Commission has just been enjoined from issuing any orders allocating coal to Indiana consumers which was contracted for interstate delivery before the creation of the commission.

DUQUOIN

Prices Slightly Lower — Northwestern Trade Bolsters the Market — Car Supply Holds Out Well.

Conditions have not changed to any great extent over last week, with a possible small exception of a slump in some grades of coal. Mines have worked 70 to 90 per cent, the car supply holding out well for the season of the year. The Chicago, Burlington & Quincy R.R. did not hold out as well as other carriers during the week.

The demand, while falling off in some regions, is still steady and the Northwestern trade is uneasy as to whether their wants will be supplied. This demand is all practically in the southern Illinois field and is one of the main features which is keeping up the market at this time.

The continued steady operation of the mines has a tendency to lower the prices and the warm weather is also blamed. Prices during the week did not take any decided drop, but the general depression could be felt throughout. Screenings ranged $3.50@$3.75; lump, $4; mine run, $3.75@$4.

WESTERN KENTUCKY

Prices Soften — Domestic Calls Are Brisk — Steam Is Inactive — New Freight Rates Are Sought.

The situation is better than could be expected, considering the slump in other fields. Mild weather has resulted in comparatively small domestic call, and industrial consumption is being steadily lowered.

With a car supply up to around 60 per cent and a good supply of labor, mines are getting out a good tonnage. The Southern retail demand for lump has been good, but steam is rapidly falling off.

It is reported that operators are selling lump at around $5.50 average; mine-run, $4.25; and screenings, $3.25, although it is doubtful whether much lump coal is selling under $6.

Operators are further endeavoring to develop the selling field, having just filed a complaint with the Interstate Commerce Commission, asking for a rate of 10c. a ton over the rate from the Harlan mines, to Atlanta and Georgia points north of the Central of Georgia Ry., extending on a line from Atlanta to Savannah. Export rates have also been asked through Savannah and Port Wentworth, Ga., at 60c. under the rates proposed to those points proper.

Southwestern

KANSAS CITY

Operating Conditions Are Good—Market Is Steady and Steam Production Adequate — Some Domestic Shortage Noted.

Mines in the Southwest are having good running time. The car supply is adequate with few exceptions, and there is no railroad congestion or interruption. The temperature is above normal for the season, and demand just about equals the supply, with the possible exception of shortage in spots of Kansas domestic grades.

Prices are steady and quotations made by shippers are as follows:

Arkansas smokeless domestic grades, $6.75@$8; steam, $4@$5.25.

Kansas domestic grades, $6@$6.50; steam, $4.50@$4.75.

Missouri domestic grades, $6@$8; steam, $3.55@$5.50.

Mines, generally, were idle Thanksgiving Day, but all steam plants are endeavoring to carry from one to two months' supply of coal to tide over such incidental interruptions.

Western

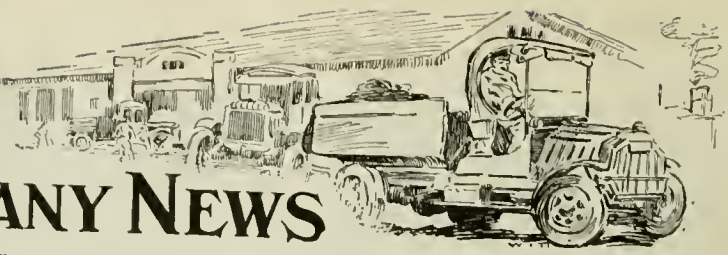
UTAH

Car Situation Improves — Labor Is Nearly Adequate — Rate Decision Is Expected Soon.

The car situation continues to improve, but is still subnormal. Retailers, however, are fairly well stocked. The demands made upon them this season so far have not been heavy, owing to the mild, almost summerlike weather which has prevailed. Labor is good, although most of the mines could use a few more experienced men.

The dispute between the Utah Public Utilities Commission and the Interstate Commerce Commission, regarding the proposed increase in Utah freight rates is not yet settled. The decision is anticipated early in January but may come before the end of the present year.

MINE And COMPANY NEWS



ALABAMA

The Weller Coal Co., Aubrey, recently organized with a capital of $10,000, has acquired about 150 acres of coal lands and is planning for its development at an early date. It is proposed to establish a daily output of 200 tons. Tom Stobert is secretary-treasurer.

COLORADO

Coal production is back to normal, following the walkout of 1,500 miners in the lignite fields to force operators to grant a 20 per cent increase for deadwork and incidentally bring about union recognition through an agreement extending over two years. Hearing before the State Industrial Commission resulted in a continuance until Nov. 29. Operators will testify at the adjourned meeting. They say there is at present no wage scale covering deadwork in the mines. James Dalrymple, state coal mine inspector, told the commission that deadwork is such labor as falls to others than coal diggers. Increased production comes in spite of the loss of the last four days in October on account of strike conditions. The total production in all fields in Colorado for the period between Jan. 1 and Oct. 31 was 10,127,997 tons, as against 8,649,062 tons for a similar period last year. Production during October was 1,090,867 tons against 917,021 for September. In Boulder County, where the strike interrupted output, the October record nevertheless shows a production of 112,135 tons against 103,249 tons in September. In Weld County production was 109,743 tons compared with 109,199 in September.

ILLINOIS

The Buehmer Coal Co., of St. Louis, is now installing a new 200 k.w. motor-generator set at one of its mines near Collinsville, St. Clair County. The company recently purchased the property of the old No. 5 mine near Duquoin, Perry County, and is now re-equipping the plant. All of the machinery, including shaker-screens, hoisting engines, cages, etc., were dismantled some few years ago when the mine was closed down by the Jupiter Coal Co., which operated it at that time.

Over 300 men were thrown out of work recently when the fan house of the Jefferson mine operated at Springfield, by the **Sangamon County Coal Co.**, burned to the ground. The quick action of the company cut short the time of idleness for the men and the fan house was soon rebuilt.

The mine at Hallidayboro, operated by the **Jackson Coal Co.**, is again working after being idle for sometime due to a fire in the workings of the mine. Rescue teams from Duquoin and Benton were called and the fire was extinguished. The mine recently experienced a fire on top which took everything with exception of the engine and generator rooms. The mine is one of the oldest in the state.

INDIANA

The C. R. Cummins Construction Co., of Cleveland and St. Louis, is surveying a switch line from the Southern Ry. at Indianapolis to a point seven miles southeast of Oakland City, where a strip mine will be opened in the spring. The company has many thousand acres of strip coal land and will place five steam shovels at the work, making it the largest strip mine in Indiana. It is estimated that sixty days will be required for the building of the switch. The steam shovels are under construction and will be placed on the work as soon as the railroad is completed.

The John Bull mines of Boonville, employing about 200 coal miners, and operated by **Cypress Creek Coal Co.**, will close down for two weeks for repairs. All the other coal mines in that region are working at full speed, though the market for coal has fallen to a low price in the last 30 days.

KENTUCKY

The Stearns Coal & Lumber Co., operating at Stearns, Ky., where it has 100,000 acres of coal and timber land, bought years ago, is installing 27 miles of additional railroad, ten miles being completed, and is getting ready to open up a considerable territory for development and marketing.

The King Blue Gem Co. of Manchester, has filed notice of an increase of capital stock to $10,000.

MISSOURI

Attorney-General McAllister has filed a motion in the Superior Court dismissing an inquiry he instituted early last August against the **Southern Interstate Coal Operators' Association** on the theory that the organization was guilty of an unlawful combination in restraint of trade. The information was directed against the association and eight of the large coal companies in Kansas City and western Missouri. In his motion to dismiss the Attorney General says that a full investigation of the books and papers of the organization and the examination of many witnesses convinced him that neither the organization nor the companies belonging to it have violated the anti-trust or the anti-pooling laws.

OKLAHOMA

The company recently organized by **J. W. Hinton** and associates with a capital of $50,000, has had plans prepared for the development of coal property at Gaither. Installation of mining equipment is being arranged.

Extensive coal developments at Gunther will be undertaken by the **Gunther City Coke & Mining Co.**, recently organized with a capital of $1,000,000. The incorporators are C. B. Cordes, E. Webb and W. H. Brown, Des Moines, Iowa.

The Boley Ice and Fuel Co. of Tulsa, retail coal dealers, filed an amendment to the charter at Oklahoma City increasing the capital stock from $12,000 to $25,000.

OHIO

Charles S. Geese, who has been operating a mine near Shawnee under the name of the **Carrington Coal Co.**, and who also operated three mines in the same vicinity under the name of the **Pine Hollow Coal Co.**, has turned over the holdings to a new corporation styled the **Carrington Coal Co., Inc.**, with Charles McMillan as president and general manager. It is planned to enlarge the output of the mines.

The Philadelphia & Cleveland Coal Co., of Cleveland and Columbus, has sold its new mine, a mile from Pomeroy, to the Stalter & Essex Coal Co., of Columbus.

The Camp Bros. Co. has been incorporated with a capital of $500,000 to operate coal and limestone properties, located on the Magodore road in Springfield township, Summit County. The holdings of the company are extensive. Incorporators are H. H. Camp, L. W. Camp, C. C. Baird, Thomas F. Walsh and Richard E. Augustine.

The Eastern Hocking Coal Co., a syndicate of Columbus and Zanesville capitalists, who purchased a tract of 17,000 acres of coal lands in Morgan, Perry and Muskingum counties about a year ago from the National Coal Co., has taken no steps for developing the property so far. According to the announcement of its president, J. H. Frantz, manager of the Columbus branch of the American Rolling Mills Co., the deal was made as a long time investment. The property embraces 202 farms and covers approximately 29 square miles of territory. Other officers are: Cary T. Marshall, Zanesville, vice president; H. M. Runkle, Columbus, secretary and treasurer.

PENNSYLVANIA

Fire that has been raging in the Katharine mine of the **Union Connellsville Coal & Coke Co.** at Simpson, near Brownsville, is under control and will soon be extinguished. Damage may easily reach $1,000,000, the officials state. Spontaneous combustion is now regarded as the cause of the fire which invaded every part of the workings. The 200 workmen escaped safely from the mine. The fire has thrown idle the 142 push ovens of the company, which is a Uniontown organization.

Coal mining at Curwensville, Clearfield County, has taken on new life and new mines have been opened near Bloomington by the **Lantz Coal Co.** The coal is being mined and dumped on coal cars on the New York Central at the Pyramid tipple. The new company will load from 25 to 30 tons a day until the drift is completed when the output will be increased.

Dr. C. E. Chase of Clearfield, representing Clearfield business men has closed a deal at Houtzdale for some valuable coal property. This property contains 300 acres underlaid with several veins, one of which is being operated at the present time. The new company is composed of Dr. C. E. Chase, Dr. A. D. Cowdrick, Wade Stewart, M. F. Bratton and Edward B. Chase. Several additional openings will be made.

TENNESSEE

The Durham Coal & Iron Co., Chattanooga, has recently acquired coal property in the vicinity of Bakewell, and is planning for the erection of a new steel coal tipple and the establishment of a housing development on that site, estimated to cost about $150,000. The installation of machinery for mining purposes will be inaugurated at an early date.

The Mercer Coal Co., Memphis, has filed notice of an increase in capitalization from $30,000 to $150,000.

TEXAS

The Awbrey Coal and Coke Co. of El Paso, has been organized and charter filed with the Secretary of State. The company is capitalized at $10,000, and the incorporators are: C. B. Woodal, J. R. Woodal and A. W. Danford. The company will conduct a retail coal and coke business in El Paso.

Deposits of good quality lignite in strata from six to seven feet in thickness have been found at a depth of 36 to 40 feet near Weldon. Several companies are now being organized and mining operations will soon begin on an extensive scale. The lignite is shown by experiments to make excellent steam fuel, and a market for it is promised from nearby industries.

The Calvin Coal Co., San Antonio, has filed notice of an increase in capital from $60,000 to $240,000.

VIRGINIA

Preparation for operations at the Midlothian mines, in Chesterfield County, lately acquired by the **Murphy Coal Corporation**, are well under way, and it is known that soon the place will be humming with activity. Within the last month, since the property was acquired, the Southern Ry. has completed its track to the mines and is ready to begin handling the output.

WASHINGTON

Articles of incorporation will soon be filed by the **Columbia Collier Co.**, which recently began opening a coal mine in Section 32, on Lincoln Creek. The new concern will be capitalized for $100,000.

Sam Hyde of Seattle, one of the state's well-known coal operators for 35 years, who recently disposed of his mine near Seattle for $500,000, will be president and manager of the new company. As soon as the mine is in full operation he will reside in Centralia.

WEST VIRGINIA

The Island Creek Coal Co., which owns 28,000 acres of coal land in the Logan district, 8,000 of which are under development, is building 50 new houses for its miners in

the Mud Fork region, about a mile and a half northeast from Holden. It is expected that these houses will be finished by March 1, 1921. This company opened a few months ago its Mine No. 14 which on its opening day dumped 30 cars (1,500 tons) of coal. It is the first time in the history of the Logan field that such a feat has been achieved.

The Carlston Mining & Power Co. of Kingwood, organized with a capital of $125,000, is having plans prepared for the development of 800 acres of coal property recently acquired. Mining equipment for all features of operation will be installed and a daily output of 800 tons is expected. It is reported that plans are being considered for the erection of an electric power plant for works service.

The Gay Coal & Coke Co. of Mt. Gay, had its workmen's compensation insurance rate reduced to 85c. This is believed to be the lowest insurance rate in the whole state of West Virginia. The company, which is a pioneer in the Logan field, in its 15 years' existence produced over 2,000,000 tons of coal without a single fatal or even serious accident. H. S. Gay, Jr., is the superintendent in charge.

The Glasscock Collieries Co., Morgantown, has purchased about 500 acres of Sewickley coal near Cassville in Cass and Grant districts of Monongalia County and will commence work on the sinking of a shaft. Former Governor William E. Glasscock of Morgantown was one of the organizers of the company. So far the company has not had a meeting of stockholders to complete its organization.

A syndicate of business men of New York and Japan has purchased a large acreage of coal land near Moundsville, where a large byproduct plant will be established. In addition to New York and Japanese business men a number of chemical experts of this country are said to be interested in the new concern which is headed by **D. W. C. Tehabire of New York City.**

Further impetus will be given to the development of the coal resources of Monongalia County on the west side of the Monongahela River by the sale of 950 acres of Pittsburgh coal by the New England Fuel & Transportation Co to the **Osage Coal Co.** and the **Abrams Creek Coal Co.**, in all of which S. D. Brady and others are interested. While the purchase price was not announced it is understood to have been $600,000. The tract acquired is near Beechwood station in Monongalia County and constituted Block No. 5 of the New England Fuel & Transportation Co. holdings. The coal was originally a part of what was known as the Empire tract belonging to the Elkins estate.

The Williamson Operators' Association has compiled figures covering production and the return of men to work since the beginning of the strike in the Williamson field of West Virginia. The July production at the mines directly affected by the strike was only 2,852 tons. By the end of August production had grown to nearly 30,000 tons for the month. It was more than double that, or 70,000 tons, in September, and as against an estimated production of 90,000 tons for October there was an actual production of 103,183 tons for that month. The number of men at work increased from month to month. Only 107 men remained at work on July 1. By Aug. 31, mines in the strike area had 602 men on their rolls. This number had grown to 1,010 on Sept. 30 and on Oct. 31 there were 1,419 men on the rolls of the company in the strike area. Another sign of improvement was seen in the fact that 38 mines out of 44 forced to close down when the strike began had resumed operation. Thus it will be seen that there was a 50 per cent increase in production in the strike region in October over the month of September, despite the fact that there was still consideable violence in the trouble zone.

ALASKA

According to a statement made by **G. D. Beymer**, who has spent the spring in Anchorage, he has just discovered a mountain of coal, unexplored and not charted on the geological map. He says, "The mountain of coal is a mile long, with seams from 50 to 100 ft. thick and traceable for half a mile.

A better grade of coal is now being mined from the coal fields in the vicinity of Nenana than at any previous time, according to a statement made by **Woodbury Abbey**, of the Alaska survey, who has returned from the interior. The biggest operators are located near Healy, and the completion of the bridge across the Nenana river this summer has opened a route of transportation from Healy to Nenana, according to Mr. Abbey. As with other industries of the interior there can be no extensive development until the completion of the government railroad.

BRITISH COLUMBIA

The transfer of an area of 3,000 acres of coal bearing land situation in the **Cedar District, Vancouver Island**, for a figure aggregating a quarter of a million dollars is authentically reported. A number of British Columbia business men are the owners. While the identity of the buyers has not been disclosed, it is understood that they are undertaking to commence development without loss of time. The land carries bituminous coal of the same quality as that produced by other Vancouver Island coal mines.

The City of Vancouver has taken umbrage over the cost of coal to the consumer. Inquiries made are said to have led to the establishment of the fact that lignite can be imported to the Pacific coast from the Province of Alberta and sold cheaper than is bituminous of Vancouver Island and the interior British Columbia fields. The investigation now is in progress. Retail dealers have filed a statement of their case. They point first to their investment in Vancouver which runs to about $2,000,000 and dwell on the unfairness of the municipality entering into the business in competition with them. They then show their costs to be $13.41 per ton. The quality of the Alberta coal in comparison with that of this Province is attacked and it is asserted that the City would have to figures on selling run-of-mine coal at $11.36 at the cheapest, while this coal is sold by them at $11.50, so that there would be a saving of only 14c. a ton for an inferior quality of fuel.

Negotiations are pending between a syndicate representing the British Admiralty and the owners of the **Ground Hog coal properties**, 150 miles from Hazelton, B. C. for the purchase of the largest smokeless steam coal deposit in the world—2,000 sq.mi.

Traffic News

In a complaint to the I. C. C. the **United Verde Extension Mining Co.**, of Jerome, Ariz., attacks the rate of $8.20 a ton on mine-run coal from Dawson, N. M., to Clarksdale, Ariz., from June 25, 1919, and June 8, 1920, on the ground that it is unreasonable and unjustly discriminatory and unduly preferential to mines at Gallup, N. M. A reasonable rate and reparation are asked.

The Tuffli Bros. Pig Iron & Coke Co., of St. Louis, in a complaint to the I. C. C. attacks as unjust and unreasonable the rates on a car of smithing coal from Douglas, W. Va., to Los Angeles, Cal., reconsigned at Chicago to Oakdale, Cal., and thence to Los Angeles, because such reconsignment was not accomplished at the through rate of $12.10 from Chicago for final destination. A cease and desist order and reparation are requested.

The I. C. C has scheduled for hearing the following coal cases.

Lehigh Coal and Navigation Co. vs. the Director General as agent, Dec. 17 at Washington. **Merchants Coal and Coke Co. and the Ideal Fuel Co. Inc. vs.** the Director General as agent, at Chicago, Dec. 1.

In a complaint to the I. C. C. the **National Fireproofing Co.** of Pittsburgh attacks the rate of 70c. per ton on coal in the Clinton district to Brazil, Indiana as unjust and unreasonable, and asks for a rate not in excess of 50c. and reparation.

The Commission has assigned for hearing Dec. 20 at Louisville the compaint of the **West Kentucky Coal Bureau vs.** the Illinois Central R.R.

The I. C. C. has scheduled for hearing at Galesburg, Ill., on Nov. 29, the matter of **coal rates from Illinois to Michigan.**

Ohio operators, through the various operators' associations, have lodged a protest with the I. C. C against the recent amendment to Service Order 20, which changes the definition of what constitutes a coal car. The effect of the amendment as to the southern Ohio field is to release thousands of cars from the coal trade. Out of approximately 26,000 cars on the Hocking Valley R.R., the Toledo & Ohio Central, Zanesville and Western and Kanawha and Michigan, only 2,000 are hopper cars. All the remainder are flat-bottom cars and thus can be used for any purpose.

The Indian Creek & Northern R.R., which is being built by the New England Fuel & Transportation Co., will, within a short time, be completed in the Monongalia County field of West Virginia.

In a complaint to the I. C. C. the **P. Koenig Coal Co.**, of Detroit, attacks as unreasonable the switching charges on coal to its yard in the city of Detroit on the ground that it is not accorded the Detroit rates.

The hearing in the complaint of the **Avella Coal Co.**, scheduled for Pittsburgh Nov. 29 has been postponed to a date to be fixed later.

The commission has suspended until March 24, 1921, operation of the **proposed cancellation of rates** on coal from mines in Kentucky and Tennessee **to Atlanta via Cartersville, Ga., and the Western & Atlantic Ry.** The proposed cancellation would force the payment of an additional switching charge of 30c. per ton less $2.50 per car by the consumers located more than three miles from the point of interchange of the L. and N. R.R. with the Southern Ry.

Industrial News

Minneapolis, Minn.—The shortage of coal and the high prices have given some impetus to the development of peat in this city. A plant has been completed in Minneapolis, for producing pulverized peat and it has been tested in a local office building. It is claimed that it nearly equals steam coal, and it is priced at about half the cost.

New York, N. Y.—Coale & Co., Inc., has moved as of Nov. 18 from 149 Broadway to its new offices on the fifth floor of 11-13 Stone Street, New York.

Detroit, Mich.—Morse Chain Co., Ithaca, N. Y., manufacturers of the Morse "rocker-joint" silent chain, has established a Detroit branch factory. The company will continue the main plant at Ithaca. The Detroit branch will be under the general management of F. C. Thompson, with F. M. Hawley as chief engineer and C. B. Mitchell as factory manager. Sales and engineering offices are located at corner of Eighth and Abbott Streets.

Detroit, Mich.—The Chicago Pneumatic Tool Co. announces the removal of its Rock Drill Plant from 864 East 72 St., Cleveland, Ohio, to the company's Boyer Pneumatic Hammer Plant at 1301 Second Blvd., Detroit. Location of the company's Little Giant Air Drill Plant at 1241 East 49 St., Cleveland, remains unchanged.

Philadelphia, Pa.—The Cement Gun Co. announces the removal of its main office from Allentown to Cornwells, Bucks Co., Pa., a suburb of Philadelphia.

Norfolk, Va.—Rolling stock now coming into use by Eastern coal-roads is far beyond the unit capacity contemplated a few years ago and the latest cars now being built in large numbers, each carry 120 tons whereas 60 tons capacity was formerly the limit. To meet this situation the Norfolk & Western Railway Co have now contracted for another Wellman-Seaver-Morgan, Cleveland-made, car dumper to be installed at its terminal at Lamberts Point, Norfolk, Va.

Personals

A large number of guests attended the recent dinner at Holden, W. Va., given by **A. R. Beisel**, general manager of the Island Creek Coal Co. complimentary to **T. B. Davis** of New York, president of the company, and to **J. D. Frances** of Huntington and **R. S. McVeigh** of Cincinnati, vice presidents. There were also present: **W. O. Percival**, general superintendent; **W. L. Davis**, assistant to the general superintendent; **F. S. Landstreet**, vice president of the Mallory Coal Co.; **W. J. Cruteher**, store manager; **J. J. Foster**, auditor; **G. V. Hite**, superintendent River Department; **Robert Crutcher**, assistant store manager, and **W. R. Dudley**, chief engineer.

The resignation of **E. C. Morse**, Director of Sales, has been tendered to the War Department, effective Dec. 31, or earlier.

Mr. Morse will return to civil life from which he was drawn early in the war by the Construction Division of the Army, later transferring to the sales organization of the War Department. He has not yet decided upon the line of work he will follow when he leaves the Government service. He will be succeeded by **Lt. Col. E. S. Hartshorn**, of the General Staff.

William H. Bowers of the Union Colliery Co., DuQuoin, Ill., has resigned to accept a similar position with the Willis Coal & Mining Co., operating at Willisville. **Thomas Hunter**, also formerly an employee of the Union Colliery Co., is now with the Willis people.

Arthur Neale, general manager of the coal properties in Illinois of the Pittsburgh Coal Co. until the sale of those properties to the Illinois Coal & Coke Co., has accepted the position of assistant manager of the Pittsburgh Coal Co. Mr. Neale will make his headquarters in Pittsburgh.

Herbert H. Calvin, railroad fuel agent for the United States Fuel Co. of Salt Lake City, has been appointed general sales manager of the company. Mr. Calvin, who has been interested in the coal business for the past five years, is a son of E. E. Calvin, vice-president of the Union Pacific R.R.

Walter H. Clemmency of Clemmency, Hammer & Co., North American Building, Philadelphia, spent ten days recently on a tour of the mines in Clearfield, Cambria and Westmoreland Counties and also to the Fairmont district of West Virginia.

The Whitney Coal Mining Co., Land Title Building, Philadelphia, announce the appointment of **Gilbert F. Foote, Jr.**, as sales manager.

W. J. Alexander, with a big retail yard in Philadelphia, was on a recent visit to the Markle anthracite properties in the vicinity of Jeddo, Pa.

The retirement of **Judge McGee** as fuel administrator for Minnesota is announced, and **Chairman Mills**, of the Railroad and Warehouse Commission, will carry on such work as pertains to the position hereafter. The Judge has spent a considerable amount of time in the East urging shipments forward to the Northwest, and watching deliveries to the lower ports.

C. H. Diffenderffer, Philadelphia, president of The Blair-Parke Coal Co., was in Fairmont recently.

M. D. Wilson, of The Wilcord Coal Co., has returned from Washington, D. C.

Arthur R. Wellwood has recently become identified with the Enginering Staff of the Superpower Survey with offices at 709 Sixth Avenue, New York City.

Charles E. Lucke, professor of mechanical engineering at Columbia University, and a graduate of the class of 1902, has been made a member of the fuel committee of the American Society of Mechanical Engineers, which is conducting a nation-wide research into fuel conditions.

Ivan R. Butler has opened an office in the Marine Trust Building as Buffalo representative of the Northeastern Coal & Export Corporation of Montreal. He was at the head of the Century Coal Co.'s Buffalo office till it was closed, after which he enlisted. **Roy S. Bain** is at the head of the Cleveland office of the Northeastern Co.; **Harry F. Butler**, vice president, manages the Syracuse office.

Clem Richard, coal operator of Terre Haute, Ind., state senator-elect, tendered his resignation recently as chief of the board of safety that he may serve in the legislature without other official duties.

F. A. Thrasher, one of the best-known young business men in Jackson, Miss., has accepted the position of manager of the Morrison Coal Co., and has assumed his duties.

Captain J. Frank Tillery, secretary of the Pittsburgh Coal Exchange attended the annual convention of the Ohio Valley Improvement Association in Paducah, Ky., as delegate of the Pittsburgh Chamber of Commerce.

The Ralco Coal Co. of Buckley, W. Va., which was organized not long ago, has perfected its organization with the election of the following officers: **M. B. Hoffman**, president and general manager; **D. D. Ashworth**, vice president; **A. P. Gruss**, secretary and treasurer.

C. R. Cassidy, formerly connected with the Pittsburgh office of the Pittsburgh & Bessemer Coal Co., has been made manager of the Columbus office of the company following the resignation of D. D. Davidson.

F. S. Davidson, formerly sales manager of the Columbus office of the Pittsburgh & Bessemer Coal Co., has been made sales manager of the Packard Coal Mining Co., of Columbus, which operates mines in the Hocking Valley field.

Robert S. Wheatley of Salineville, a coal miner for 25 years, has been named director of five schools for miners, established in the eastern Ohio district. The Federal Board of Vocational Training has established the schools for foreign-born miners.

Publications Received

Coke-Oven Accidents in the U. S. Issued by the Bureau of Mines, Department of the Interior, by William W. Adams. Pp. 25; 6 x 9 in. Tables and statistics showing coke-oven accidents in this country during the calendar year 1919.

Coking Industry of the Pacific Northwest.—Issued by the Engineering Experiment Station, University of Washington. Bulletin 9. Pp. 35; 6 x 9 in.; illustrated.

Trade Catalogs

Gunite Slabs.—The Cement Gun Co., Inc., Cornwells, Pa. Pp. 30; 6 x 9 in.; illustrated. Covering report on tests of Gunite Slabs.—Advertiser.

Blaw Bulldog Buckets. Blaw Knox Co., Pittsburgh, Pa. Folder; 3½ x 7 in.; illustrated. Cuts and specifications of various types of clamshell buckets.—Advertiser.

Aurora Centrifugal Pumps. Aurora Pump & Mfg. Co., Aurora, Ill., Bulletin 100. Pp. 23; 8 x 11 in.; illustrated. Showing designs of standard types of centrifugal pumps.

Association Activities

Indiana Bituminous Coal Operators' Association

The association has appointed a committee to co-operate with the United States district attorney for Indiana in the maintenance of fair practices and fair prices for coal. M. L. Gould of Indianapolis, president of the association, and P. H. Penna, of Terre Haute, secretary-treasurer, were named for the purpose. They also were authorized to call in other members to assist them. The action of the association was in conjunction with a resolution passed at the recent national meeting of operators in Cleveland. Mr Penna has refused to say what the first steps will be in the "fair price fixing" authorized by the association. It is expected he will soon confer with the district attorney to make primary plans for the work.

Pittsburgh Vein Operators' Association

The Fair Practice Committee organized at Cleveland, at the time of the recent meeting of the National Coal Association, and other operators, recently held a meeting to review the situation under its supervision, particularly as regarding supply of domestic coal for northeast Ohio cities.

It was found that the poor car supply and obligations of small operators in other directions had interfered somewhat with the program for supplying this coal, which was promulgated some time ago. At the suggestion of the committee, certain shippers took steps which have resulted in taking care of the immediate situation and it is gratifying that even during the recent cold weather retail dealers have been supplied with coal to meet their requirements. This phase of the situation is believed to be thoroughly in hand.

The Fair Practice Committee has not received any complaints regarding excessive prices and the feeling prevails that dealers have individually reached the conclusion that they are being charged prices which are reasonable and which enable them to fill their orders at prices which are also fair to the consumer. This conclusion is confirmed by the fact that retail coal has sold during the past week, or ten days at prices under $10.

Coming Meetings

The Engineers' Club of Philadelphia will hold a special meeting at the Club House, Friday, Dec. 3, at 8.15 p.m., to discuss the subject of the use of powdered anthracite and the recovery and use of "river coal." Secretary, C. E. Billin, 1317 Spruce St., Philadelphia, Pa.

American Institute of Mining and Metallurgical Engineers' annual meeting will be held in New York, Feb. 14 to 17, 1921. Secretary, Bradley Stoughton, 29 West 39th St., New York City.

West Virginia Coal Mining Institute will hold its annual meeting Dec. 7 and 8, at McLure Hotel, Wheeling, W. Va. Secretary, R. E. Sherwood, 1001 Kanawha Bank Building, Charleston, W. Va.

Coal Mining Institute of America will holds its annual meeting Dec. 8, 9 and 10, 1920, in the Chamber of Commerce Auditorium, Pittsburgh, Pa. Secretary, H. D. Mason, Jr., Chamber of Commerce Bldg., Pittsburgh, Pa.

Taylor Society will hold its annual meeting Dec. 2, 3 and 4 in the Engineering Societies Building, 29 West 39th Street, New York City. This society tends to promote the science and the art of administration and of management. Managing director, H. S. Person, 29 West 39th Street, New York City.

The Wholesale Coal Trade Association of New York, Inc., will hold its annual meeting in New York City Jan. 18, 1921. Secretary, Charles S. Allen, 90 West Street, New York City.

American Society of Mechanical Engineers' annual meeting will be held in the Engineering Societies Building, 29 West 39th Street, New York City, Dec. 7 to 10 inclusive. Secretary, Calvin W. Rice, 29 West 39th Street, New York City.

American Society of Civil Engineers will hold its annual meeting Jan. 19 and 20, 1921, at its headquarters, 33 West 39th St., New York City. Acting secretary, Herbert S. Crocker, 33 West 39th St., New York City.

Obituary

Herbert M. Wilson, general manager of the Associated Insurance Companies and a former chief engineer of the United States Bureau of Mines, died at his home here Nov. 25 of pneumonia. He had been ill but a few days.

Mr. Wilson was born in Glasgow, sixty years ago. He was graduated from Columbia University in 1881 and spent some time in Mexico on railway engineering projects.

HERBERT M. WILSON
Former Chief Engineer, U.S. Bureau of Mines

For several years he was connected with the United States Geological Survey and was engineer in charge of the bureau of mines from 1910 to 1914. He was the author of many articles on engineering.

COAL AGE

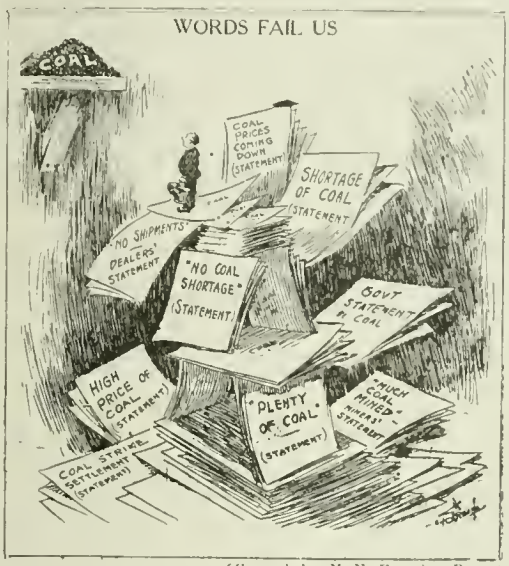
The Weekly Journal of the Coal and Coke Industries

Volume 18 NEW YORK, THURSDAY, DECEMBER 9, 1920 Number 24

Popular Stuff

DEPICTING the householder, empty coal hod in hand, enshrined on a mass of "statements" running the gamut from "no shortage" and "prices going down" to "high prices," earnestly gazing upward at the coal pile high above his head and well out of reach, the cartoonist of the *New York Evening Post* has given us a true picture of the attitude of a large portion of the hard-coal buying public.

This is the attitude assumed by not only the relatively few who thus far have not been able to get anthracite as they need it but by many other citizens who read much about coal in their newspapers and conclude that something must be wrong somewhere. We are in receipt this week of a letter from the secretary of a civic and oratorical league representing twelve leading colleges in the Middle West which propose to debate the proposition "that the United States should own and operate all the coal mines," accompanied by the inquiry "Is there a better method of remedying the evils of high prices, irregularity of employment, irregularity of production, waste and profiteering," and "Would or would not Government ownership and operation bring the desired results?" The inquiry is concluded with a statement that these good people would like to mold public sentiment aright and wish to know what the miners, the operators and the public think of this general propostion.



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People are questioning not so much the integrity of the individual in the coal industry, although that is generally blamed for what is wrong, as the fundamental proposition of whether the Government should not take a greater hand in the control of a commodity that is so basic and enters the everyday life of so many people. What many are seeking is some solution of the problem that will so regulate the individual in the industry that repetition of this year's experience will be impossible.

The householder who this year compares the price of his winter's supply of coal with that of six years ago is concerned not so much about the percentage of increase as he is in regard to total dollars and cents. It has been futile to show him that measured in percentage the increase in the cost of his coal is less than for many if not most of the other commodities that he daily uses, for the size of the bill is the all-important feature to him. When this is coupled with inability to obtain coal in the quantities he desires and at the time he most needs it the average citizen cannot be blamed for getting peeved and perhaps writing his Congressman for help.

Our answer to those who say they believe some form of federal regulation or control must be had for the coal industry for the protection of the public has been the inquiry "What would you propose?" So far we have heard no concrete proposal and have generally been answered to the effect that something must be done and it is up to Congress to find a way. It seems accepted that Senator Calder will make some sort of a proposal to Congress this winter, but because his every effort so far has been to devise destructive evidence, and he apparently has developed no tendency to work constructively, we believe that his legislative efforts will perish in the making. It is understood that his idea is that some harness must be placed upon the coal industry and that if the coal men themselves cannot devise that which will be acceptable to them and at the same time protect the public, Congress will attend to the harness making.

We cannot but hark back to the prophecy of Dr. Garfield in the spring of 1919, when, speaking to the National Coal Association annual meeting in Chicago, he told us that it was no longer a question of whether we should have some form of governmental control or regulation of the coal industry but rather what form that regulation should take. Dr. Garfield was a statesman before he was Fuel Administrator and merits a hearing more than a Senator who seems anxious to tear down one industry in order to profit another.

Education of the public in abstract matters of economics is slow and must be done at least in part, by Congressional investigation even though it be expensive. The Calder committee last week held a hearing on anthracite, going over practically the same ground covered in detail by Senator Frelinghuysen more than a year ago. There is, however, no publicity connected with a Senator's reading a printed report of a previous investigation covering the same ground. We are, nevertheless, not opposed to investigations by Congress, because even though they come to naught someone has in the process been educated. We only ask that these investigations be conducted in a spirit of fairness, with a real desire to develop the truth and help constructively.

In the meanwhile we confidently believe that the coal consumer is already getting his coal, either because he extended his reach or the coal came down, and that he will soon go home happy, forgetting the headlines in the newspapers of the already distant past.

The Price of Coal

STAMPEDING as a form of exercise is not confined to coal buyers. Rumors of prices so low as to cause one to wonder are as rampant now as were rumors of the high prices last summer. Neither Senator Calder nor the Department of Justice can claim credit for the turn the market has taken. Patience is a virtue not possessed by all sellers of coal. A rush to cover now for next year's business at any figure is far from justified by a study of the basic conditions surrounding next year's outlook.

This is particularly true in the export market, where some may jump before they look. This is a new line of business for many who are now following it, and it is perhaps true that some are apt to judge the world's market, in which they hope to continue, by conditions in the United States. The price of coal in the export market is not determined by the cost of production in our Appalachian coal fields but by other factors, among which looms large the lower limit to which the British producer can go and the demand in Europe and South America. Things abroad are in too deplorable a condition industrially to warrant any conclusion at this time as to any but the very present value of the export market or what the price should be in 1921-22.

At home the seller of coal is better able and more experienced in judging the demand and what his share in supplying that demand may be. It is admittedly good business to tie up tonnage at a price that will suffer a reduction as the season progresses, but it is not advisable to expose one's self to the temptation of dodging contracts later on because those contracts were entered into in a pessimistic mood.

The Census Returns for 1919.

BECAUSE the Census must always live ten years behind the times and must needs make the statistics this year comparable to those of ten years ago we must be content with much less than we have a right to expect from this governmental effort. The preliminary statement of the Census of the anthracite industry for 1919, published this week, is given in full in the news column of this issue. The chief value of the data in this statement lies in the comparison it affords between 1909 and 1919 in certain items of expenses incurred in the production of anthracite.

The Census gives us no complete and inclusive picture of the anthracite industry, but the statistics are nevertheless interesting in several respects. In answer to the inquiry as to the amount of capital, both owned and borrowed, invested in the business of producing anthracite the aggregate answer of all the operators shows but $6.40 per ton of commercial production, compared with which we have the statement of the engineers of the Fuel Administration that the average for the industry is around $8 per ton of production.

According to the Census the invested capital in 1919 was $432,292,000 and the commercial shipments, as reported by the Geological Survey from the same returns, were 67,817,000 gross tons from which we deduce the figure of $6.40 per ton as representing the investment. On the basis of the same tonnage we find that salaries averaged 19c. per ton; wages and contract work, grouped as labor, averaged $3.13 per ton; supplies 88c. per ton, fuel for operation of the mine and purchased power together averaged 21c., rent and royalty 17c. per ton, and taxes, including income and excess profit taxes, averaged 21c. per ton.

The total of these items, all that are given by the Census, are equivalent to $4.79 per gross ton of commercial output, which is to be compared with $4.49 per gross ton of commercial output as reported by the Federal Trade Commission for November and December, 1918, at which time the wage scale was the same as throughout the year 1919. Compared with a labor cost of $3.13, as reported by the Census, we find $3.10 reported by the Federal Trade Commission, and compared with 88c. per ton for supplies, as reported by the Census, we find 77c. reported by the Federal Trade Commission.

General expenses reported by the Federal Trade Commission include rents and royalty, and in addition a charge for depletion on the part of those operators who own coal-bearing lands in fee. The Census did not include depletion charges as an item of expense, nor did it call for cost of insurance and a number of other items, small in themselves, that are recognized by the Federal Trade Commission in mine costs. If from the items of expense reported by the Census is subtracted the 21c. for taxes, not included in the mine cost as recognized by the Federal Trade Commission, we have a figure for f.o.b. mine cost of $4.58 from the Census, compared with $4.49 as reported by the Federal Trade Commission.

The most that we can say for the Census figures is that they appear to be somewhere near right, but they are not inclusive and not conclusive. Nevertheless the Census figures are all we have for anthracite costs for the year 1919 and we must make the best of them, for it is going to be some time before we have more Government figures on this subject. It is fitting, too, that we should at this time commend the Census and Mr. Katz for the timeliness of this report. The Census is proverbially slow and the collection and tabulation of the returns from 250 operators in eleven months is a remarkable performance for this particular Government bureau.

A SUMMING UP OF THE so-called "cancellation evil" and its possible remedies are contained in a final bulletin on this subject issued Dec. 4 by the fabricated production department of the Chamber of Commerce of the United States.

An exhaustive study of the practice of cancellation of orders and repudiation of contracts in almost every division of business has been made by the fabricated production department, as a result of which study it groups opinions as to possible causes under three heads:

"First, that the practice is the result of war-time irregularities and will pass as we return to a normal basis.

"Second, that we are now reaping the results of the loose business practices inaugurated before the war, when many lines were in a state of overproduction and the measures taken to unload this surplus were demoralizing. Those entertaining this belief feel that the remedy is in a general reformation of our system of order taking, making each order a contract enforceable by law.

"Third, that we have been drifting away from the fundamentals of sound business and the 'Golden Rule,' and that we must return to a stronger belief in the rights of others and a higher regard for our own integrity if the change is to be permanent."

First Ship-by-Truck Tipple To Be Constructed

By Donald J. Baker
Pittsburgh, Pa.

At Tylerdale, Pa., Coal Is Mined from the Properties of Various Industrial Concerns, to Which It Is Delivered by Truck or Belt Conveyor—Some Coal Will of Course Be Sold to Domestic Consumers and Provision Has Been Made for Coaling Locomotives and Making Shipments by Rail

FROM its organization chart to its operating units the Washington Gas Coal Co., of Tylerdale, Pa., presents innovations of much practical value. These departures from current practice come at an opportune time. In the main all the changes are in response to a problem with which many operators are for the first time deeply engrossed, viz.: How should a tipple for a fair-sized operation be constructed so that the entire mine output may be shipped by autotruck, which, by making the mine independent of the railroads, will guarantee steady operation the year round?

The tipple to be described is more than merely another new mining structure added to the many already in the Pittsburgh district, for it is the herald of a new era in coal mining. With the adoption of the practice of shipping coal in large quantities direct from the mine to the consumer's cellar a coal-mine plant becomes in a sense a public utility, as it controls the maintenance of service. This completeness is something that it has heretofore lacked, because mines have been dependent in the past on the carrying power of the railroads. All contracts hitherto have been made conditional on the regularity of railroad service. A plant having auto-truck delivery is, by reason of its facilities for shipping, highly efficient, as the question of car supply does not enter into its daily operation.

Large industries or consumers cannot depend for their fuel supply upon a finicky and unsettled spot market. The United States Steel Corporation, for example, as a guarantee of an adequate daily fuel supply at a reasonable figure owns, leases and has developed many thousands of acres of coal land, thus assuring itself that its mills will be in steady and unrestricted operation the year round. The Ford Motor Co. has recently purchased a large mine in Kentucky, and in this respect is pointing the way to other manufacturers of gasoline vehicles throughout the country.

Small manufacturing plants, or those incapable of supporting their own mines, usually are forced to obtain their fuel as best they may, often purchasing their daily requirements in the spot market. During the last year the condition of this market has not been conducive to a lowering of commodity prices throughout the country, as the prices secured for coal during the past twelve months have been excessively high.

Mine Operated for Benefit of Two Cities

Tylerdale and Washington, two small cities of Washington County, contain within their borough limits many small manufactories. Although this section of the country lies well within the bituminous field, these plants, chief among which is the Tylerdale Tube Co., consuming 200 tons of coal per day, have had to jockey and scramble for their daily fuel supply ever since their formation. The Washington Gas Coal Co. was organized solely for the purpose of supplying these manufacturing plants and the domestic consumers of Washington and Tylerdale, and the mine is so located that it is possible to deliver coal to them by truck far cheaper than it could be done by common carrier.

The Pittsburgh bed of coal, averaging 5½ ft. in thickness, underlies both Tylerdale and Washington. A large acreage of this bed is owned in the aggregate by the small plants desiring the fuel, but they have been unable to finance and operate mines of their own. For this reason, when the construction of a coal plant to supply these industries with fuel from a mine opened for their special benefit was broached, conditions were already favorable for such co-operative effort. The heretofore, and it was natural that the tipple should exhibit some marked deviations from customary design.

Baton & Elliott, of Pittsburgh, mining engineers, designed and supervised the construction of the tipple and other surface buildings at this operation, working in conjunction with Jacobsen & Schrader, who furnished the equipment. The combined headframe and tipple was erected by John Eichleay & Sons Co., of Pittsburgh. The exterior appearance of this building

Hoist House

All plant buildings except the tipple are built of stuccoed tile with brick pilasters. This forms a neat and attractive type of mine building.

Hospital and Foreman's Office

The grounds around all the surface buildings are to be sodded and when this has been done the plant will look almost like a factory.

suggestion was obvious: Why not mine the coal from the properties of the consumers who own it, and allow each of them to become a stockholder in the mining company? This is exactly what is being done by the Washington Gas Coal Co.

Other small blocks of stock are, of course, held by private interests in the towns mentioned. These stockholders, as well as outsiders, will create a further market for the domestic product of the mine. The chief factor influencing the selection of the plant site in the town of Tylerdale was the fact that motor trucks could profitably deliver the coal from the mine to the market. Another consideration was that the miners might live in a town already built; thus the expense of constructing a "camp" was obviated. With the trucks guaranteed an easy hauling distance it might never become necessary to pay the increased freight rates demanded by the railroads for transportation of the mine product.

Notable Changes in Standard Tipple Design

A mine with a daily ship-by-truck output of 2,000 tons forms an important development in bituminous-coal practice. It will not, however, retain for long the distinction of exceptionality. As far as is known, nothing similar to this plant has ever been constructed differs quite radically from that of any other in this district.

In the first place, no railroad tracks pass beneath the structure, this space being needed for storage bins. Anthracite men looking at the illustrations accompanying this article will possibly aver that the structure more nearly resembles a breaker in outward appearance than any other tipple to be seen in the bituminous field.

Suited for Delivery to Four-Way Market

The tipple is constructed and equipped in such a manner as to make it possible to dispose of the product in a variety of ways. First, the entire output may be shipped by truck; this, however, will seldom be done. Second, some of the mine product will be used by locomotives of the Pennsylvania R.R., and arrangements have been made whereby they may be readily coaled. Third, the plant of the Tylerdale Tube Co. being located adjacent to the tipple, a conveyor shed has been erected spanning the intervening railroad tracks, so that coal may be fed by belt conveyor to the storage bins within the plant of this consumer; from that point it will later be removed by trucks to the various mills requiring this coal. Lastly, when the tipple has been entirely completed a railroad track will run parallel to and

Delivery Truck

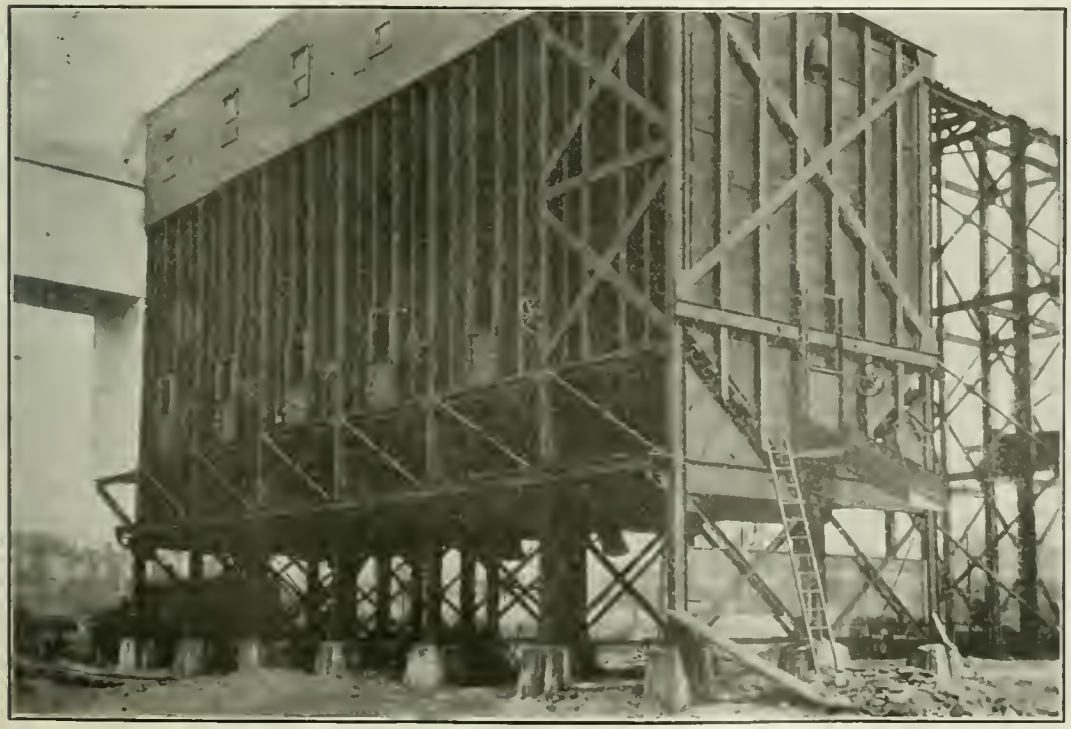
Each truck load of coal is weighed upon scales near the tipple. The trucks are numbered, and their movements may thus be easily recorded. They are equipped with a body elevator that assures the rapid discharge of their burden.

upon either side of the storage bins, so that it will be possible to ship by rail, if necessity so demands. This will occur only when the domestic trade of the two cities is not sufficient to consume the surplus left over from the manufacturing plants.

Thus a four-way market has been created for the coal from this plant, and only a serious breakdown of one of the main operating units can keep the mine from working daily throughout the entire year. Few plants in this country are today so well equipped as to attain continuous operation. Some plants in the Pittsburgh district situated on one of the river fronts are secure for perhaps a full nine months out of the twelve, but are not so fortunate during the remaining three months.

Except for the bins, which are of wood and lined with ¼-in. steel plate, the tipple is not greatly different from others in the Pittsburgh district. The main building is of structural-steel framework with the customary siding of corrugated sheet iron. Self-dumping cages are utilized to hoist the 2-ton mine cars to the dumping platform in the headframe. The cars discharge their contents onto a dump plate, from which the coal moves by gravity into a weigh pan.

After weighing the coal passes again by gravity to a feeder plate, which delivers it to a double-deck horizontal shaker screen. Both sections of this screen are operated by the same shaft, the flywheel of which is connected to a 50-hp. motor suspended from the roof trusses of the building. The eccentrics on this shaft which actuate the screen are so set that the screen sections oscillate in opposite directions, the upper screen



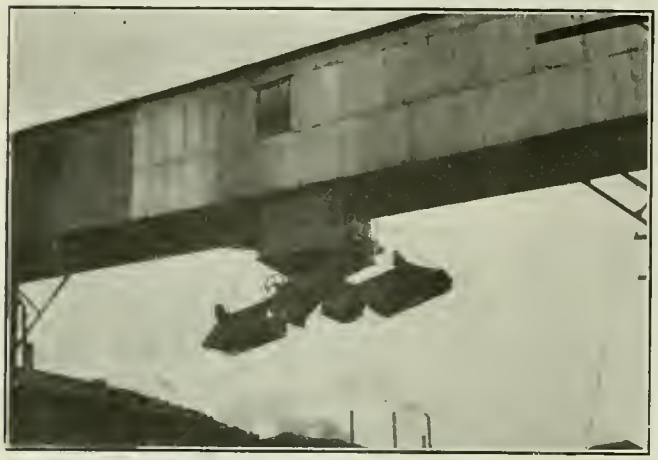
Storage Bins

Eventually tracks will be laid on the ground level along either side of the storage bins, so that cars may be loaded by chutes from the gates on the bin sides. Trucks drive under the bin, receive their load and drive out on the other side, thus making backing out unnecessary. The bin to the right is now employed for rock and slate.

having a forward, while the lower receives a rearward movement.

Each screen is 60 ft. long, perhaps 45 ft. of the distance being actually utilized as a container or conveyor of the coal. Thirty feet of this 45 ft. may be used as a picking table. When this operation is performed, extraneous material removed from the coal on the upper deck is dropped by the pickers into a narrow compartment upon the lower screen, which carries it to the rock-and-refuse bin at the forward end of the building.

As the coal leaves the feeder plate it passes over a



SUSPENDED CHUTE TO SUPPLY LOCOMOTIVE FUEL

By means of these double extension chutes either north- or south-bound locomotives may be coaled without delay. This railroad fuel will be taken from the conveyor which leads to the plant of the Tylerdale Tube Co.

screen where slack up to ¾ in. diameter is removed. Lumps exceeding this size are retained on the upper-screen platform and move forward until the 1¼-in. perforated plate is reached. Here the next size is removed, which then falls to the lower deck of the screen, by which it is carried to the rear until it reaches an opening in this deck and is directed to a chute feeding one of the storage bins, four of which lie directly beneath the screens. More concerning them will be said later.

The lump size that has passed over the perforations in the upper deck is conveyed to the end of the screen to drop through an opening to the lower deck, whence it passes almost immediately through a second opening to a chute feeding the lump bin. When it is desired to load run-of-mine, a plate forming a section of the feeder conveyor is removed, and the coal is permitted to drop by gravity into one of the bins.

Rock Loaded Into Trucks for Making Fills

Arrangements for handling the rock and refuse do not differ greatly from those employed at other tipples. Until another shaft now being sunk has been completed, all extraneous material loaded into cars within the mine will be brought up the main hoisting shaft. They will be discharged into a chute by by-passing the rock through a hand-operated reversible gate forming a section of the discharge plate at the head of the tipple.

The rock is thus shot by gravity through a steep chute into one of the storage bins. This arrangement, however, is only temporary. Eventually it will be necessary to fill all four bins with coal, so as to facilitate the steady operation of the trucks. But for the present the rock passes into the bin and is loaded from it into trucks and used as filling material around the plant buildings, which have been built on rolling ground which needs much grading.

Perhaps the most interesting detail in the plant centers in the bins, for it is these that make the tipple so notably different from others in the bituminous district. The bin at the forward end of the structure—that is, the one facing the hoist house—is utilized for holding the rock and refuse and has a capacity of 125 tons. The one adjacent to it holds screenings and slack and has a similar capacity. When other means have been provided for disposing of the rock, this bin will be utilized exclusively for run-of-mine.

Lump Bin Has Two Discharge Doors

Adjacent to the slack bin is the nut compartment. The bin holding the lump is located at the rear end of the tipple and has a capacity of 250 tons. From the external appearance of the bins it might be thought that they are five in number, but in reality there are only four. The lump bin, being twice the size of the others, is equipped with two discharge doors in the bottom, so that two trucks may be loaded at one time.

All four bins at present are equipped with ordinary loading chutes whereby they receive the coal as it comes from the screens. This, of course, is a temporary arrangement, for as soon as full operation is attained, some other method will have to be employed for lowering the lump sizes into their respective compartments. The distance from the screens to the bottom of the bins is nearly 20 ft. If the coal were to be allowed to fall such a height undue breakage would result. It is believed that the installation of a spiral chute to the bin bottoms will do much to eliminate this difficulty.

Rolling Down the Cone Will Cause Breakage

This probably is not the best arrangement that could be made, but it will perhaps suffice until the problem of building the most efficient ship-by-truck tipple has been solved. If a bin is nearly full, the incoming coal is subject to but little breakage. This, of course, is a condition that will seldom prevail. A spiral chute, while eliminating direct descent of the coal to the bottom, will not prevent all breakage, as the coal will pile up, cone-shape, at the bottom of the chute, and the incoming lumps will strike the top of the pile and roll thence to the bottom. This will, to a certain extent, defeat the purpose of the chute. It is difficult to predict just how in the future the breakage of coal thus dumped into bins will be eliminated.

As may be noted in the illustrations, a covered trestle spans the near-by railroad tracks. This leads directly into the yards of the Tylerdale Tube Co., where a storage bin is located. When this concern desires fuel the upper deck of the horizontal screens in the tipple will be veiled with a steel plate, as will also the lump-discharge aperture of the lower deck.

Belt Is Operated in Two Sections

The screens, with their oscillating motion, will then deliver the coal as a run-of-mine product to a 30-in. rubber belt. This is operated in two sections, the first, that nearest the tipple, being 65 ft. long, while the connecting length, or that adjacent to the Tylerdale Tube works, will be 40 ft. in length. This belt was installed in two lengths so that the coal might be discharged near the mid-section of the conveyor into a 10-ton weigh hopper for delivery, after weighing,

through an extension chute into locomotive tenders on the tracks of the Pennsylvania R.R.

Besides being equipped with a bottom gate for the removal of the coal into a truck beneath, each bin is supplied with two bottom chutes, one upon either side. It is planned to lay a single track parallel with each side of the bins so that coal may be delivered into railroad cars for shipment. When these tracks have been constructed, it will be safe to say that the tipple of the Washington Gas Coal Co. will be the best equipped of any to run every working day in the year.

Maximum Haul at Present Three Miles

For delivering its output locally this concern has already purchased two 5-ton Pierce Arrow trucks, each of which is equipped with a power-driven hoist for raising the beds in dumping. More of these machines will be ordered as the mine becomes more fully developed. The maximum haul over which these trucks will operate will not exceed three miles, the greater portion of which will lie over improved city streets, not obstructed by heavy traffic. Today the trucks are working day and night. No garage has yet been built for the housing of these machines, but a building undoubtedly will be constructed in the immediate future.

Units making up the remainder of the surface plant show the same careful consideration to detail that is evidenced in the tipple. Somewhat of an innovation is the construction of these plant units out of hollow tile having a stucco finish and ornamented by pilasters of brick. This makes an unusually attractive building and one that will adapt itself readily to the completed grounds. These latter are to be sodded and otherwise beautified. All the plant buildings are centered around the tipple and lie within a radius of 200 ft. from it.

Power for operation is purchased from the West Penn Power Co. A high-tension line carrying 22,000 volts is conducted to an outdoor transformer station situated in the immediate rear of the hoist house. Here three 150-kva. transformers, one of which is used as a spare, steps the current down to 2,200 volts.

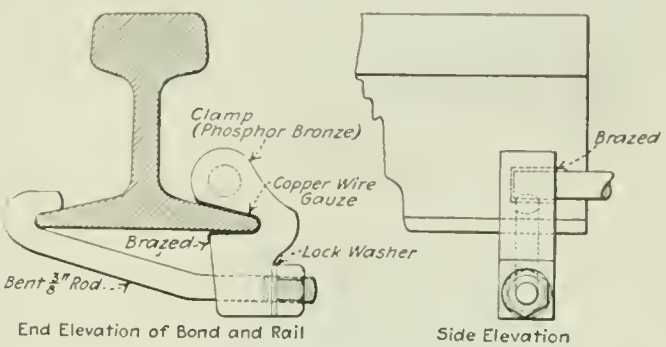
The hoist house is divided by a brick partition. This makes it possible to place the hoisting engine in one room and the generating equipment and all switches in another. A 200-kw. Ridgway motor-generator set delivers to the trolley wire the 500-volt direct current which is used in the mine. The hoist engine is of Lidgerwood make and winds a 1¼-in. cable on a 6-ft. cylindrical drum. This machine is direct connected to a 300-hp. motor.

At present both men and materials are handled through the main hoisting shaft, which is of the two-compartment type with a small additional compartment for carrying pipe, etc. The dimensions of the shaft are 22 x 10 ft. and it has been sunk 270 ft. to the coal. It is concreted from the surface to the bedrock, the remainder of the walls being wood lined.

Upon completion of the second shaft, now under construction, the burden of moving men and materials will be lifted from the main opening. This second shaft will be utilized also as an air intake. Just what disposal of rock will be made when this opening is completed has not yet been determined, but a large quantity of this material may be advantageously used for filling. It is quite possible that a truck will be assigned to the removal of this material from the immediate vicinity of the plant, as the management desires to keep the surface as neat as conditions permit. This is a commendable desire and one that many operators must consider to a greater extent than they have in the past. As this operation is situated in the heart of the town of Tylerdale, its officials could not well countenance a plant made unattractive in appearance by unsightly piles of rock.

Double Rail Bond Is Readily Detached And Easily Installed

A MODIFIED and improved rail-bond has been used successfully by a large West Virginia coal-mining company during the last eight years. The clamp is of phosphor-bronze and is gripped to the rail flange by a ⅝-in. hook bolt as shown. A strip of copper-wire



CLAMP ATTACHED TO LOWER FLANGE OF RAIL

It can be removed in five minutes and does not jar loose despite vibration of the track. Tightening of the nut assures satisfactory contact.

gauze between rail and clamp insures good contact, the clamps being linked together with 4-0 stranded copper cable. They may be furnished either thus joined and ready to install or they may be delivered singly to such customers as desire to use their own scrap cable for bonding purposes.

One of these clamps can be secured in place or removed by an ordinary workman in four minutes, whereas some bonds require half an hour or more for installation or removal. Once attached to the rail it cannot jar loose by vibration. Another advantage is that the clamp will last indefinitely; being made of phosphor-bronze it can be used over and over again. This makes it of special advantage for temporary track and for use in entries where ordinarily bonds are never used. Another detail worthy of attention is the advantageous position of the connecting cable, this being close to the rail web and thus comparatively free from injury in case of wreck or derailment. The bond is made by the National Electric Co., of Charleston, W. Va.

Two Traveling Laboratory Cars, the Hamilton and the Wyman, belonging to the Public Health Service and used in epidemic work, were transferred to the U. S. Bureau of Mines Nov. 30, having completed their work for the Public Health Service. One of these cars, the Hamilton, is to be rushed to Terre Haute, Ind., to take the place of the mine-rescue car of the Bureau of Mines formerly stationed there and which was destroyed by fire while in the repair shops of the New York Central R.R. at Cleveland, Ohio, last July. The other car, the Wyman, has been transferred to the Bureau of Mines to serve as a laboratory car in the field work of the bureau in the sampling and the classification of coals. The coal-sampling crew will live on the car, which also will contain the machinery and laboratory equipment for the crushing and preparation of coal samples.

How Coal Is Handled in South Africa

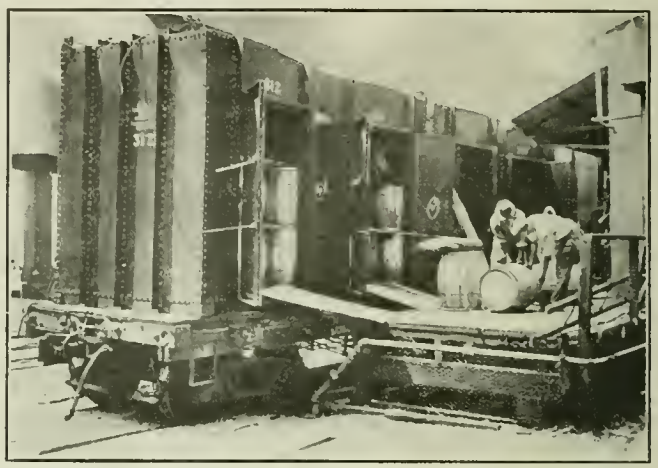
Coal Is Loaded Into Ten-Ton Buckets Which Are Lifted by a Crane Onto a Specially Fitted Car—At the Receiving Station the Bucket Can Be Removed by a Crane

AT THE Durban coal station in South Africa coal is placed in large box-like containers, each holding ten to twelve tons. These are lifted onto a special flat car designed to carry five of these portable bins. On arriving at the destination the consignee can remove these bins onto a motor car, transfering it without delay. The equipment was made by the Canadian Car & Foundry Co. The illustration on the succeeding page shows the assembled car. The buckets are quite similar to the loose-freight containers of the Trinity Freight system now being introduced into this country. They have a reinforced steel-plate shell and may be handled by means of a hoisting tackle or may be rolled on or off the car. The use of these buckets saves much time at loading and unloading points and makes transference by motor truck easy.

One wonders whether, when run-of-mine is required and the coal bed is thick and headway consequently ample, mine flat cars could be built to take the bucket to the working face, the novel cars being so handled that once the coal is loaded by the miner there would be but one handling of the coal from working face to the consumer's stock pile or boiler room.

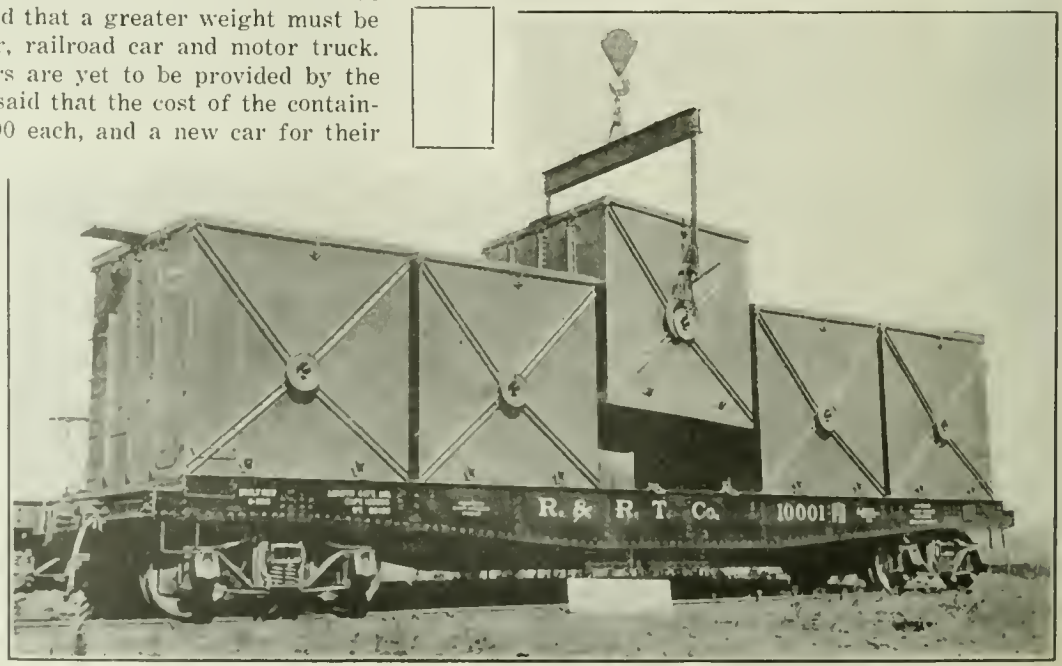
Objections can readily be seen. The limitations as to size of coal delivered are among these. Consumers nowadays are coming around to the point where only sized coal is desired. Furthermore, the miner would find the bin not easy to fill, as the sizes would be excessively high. Then also the coal would be badly broken in the filling of the bin, though it would be saved all the degradation consequent on the handling at the tipple horns, beneath the tipple, at the railroad receiving point when the car is unloaded and when the coal is being reloaded into the motor car. There are also the objections that a greater investment must be made where bins are used and that a greater weight must be hauled on the mine car, railroad car and motor truck.

Furthermore, the cars are yet to be provided by the railroads, though it is said that the cost of the containers is roughly only $200 each, and a new car for their reception costs no more than the average freight cars. An old flat car can be rendered suitable by the expenditure of about $250. Apparently this change would make flat cars as well as open-tops available for coal transport and thus add to the flexibility of railroad equipment.



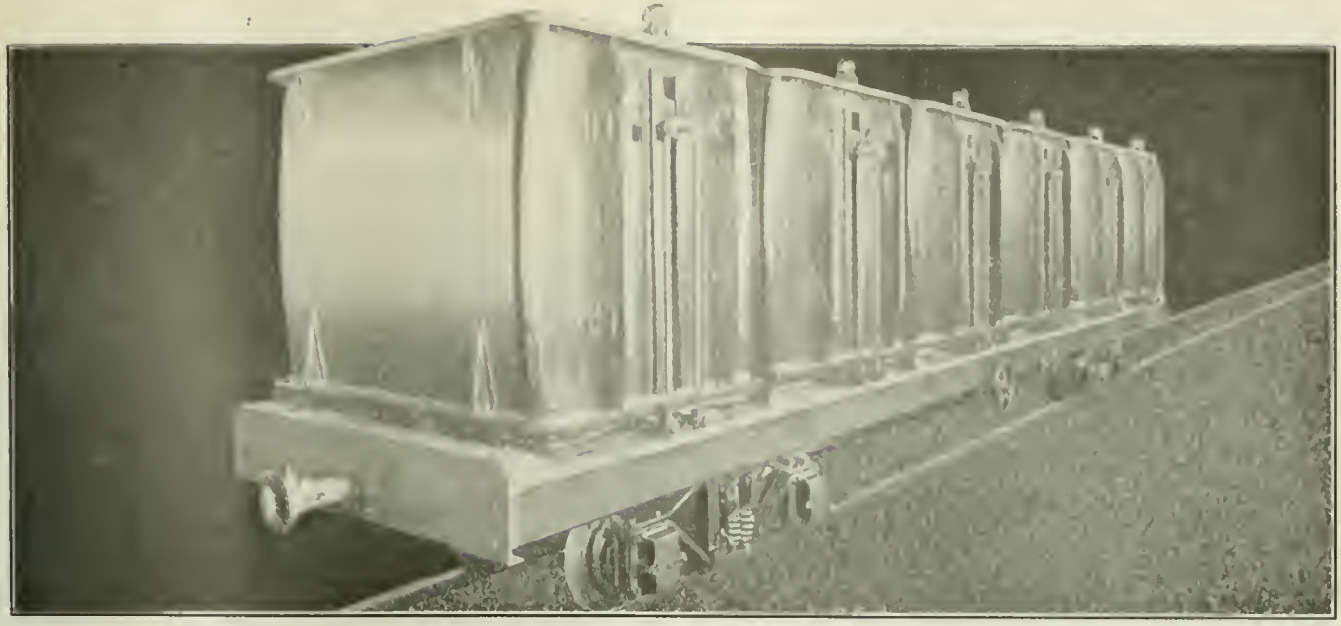
LOADING PACKAGE FREIGHT AT SMALL STATION
In larger stations the containers would be "yanked" off the car and placed where they could be unloaded at leisure, loaded containers being lifted onto the flat car in their place. Here no handling equipment is available, and the use of the track and car is needed during the loading and unloading of the containers.

Perhaps it may be permissible to refer here to what is being proposed for package freight, not because these proposals have much direct bearing on coal transport but because they illustrate how the scheme is thought worthy of trial for the transference of higher-class materials. The River & Rail Transportation Co., of



Coal-Bucket Car

Each container or bucket will hold ten tons of coal and any of them can readily be lifted by a crane, stationary or portable. It is readily locked on the car by the hasps along the edge of the car bed.



RAILROAD CAR WITH COAL CONTAINERS FOR SOUTH AFRICAN SERVICE

Each car holds five detachable coal containers having a capacity per unit of ten to twelve tons. There is nothing radically new in this container idea. It has been usual in the shipment of many lines of merchandise, the container in these cases being carboy, box or barrel. The new idea is to make the container larger, attach it to the truck and eliminate the practice of having every container stowed within another, namely, within the box of the box-car.

St. Louis, Mo., is building cars having five 10-ton freight containers or twenty 2½-ton units or several units of both capacities. These are of steel plate rigidly reinforced with angle irons which will withstand stresses imposed by the weight of the contents and the transference of the unit from one vehicle to another. Here, however, is an advantage not found in the coal container. The closed package container is weatherproof and foolproof.

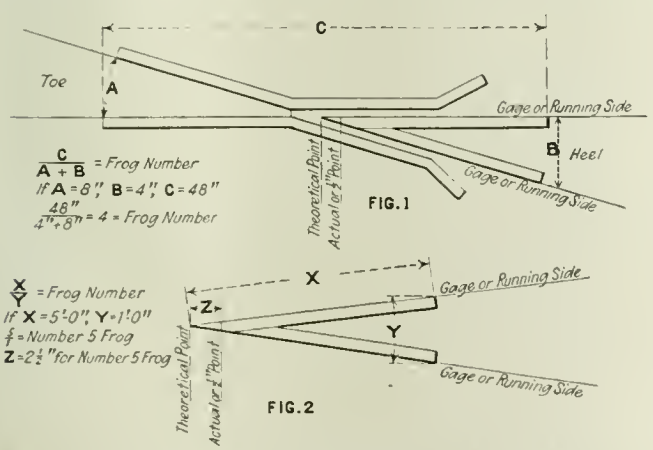
It is easy to see that the coal may be readily dumped when the bucket is in suspension. The idea is a novel one, but experience alone will prove whether it has possibilities for the coal trade. If it has, it will doubtless be suitable only where conditions are greatly favoring. Where package freight is being so handled and the factory does not have direct railroad facilities, this scheme may have much to commend it for supplying the factory with coal. It might fit in well with the distribution of powdered coal. Whether practical or not, it is worthy of consideration as an interesting way of handling coal, especially in less than carload lots.

The facts on which these remarks are based were furnished by the courtesy of *Railway Age*, which also supplied the illustrations.

Simple Rules for Measuring Mine Frogs

By C. H. Hampsch

THROUGH a lack of knowledge of the manner in which switch leads and frog numbers should be calculated mistakes are not infrequently made by mine superintendents and foremen in ordering and laying



MINE FROG SHOWING METHOD OF MEASUREMENT

Be sure to measure to the gage or running side of the rail and do not use the actual point of frog but the point where the gage lines would meet.

mine track material. Fig. 1 shows the common nomenclature used in measuring frogs and a simple method of measurement, which may be explained as follows: Measure the spread or distance across the toe and heel of the frog and divide the sum of the two into the frog length. The quotient will be the frog number. For example, *A* being 4 in., *B*, 8 in. and *C*, 48 in., the frog number will be $48 \div (4 + 8) = 4$. Care should be taken that all measurements are made to the gage or running side of the rail. This is shown in Fig. 1 to be on the inside of the toe and outside of the heel.

Another method that may be used in measuring a frog is to find a place where the spread, or distance across the frog, on the gage line is, say, 1 ft., and measure from this point to the theoretical point of intersection of gage lines as shown in Fig. 2. The ratio of the spread to the length gives the number of the frog.

The actual or blunt point, commonly called the ½-in. point, is the place where the two rails are ½ in. wide. The distance of this point in inches from the theoretical point is one half the frog number. Thus in a No. 5 frog this distance is 2½ in., in a No. 4 frog, 2 in., etc. The theoretical point is the intersection of gage lines. It is not practical, of course, in construction to bring the rails to a feather-edge point.

It should be remembered in laying switch leads that the frog is not curved but is manufactured straight. Consequently only the lead rails are curved except in special cases, and occasionally switch points in short mine leads; also every frog has a lead the length of which corresponds to its number.

Why America's Export Coal Business Should Be Built Up

Effect of Exportation in Raising Coal Prices at Home Far From General—Would Mean Success for Mine Otherwise Unable to Operate—Opposition Inconsistent, Considering Our Wastefulness

By Erich W. Zimmermann, Ph.D.*

AMERICA, "the land of unlimited possibilities," has once more proved to the world that she deserves the epithet. Before the war we held many a championship in the industrial and commercial field, but during the war we added new trophies to our proud array. One of the most valuable of these is a crown of "Black Diamonds." The greatest producer of coal has become the greatest exporter of coal, a record held so long by England that we had almost believed it permanent. Before the war England was far in the lead in the international coal trade, with Germany a rather poor second. As far as off-shore exports were concerned we hardly figured at all.

All that is changed now. Germany had to drop out of the race altogether and England's loss was our gain. We were pulled and pushed to the fore. The world this year clamored for our coal and our unfilled indents at times exceeded our shipping capacity by millions of tons. So almost over night we find ourselves the premier coal exporter of the world.

New glories mean new responsibilities to shoulder, new problems to solve, new situations to face. As a nation we must learn to understand the vast possibilities which our leading position in the world's coal trade holds out to us. Perhaps in no other country is a popular understanding of commercial propositions as important as it is in the United States. For nowhere else is "the voice of the people the highest law" to the same extent that it is here. Popular support may make a business and popular disfavor unmake it.

Already we hear the first rumblings of opposition to the coal export trade. To quote from a recent number of the *Literary Digest:*

"Newspapers fear increased prices and profiteering; not a few call for an embargo. This is a situation requiring national action, says Mr. Hoover's *Washington Herald,* which insists that 'a prompt limitation should be put upon coal exports and a national coal controller should be appointed without delay.' Mr. Hearst's *New York American* says, 'keep our coal at home,' maintaining that the perils of coal shortage are already acute in American cities."

If our coal exports continue to gain momentum or even if only the present volume of exports is maintained for any considerable length of time the voices which today are clamoring for an embargo on exported coal will multiply, the cry of opposition will grow louder and louder, and clear thinking and thorough understanding will be at a premium. The jury of consumers, statesmen and economists who will pass on the merits and demerits of this new trade should hand down their verdict only after having struck a most careful balance between national profit and loss which come from coal exports.

As far as we are aware the opposition against coal exports bases its case on the following principal arguments:

(1) It is bad policy to export raw materials which

*Professor of commerce, the James Millikin University, Decatur, Ill.

could serve as the basis of industrial activity at home.

(2) Coal exports reduce the domestic supply of fuel, thereby raising the price to the domestic consumer and causing distress to the poor and needy and diminishing the competitive strength of our industries.

(3) By exporting coal we furnish our competitor with the weapon wherewith to strike our exporting manufacturer, thus enabling foreign countries to flood our markets with the cheap product of factories and sweatshops.

(4) Coal exports hasten the exhaustion of the most universally useful of our natural resources.

(5) Coal exports overburden much-needed railroad and harbor facilities, hampering our importers and exporters of general commodities.

We shall take up these charges in the order given.

In the days of the mercantile school of political economy it would have been a most daring enterprise to say a good word on behalf of coal exports. To export raw materials was bad—very bad. The great idea was to bring gold into the country, and that could be achieved only by pushing the exportation of manufactured goods and by allowing raw products to enter the land but not to leave it. The proverbial "favorable trade balance" thus obtained had to be offset by gold imports. Gold meant power, and power was the aim of all commercial policy. England waxed rich exporting coal and Germany before the war was most eagerly striving to emulate England's example. That proves at least that our ideas of economics have changed. We have learned to judge each branch of trade by its own merits or demerits. We have grown empiric instead of dogmatic. And apparently England and Germany think well of coal exports. Later on we shall say more of the reasons for their partiality.

Combats Penny-Wise-Pound-Foolish Policy

Now to the second point: Coal exports mean higher fuel cost at home. There can be no gainsaying that coal exports reduce the domestic coal supply and that decreasing supply in the face of stable or increasing demand forces prices up. We even grant that in case of prime necessities, a class of commodities among which coal is king, this elementary law of economics works overtime, meaning thereby that a slight reduction of the available supply is likely to produce an entirely disproportionate increase in price.

But while we do not deny this fundamental truth, we would point to several circumstances peculiar to our case of coal exports which considerably modify the general applicability of the law of supply and demand. In the first place there is a geographical factor to be considered. When we say "coal exports reduce the home supply" we give the impression that home supply is a uniform, homogeneous matter spread evenly over the whole continent of North America. But, as everyone knows, that is not the case. The sources of coal supply are bunched in fields which are relatively few and far between and the coal exported from one field does not by necessity affect the supply available to remote parts of the country. So by no means do all coal consumers have to pay more for their coal because several million tons of coal a year are allowed to leave the country.

Another modifying factor is that coal production is carried on under very diverse conditions of operating cost. Granting that coal exports raise the price of coal within certain fields situated within reach of tidewater, it does not follow that more coal would be available to the domestic consumer if exportation were discontinued. Those mines which were operating at a very close margin of profit while exports were going on would most likely have to discontinue operations, as the price reduction forced by an embargo on exports would wipe out their profit. In the case of a mine which works both for export and for the domestic market but whose location is such that its domestic market cannot expand beyond the figure it has reached—such a case is thinkable—to cut this mine off from its foreign market would almost certainly result in an increase in the cost of operation and possibly also in the price to the consumer, as the overhead would burden a smaller number of output units.

These modifications interfere with the unobstructed working of the law of supply and demand. Otherwise it could hardly be explained how Great Britain could afford to export one-third and more of her entire coal production and yet compete successfully as a manufacturing country. A third of our output would mean 150 to 200 million tons of coal, and all we are exporting by sea now is from 20 to 30 million tons, a miserly 4 to 6 per cent. So, as yet, it hardly seems worth while to get excited on that score.

Helping Our Debtors to Go to Work

But, says our learned adversary, exporting coal means to arm our enemy, to put into the hands of our competitor the weapon which he will use against us. Who are these dangerous rivals whom we must fear so much? Oh, the industrial nations of Europe! Great Britain, our greatest rival, does not ask of our coal. But France, Italy and Scandinavia clamor for the crumbs that fall from our table. Shall we push them away? Without coal the wheels of industry stand still and the home is cold. Those "over there" need our coal to get to work and to keep warm. And here, as elsewhere, generosity pays. Europe is our greatest debtor. In order to be able to make the goods which as exports will pay the interest and principal due us Europe demands our coal. We should be glad to see our debtor willing to go to work and help him in his laudable effort, not hamper him. Therefore do not stop our coal for Europe! About the rest we shall say a word later.

Now to the great argument that coal exports hasten the exhaustion of our coal mines. Undoubtedly they do. But geologists assure us that we possess more than half the known coal resources of the world. If we are to be afraid of shipping a few million tons of coal a year what are we to think of England, whose mines hold but a fraction of our resources and whose statesmen and captains of industry and shipping magnates are worried not because of the large volume of their coal exports but because of their inability to export much more than they do? Our own Commissioner of Navigation refers to those who try to throttle the British coal export trade as "the greatest suicide club on record."

Granted that our descendants who will inhabit this land in the year 3000 will blame us for having shipped out of the country a certain amount of coal, has the present no rights as against the future? Do we not wage wars with the wealth that future generations are expected to produce? At any rate, I for one belong to that class of cheery optimists who think that long before our coal is exhausted human ingenuity will have discovered some other source of motive power. Of course we cannot be sure that in the age of this new

motive power we shall enjoy the same advantages, possess the same preponderance as we do in this coal age. But we are optimist enough to think that mother nature, so kind to us now, will not in the days to come turn into a heartless stepmother.

At any rate what right have we to say a single word against coal exports as an accelerator of coal exhaustion as long as the waste of coal within our land is as appalling as it is? A great expert tells us that out of every thousand tons mined only 200 are utilized in creating energy. If we do export 10 per cent of our production can we object as long as we waste 80 per cent at home? As long as there is in operation in this country a single beehive coke oven, which wastes the valuable byproducts, we have to acquiesce in the exportation of coal, unless we wish to expose ourselves to a well-founded charge of inconsistency. We may go even further and say that as long as our waterfalls remain unharnessed, as long as our forests are cut down without proper regard to reforestation, as long as apples rot on the ground because of lack of proper co-ordination of the marketing mechanism, we cannot make an exception with coal exports and stop them on the ground of waste of national resources.

Why Not Embargo Iron and Steel Also?

Moreover, as far as the ultimate exhaustion of our coal mines is concerned, it makes no difference whether we export a ton of coal or a quantity of pig iron, steel or machinery the making of which required a ton of coal, or whether we send away any merchandise in sufficient quantities to require for their production, storing, transportation, etc., a ton of coal. In each case some foreign country gets one ton of our coal!

But that does not necessarily imply foreign consumption of our coal. For a part of our exports of coal, in the raw state as well as in the form of finished products, is not consumed by foreigners but by our own nationals, directly or indirectly. A few examples will illustrate and clarify what we wish to say. A clear-cut case would be that of a Mexican smelter owned by American citizens and operated with coal imported from the United States. Another case in point would be that of an American steamer which bunkers American coal in a coaling station abroad. Less transparent is the case of a foreign railroad the stock of which is partly or wholly owned by American citizens and which consumes coal exported from this country. The examples could be multiplied. But our case seems sufficiently proved.

There remains point five. We repeat the charge: Coal exports overburden our railroad and port facilities. It seems to us that this charge is easily answered. The bulk of our coal exports move through the Chesapeake Bay ports and the congestion is notorious in ports and along railroads leading to ports which do relatively little if any coal exporting. There is in most countries a wholesome division of labor among ports which in a natural way group themselves into grain ports, coal ports, general ports, import ports, export ports, etc. Therefore coal exports are not likely to interfere with other traffic as much as a general statement of the situation might lead one to assume. We do not for a moment deny that there is a good deal of congestion on the main arteries of our traffic and in our ports, but coal exports can hardly be held responsible.

In this article we have contented ourselves with the refutation of various charges which are raised or apt to be raised against the exportation of coal. In the next article we have set for ourselves a more cheerful task. We shall demonstrate by the example of Great Britain that a well-established coal export trade properly controlled and directed may become one of the most valuable of national assets a country may possess.

Failure of Dorrance Colliery Headframe

THE headframe of the Dorrance Colliery of the Lehigh Valley Coal Co. at Wilkes-Barre failed on Nov. 18, 1920. This headframe served for a six-compartment shaft and was the only one at the operation. Its failure means the closing down of the colliery for a few days until repairs can be made.

One of the legs of the frame completely collapsed and is about ten feet out of line. This leg probably will have to be completely rebuilt. The headframe is an old one and for some time the company has been preparing plans and making surveys for its rebuilding.

The accident happened during the afternoon while the men were at work, and all the employees underground were notified to prepare to leave the mine. They were assembled at the shaft stations and instructions were given them as to the method to be followed in leaving the mine. No open lamps were allowed, as the men had to pass through old workings and over falls and caves and come out by an old opening a long distance from the main shaft.

There was no confusion and all the men got to the surface safely but at a somewhat late hour.

U. S. Troops Intervene Nine Times in Coal Strikes in a Year

THE army was called out on nine occasions during the last year to preserve order in coal strikes, according to the annual report of the Secretary of War, Nov. 29. The Secretary lists the occasions on which troops were called out for duty in coal fields, as follows:

Charleston, Beckley and Clothier, W. Va.: From Camp Taylor, Ky., 55 officers and 793 men arrived Oct. 31, 1919, at the request of the Governor of the state, returning to camp Nov. 18.

Troops were sent to various points in Wyoming from Forts D. A. Russell and George Wright during November and December, 1919.

Troops were sent to various points in Utah from Fort Douglas, Utah, and Camp Kearny, Cal., during November and December, 1919.

In November, 1919, 5 officers and 127 men from Fort Niagara, N. Y., were sent to Brownsville, Pa., during a coal strike to guard the locks on the Monongahela River.

Cavalry troops were sent Nov. 3, 1919, to Gallup, N. M.; some left Dec. 4, 1919, and the others remained until Jan. 2, 1920.

Cavalry and infantry troops were sent to Raton, N. M., Nov. 3, 1919, and returned Dec. 20.

Troops were sent from Camp Lewis, Wash., to Bayne, Wash., Nov. 20, 1919, remaining eight days.

Troops to the number of 38 officers and 660 men were sent from Camp Funston and Fort Leavenworth, Kan., at the request of the Governor of the state, to Pittsburg, Kan., Nov. 30, 1919, and were withdrawn Dec. 17.

In December, 1919, cavalry troops were sent to McAlester, Okla., arriving Dec. 7 and departing Dec. 30, 1919.

Under the Microscope Coal Has Already Lost Much of Its Former Mystery—I*

Early Writers Believed Coal To Be an Inorganic Substance, Later That Coal Was Plant Matter Filling in Shrinkage Cavities—Contest Between Drift and Peat-to-Coal Theories—Belief That Coal Represents Only a Small Part of the Plant Matter Deposited

By Reinhardt Thiessen†
Pittsburgh, Pa.

ALMOST from the beginning of written history coal appears to have been known and described, and records indicate that it was used by the ancients. Aristotle and Nicander wrote about it, and Theophrastus in 371 B. C.[1] described it at some length and said that blacksmiths made use of it. It was then believed it to be an inorganic substance and that its origin was similar to that of rocks and stones in general. The fact that its weight, hardness and other characteristics are similar to those of stones was mainly responsible for this belief.

Later Claudius Galen (A. D. 130-200) advanced the hypothesis that coal was composed of earthy matters such as clay, and other clayey rocks impregnated with pitch or bitumen. Lakes of pitch and springs of asphalt and petroleum occurred in the vicinity of the Dead Sea and, having been reported at an earlier date, must have been known to Galen. That scientist, it should be noted, advanced the dual theory as well as the impregnation theory of coal, both of which were to influence men's ideas of the nature of coal even to the present day.

In England coal was discovered and used as far back as the ninth century and is said to have been brought into common use during the reign of Charles I (1625-1649). The English adhered for some time to the idea that coal was of inorganic origin. This theory was supported by Georgius Agricola (1544), by Francesco Stolluti (1637) and later by R. Kirvan (1799), all of whom were noted scientists of their day.

In most coals there is so much evidence of plant structure, even when observed with the naked eye, that plants soon become associated with the origin of coal. Valerius Cordus (1544) and Balthasar Klein (1592) appear to be the first to connect the one with the other. Later the opinion of the chemists became prevalent that coal was chiefly composed of carbon, or charcoal, and bitumen. The bitumen was generally held to be of inorganic origin, while the carbon, or charcoal, on account of its evident resemblance to wood, was held to be derived from plants. Others held that woody substances somehow buried in the earth or deposited in the sea had become impregnated with mineral bitumen.

*Article entitled "Recent Developments in the Microscopic Study of Coal," read at the meeting of the Coal Mining Institute of America, Dec. 9, held at Pittsburgh, Pa.

†Research chemist, U. S. Bureau of Mines.

[1]Theophrastus having been born about 372 B. C. and dying about 287 B. C., the date of the publication must have been somewhat later than that given.—Editor.

FIG. 1

Illinois Coal

The dark bands (*an*) represent the bright coal or larger anthraxylon components; the grayish striated layers (*d*) between the anthraxylon bands represent the dull coal. The white lines vertically to the banding represent thin plates of quartz filling narrow vertical crevices in the coal. Some of these plates are seen exposed on their broad side. Four-fifths natural size.

There was at that time no knowledge of the earth's history, no recognition of the time relationships of the different rock strata, and until this was known the position of coal far below other rocks was hard to explain. Such ideas as advanced by Buffon (1744) offered a plausible solution and are, therefore, not surprising. He believed that during solidification of the earth's crust caverns and bubbles remained, and that the surface was left uneven and full of hollows. Vegetation then appeared in great luxuriance, which after death and decay covered the earth with a slimy mass, which was later carried into the caverns and hollows, where we now find it as coal.

Scheuchzer, a Swiss, in a book on natural history written in 1718, advanced the first plausible explanation that coal was formed from deposits of woody matter. These woody deposits were thought to have been left by the Noachian flood. For many years after, this catastrophe was held as the cause of the accumulation of plant matter, which in turn gave rise to coal beds, and this belief persisted despite explanations to the contrary, even though the opponents of the theory based their argument upon careful observations and what have since been found to be correct interpretations. At that time it probably was dangerous, however, to argue against anything involving the Flood. About this time coal was being discovered and first mined in the eastern part of the United States—in the Richmond Basin (1760), at Pittsburgh (1763), Wyoming and Lackawanna (1768), and Pottsville (1790).

Beroldingen Advances Peat-to-Coal Theory

Beroldingen (1778 and 1792) was the first to advance a definite and plausible explanation of the origin of coal, namely, that coal had a like origin to modern peat. Beroldingen, therefore, is the man who first advanced the peat-to-coal theory. His ideas at once found firm adherents and a lively controversy was set up by those who believed in the drift theory advanced by Scheuchzer. The controversy between those who favored the peat theory and those who advocated the idea that coal was accumulated by drift continues even up to the present time, although the evidence supporting the peat theory was, and still is, uncontrovertible. The works of Beroldingen and his followers, however, were soon to be forgotten, mainly as a result of the writings of Johann Voigt, a prominent and influential author. His history of coal published in 1802 attacked Beroldingen in a slanderous way and defended the drift theory. It received an award from the Academy of Science at Göttingen.

Voigt Explains Loss of Plant Structure

Voigt found no plant imprints in coal. The cause of this he believed to lie in the fact that the plant mass, after having accumulated through drift, had undergone a fermentation process in which the vegetable matter lost its form and structure and was transformed into a gelatinous mass, which later hardened under the great weight of the superincumbent rocks. Through the fermentation process an oily substance had been formed which impregnated the remaining plant residue, thus forming bituminous coal.

Although Voigt did much to retard the advance of correct ideas regarding the origin and formation of coal he caused the public to form ideas of bituminization that led in the right direction. In this he found an eager follower in Charles Hatchet. Through a fortunate opportunity in having at hand a series of coals of all grades Hatchet was able to examine and compare coal in all its possible gradations of structure, texture and transformation, and to establish a positive proof of the plant origin of coal and also to show the relationship of the resinous and perhaps the oily and gummy substances of plants to the bituminous substances in coal.

Proves That Coals Are of Various Ages

In 1831, more than forty years after Beroldingen, McCulloch revived the peat theory and also gave the true relationships of coal beds to the earth's strata. He showed that the different coal beds were of different ages and that many of them must be of much greater age than was supposed. This, it should be noted, was an important step in advance.

With McCulloch, during the third decade of the nineteenth century, the controversy concerning the origin of coal lost much of its interest and may be considered to have closed. The occurrence of plant remains in all kinds of coal was considered by many such convincing evidence that coal originated in plant life that all further proof was deemed superfluous. Yet it must not be thought for a moment that arguments in favor of the inorganic origin of coal were concluded. Quite a number of men, and some of them quite prominent, within recent years have appeared in favor of the inorganic theory.

Toward the middle of the ninteenth century the trend of investigation and thought in coal was taking three directions. As has been already noted, there were from the earliest times two opposing theories of the

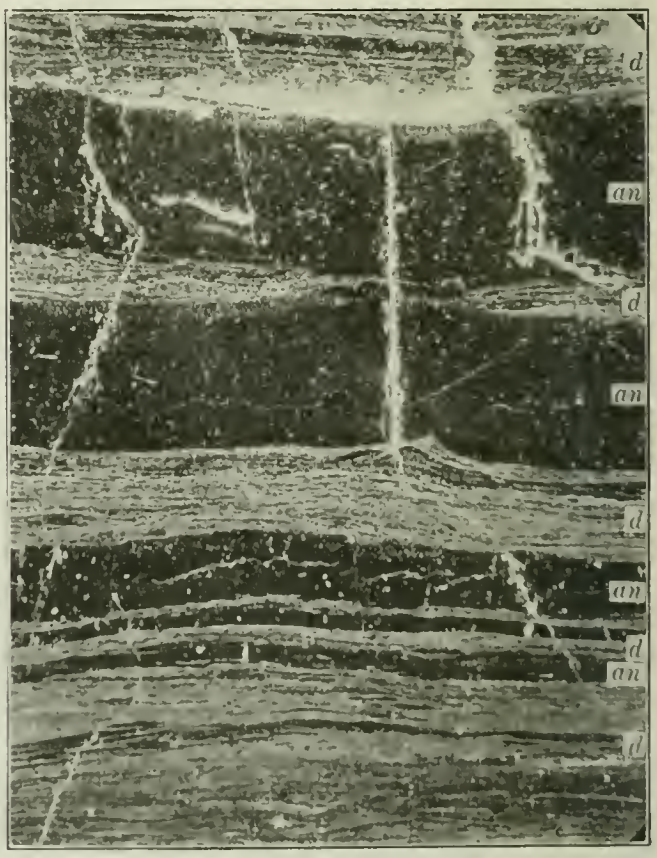


FIG. 2. PART OF A VERTICAL CLEAVAGE FACE OF COAL

Magnified 9.15 diameters, photographed by reflected light. The black bands (*an*) represent anthraxylon, the light striated bands (*d*) represent the dull coal. It will be noticed that the latter is compiled of black and light striæ; the former represent anthraxylon and the latter attritus.

FIG. 3. ONE OF THE MANY PEAT BOGS IN WISCONSIN

Such bogs are found as deep as 30 ft. The most evident and the most characteristic substance met with in digging into the bed is a mud that at first is of a light color, but soon turns coal black. Where the mud is examined under the microscope it is found to consist of finely comminuted plant substances, or plant attritus.

origin of coal; namely, the peat theory, that is, that plants grew on the spot where the coal bed has been formed, and the drift theory, that the plants had been drifted or floated to the spot where the coal beds are now found. This controversy was continued mainly by the geologists.

The discussion of the origin of coal gradually merged into that of its composition. The investigation in this field, in turn, assumed two directions: One chiefly engaged the interest of the fossil botanists and sought to ascertain what kinds of plants entered into the formation of coal; the other interested itself in determining what kind and nature of plant products survived to form the coals, or, in other words: Of what is coal *now* composed? Those two phases were carried on by diversified classes of men—geologists, chemists, paleobotanists, and even preachers were engaged in this problem with, however, but insignificant results.

Colloidal Chemistry Till Now Not Available

With the theory of the origin of coal there also were associated the problem as to how the plant material was transformed into coal, and what were the agents that brought about this transformation. This problem mainly engaged the chemists and received a new impetus about this time by the works of De Sassure and Liebig but toward the end of the nineteenth century lost most of its interest for lack of an adequate advance in chemistry. This phase of the coal problem involves the chemistry of colloids, which, of course, until within the last few years was an unknown science, and thus no progress could be made in explaining the chemical changes that took place in coal. The lack of a study of colloidal action formed at that time an insurmountable barrier to further investigation into the maturing of coals.

Up to this time little had been contributed to the knowledge of the real nature of coal. That which was learned was merely incidental to the discussion of its origin. Little could have been done in this direction for want of proper means of observation. Only with the advent of the compound microscope, which at that time was crude and inefficient, was attention turned to microscopic research. The first real object in using the microscope, by the way, was not to elucidate the composition of coal but to prove its plant origin. This, however, immediately led to the study of its composition and structure, because in order to study the origin a better knowledge of its structure was required.

Witham the Pioneer in Coal Microscopy

The first to use the microscope in the examination of coal was Witham (1831). He had been accustomed to make sections of fossil wood, and to examine them with the microscope. He thus became familiar with the structure of wood, particularly that of coniferous wood. It should be remembered that little knowledge of the structure of plants had been obtained at this time.

It occurred to Witham to examine coals as he had fossil woods. In the Bovey coal, a brown coal or lignite, he observed unmistakably the structure of coniferous wood. In the cannel coals he observed peculiar cellular structures. It was these peculiarities that induced Hutton (1837) to continue the study. Hutton was not able to tell what these cells were, but found them in all the ordinary coals he investigated. He also found that in ordinary bituminous coals were two classes of material, the more homogeneous or more crystalline portion, and the duller portion. The peculiar cells were filled with wine-colored matter and occurred only in the duller portions. These bodies were observed by a number of later workers, but it was left to Balfour (1854) to identify them as the spores of certain lycopodaceous plants. Hooker, only a few years before this (1848), had examined and described a fossil cone in which the same kind of objects were found and identified as spores. The large ones, now known to be megaspores, he called seeds and spore cases. Some of these were later identified as megaspores by Dawson.

Spores Found Mostly in Dull Coal Matter

Huxley (1870) showed that spore matter was found in all coal, of which it always forms an important constituent; although it should be noted that Huxley much overestimated the proportion that the spores bore to the coal mass. Other investigators who observed spores in coal were Williamson, Wethered, Bennie and Kidston, and all agree with Hutton that the spores do

not occur in all the layers of the coal bed, but mostly in the duller portions. Wethered points out that the dull and bright laminæ occur alternately and that the dull laminæ contain most of the spore matter, though the bright coal contains little or none. Bennie and Kidston confirmed the relationship of these spores beyond any doubt.

Just at the time when the presence of spores and their origin was considered as settled Bertrand and Renauld (1900) came forward with new theories, which, by virtue of the prominence of these scientists, upset the whole conception of spores in coal and also the idea of the origin and formation of coals. They conceived that most of those bodies that had hitherto been called spores were algæ and with those developed the gelosic-algal[2] theory of the origin of coal. It became all the more serious when the theory was in part accepted by Potonie, the foremost investigator on coal at the time, who had many followers.

Jeffrey (1912) and Thiessen (1913) independently corrected this false notion of the algal and gelosic theories in proving that all the bodies called algæ were the spore exines of Paleozoic plants. But the gelosic-algal theory was fascinating and at once appealed to the geologists, as it also explained a number of phenomena that seemed as yet inexplicable. Hence it became popular and spread fast. It also got into the textbooks and much of it is there yet.

Hutton Thought He Saw Plant Structure

Hutton (1837) saw besides the "peculiar cells" "unmistakably more or less of the vegetable texture in the coal he examined." Link (1836), who examined similar coals soon after, did not believe that what Hutton saw was the structure of wood. Link probably was right; what Hutton saw were merely the cross-sections of thin sheets of woody matter in coal, usually mistaken for fibers. Link, according to his description, saw the structure of wood in coal as well as other plant tissues. It should be remembered that the plant structures observed in coal all through the years were not so much from thin sections of coal as from the microscopic appearance of the horizontal cleavages.

Goeppert (1846-1852) added more than all his contemporaries to the knowledge of coal, and apparently obtained all or most of that knowledge through the microscopic as well as the macroscopic appearance of the horizontal cleavages and by the ash method, for he never speaks of making thin sections of coal. We are indebted to Goeppert for the first extensive knowledge of the kind of plants that gave rise to coal, but he is somewhat in error as to what tissues of the plants remained to form it.

He inferred that charcoal or mother of coal was derived mainly from the Araucaria[3]; the bulk of the true coal to be formed from stems of Stigmaria, Sigillaria, Lepidodendra and Calamites,[4] but that the structure of these had been so much changed that nothing or very little of it was left, and that the discernible plant structure in the coal was derived from the bark of these trees. Ferns played but a small part in coal formation. Balfour (1854) asserted that Sigillaria and Stigmaria were the most important coal-forming plants and backed up his statements with good illustrations. Queckett (1853), on the other hand, believed that the Lepidodendra, Sigillaria and Stigmaria rarely, if ever, formed coal and that coal was formed almost entirely of coniferous trees—that is, trees related to our pines.

Huxley Thought Coal Mainly Bark and Spores

Dawson also spent much time in determining what kind of plant gave rise to coal, and adds Poacites and Ulodendra[5] to the list already given. The conifers, he concluded, are represented only by their bark. He found only very little woody or plant structure in the compact coal, the plant cells for the greater part having been obliterated and compressed into a homogeneous mass. Mineral charcoal consists of fragments of bark. Huxley concluded that none of the wood was left in coal and that the bark and the spores of plants contributed to the bulk of a coal bed.

Lesquereux, in order to determine the kind of plants entering into coal, probably made the most complete survey of fossil plants that has ever been made in America, as he believed it to be impossible to get a correct idea of the nature of coal if the nature of the plants contributing to the coal was not known.

With Dawson, Lesquereux and Guembel a new era in the idea of the nature of coal was inaugurated. They showed that all parts and products of all the plants, as far as known, contributed to coal; all possible plant structures and tissues, such as woody tissues and fibers, bark, parenchyma,[6] cuticles, spores, pollengrains, resinous bodies and other minor objects could be recognized; and that in coal all is bound together by a substance which Guembel termed "carbohumin" into a mass which appears more or less homogeneous. Relatively little plant structure had been preserved.

Our knowledge as to what kind of plants gave rise to coal beds has been supplemented by a number of investigators, the foremost of whom in this country is White. This subject has been worked up more from the rocks accompanying coal beds than from the coal itself and the literature regarding these fossilized plants has assumed vast proportions. It is of relatively little importance in the present consideration.

Noted Dull and Brilliant Layers in Coal

When Hutton was looking for spores in coal he also discovered that coal was composed of different kinds of layers and that the different layers could be classified into two kinds, the one a homogeneous "crystalline" body containing no spores or only a few, and the other a duller, less homogeneous layer which contained most of the spores found in the coal. Upon this basis he proposed to classify coals into slate coals, coking coals and cannel coals. The different layers and varieties of coals were ascribed to the original differences in the plants from which they were derived.

Dawson, thirty-five years later, came to similar conclusions, but he distinguished two main classes, mineral charcoal and compact coal. The compact coal consisted of bright concoidal pitch coal and duller slate coal with a horizontal fracture containing much earthy matter, arranged in thin interrupted laminæ. The bright coal, he concluded, was mainly derived from bark, and the

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[2]Gelose—An amorphous gummy compound ($C_6H_{10}O_5$) in Chinese moss and seaweeds. Algæ—Green, brown or red aquatic cryptogamous plants occuring in both sea and fresh water, including kelps, seaweeds, diatoms, etc.—Editor.

[3]Araucaria—Pine trees.

[4]Stigmaria, Sigillaria, Lepidodendra—Plants having regular leaf scars which form a scale-like pattern. Calamites—Plants with jointed rod-like stems resembling the modern horsetail.—Editor.

[5]Poacites—Grasses. Ulodendra—Fossil trees with lepidodendroid cortical scars but bearing rows of large round or oval concave disklike scars, often several inches in longitudinal diameter, left after the fall of large deciduous cones.—Editor.

[6]Parenchyma—Cellular tissue.—Editor.

dull, coarse coal consisted of numerous sublaminæ of disintegrated vegetable matter mixed with mud. The mineral charcoal was supposed to be derived from the woody matter impregnated with bitumen.

Huxley also distinguished two classes: Mineral charcoal and coal proper. The charcoal was thought to be composed of stems and leaves reduced mostly to carbon. The compact coal he believed to be mainly composed of spore matter and some bark. The woody parts of trees, he concluded, had largely decomposed and disappeared.

Wethered Thinks Bright Coal Structureless

Wethered (1885) calls the "bright coal" a "hydrocarbon," and describes it as a structureless, dark brown mass forming an important constituent of coal, but he does not attempt to account for its origin. The dull coal contained a large number of microspores and megaspores.

Muck (1888) discusses the layering of coals at some length and introduces a new term, "pseudo-cannel coals," which he applied to the dull coal associated with the fatty coals and differing in respect to its origin from the dull coals which are associated with gas coals. The difference between cannel coals and pseudo-cannel coals is that the latter contain no algæ-like bodies. To determine the difference in origin in these coals he regarded as a difficult matter and not to be settled easily.

Potonie divides coals into three classes: Humus coals, derived for the most part from land plants; cannel coals, derived mainly from aquatic plants, and spore coals, derived largely from the more resistant plant substances like spores, pollens and resins. The humus coals have assumed a homogeneous, pitch-like consistency and are of a lustrous appearance and so are called bright coals. The dull coals have assumed a granular consistency and a dull appearance and so are called dull or mat coals.

Almost all the ordinary bituminous coals are mixtures of humus and cannel coals, arranged in more or less alternate layers, and are called banded coals. As the typical humus coals were supposed to be formed under the conditions which today ordinarily accompany the growth of the land plants, and as the cannel coals were supposed to have been accumulated under very wet conditions, in order to account for the alternations of the two kinds of coal in the same bed, Potonie assumed that during the formation of the ordinary striped coals there was a sort of struggle going on between very wet and dry conditions, a sort of oscillation from one to the other in relatively short periods of time.

FIG. 4. DRIED PEAT FROM BOG IN FIG. 3

Substance is soft and soggy and can be readily cut by a spade. It is quite plastic and can be molded like clay. The cell or woody structure is definitely retained, but the cell walls have become thinner and softer.

Two Centuries of Scientific Surmise

These in brief are the peaks on the road that led up to the knowledge of the nature of coal possessed at the beginning of the twentieth century. Volumes

FIG. 5

Restored Peat Bog of Coal Era

Taken from a frontispiece in H. Potonie's "Entstehung der Steinkohle." On the right are the big brothers of our modern horsetails (Calamites, Arthodendra, Calamodendra and Protocalamites). On the left are Lepidodendra, Sigillaria, Ulodendra and the like.

have been written during the last two centuries. Yet, considering the number of investigators engaged on the problems involved, little progress had been made. If anyone should attempt to get an adequate understanding of the nature of coal through a study of the literature compiled on the subject during this time he would be ill-advised because of the numerous contradictions, the many conclusions drawn from wrong premises, the frequent wrong interpretations and the number of hasty conclusions.

Microscopy Is True Basis for Coal Study

Progress was slow because of the difficulty of the subject and wrong methods of attack; further, in many phases there was a lack of knowledge of the underlying principles. As is often the case today, investigators occasionally blindly followed a leader into realms that led nowhere. Writers of textbooks copied the conclusions of prominent men irrespective of whether they were right or wrong, and when a statement had once gotten into a textbook of authority it was hard to eradicate it. It is so even today, but the difficulty was greater in the years gone by. Scientists in other fields were content with what the textbooks had to say.

In recent years most of the investigations of coal have been made by botanists with a purely botanical point of view. Much credit for the resumption of this line of attack must be given to David White of the Geological Survey. White saw that in order to get a proper understanding of the nature of coal it must be attacked from the botanical side first and from the chemical side later; also that its study must begin with the peats and continue successively on through the lignites and the subbituminous coals to the bituminous coals.

Before actual microscopic examination of coal could begin difficulties in preparing it for examination had to be overcome. These in themselves constituted no small problem. Furthermore, before the nature of coal could be satisfactorily investigated all information relative to the subject in other allied branches of science, such as geology, botany, chemistry, colloid chemistry, physiography and fossil botany, had to be collected and brought into harmony.

The great hindrance to the investigation of coal has been in the difficulties encountered in preparing it for examination. From the time of Witham and Hutton to the present day the one great difficulty has been to make thin sections for microscopic observation. Many attempts have been made to overcome this and to devise means by which better results might be obtained.

Try to Determine Structure from Coal Ash

For a number of years a method was pursued that might be termed the "ash method." Small bits of coal were carefully burned, either partly or totally, and the ash skeleton remaining was examined under the microscope. Among such investigators were Reade, Phillip, Goeppert, Bailey, Teschemacher and Ehrenberg. Goeppert seems to have become quite efficient in this method, as much of his knowledge of coal was obtained in this way. The method, however, proved unsuccessful in general and led to no important results. Other methods were tried, but without success.

Frank Schulze devised a maceration method. He had been accustomed to purify cellulose by means of nitric acid and potassium chlorate. It occurred to him to test coals for residual cellulose by the same method, and so he discovered that coal could be macerated by first treating it with a mixture of nitric acid and potassium chlorate and then digesting it with ammonia. By watching the latter reaction under the microscope much of the structure in coal may be observed.

Guembel applied this same method with great success. It was mainly through this process that he gained his deep insight into the nature of coal and was able to give the first adequate contribution to the subject of coal structure. It is now common practice to use this method to supplement the microscopic examination of thin sections.

Quite recently Jeffrey of Harvard has tried to overcome the difficulties in cutting thin coal sections by first treating the coals alternately with a mixture of hydrofluoric and nitric acid and with alkalies, and then finally heating them in a hot ether and absolute alcohol solution. These treatments were supposed to soften the sample so as to make it possible to cut it with a sharp knife into thin serial sections. Nothing was gained in expediency by this method; besides, the original condition of the coal was entirely changed. Indeed, it was coal no longer.

Grinds Coal Sections to Transparency

Thiessen finally adapted to his needs the method that had been in use from the first, the same method that has been successfully used for many years by petrologists and fossil botanists. The plan as adapted in brief is this: The small rectangular piece of coal to be examined is polished on one surface. By means of a mixture of about one to two parts of marine glue and three to four parts of Canada balsam, heated to a proper consistency, the polished surface is cemented permanently to a glass object slide. The piece is then ground down roughly to a safe thickness on a wheel such as lapidaries ordinarily use and is finally ground down by hand on a very fine hone until thin enough to be transparent.[1] Oil shales are prepared in the same way.

From eight to twelve sections can be made in a day. The coal in such sections is entirely in its original condition. Sections can thus be cut from any desired part of the coal, either across the bedding planes or horizontally with them, and they may be studied and photographed at any magnification possible.

Every ordinary bituminous coal has a more or less pronounced alternate banding of bright and dull layers (Fig. 1). This phenomenon had long been noticed but was first obesrved in connection with microscopic work by Witham and Hutton, and later more definitely defined by Dawson and Wethered, who called the layers "bright coal" and "dull coal" respectively. Potonie, who called them glanz and mat coal, made them the object of considerable discussion and did much theoretical work in an effort to explain them.

Dull Coal Represents Attritus Material

It has now been definitely determined that the bright bands represent constituents that at one time were pieces or fragments of wood of varying sizes and that the "dull coal" represents layers of compiled constituents that at one time were smaller fragments of wood interlayered by macerated plant matter or débris derived from many kinds of plant products called the "attritus" (Figs. 1, 2, 3 and 4).

Many sections have been made of the bright bands

[1] A fuller description of the method is to be found in Bull. 117, "Structure in Paleozoic Bituminous Coals," U. S. Bureau of Mines.

and examined under the microscope, and in every case it has been shown that they were derived from fragments of wood, such as parts of stems, limbs, branches, twigs and roots. Woody structure has been preserved in all of them (Fig. 2). In some cases such constituents represent quite large pieces, but most of them represent only minute fragments.

Between these two extremes all sizes are present. These constituents are always flat; the semi-decayed wood, having been at one time soft and pliable, has been compressed and flattened. Being constituents derived from wood now turned into coal, they have been called "anthraxylon," meaning wood coal. The nature of the anthraxylon may best be elucidated through a study of peat. It is now generally admitted that coal was formed as peat is being formed today. The whole process can, therefore, be studied first hand by studying peat. Peat may be taken as the first step and lignite as the second step in the process of coal formation.

(To Be Continued)

Illinois Mining Institute Meets at Springfield for Annual Fall Conclave

Two Subjects, One on Accident Prevention, Another on Vocational Education, Bring Out Interesting Discussions—Frank F. Tirre, of the North Breese Coal & Mining Co., Succeeds William Hall as Society President—Next Summer Outing To Be Held on Boat from St. Louis

FEW meetings of the Illinois Mining Institute have roused greater interest than the one held in Springfield, Nov. 20. It was attended, however, by only about forty persons. The autumn program usually is shorter than that of the summer meeting, to which about half a week is devoted. The two papers which are presented have to be read and discussed on the same day on which the officers are elected and the necessary business is transacted. This leaves scant time for technical discussion.

The meeting, which was held in the Municipal Building, was called to order at 10:30 a.m. by William Hall, chief of the Illinois Miners' Examining Board. Charles T. Bauman, Mayor of Springfield, who had promised to welcome the delegates, was unavoidably absent, and Ernest Fullenwider, assistant State Attorney, spoke ably in his place. Fred Phaler, general superintendent of the Superior Coal Co. and a past president of the institute, responded.

William E. Kidd read a paper on "The Cause of Fatal and Serious Accidents in Mines," in which he emphasized the human elements in accident prevention rather than the technical or mechanical. Mr. Kidd referred to the progress from hand to electrical mining and declared that the wide use of electrical energy was an important factor in the increase of mine fatalities. Mr. Kidd represented that there were so many negative return conductors in a mine that if a man touched a conductor he was likely to make a direct connection with some such return conductor and be not merely shocked but electrocuted.

A decrease in the number of skilled men in the mine, Mr. Kidd said, accounted for the increase in the number of accidents. This lack of skill arose from the failure of the sons of mine workers to follow the occupation of their fathers. With a lack of co-operation between mine workers and management and a decline in discipline safety hardly could be expected.

Suicide or Official Negligence?

Joseph Haskins, state mine inspector of the Third District, condemned the resignation with which miners met accidents, ascribing them to a preordained fate. Nor did it seem much better for the officials of the mine to talk of suicide when a man was killed as a result of something that appeared a foolhardy stunt. It was, he said, a poor way of covering someone higher up who really was the man at fault. He said that for every life taken by a preventable accident some man living could be blamed. When flesh is scrapped under such circumstances it is either due to a failure of the underground executives to comply with the inspector's warnings or to a hazard which the manager might have detected had he noticed and appreciated it, or to lack of knowledge by the deceased of the dangers of his work.

Mr. Haskins proposed that a statewide campaign be started to show the miner how he might gain maximum production with minimum danger. He cited the fact that the United States Fuel Co. had taken over a mine in Vermilion County which had a statewide record for frequently recurring preventable accidents, and that the company as a result of its safety work had recently extracted three million of tons without a fatality.

Safety as a Vocational Study

W. L. Morgan, state inspector of the Eighth District, urged that the education provided by the State Vocational Educational Board should deal with safety even more than with matters of production. He said that Great Britain, despite the general friability of its mine roofs, the gaseous quality of a large proportion of its mines and the difficulties of ventilating adequately its old and extensive workings, had an enviable record for lowness of accident rate. Mr. Morgan attributed this fact to the better discipline of the miners of Great Britain.

Henry B. Thompson, state inspector of the Seventh District, said that between 90 and 95 per cent of present-day coal-mine accidents could be prevented. Out of the last eighteen fatal accidents recorded by the Department of Mines and Minerals, fifteen were, according to the report of the coroner, preventable. Mr. Thompson related the following story: A miner completed his day's work by drilling holes for a shot, knowing that the shotfirers would fire the hole during the night. The mine examiner in making his rounds the following morning detected considerable quantities of gas in the room and so reported to the manager, who immediately ordered the man to another section of the mine to work there till his place was made safe. So anxious had the manager been to keep the man from danger that he had his check retained till he could point out the hazards and explain the transfer. But all the care was of no avail. The man went back to his old place, apparently to see if the blasting had done its work. Having an open light he set fire to the gas, which, exploding, snuffed out his life.

Love of Dollar as Accident Cause

The miner is like a capitalist, and the lure of the "almighty dollar" misleads him like the rest of us. This man had a safe working place and he could well have waited to load the coal in his old room. Mr. Thompson believed that the man violated the rules in the belief that the mine manager was trying "to slip one over on him" in the interest of the company.

Following Mr. Thompson's remarks James Taylor, economic investigator of the state, moved that John H. Walker, president, Illinois State Federation, address the meeting. Mr. Walker laid the accident increase to unfamiliarity of the miners with the latest approved practices and to speed

of production. He added that coal mining was a seasonal industry and the men who leave the mines in the summer are not assigned, on their return, to the rooms which they left, and so their knowledge of the peculiarities of the place in which they have worked is not available to defend them from danger. As Mr. Walker did not believe that mine work would ever be made steady, he advised the mine management to urge the miners to seek work in nearby brick plants so that when the brick plants closed down, the old force of men would be available to work in the mines.

Mr. Walker urged that the laws of the state be enforced against examiners and managers who are guilty of criminal negligence. Though carelessness might be punished as manslaughter, the courts usually took cognizance of the offense only by taking away the certificate of the offender. He believed that a jail sentence should be given when the certificate was cancelled. It is a small hardship to take up a certificate, returning it, as is the custom, at some later date. Mr. Phaler stated that in his belief accidents were increasing because the majority of the managements of mines did not initiate any systematic campaign of accident prevention.

Value of Vocational Education

After lunch J. T. Kolb, head of the industrial division of the state board, made an address on the "Value of Vocational Education," describing the vocational board as composed of three departments: industrial, agricultural and home economics. In the latter department girls were educated in scientific cooking, buying, sewing, etc. Any man who had mastered a certain knowledge of the fundamentals of any trade was eligible to enter a part-time trade extension school, where he was given additional instruction and a definite amount of what might be called "shop work." This gave him a chance to obtain work, and while doing this he was able to spend his evenings at classes where further instruction in his life work was given him.

Work for miners' education had not, however, been so completely elaborated. There were classes for hoisting engineers, for examiners and mine managers. Up to the present eighteen vocational schools have been started for mining men. Teachers were chosen from among those who already held certificates. Some of the teachers were state mine inspectors.

Miners Suspicious of Schools

It was necessary to select men who would be congenial to the mine workers, for they were prone to view the opening of a school with suspicion. It was the common practice to write the town board of education and the local branch of the union, asking them to suggest a suitable instructor, and often the mine workers are themselves consulted before the classes start.

James Taylor led the discussion with a declaration that only college-trained men had been allowed to act as teachers. Mr. Taylor wanted men who had risen from the pick. Martin Bolt, the secretary, managed to get in a word, denying Mr. Taylor's statement, and several of the inspectors declared that they had acted at one time or another as instructors.

Mr. Bolt then read the report of the auditing committee, which found about $1,800 in the treasury. One of those present protested that this looked like too much money and wanted all the papers of the institute from its first session printed and bound, but at a rising vote the plan was voted down.

New Officers Are Appointed

The following were elected as officials for the ensuing year: President, Frank F. Tirre, secretary-treasurer, North Breese Coal & Mining Co.; first vice president, H. H. Stoeck; second vice president, John Millhouse, and secretary-treasurer, Martin Bolt. The executive committee that served last year is continued in office. It consists of Thomas P. Bach, Charles Kerrell, Harry Fishwick, James Taylor and Samuel Jenkins. The summer meeting of next year will be held on a steamboat leaving St. Louis for a three-day cruise.

At the banquet at the St. Nicholas Hotel references were made to the loss of John Thompson, formerly chief of the Department of Mines and Minerals, and of Walter Rutledge, of the Bureau of Mines. About seventy-five were present. On the call of President Tirre, who acted as toastmaster, addresses were made by William Hall, Fred Phaler, John Walker, Martin Bolt and James Taylor.

Anthracite Joint Scale Board Empowered to Change Agreement, Secretary Wilson Says

THE joint scale committee of the anthracite operators and miners conferred on Dec. 1 with Secretary of Labor Wilson on the interpretation of the President's letter suggesting adjustment of alleged inequalities in the wage award. After the conference Secretary of Labor Wilson issued the following statement:

"The operators and miners of the Joint Scale Committee of the anthracite coal field have had a misunderstanding concerning their authority under the communication of the President reconvening the scale committee. It is definitely understood that the agreement now in existence will continue in force and effect during the time for which it was entered into. The Secretary of Labor has interpreted the communication of the President to mean that the Government will not interfere with the Joint Scale Committee in making any changes or modifications which they may mutually agree should be made in the agreement."

No statement was issued by representatives of either the miners or operators.

Those attending the conference were: Representing the anthracite operators: S. D. Warriner, president Lehigh Coal & Navigation Co., Philadelphia; W. J. Richards, president, Philadelphia & Reading Coal & Iron Co., Pottsville; C. F. Huber, president, Lehigh & Wilkes-Barre Coal Co., Wilkes-Barre; Frank Hemmelright, vice president, Temple Coal Co., Scranton. Representing the mine workers: Philip Murray, International vice president, United Mine Workers of America, Pittsburgh; John Collins, president District 1, United Mine Workers of America, Scranton; Thos. Kennedy, president District 7, United Mine Workers of America, Hazleton; C. J. Golden, president District 9, United Mine Workers of America, Shamokin. James A. Gorman, secretary of the Anthracite Coal Commission, also attended.

Carnegie "Tech" Has Complete Coal Mining Laboratory

THE most elaborate coal-mining laboratory in America is just being completed for the Carnegie Institute of Technology, of Pittsburgh. The equipment comprises a full-sized coal mine, except that it yields no coal; a mine locomotive and a full set of coal- and metal-mine machinery that have been furnished by manufacturers. The laboratory is located beneath the building of the division of science and engineering of the institute.

In connection with the mining laboratories there will be a well-equipped ore-dressing and coal-washing plant.

It is proposed to extend the mine during the practice work of the students along such a plan that it can be utilized for carrying some of the steam and water pipes of the institute.

Huston Thompson, of Colorado, was appointed chairman of the Federal Trade Commission Dec. 1 for a term of one year. Mr. Thompson, who was vice-chairman during the last year, succeeds to the chairmanship under the rule of the commission which provides for rotation in the office of chairman among the several commissioners. Mr. Thompson was first appointed to the commission by President Wilson in December, 1918, to fill an unexpired term, and in December, 1919, was reappointed for a full term of seven years. He also has served as Assistant Attorney General of the United States, in charge of the Court of Claims branch of the Department of Justice.

Problems of Operating Men

Edited by James T. Beard

Mine Foreman Fails To Observe Standing Orders

The fatal mine explosion that occurred in No. 3 mine of the Union Collieries Co., at Renton, Pa., July 19, 1920, resulted from the mine foreman's failure to observe the standing orders of the company, forbidding any one to enter the mine after any interruption of the ventilation, until the mine had been examined and pronounced in a safe condition.

BEING one of the special commission appointed, by the chief of the Department of Mines of Pennsylvania, to investigate and report as to the probable cause of the explosion that occurred in the No. 3 mine of the Union Collieries Co., at Renton, July 19, 1920, I was naturally deeply interested in the letter of "Safety Inspector," *Coal Age*, Sept. 16, p. 593, entitled "Negligence or Ignorance, Which?" The letter discussed certain elements or conditions that the writer assumed were possible contributory causes of the disaster.

While I felt, in reading this letter, that the premises taken were in some respects incorrect and tended to do an injustice to the company who operated the mine, I refrained from writing on the subject at the time, preferring to wait until after the holding of the coroner's inquest, which would throw much light on the matter and, it was hoped, would establish the responsibility for this terrible calamity. I am inclined to think that if all the details of that occurrence had been known to the writer of the letter to which I referred, the knowledge would have changed his views and altered his conclusion.

In the first place, the established rule and practice at this colliery was to operate the mine in three shifts. The regular mine foreman and his several assistants entered and took charge of the mine, each day at 7 a.m., and quit on the arrival of the second shift at 3 p.m. Again, another foreman and his assistants were in charge from 3 p.m. until the third shift arrived at 11 p.m. This was the nightshift and they remained in the mine until the arrival of the dayshift at 7 a.m. the following morning.

Each day the mine was regularly examined by the firebosses, who entered and started their work at 3 a.m., four hours before the entrance of the dayshift. The officials in charge of each shift were thus given full opportunity to confer with the officials of the next shift regarding the conditions existing in the mine. These arangements would indicate that the management had made ample provision for the safety of their employees, in respect to the examination of the mine.

The statement made in the letter mentioned, which reads: "There was but a single fan installed when a more up-to-date equipment of a gaseous mine would suggest duplicate fans," is incorrect. To my personal knowledge there were two fans installed at this plant each operated by a separate motor, which leaves no question but that the mine was provided with ample means of ventilation; and there had been no trouble arising from this source prior to this explosion. The records made from time to time in the books kept by the mine foreman and firebosses fully demonstrate this fact.

VIEW OF FAN HOUSE AFTER THE EXPLOSION

Regarding the equipment of the mine and other arrangements, it can be stated that the electric current was carried down the mine shaft through insulated cables of 500,000 circ.mils. These cables were conducted immediately into a switch-house at the bottom of the shaft. Here cutout switches were installed to enable the shutting off of the current from each of the several haulage roads, and a similar switch controlled the current in each pair of butt or face entries. Electric wires were not extended beyond the last crosscut.

The mining machines in use in this mine were of the latest and most approved type. Brick stoppings and over-casts were kept in good condition, the stoppings being built as the entries were extended. Indeed, the air current was conducted about the mine in a way that met with the hearty approval of the district mine inspector. I can vouch for the fact that most of the officials of this mine were capable and reliable men.

At the appointed time, I made it my business to be at Renton and attended the coroner's inquest held there. I noticed that the management of the mine made no attempt to hide the fact that the fan had been stopped for 21 hr. The mine officials informed our committee that the company furnishing power to the mine had requested them to have the line cleared on Saturday noon, July 17, owing to the need of making important repairs at the power station. The officials stated that on receipt of this notice, arrangements were promptly made to suspend all operations at the mine by noon Saturday. From that time nothing was done till the night foreman reached the mine at 7 p.m., Sunday, July 18, ready to make his inspection of the mine four hours before the time for the regular nightshift to enter. Owing, however, to a combination of circumstances, power to operate the fan was not available until about 2 a.m., Monday.

The management did not attempt to justify the action of the night foreman, who is said to have entered the mine about an hour and twenty minutes before the explosion occurred and who took with him the pumpers and other men who were to work in the mine. According to the statement of the management, this was a direct violation of the instructions given some time previous and which were in the nature of "standing orders." These orders were to the effect that if the ventilation of the mine was interrupted for any time, long or short, no one other than those whose duty it was to examine the workings, was to be permitted to enter the mine until the examination had been made and reported.

In the consideration of safety, allowance must always be made for the human equation and the proneness of men to take chances. Safety must always depend to some extent on these personal elements. There is always the possibility that the individual will fail at the supreme moment when all depends on his judgment and action to avert disaster. It is my firm belief that had this foreman been less anxious to get the work started the accident would not have occurred.

JOHN G. BART, Supt.
Republic Iron & Steel Co.
Russellton, Pa.

Where Does Responsibility Rest?

The exercise of practical common sense by a fireboss, it is argued, would prevent him from permitting the use of open lights beyond a place generating gas and worked with locked safety lamps. For what is a fireboss employed except to safeguard the mine against such practices?

AFTER asserting that under no conditions would he permit open lights to be used on the return air coming from places generating gas and worked with safety lamps, Robert A. Marshall, asks: "Did the foreman violate the mining law?" and adds, "I am compelled to admit in justice to him, that he could not be held for any violation of the law as it reads."

The reference here is to a section of the Bituminous Mine Law of Pennsylvania (Art. 10, Sec. 3), which after prohibiting the use of open lights on the return air coming from any portion of a mine worked with locked safety lamps, adds: "The provisions of this section shall not apply to any mine wherein explosive gas is generated only at the face of active entries."

ONE MUST USE COMMON SENSE

If, as Mr. Marshall has stated, the fireboss cannot be held responsible on the ground of violating the law, is it not true that he is yet responsible for failing to use his common sense? It would seem that any schoolboy would know better than to work open lights beyond a point where explosive gas has been found.

My answer is: If a fireboss finds gas in dangerous quantity, requiring the use of safety lamps at any point in his section, he cannot be excused for permitting the use of open lights on the return air in that section. It would be his duty to fence off the entire section and notify the mine foreman, who in turn should notify the superintendent; and it may be required for that official to notify the inspector.

Any man who is in charge of a mine or section of a mine, whether fireboss, assistant foreman, or mine foreman, is responsible for its safe condition, and he must use practical common sense that would teach him that gas and open lights do not go together. The only logical conclusion in this case is that if safety lamps were used at the faces of the two headings where gas was generated it was wholly unsafe to permit an open light to be used beyond that point.

Speaking of the rapid diffusion of the gas into the air current, I am glad to note that Mr. Marshall, admitting this fact, still holds that no one can tell at what moment an increased flow of gas will render the current explosive. The striking of a large feeder of gas may be expected at any time when driving headings generating gas, and ample provision should be made to safeguard the mine against such a possibility.

Before any fireboss makes up his mind that it is safe to allow the use of an open light on the return of a section generating gas, or beyond a point where safety lamps are required, he should ask himself a few questions such as the following: 1. What percentage of gas would be safe traveling in the return air where open lights are in use? 2. What is the least percentage of gas that the ordinary fireboss will detect in an air current on an entry? 3. What assurance has he that this percentage will not be increased at any moment, where the conditions are such as to require the use of safety lamps inby on that current?

WHAT IS EXPECTED OF FIREBOSSES?

Speaking of responsibility for safe conditions, permit me to ask our mine foremen what they expect of their firebosses and assistant foremen. Do they not expect each of them to use practical common sense in the discharge of their duties? Mr. Marshall states: "From a practical standpoint, however, I want to say that he [fireboss] took long chances." That word "chances" has laid many a poor man in his grave; and the *chance* taken may not have been his own, but that of some fireboss whose foreman has not held him responsible and expected him to use his common sense.

Perhaps Mr. Marshall is right in his idea that the reading of the law allowed the use of open lights on air returning from a place where safety lamps were used but no one will claim that in so doing a fireboss displays practical mining judgment. It may not be too severe to impose even the death penalty where the *willful* failure of a fireboss to exercise his practical common sense and judgment has resulted in the loss of innocent lives.

JOHN H. WILEY.
Oliphant Furnace, Pa.

Safety Devices vs. Moral Hazards

The improvement of safety devices, designed to prevent the occurrence of accidents regardless of the unreliable human factor is here regarded of relatively less importance than the discussion of moral hazards and their consequences.

MY ATTENTION has been attracted to a single statement that occurred beneath the photo of C. F. Tolman, president of the National Safety Council, in *Coal Age*, Oct. 14, p. 803. Following is the statement: "Why discuss moral hazards, until the mechanical devices have done their utmost to render accidents impossible?"

The question of accidents, their causes and prevention, has been discussed and analyzed so frequently that it is difficult to say or write anything that has not been already stated at one time or another. It is therefore a relief to have someone bring to our attention the fact that other avenues than those commonly discussed are open to investigators engaged in finding out ways and means of preventing mine accidents. The statement just quoted refers to improved mechanical devices designed to increase mine safety.

EACH MINE WORKER A SAFETY DEVICE

In a sense, a human being is a safety device, but one that is prone to frequent failure, because of the frailty or weakness of the ordinary individual. Moral hazards depend on the individual, and are proportioned to his capabilities and faithfulness, to say nothing of his personal equation that is a large factor in the success with which he is able to avoid or prevent accidents from occurring.

Most of us will agree that more responsibility has been placed on the individual operator, in this regard, than we have been willing to place on improved safety devices. It is true that no engineer or mechanic can put together machinery that will perform with the same completeness and in a manner equal to the functions of the human body; but the mechanical device acts independently of the human mind and is supposedly capable of greater certainty owing to that fact.

The average reader may not have given a thought to the quickness with which sensations are transmitted from any part of the human body to the brain and *vice versa*. The moment a pain is felt through contact of any part of the body with a hot iron or otherwise, the sensation is instantly communicated to the brain and, in response, a second impluse is communicated back to the muscle, which promptly breaks the contact to avoid further injury and pain.

TRAIN MEN TO WORK SAFELY

To my mind, the problem of the greatest importance in relation to safety is the perfecting of this human device and eliminating, as far as we may, the possibility of its failure. The question is, What can we do to train men to operate with greater certainty and thereby improve the safety device they themselves each represent? Unless we can do this we shall fail to eliminate the moral hazards that must always be a controlling factor or one of at least equal importance to the best designed mechanical safety devices. In other words, we must teach the worker to safeguard himself.

Not to be misunderstood, let me say I am an advocate of good roads, good ventilation and other means of increasing safety in mines by employing

the best methods and systems of working. The fact remains, however, that the mine where men are taught they must take no chances is the mine that has the best record for safety. All that has ever been written and the best rules and regulations for securing safety must fail in their object, unless we can bring workmen to realize that they must protect themselves. This will doubtless be difficult to accomplish. While we can lead a horse to water, we cannot compel him to drink, and the same is true of the individual.

Our Mine Officials Second to None

In this country, we have mine officials who are second to none in the world in respect to their intelligence and practical judgment. Yet, there is a tendency among us to play the part of the "good fellow." In our efforts to gain greater safety in mining, let us study what has been done along this line in other countries where mine accidents are less frequent than in our own mines.

None of us desire to place greater hardships on miners and mine workers; and yet safety will often compel us to draw the line more closely than has been our wont. No excuse should be accepted or any leniency exercised toward a worker who has willfully taken a chance and risked injuring himself and others. No violation of mining laws or mine rules and regulations must be tolerated if we are to reduce our accident rate to a minimum.

Plains, Pa. RICHARD BOWEN.

Open Lights and Gas

The frequent recurrence of disasters, with which we are far too familiar, should lead us to discourage the practice of chancing the use of open lights on the return current coming from a section where gas is generated to such an extent as to compel the use of safety lamps.

NO DOUBT many, like myself, have been surprised at the contention of some contributors to this discussion, that the use of open lights on the return current of a section or portion of a mine worked with safety lamps, could be regarded as safe practice on any assumed conditions.

A short time ago this quesiton was discussed in *Coal Age*, in reference to a certain section of the Bituminous Mine Law of Pennsylvania that seemingly allowed the practice. Recently, attention has again been drawn to the same question, by the inquiry of J. M. Nichols, *Coal Age*, Sept. 23, p. 642. Mr. Nichols cites an instance of the use of open lights on the return of a section where fifteen men were employed and gas was generating at the faces of the first three rooms in that section.

My opinion is that the use of open lights, on the return of any place generating gas in quantities requiring the use of safety lamps, should not be permitted. It appears to me that such a practice is not in harmony with most of our state mining laws, or in keeping with our practical experience and knowledge.

In Indiana, the law requires that the workings of a mine shall be kept "free from standing gas of whatsoever kind to such an extent that the entire mine shall be in a fit state, at all times, for men to work therein." Although this may frequently be almost impracticable, yet the law should prevail.

It is possible that the three rooms mentioned by Mr. Nichols may have had a foot or more of gas at each face, and yet the fireboss was unable to detect any gas between the roomnecks and the last breakthroughs. Such a condition would lead some to say that the balance of the section could be safely worked with open lights. However, this is a straight question and admits of but one answer. The entire section should be marked "Keep Out," and no one should be permitted to enter, until the gas has been removed and the entire section examined and reported safe for work.

Some time ago I remember firebossing in a very gassy mine where the men had struck against the use of safety lamps and the mine was being worked with open lights. I firmly believe that as time rolled on they had cause to regret their action. It is not my wish to exonerate the management of the mine in granting the demands of the men, since the mine was equipped with electricity and even the fan and the hoisting engine were operated by that means, which should have called for the exercise of greater caution on the part of the management.

It happened that, owing to the loss of power, the men were withdrawn from the mine one Saturday afternoon and two men went into the mine with electric lamps for the purpose of bringing out the mules. An explosion followed that blew out most of the stoppings and all the doors on one side of the mine. Though the men escaped death, one of them was badly injured by being run down by a car blown by the blast of the explosion.

In an adjoining mine, I had another week-end's experience in an explosion that occurred at night when but seven men were down in the mine. There were in this mine many acres of old works that were full of gas. These had been sealed off and it was the practice to allow the gas to bleed off at night, by opening holes in the stoppings.

In some way, the gas was ignited and an explosion followed killing a motorman and severely burning the nightboss. Some forty stoppings and three overcasts were blown out and much other damage done in the mine. It may be that storage-battery locomotives would have avoided this explosion; but these incidents show some of the dangers in mining practice.

Linton, Ind. W. H. LUXTON.

Inquiries Of General Interest

Detecting Carbon Monoxide Gas

A percentage of carbon monoxide dangerous to life cannot be detected on the flame of a safety lamp.

PLEASE say if carbon monoxide gas can be detected in mines by observing its effect on the flame of a safety lamp. I have seen a statement that this gas causes a lengthening of the lamp flame. The question was argued at considerable length at a meeting I once attended when a large number of firebosses and mine foremen, were present, and there was such a diversity of opinion expressed that I decided to submit the question to *Coal Age* and ask if a percentage of gas that is dangerous to life would produce any visible effect on the flame of a lamp. At the meeting, a few firebosses stated that they had observed the lengthening of the flame when they were confident that no marsh gas was being generated and thought the effect was produced by a trace of carbon monoxide too small to affect the life or health of workers.

———, Ill. FIREBOSS.

Carbon monoxide is an extremely poisonous gas, one-tenth of 1 per cent often proving fatal when breathed a sufficient time. This percentage of gas however, is too small to produce any visible effect on a lamp flame.

When the flame of a lamp is observed to reach upward in a slim taper blaze, the probable cause is a deficiency of oxygen in the air, which causes the flame to lengthen in an effort to secure the necessary oxygen to complete the combustion of the carbon.

Carbon monoxide must be detected by observing its effect on caged birds or mice, as illustrated in the accompanying figure. These small animals are prostrated with the gas in far less time than a similar effect is produced on a healthy person.

Examination Questions Answered

Anthracite Foremen's Examination, Ninth District, May 4, 1920

(Selected Questions)

QUESTION—*What distance is required between main doors to comply with the Anthracite Mine Law? Tell how main doors shall be built and placed.*

ANSWER—Article 10 of the anthracite law treating on ventilation does not specify any distance apart of main doors. The law requires all doors to close automatically (Sec. 9). An attendant must be constantly on duty to open and close each door (Sec. 10). Main doors must be so placed that one door shall always be closed while the other is open in order to prevent the short-circuiting of the air (Sec. 11). An extra main door must be provided and kept standing open, ready to be closed at once in case the door in use is broken (Sec. 12). Each door must be hung in a solid frame fastened securely in stone, brick or mortar, unless otherwise permitted, in writing, by the inspector (Sec. 13).

QUESTION—*(a) What are the four electrical units? (b) What three things should be proportionate for the safe transmission of electrical energy?*

ANSWER—(a) The four common electrical units are the volt or unit of pressure; the ampere or unit of quantity; the watt or unit of power; and the ohm or unit of resistance.

(b) In the transmission of electrical energy the voltage and amperage of the current are proportioned to the resistance of the conductor or the line resistance in order to effect the greatest economy and safety.

QUESTION — *How would you proceed if you discovered a workman in contact with a charged electric trolley wire in a mine? Describe in detail, assuming that the workman is unconscious.*

ANSWER — If a switch is close at hand, shut off the current. Or, standing on a dry board or dry clothing or paper, cut the wire with one sharp blow of an ax, between the victim and the power house. In any event permit no delay, but drag or push the man off from the wire, standing on a dry board and using a dry garment or dry wooden rail for the purpose.

When the man is free from the wire proceed at once to apply artificial respiration, turning him over on his stomach, with face to one side to permit free breathing, and head resting on one arm. See that the mouth is clear and the tongue pulled forward so as not to obstruct the throat. Then, kneeling astraddle of the man's thigh and placing the outspread hands across the small of the back and the lower ribs, proceed to alternately compress and expand the lungs by the forward and backward motion of the body, at the rate of regular breathing, say sixteen times a minute. This must be continued until the person shows signs of life or until a physician, previously summoned, has arrived. Efforts to revive the person should not be discontinued for two hours or more or until the person is pronounced dead.

QUESTION—*What precautions would you take, as foreman of a mine, to prevent and reduce accidents from falls of roof?*

ANSWER—The means of avoiding accidents from falls of roof can be classified under four heads, as follows: 1. The adoption of a systematic method of timbering that is suited to the conditions in the mine. 2. Making and enforcing rules and regulations designed to increase safety in the mine. 3. Maintaining a thorough inspection of the mine by competent and trustworthy officials, at frequent regular intervals while the men are at work. 4. Maintaining discipline by suitably punishing all violations of the mining laws or the rules and regulations of the mine. Attention to these four requirements will go far toward preventing and reducing the number of accidents in the mine.

QUESTION — *(a) If a safety lamp shows a cap of 1¼ in. what percentage of gas is in the air current? (b) If you discovered this condition existing in your section in the morning, while making your round as an assistant foreman, describe in detail the action that you would take.*

ANSWER—The percentage of gas corresponding to a 1¼ in. cap is

$$\sqrt[3]{36 \times 1.25} = \sqrt[3]{45} = \text{say } 3\tfrac{1}{2} \text{ in.}$$

(b) Three-and-one-half per cent of gas present in the air would indicate a dangerous condition existing in that section of the mine. The duty of an assistant foreman, on discovering such a condition, would be to promptly withdraw the men working in that section, notifying them to extinguish all open lights at once. A fireboss should then be stationed at each entrance to the section to prevent any one from entering the same until the danger has been removed and the foreman notified.

Having withdrawn the men safely from that section, it may be possible to increase the circulation of air therein without interfering with the regular work in other portions of the mine. When that is not the case, however, all the men should be withdrawn from the mine and means taken to improve the gaseous condition in the affected section. The increase of gas may be only temporary owing to striking a fresh blower; but if permanent it will be necessary to arrange for an increased air volume in that section to dilute and sweep away the gas.

QUESTION—*As foreman in a very gaseous mine where electric cap lamps are used as a means of illumination, what precautions would you take to insure the safety of the workmen under your charge? What additional precautions would you take to prevent accidents from gas, other than complying with the requirements of the mining law?*

ANSWER—In a mine generating gas in considerable quantity and where the miners use electric cap lamps they should be supplied also with safety lamps. In such a mine safety inspectors should be employed in addition to the assistant foremen. All miners should be instructed to watch their safety lamps to detect any unusual gaseous condition of the mine air. The safety inspector should make frequent and careful examination of every portion of the mine to insure that the ventilation is adequate and the ventilating current properly conducted and made to sweep the working faces clear of gas. The miners' cap lamps should be properly protected with strong wire netting or otherwise safeguarded against the bulbs of the lamps being broken.

In addition to these precautions competent shotfirers should be employed to examine charge and fire all holes drilled by the miners, and this must be done after the men have left the mine. The shotfirers must examine each place before firing a shot therein and refuse to fire any shots that in their judgment are unsafe. Only permissible powders must be used, and all shots be fired by electric battery.

QUESTION—*(a) What is the nature of permissible explosives? (b) How do they differ from black blasting powder?*

ANSWER — (a) For the most part permissible explosives contain ammonium nitrate or other nitrated compounds, or salts having a high percentage of water of crystalization. The aim is to reduce the flame temperature and render the explosion of the powder as nearly flameless as possible, through the agency of the nitrated salts and water of crystalization. Permissible powders are exploded by percussion, and a far less weight of the explosive is required to produce the same effect in blasting.

(b) Permissible explosives differ from black powder in the fact that they produce less flame and this has a lower temperature than the flame produced by the explosion of black powder. While black powder is readily ignited by a spark or flame and its action is deflagrating, permissible explosives must be detonated by the use of a percussive cap, and a less weight of the explosive is required for the same work.

Movement of Coal by Fourteen Railroads, July and First Seven Months of 1920

(Compiled by U. S. Bureau of Foreign and Domestic Commerce)

SHIPMENTS DURING JULY

Classes and Railroads For Revenue Only	Originating on Line 1919 Short Tons	Originating on Line 1920 Short Tons	Received from Connections 1919 Short Tons	Received from Connections 1920 Short Tons	Total 1919 Short Tons	Total 1920 Short Tons
Bituminous						
Baltimore & Ohio	2,992,204	3,481,938	1,400,630	1,146,911	4,392,834	4,628,849
Buffalo, Rochester & Pittsb'gh	531,601	895,181	15,375	23,248	546,976	918,429
Buffalo & Susquehanna	120,808	174,779	..	..	120,808	174,779
Chesapeake & Ohio	2,453,693	2,215,323	209,235	249,314	2,662,928	2,464,637
Huntingdon & Broad Top Mtn.	88,183	24,088	521	49,801	88,704	73,889
N.Y. Central (Buffalo and east)	669,381	834,358	..	..	669,381	834,358
Norfolk & Western	1,979,980	1,912,662	219,872	306,425	2,199,852	2,219,087
Pittsburgh & Lake Erie	554,279	409,252	679,746	576,785	1,234,025	986,037
Pittsburg & Shawmut	169,930	263,300	..	..	169,930	263,300
Pittsburg, Shawmut & North'n	45,116	65,077	34,598	31,223	79,714	96,300
Virginian	410,105	633,752	55,459	68,317	465,564	702,069
Western Maryland	386,233	530,064	574,526	366,188	960,759	896,252
Totals	10,401,513	11,439,774	3,189,962	2,818,212	13,591,475	14,257,986
For Company Fuel						
Bituminous						
Baltimore & Ohio	479,782	426,961	26,801	4,912	506,583	431,873
Buffalo, Rochester & Pittsb'gh	54,020	70,111	..	..	54,020	70,111
Buffalo & Susquehanna	7,344	7,018	..	..	7,344	7,018
Chesapeake & Ohio	168,344	203,596	..	..	168,344	203,596
Huntingdon & Broad Top Mtn.	..	1,744	1,463	..	1,463	1,744
N.Y. Central (Buffalo and east)	131,745	77,511	..	..	131,745	77,511
Norfolk & Western	152,657	154,083	49,048	48,380	201,705	202,463
Pittsburgh & Lake Erie	21,447	18,655	19,612	25,043	41,059	43,698
Pittsburg & Shawmut	1,061	3,394	..	..	1,061	3,394
Pittsburg, Shawmut & North'n	3,101	5,264	..	..	3,101	5,264
Virginian	19,398	35,325	52	50	19,450	35,375
Western Maryland	34,532	52,247	349	546	34,881	52,793
Totals	1,073,431	1,055,909	97,325	78,931	1,170,756	1,134,840
Coke for Revenue and Fuel						
Baltimore & Ohio	112,263	167,211	59,948	80,773	172,211	247,984
Buffalo, Rochester & Pittsb'gh	5,812	16,976	24,067	35,722	29,879	52,698
Buffalo & Susquehanna	37,103	28,952	..	23	37,103	28,975
Chesapeake & Ohio	49,910	44,073	4,385	6,143	54,295	50,216
Huntingdon & Broad Top Mtn.	5,258	2,505	1,061	5,157	6,319	7,626
Norfolk & Western	50,132	110,387	2,984	21,202	53,116	131,589
Pittsburgh & Lake Erie	26,068	35,739	380,436	298,938	406,504	334,677
Virginian	..	..	40	..	40	..
Western Maryland	2,891	3,579	22,951	39,377	25,842	42,956
Totals	289,437	409,422	495,872	487,335	785,309	896,757

SHIPMENTS FOR SEVEN MONTHS ENDING JULY

For Revenue Only						
Bituminous						
Baltimore & Ohio	17,248,735	21,566,378	6,014,287	7,115,280	23,263,022	28,681,658
Buffalo, Rochester & Pittsb'gh	3,178,588	5,101,726	218,954	110,442	3,397,542	5,212,168
Buffalo & Susquehanna	662,699	1,073,388	957	..	663,656	1,073,388
Chesapeake & Ohio	12,674,465	14,019,051	1,273,210	1,510,170	13,947,675	15,529,221
Erie	149,675	269,075	3,180,345	5,360,071	3,330,020	5,629,146
Huntingdon & Broad Top Mtn.	433,846	457,576	6,568	136,088	440,414	593,664
N.Y. Central (Buffalo and east)	3,638,490	5,201,726	..	..	3,638,490	5,201,726
Norfolk & Western	11,114,391	11,401,225	1,398,805	1,800,980	12,513,196	13,202,205
Pennsylvania[b]	5,996,448	6,138,239	1,436,168	1,378,082	7,432,616	7,516,321
Pittsburgh & Lake Erie	3,280,923	2,629,718	3,678,244	3,246,474	6,959,167	5,876,192
Pittsburg & Shawmut	1,073,631	1,592,538	..	..	1,073,631	1,592,538
Pittsburg, Shawmut & North'n	237,972	449,879	165,260	189,523	403,232	639,402
Virginian	2,368,451	3,506,542	331,425	379,481	2,699,876	3,886,023
Western Maryland	2,079,617	2,970,271	3,734,594	3,617,849	5,814,211	6,588,120
Totals	64,137,931	76,377,332	21,438,817	24,844,440	85,576,748	101,221,772
For Company Fuel						
Bituminous						
Baltimore & Ohio	3,153,851	2,796,599	240,215	135,584	3,394,066	2,932,183
Buffalo, Rochester & Pittsb'gh	348,975	465,992	773	244	349,748	166,236
Buffalo & Susquehanna	41,806	62,806	..	..	41,806	62,806
Chesapeake & Ohio	1,060,114	1,380,318	..	..	1,060,114	1,380,318
Erie[a]	623,524	655,589	938,562	1,115,203	1,562,086	1,770,792
Huntingdon & Broad Top Mtn.	12,952	12,358	2,567	3,268	15,519	15,626
N.Y. Central (Buffalo and east)	974,214	848,974	..	..	974,214	848,974
Norfolk & Western	1,325,482	1,393,000	264,092	335,032	1,589,574	1,728,032
Pennsylvania[b]	1,796,501	1,620,808	74,080	181,760	1,870,581	1,802,568
Pittsburgh & Lake Erie	146,699	164,529	161,674	143,713	308,373	308,242
Pittsburg & Shawmut	18,447	25,528	..	..	18,447	25,528
Pittsburg, Shawmut & North'n	20,545	33,088	..	..	20,545	33,088
Virginian	167,146	264,392	1,693	4,482	168,839	268,874
Western Maryland	202,464	348,372	105,112	22,236	307,576	370,608
Totals	9,892,720	10,072,353	1,788,768	1,941,522	11,681,488	12,013,875
Coke for Revenue and Fuel.						
Baltimore & Ohio	645,375	1,068,185	371,072	564,816	1,016,447	1,633,001
Buffalo, Rochester & Pittsb'gh	126,712	123,276	159,603	235,940	286,315	359,216
Buffalo & Susquehanna	213,782	216,913	75	62	213,857	216,975
Chesapeake & Ohio	314,507	322,437	26,262	81,958	340,759	404,395
Erie[a]	53,406	103,438	128,565	236,819	181,971	340,257
Huntingdon & Broad Top Mtn.	50,458	38,129	2,567	3,268	53,025	41,397
Norfolk & Western	625,695	677,467	62,195	133,752	687,890	811,219
Pennsylvania[b]	1,265,973	1,183,676	312,270	208,775	1,578,243	1,482,451
Pittsburgh & Lake Erie	222,357	215,365	2,578,286	2,068,312	2,800,643	2,283,677
Virginian	..	..	165	..	165	..
Western Maryland	26,192	30,376	221,225	132,179	247,417	162,555
Totals	3,544,457	3,979,262	3,862,275	3,755,881	7,406,732	7,735,143

a Figures for six months, January-June. No report for July.
b Figures for two months, January-February.

Coal Mining Promises to Become Chief Industry of Formosa

Coal mining, according to the *Colliery Guardian*, promises to become the most important enterprise of the island of Formosa. Production has risen from less than 350,000 tons in 1914 to more than 1,000,000 tons in 1919, and it is estimated that by next year the mines will be close to a 2,000,000-ton basis.

In 1919 exports, principally to Hong Kong, the Philippine Islands, Shanghai and Singapore, accounted for approximately 480,000 tons; bunker sales were 100,000 tons; while Formosan consumption was estimated at 570,000 tons. The total coal deposits of Formosa are variously estimated at figures between 691,840,000 tons and 850,000,000 tons. Production could be greatly increased, and an output of as much as 5,000,000 tons per annum easy of attainment, were it not for defective harbor and transport facilities.

Reclamation of Belgian Mines Advances; Output Increasing

Since publication of the article "Reclaiming the Coal Mines of Lens," in *Coal Age*, Nov. 25, advices from the devastated region, according to the *Colliery Guardian*, state that No. 14 bis pit at Lens yielded 181 tons during September, and No. 22 pit at Courrières 11 tons. On the last day of October a small increase was noted at the former pit, and the output is now about 40 tons a day.

Cementation at Lens has been fully completed in 11 pits out of 130, which form the concession. Continuous pumping is to be undertaken at No. 10 and No. 10 bis pits, and the newly-erected pumping installations at No. 7 pit. The headgear of shaft No. 6 ter has been started at Marles. The aim is to double the 6-6 bis pit, and so make it an independent one for ventilation. The remodelling of No. 7 pit, and its use either as an upcast or winding shaft, are under consideration.

Washery Capacity 250 Tons Hour

The sinking of No. 2 pit ter is now fully completed. This pit is situated in an alluvial area near the La Clarence River and Béthune-Saint Pol Railway. Sinking was started at the end of 1917. The machinery consists of a battery of Buttner boilers (eight multitubular boilers) and a steam winding engine with an hourly capacity of 260 tons. Screening and washing plants are adapted to an output of 250 tons per hour.

Nearly 40,000 workers were employed in the collieries of Northern France during September, an increase of some 3,000 above June; 20,800 men are working on the surface and 19,000 underground. Deepening of the ventilation shaft (No. 2) at La Clarence is proceeding through the coal measures; the 1,000 m. level will be reached in about two years. The sinking of a shaft is under consideration at Ligny-lez-Aire Collieries.

M. M. Garland, Congressional Authority on Mining Affairs, Dies

MAHLON M. GARLAND, Representative-at-large from Pennsylvania, one of the union labor leaders of the House and chairman of the Committee on Mines and Mining, was found dead in his home at Washington from heart disease Nov. 19. Funeral services were conducted in Pittsburgh Nov. 22 in the presence of hundreds of friends and relatives and an official congressional delegation.

Mr. Garland, who was the House authority on mining affairs, was born in Pittsburgh, Pa., in 1856, and was mostly self-educated. He began work on a farm at the age of nine years and later learned the trade of puddling and heating. He joined the Amalgamated Association of Iron, Steel and Tin Workers, and in 1891 was elevated to the presidency of the association, which position he held for seven years. Mr. Garland had also been vice-president of the American Federation of Labor. Through lifelong association with mineral production Mr. Garland closely followed developments in the coal industry. He gave much attention to mining legislation and conducted a thorough investigation of the war-minerals situation. He was particularly interested in the relationships between capital and labor in the mining industry.

As a labor leader who also enjoyed the confidence of employers he was frequently called upon to advise labor and capital in industrial troubles. During the anthracite strike in 1902 Mr. Garland took an important part, and was selected by John Mitchell as labor's member of the arbitration commission, which, however, did not function, as an agreement was reached without referring the matter to an arbitration board.

He was appointed Collector of Customs of Pittsburgh by President McKinley in 1898 and served in that position under Presidents Roosevelt and Taft until 1915, when he resigned. Mr. Garland had also served as a member of the Select Council of the City of Pittsburgh for two terms, the Pittsburgh School Board for four years and the Borough Council of Edgewood, Pa., where he resided, for six years.

From 1915 until the time of his death Mr. Garland represented Pennsylvania in the House, where as chairman of the Committee on Mines and Mining he handled a variety of legislation having an important bearing on mining affairs. He also served as supreme dictator from 1914 to 1915 and from 1915 to 1919 as general dictator of the Loyal Order of Moose.

Coal-Mine Labor Prosperous

COMPARED with a year ago the number of employees in the bituminous coal mines, as reported by fifty-nine representative companies to the Bureau of Labor Statistics, was 5.7 per cent less in the first half month pay period of October, but the total amount of wages received by the smaller number of men was 33.6 per cent greater. In other words, the average income of all employees in these representative operations was at the rate of $181 per month in October, 1920, compared with $130 per month for the corresponding period of last year, an increase of more than 38 per cent. This is the best showing made in any of the thirteen manufacturing industries with which the Bureau of Labor Statistics compares these figures for bituminous coal.

In three industries other than coal mining, namely, the iron and steel, car building and car repairing, and the paper making industries, the increases in total payroll in October of this year compared with last year were greater than in bituminous coal, but in each of these others the increase in total payroll is mainly, if not entirely, due to a greater number of men and not to greater earnings per man. Compared with 33.6 per cent increase in payroll earnings indicated for the bituminous-coal industry, seven industries show a decrease, the greatest being 28 per cent in boots and shoes, 21 per cent in leather and in hosiery and underwear, and 13 per cent in cotton finishing and 12 per cent in automobiles.

When comparing October, 1920, with September, 1920, five of the fourteen industries show an increase in the amount of money paid to employees, bituminous coal being the leader, and nine show a decrease. Of these two recent months the largest decrease in payroll earnings occurred in cotton manufacturing, with 23 per cent, and cotton finishing, with 17.5 per cent. With respect to the number of men employed in October compared with September, the woolen industry alone records a measurable increase, bituminous coal showing practically no change and the automobile and men's clothing industries showing the largest decreases.

Amounts of Coal Moved by Railroads

IN A TABULATION of freight handled by Class 1 railroads, having annual operating revenues above $1,000,000, for the months of April, May and June, 1920, the Interstate Commerce Commission gives the following figures on coal and coke:

Anthracite coal—644,788 cars, amounting to 31,129,687 tons.

Bituminous coal—2,908,406 cars, amounting to 144,470,058 tons.

Coke—265,193 cars amounting to 9,432,251 tons.

By districts the coal handled was as follows:

Eastern—Anthracite coal, 614,638 cars of 30,052,775 tons; bituminous coal, 1,758,966 cars of 90,227,569 tons; coke, 189,412 cars of 6,933,980 tons.

Pocahontas—Anthracite coal, 922 cars of 44,944 tons; bituminous coal, 250,776 cars of 13,626,733 tons; coke, 14,725 cars of 512,091 tons.

Southern—Anthracite coal, 1,179 cars of 42,554 tons; bituminous, 350,801 cars of 16,678,585 tons; coke, 27,348 cars of 934,599 tons.

Western—Anthracite, 28,049 cars of 989,414 tons; bituminous, 547,863 cars of 23,937,171 tons; coke, 33,708 cars of 1,051,581 tons.

CARLOADS OF BITUMINOUS coal dumped by the Pennsylvania R.R. at Lake Erie ports and Atlantic tidewater piers between May 1 and Oct. 1 were as follows:

	Tidewater	Lake
May	11,200	3,912
June	13,312	6,823
July	14,397	11,361
August	20,099	21,750
September	20,899	25,180

THE JOINT COMMITTEE, representing operators, wholesalers and retailers, which is compiling figures which must be obtained from the three sources, is marking time awaiting the gathering by each group of the necessary basic information. The personnel of the committee is as follows: Operators, Colonel D. B. Wentz, J. A. Walsh and D. W. Buchanan; wholesalers, C. L. Couch, Borden Covel and Noah H. Swayne; retailers, John Lloyd, W. A. Smoot and Michael Burns.

AN AUCTION SALE of 5,000 acres of timber, coal and mineral lands near Cumberland and Georges Creek coal basin, Md., was held at Cumberland, Md., Nov. 20. The property consists of a part of the Hoyes Coal, Iron and Lime Discovery and General Duff Green's iron ore lands. The property is two miles from stations on the main line of the Baltimore & Ohio R.R. and the Western Maryland railroad.

Anthracite Shipments Cut by Strikes

SHIPMENTS of anthracite for the first seven months of the coal year 1920-21 (April 1 to Oct. 31), as reported to the Anthracite Bureau of Information at Philadelphia, have amounted to 39,720,654 gross tons, as compared with 41,771,313 gross tons for the same period last year. The decreased tonnage this year was, as shown in the following table, due almost entirely to the outlaw railroad switchmen's strike in April and to the "vacation" strike of the miners in September. The average shipments for the five normal months were 6,262,699 tons. The shipments in April fell below this figure by 1,448,486 tons, while the loss in September, due to the vacations, was 2,669,743 tons, so that the total shipments for the period are something more than 4,000,000 tons below what they would have been except for these two unauthorized interruptions to regular production. Shipments by initial carriers were as follows:

	April	May	June	July
P. & R. Ry.	1,055,190	1,298,295	1,165,339	1,251,791
L. V. R.R.	898,929	1,130,707	1,150,977	1,217,642
C. R.R. of N. J.	305,465	483,352	525,666	536,419
D. L. & W. R.R.	545,419	844,464	891,481	908,538
D. & H. Co.	833,254	845,033	901,325	893,358
Penna. R.R.	408,490	438,144	497,953	560,665
Erie R.R.	346,144	643,930	710,212	547,919
N. Y. O. & W. Ry.	160,306	173,913	176,604	177,427
L. & N. E. R.R.	261,014	298,040	300,400	295,341
Totals	4,814,211	6,155,878	6,319,957	6,389,100

	August	September	October	Totals, 7 mos.
P. & R. Ry.	1,401,849	537,176	1,317,070	8,026,710
L. V. R.R.	1,159,816	534,440	1,180,270	7,272,781
C. R.R. of N. J.	510,593	348,978	486,609	3,197,082
D. L. & W. R.R.	878,222	642,016	846,054	5,556,194
D. & H. Co.	917,579	736,160	893,058	6,019,767
Penna. R.R.	513,233	243,540	484,940	3,146,965
Erie R.R.	358,740	285,074	531,598	3,423,617
N. Y. O. & W. Ry.	177,151	149,260	190,958	1,205,619
L. & N. E. R.R.	290,470	116,310	310,344	1,871,919
Totals	6,207,653	3,592,954	6,240,901	39,720,654

Lieb Says Operators Observe Contracts; Blames I. C. C. for Car Shortage

MUCH less violent in his remarks on the attitude of the coal industry to the public utilities than Mr. Aylesworth at the annual meeting of the National Association of Railway and Utility Commissioners in Washington recently was J. W. Lieb, chairman of the National Committee on Gas and Electric Service, in his address before the American Gas Association in New York last week.

Mr. Lieb puts the entire blame for the utilities coal shortage on the Interstate Commerce Commission. He exonerates the coal shippers from the charge of non-fulfillment of contracts. Reviewing conditions since spring Mr. Lieb said:

"During the week ending Nov. 13 the National Association of Railroad and Public Utility Commissioners held its annual convention in Washington, bringing together representatives of the Public Service Commissions throughout the country. The National Committee on Gas and Electric Service felt that it was its duty to bring to the attention of this convention the extremely serious and dangerous condition of coal supply as applied to public utilities and a letter (*Coal Age*, Nov. 18, page 1059) was addressed to them. This letter was intended merely to call the convention's attention to the deplorable situation, but did not request or suggest any specific official action. When the matter was brought up, however, it created considerable discussion and Interstate Commerce Commissioners Clark and Aitchison, who were present, both took occasion to address the convention, taking a much less definite position than was to be expected from public officials who must realize what the public utilities of the United States are confronted with and how serious and disastrous would be the consequences to the public of a suspension of the important services which they render.

"It was represented by these commissioners that the public utilities were endeavoring to use the Interstate Commerce Commission to enforce their coal contracts, while the real situation is that there is no dispute whatever regarding coal contracts. The coal producers show their willingness to ship if they can get sufficient cars, either through distribution or by assignment. They do not dispute these contracts and no questions of that nature are involved, but the entire matter resolves itself into the fact that the Interstate Commerce Commission is merely being requested to invoke the provisions of Service Order No. 21, which was promulgated by it in order to furnish sufficient cars at the mines to ship public utilities coal which they had already bought to cover their requirements.

"Another statement made was that the public utilities, notwithstanding the fact that they had contracted for their coal, should now go out in the open market and buy 'spot' coal to make up for lack of deliveries, due largely to inadequate transportation facilities, and pay the prevailing excessive prices, regardless of the fact that they had already covered themselves for their requirements by proper contract. The only real obstacle confronting them in the way of getting these contracts filled to meet their requirements is lack of carrying capacity of the railroads over which the Interstate Commerce Commission has complete and absolute jurisdiction.

"On the following day a place on the program was given the secretary of the National Committee on Gas and Electric Service, and the situation as it existed was presented to the Commissioners by him and discussed by the convention, resulting in the introduction of a resolution calling upon the Interstate Commerce Commission to arrange to place sufficient cars at the mines to carry to public utilities coal supply necessary for their daily operations, and thereby prevent an impending calamity.

"The utilities now find themselves at the very gates of winter, generally speaking, with little or none of the storage or reserve fuel supplies usually accumulated, and in many cases with hardly enough fuel obtainable to carry on each day's operations.

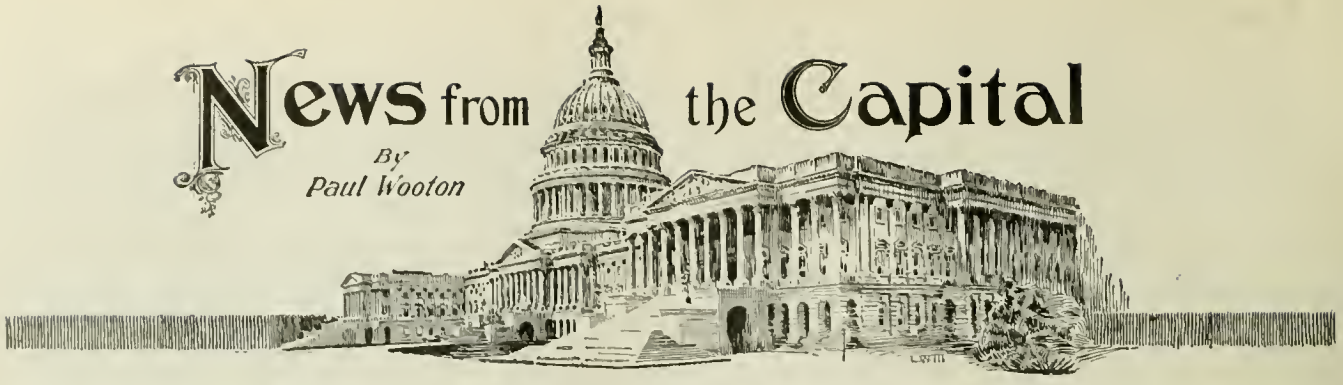
"It is probable that immediately upon the convening of Congress we shall receive requests for all the information which we can obtain as to the coal supply necessary for the operation of public utilities, the required reserves to be carried in storage, etc., as it seems inevitable that some legislation will be proposed looking forward to the elimination of some of the difficulties which have been experienced in the protection of the coal supply necessary to maintain the service of the public utilities."

Division on Prepayment Requirement Foreshadows Its Withdrawal

THE Interstate Commerce Commission has approved the tariff requiring prepayment of charges on shipments into Canada in so far as it applies to the charges for transportation within the United States. The charges or divisions which occur beyond the frontier may be collected at destination.

To comply with this opinion it will be necessary for the railroads to publish the division of the rate which applies to transportation within the United States. As this applies to such a large number of points of destination the difficulties of making this publication are such that it is believed that the railroads will do away with prepayment requirements of their own volition. This case has been pushed by the American Wholesale Coal Association. A conference is now being arranged by that organization with the representatives of the railroads, with the idea of discussing voluntary withdrawal of the prepayment requirements.

CO-OPERATION OF THE National Coal Association has resulted in the Government fuel yard at Washington, which supplies public buildings in the national capital with coal, obtaining fuel at reasonable prices, according to a report submitted to Director Cottrell of the Bureau of Mines by George S. Pope, chief engineer in charge of the yards. Mr. Pope points out that the yard failed to receive bids when it asked for 250,000 tons of bituminous coal this year, whereupon he took up the matter with the National Coal Association and through its support he has obtained coal at $4.25 per net ton at the mine. Mr. Pope also discusses the quality of coal in his report.



Fuel Freight Increases 22 to 90 Per Cent

IN a report on freight operating statistics of railroads the Interstate Commerce Commission gives reports of the cost per freight train-mile for fuel for August, 1920, compared with August, 1919, and from January to August, 1920, inclusive. The figures are as follows:

COST PER FREIGHT TRAIN-MILE FOR FUEL
First Eight Months of 1920

Region	Jan.	Feb.	Mch.	Apr.	May	June	July	August
New England...	$0.798	$0.956	$0.824	$0.899	$0.819	$0.901	$1.040	$1.067
Great Lakes....	.684	.718	.630	.634	.647	.662	.661	.702
Ohio-Ind.-Allegheny.....	.568	.576	.534	.585	.569	.605	.594	.693
Pocahontas.....	.606	.602	.587	.609	.638	.869	.779	.861
Southern.....	.451	.480	.430	455	.451	.449	.468	.29
Northwestern...	.636	.634	.560	.559	.527	.545	.523	.601
Central Western	.618	.554	.551	.561	.539	.555	.556	.593
Southwestern...	.583	.527	.526	.527	.614	.518	.506	.588
All regions.....	.598	.593	.551	.569	.563	.583	.584	.648

August, 1920, and 1919 Compared

	August, 1920	August, 1919	Increase — Amount	Increase — Per Cent
New Englaud.....	$1.067	$0 561	$0 506	90 2
Great Lakes.....	.702	.451	.251	55 7
Ohio-Ind.-Allegheny.....	.693	.404	.289	71.5
Pocahontas.....	.861	.502	.359	71.5
Southern.....	.529	.362	.167	46.1
Northwestern.....	.601	.483	.118	24.4
Central Wester.....	.593	.487	.106	21 8
Southwestern.....	.588	.434	.154	35.5
All regions.....	.648	.445	.203	45.6

Railroads Continue to Surpass Pre-War Records for Freight Movement

FOR the third successive month, Class 1 railroads of the United States moved more freight during September than was ever transported in a single month either during Government control or the pre-war period, according to data just compiled by the Bureau of Railway Economics.

The net ton-miles (the number of tons of freight multiplied by the number of miles they were carried) totaled for September 40,999,843,000. This was 1,706,992,000 net ton-miles less than the total for August, but was 564,335,000 greater than the net ton-miles for July, which, according to the Interstate Commerce Commission in a recent statement, was greater than for any month previously recorded. The total for September also exceeded that for the same month last year by 2,139,532,000.

Part of the difference between the net ton-miles for September and August resulted from a temporary lull in industrial activity due to the observance of Labor Day, together with the fact that there is one less day in September than in the previous month.

The goal set by the railway executives—to attain an average loading of thirty tons for each loaded freight car—was realized during September, when that mark was reached by the Class 1 railroads of the country.

The average freight car during September carried a greater load of freight than for any month in the last four years with the exception of July and August in 1918, when the average for each month was only $\frac{1}{10}$ ton greater. The September average also marks an increase of $\frac{1}{2}$ ton over that for August. For September, 1919, the average was $28\frac{9}{10}$ tons and for the same month in 1918, $29\frac{1}{10}$ tons.

During September the roads also continued to progress in their efforts to speed up the movement of freight cars. Statistics prepared by the Bureau of Railway Economics show that during the month an average daily movement per car of $28\frac{1}{10}$ miles was attained. This figure exceeded the average for any month during Federal control and was surpassed only during June and July, 1917. During last August the average was $27\frac{2}{5}$ miles, while for September in 1919 and 1918 it was $26\frac{1}{2}$ and $26\frac{3}{5}$ miles, respectively.

PROF. HORACE W. KING, engineer of the Geological Survey, who was appointed during the war to make power investigations in connection with the conservation of fuel, has resigned from the service.

IN LETTERS TO the Bureau of Mines, officials of the Department of Agriculture and the Bureau of Engraving and ing commend the service of the Government Fuel Yards, operated by the Bureau of Mines, in handling coal for these buildings. The Chief Clerk of the Agricultural Department writes that it has had satisfactory service from the bureau since it took over the distribution of coal to Government departments. The Director of the Engraving and Printing Bureau says the fuel yards are to be congratulated upon the successful manner in which coal has been handled. The bureau, he says, has never had better deliveries.

AN ARRANGEMENT HAS recently been made by the U. S. Bureau of Mines and the U. S. Geological Survey, whereby data needed by the Bureau of Mines in regard to coal-mining methods and operations will be collected by the Geological Survey on the same blank which it sends out for the collection of its annual statistics on coal production. This arrangement will be somewhat less convenient for the two bureaus, but their directors feel that, as so many demands for reports are made upon the operators, it is only fair that, even at some inconvenience to themselves, they should reduce these demands to the minimum.

THE AMERICAN FEDERATION OF LABOR announces that it contemplates a campaign of Americanization among the foreign working element, especially in the coal fields, to offset radicalism.

THE CHIEF OF THE transportation service of the army in his annual report, made public Monday, Nov. 29, says the army has under short-term charter and released from day to day, fourteen coal boats in the port of New York, used in connection with the fueling of the army transport fleet. These boats will not be necessary on the completion of the War Department-owned equipment now under construction for that class of service.

EFFORTS OF THE Department of Labor to settle the long pending strike in the Alabama coal fields are not producing immediate results, according to latest reports to the department. Some time ago a conciliator, W. C. Liller, was assigned to settle the differences between the miners and operators over the question of unionizing the mines, but Mr. Liller reports that although he has taken up the question and also has conferred with Governor Kirby and Senator Underwood at Birmingham prospects of bringing the parties together on a settlement basis are not favorable.

GEORGE W. HOLLARD, of the Geological Survey, has returned to Washington from a Western trip on which he collected valuable data for use in the administration of the coal sections of the Mineral Leasing Act.

Operators Expectant on Coal Legislation As Congressional Session Begins

TALK of radical legislation is discounted by J. D. A. Morrow, the vice-president of the National Coal Association. He feels quite certain that Congress will get the full facts before passing any law and, in his opinion, the legislators soon will find that the only trouble with coal during the last season was transportation. There must be more cars, more locomotives and greater efficiency in their handling, Mr. Morrow believes.

Due to the necessity of action on the appropriation bills, there is little chance of coal legislation at the short session. There is every indication, however, that coal will come in for active consideration in committees. As an extra session is to be called within a month after the adjournment of the short session, hearings could be completed during the short session and everything made ready for contemplated legislation at the beginning of the extra session.

Senator Calder is reputed to have in his inside pocket the draft of his bill providing for some type of Government intervention in the handling of coal in times of emergency. Mr. Calder, however, states that he has not yet made up his mind as to what legislation should be proposed.

There is a feeling among some that some regulation of organized labor must be devised to protect the public against curtailment of its coal supply. This is aimed not only at the employees within the mines but at labor employed in the train service at terminals and at the docks.

Senator Cummins, of Iowa, chairman of the Senate Interstate Commerce Committee, announces that if Congress provides for government regulation of coal production and prices he will propose an anti-strike provision to apply to coal mines so as to assure continuous output, similar to the proposed anti-strike legislation for railroads.

THE ANNUAL MEETING of the Smokeless Coal Operators' Association of West Virginia will be held at the Bellevue-Stratford Hotel, Philadelphia, Tuesday, Dec. 14, at 11 a.m. Reports of the retiring officers and the election of members of the Board of Governors and of the Membership Committee for the coming year constitute the program. Arrangements have been made for the usual luncheon, which will be served after the morning session. In order that the hotel may be advised of the number who will attend J. J. Tierney, president, asks that all who expect to attend notify him at 1503 North American Building, Philadelphia.

Production of Pennsylvania Anthracite Gains 8.8 Per Cent in Ten Years With 13 Per Cent Fewer Miners

CENSUS returns on the anthracite industry of Pennsylvania for the calendar year 1919 have just been released in a preliminary statement prepared by F. J. Katz. These statistics are the result of tabulations of the "general schedules" of the Bureau of Census as distinguished from the supplemental schedules, the returns from which were recently published by the Geological Survey.

The tabulations of the census cover such items as invested capital and certain details of costs not represented in the annual statistics of the Geological Survey. The summary shows a decrease in the number of breakers and also in the number of wage earners employed. The number of wage earners decreased from 169,174 to 147,069, or 13 per cent, during the decade 1909 to 1919, while the wages paid show an increase from $92,169,906 to $210,202,511. For operating cost a decided increase in shown. The quantity of coal produced shows but a slight increase over that for 1909, this increase being but 6,302,000 tons, or 8.8 per cent, while the value of the coal produced increased from $145,881,000 to $364,243,000.

The statistics for 1919 are presented in groups representing the three major divisions or trade regions of the anthracite producing fields, and they are also segregated in so far as possible by types of operations. The 1919 statistics for the three trade regions bring out only minor differences in conditions, except that dredging operations are centered in the Schuylkill region and are insignificant in the others.

The types of operations considered comprise: (1) Colliery operations, or production of freshly mined coal, with which there are necessarily included a large number of culm washery operations conducted by the colliery establishments and therefore not separately reported. However, the scale of washery operations and the size of figures pertaining to them are so small in comparison with colliery figures that the statistics for the latter are not significantly modified by the inclusion of the washery data; (2) culm-bank washery operations. The compilation given for these represents a small number, but, nevertheless, a typical group of such operations; (3) dredging operations. The statistics given for dredges include all returns on dredges.

PRELIMINARY STATEMENT OF PENNSYLVANIA ANTHRACITE OPERATIONS, 1919

	1919	1909	1919 — Trade Regions			1919 — Types of Operation		
	Totals	Totals	Wyoming Including Bernice Basin	Schuylkill	Lehigh	Collieries (Including Culm Washeries Not Separately Reported)	Culm-bank Washeries Independently Reported	Dredges
Number of reporting establishments	* 250	† (0)	98	128	24	151	18	81
Number of plants:								
Breakers	256	305	147	80	29	256	..	..
Mines	335	(2)	212	85	38	335	..	..
Culm washeries	79	52	43	25	11	61	18	..
Dredges	81	63	3	75	3	..	..	81
Number of persons employed:								
Salaried employees	6,972	4,302	3,984	2,251	737	6,869	56	47
Wage earners	147,069	169,174	84,858	43,785	18,426	146,339	366	364
Invested capital	$432,391,597	$246,713,318	$243,035,343	$131,218,644	$58,137,610	$429,268,788	$1,543,343	$1,579,466
Expenses (selected items):								
Salaries	13,024,557	4,572,489	7,109,762	4,334,663	1,580,132	12,828,671	134,375	61,511
Wages	210,202,511	92,169,906	120,105,650	63,560,062	26,536,799	209,390,984	424,971	386,556
Materials and supplies	60,098,707	23,472,809	35,469,133	17,074,726	7,554,848	59,656,391	253,796	188,520
Fuel	12,334,449	..	7 538,982	2,768 52	2,027,115	12.260 864	17, 81	56,404
Power purchased	1,868,915	3,189,279	617,308	605,597	64 ,010	1,800,066	58,788	10,061
Contract work	1,582,327	1,701,514	548,784	418,378	615,165	1,526,908	53,691	1,728
Rent and royalties	11,762,958	7,969,785	5,838,996	4,256,469	1,667,493	11,401,519	342,614	18,825
Taxes	14,066 012	3,356,809	9,849,191	1,875,8 5	2,341 016	14 056,216	7,305	2 491
Production:								
Total gross tons produced	78,566,868	72,215,273	43,902,008	23,334,135	11,330,725	77,369,758	591,945	605,165
Value of mines	$364,243,423	$145,880,526	$212,315,434	$100,958,590	$50,969,399	$361,397,515	$1,951,077	$894,831

* Number of individual reports furnished by 200 operators.
† Comparable figures not available.

Anthracite Investigated by Senate Committee

INVESTIGATION into the coal industry, and more especially into the so-called shortage of coal, by the Senate Reconstruction Committee, of which Senator William M. Calder is chairman, was resumed in New York City Saturday, Dec. 4. The entire day was given up the the examination of witnesses with regard to anthracite, the committee being assisted by Harry E. Lewis, District Attorney of Kings County.

W. H. Williams, vice president of the Hudson Coal Co., was the principal witness of the day, occupying the witness chair during part of both morning and afternoon sessions. Mr. Williams attributed the so-called shortage to a desire of everyone to get an entire fuel supply at one time and told the committee that New England dealers were trying to obtain more coal than they were entitled to. He said his company had given the New England States their pro-rata share of coal.

Replying to a question by Mr. Lewis if he would store coal in New York State, Mr. Williams said he would if the law would allow it. He said he could store coal in Pennsylvania, but that a railroad company cannot own the coal it mines when it crosses the state line.

The first witness of the day was Eugene C. Hultman, Fuel Administrator of Massachusetts, who told of the shortage existing in his state and gave to the committee the names of several wholesale dealers who he said had charged in excess of $9.50 at the mines for domestic sizes.

Other witnesses included J. W. Lieb, vice president of the New York Edison Co., and I. R. Schumaker, of the East Boston Coal Co. Mr. Schumaker told the committee that he had sold coal as low as $8.75 and as high as $15 f.o.b. mines and that his average price was $11.11 per ton.

Any subsequent hearings by the committee will be held in Washington.

Anthracite Producers Agree to Co-operate With Fair Practice Committee

ANTHRACITE operators and members of the Fair Practice Committee recently appointed for the anthracite industry, with whom the Department of Justice is co-operating, held a conference in Philadelphia, Nov. 29, 1920, at which time complete co-operation with the committee's work was tendered by the representatives of the producers. This was the second meeting within a week and it was presided over by Percy C. Madeira, chairman of the Fair Practice Committee. The U. S. Department of Justice was represented by Special Agent Campbell.

The committee about two weeks ago sent out a general letter to the trade, outlining its program and the general results it wished to obtain in the way of eliminating undue charges for coal at the mines, if any such charges existed, and arranging for equitable distribution of domestic anthracite with particular reference to Eastern communities where shortages were reported.

Through the co-operation of producers, results have been attained in both directions. The extreme peak of mine prices, which had been asked on a very small proportion of the total output, when compared with the reasonable prices charged for a large proportion of the production, has been substantially lowered. It is recognized that the largest possible output of domestic anthracite is desirable at this time, and that in order to attain the highest possible output mine prices must be allowed to some producers which will adequately cover their exceptional costs owing to thin veins, long and expensive haulage inside, extraordinary water conditions or other factors which increase the expense of mining. However, the aggregate tonnage from mines of this character is small in comparison with the great proportion of the output for which moderate stabilized prices are being asked.

Undue charges upon coal after it leaves the mine and before it gets to the retailers' yards are being held in check by the committee and the producers through a resolution adopted by the committee that there shall be but one wholesaler's profit between the producer and the retail dealer, and that where the producer does not sell direct to the dealer, the total of such profit shall in no case exceed 8 per cent of the mine price. This 8 per cent would apply no matter how many hands the coal passed through between the mine and the retailer's yard, but as a matter of fact the committee has acted to prevent the useless handling of coal by recommending that those anthracite producers who sell through wholesale houses stick to their established firms and not deal with "fly-by-night" jobbers, who, it is pointed out, have been responsible to a considerable degree for the high prices retailers have been asked to pay in some quarters.

Progress is being made in the distribution of domestic coal in cities reporting shortages, and in this the committee is helped by the fact that at this time of year a larger proportion of the output is customarily marketed in the East, owing to the ending of the Lake navigation season. The real cause for complaints of shortage, and incidentally one of the chief causes for such bidding up of prices as may have existed, lies in the fact that anthracite production for the first seven months of this coal year, beginning April 1, 1920, has been short more than 2,000,000 tons compared with the same period last year.

Part of the shortage is due to the outlaw strike of the railroad switchmen last April, which hampered transportation and resulted in anthracite shipments of a little more than 4,800,000 tons for that month, as compared with an average of about 6,300,000 tons for May, June and July, when normal transportation conditions prevailed. A further loss came in September, when the miners went on a "vacation" strike and cut the month's output to less than 3,600,000 tons compared with 6,207,653 tons in the preceding month, the losses being augmented by minor strikes, vacations and an unusually large number of voluntary holidays taken by miners. These losses—more than 2,000,000 tons if this year be compared with last and a little more than 4,000,000 tons if the average shipments of 6,262,699 tons for the five normal months of the current coal year be the basis of comparison—are more than sufficient to account for any anthracite shortages reported to date.

Indiana Fuel Board Endeavors to Solve Coal Problems Despite Injunction

BECAUSE of the delicacy of the situation no statement of the status of the Special Coal and Food Commission of Indiana in view of the temporary injunction issued by the Federal court restraining it from enforcement of its orders will be ventured by the commission, it was announced at its offices. The commission still has to go before the court and oppose the issuance of a permanent injunction, and meanwhile it will try to avoid arousing prejudice, it was said.

The commission will continue to act as a clearing house for communities which have not sufficient coal and for such coal operators as will co-operate with it, and will endeavor to get coal to the communities as before. The arrangement, however, will depend on the willingness of the operators to comply with the commission's requests.

The leading bituminous-coal operators of Indiana, according to A. M. Ogle, president of the Vandalia Coal Co., will do everything in their power to take care of any fuel shortage that many develop in Indiana, and as individuals will use their moral influence to hold prices within reasonable limits, in spite of the fact that the coal consumers of the state who may need relief would likely be those who ordinarily do not support the Indiana coal industry but buy their coal from outside the state.

IN A COMPLAINT to the Interstate Commerce Commission the Hazard Coal Operators' Exchange alleges that the Louisville & Nashville R.R. has failed to furnish transportation for recently developed coal fields in eastern Kentucky. The commission is requested to direct the railroad to provide additional transportation facilities in the way of tracks, engines and coal cars to afford adequate transportation facilities for this coal.

Pennsylvania Railroad Surpasses Coal Set in Elimination of Bad-Order Cars

REPORTS just compiled show that the Pennsylvania System has passed the bad-order freight-car goal set for the whole country by reducing the ratio of unserviceable freight cars to total freight cars on line from 11.9 per cent on Oct. 1, 1919, to 3.6 per cent as of Oct. 1, 1920. This betters the figure of 4 per cent which was set as an aim for the entire country by the Association of Railroad Executives in the recent national campaign for more efficient transportation.

On Feb. 28, 1920, the day on which Government control ended, bad-order freight cars on the Pennsylvania's lines numbered 23,444—8.4 per cent of the total freight cars owned and 8 per cent of the total number of freight cars on the lines. Since that time there has been a fairly steady reduction, with some weekly ups and downs, until information now available shows that the Pennsylvania System's unserviceable cars numbered on Oct. 1 only 4 per cent of the total cars owned and 3.6 per cent of the total number of freight cars on the line. The average daily number of bad-order freight cars on the system has been brought down from 25,531 during March, 1920, to 10,136 during September.

Although the 4 per cent bad-order goal set by the Association of Railway Executives has been reached and passed by the Pennsylvania, efforts in this direction will be continued, to effect still further reduction in the number and percentage of bad-order freight cars.

I. C. C. Suspends Modified Demurrage Charges and Rules Pending Hearing

PROPOSED changes in car demurrage charges and rules were suspended by the Interstate Commerce Commission in a notice designated Investigation and Suspension Docket No. 1,249, First Supplemental Order, issued Dec. 1, which reads as follows:

"It appearing that there have been filed with the Interstate Commerce Commission by the Newburgh & South Shore Railway Co. and the Illinois Terminal Railroad Co. tariffs containing schedules stating new individual rates and charges, and new individual regulations and practices affecting such rates and charges, to become effective, except as otherwise noted herein, on the 15th day of December, 1920, designated as follows: The Newburgh & South Shore Railway Co.: I. C. C. No. 46; Illinois Terminal Railroad Co.: I. C. C. No. 458, effective Jan. 1, 1921,

"It is ordered that the commission upon complaint, without formal pleading, enter upon a hearing concerning the lawfulness of the rates, charges, regulations and practices stated in the said schedules contained in said tariffs. viz.: The Newburgh & South Shore Railway Co.: I. C. C. No. 46, on pages 6, 7, 8 and 9 thereof, Rules 7, 8 and 9; Illinois Terminal Railroad Co.: on pages 6, 7, 8 and 9 thereof, Items 7, 8 and 9.

"It further appearing that said schedules make certain increases in rates for the interstate transportation of various commodities and the rights and interests of the public appearing to be injuriously affected thereby, and it being the opinion of the commission that the effective date of the said schedules contained in said tariffs should be postponed pending said hearing and decision thereon;

"It is further ordered that the operation of the said schedules contained in said tariffs be suspended, and that the use of the rates, charges, regulations and practices therein stated be deferred upon interstate traffic until the 14th day of April, 1921, unless otherwise ordered by the commission, and no change shall be made in such rates, charges, regulations and practices during the said period of suspension unless authorized by special permission of the commission.

"It is further ordered that the rates and charges thereby sought to be changed shall not be increased and the regulations and practices thereby sought to be altered shall not be changed by any subsequent tariff or schedule, until this investigation and suspension proceeding has been disposed of or until the period of suspension and any extension thereof has expired, unless authorized by special permission.

"And it is further ordered that a copy of this order be filed with said schedules in the office of the Interstate Commerce Commission, and that copies hereof be forthwith served upon the Newburgh & South Shore Railway Co. and the Illinois Terminal Railroad Co., and that said carriers be, and they are hereby, made respondents to this proceeding, and that they be duly notified of the time and place of the hearing above ordered."

Operating Costs for Second Quarter of 1920 Reviewed by Federal Trade Commission

AVERAGE sales realization and revised costs of 566 operators producing about 19 per cent of the total bituminous coal mined in the United States during the second quarter of 1920 are reviewed by the Federal Trade Commission in a recent bulletin. Since 1918 the probable increase in costs due to the wage advances has averaged 45c. per ton, or 30 per cent, for labor, and 52c. per ton, or 25 per cent, for total f.o.b. mine cost.

The average sales realization of 566 opperators in the second quarter of 1920 was $3.31 per ton and their revised f.o.b. mine cost was $2.66 per ton. Of this cost $2.04 per ton represented labor; 30c., supplies; and 32c. general expense (or overhead). The difference between the sales realization and the total f.o.b. mine cost is the "margin," which averaged 65c. per ton. This "margin" is not the same as profit. "In order to arrive at the amount available for income and excess profits taxes, dividends, or surplus there must be deducted certain items, such as selling expenses and interest on borrowed capital, and there must be added certain items, such as income from outside investments."

These average figures for companies in all parts of the country should not be considered applicable to any one region or district, because of marked variations in costs and in sales realizations. Labor cost in the Central Competitive "Interstate" Region (which produced 33 per cent of the total tonnage of the 566 operators) was 17c. per ton below the average labor cost ($2.04 per ton); and in the Southwestern "Interstate" Region (which produced 6 per cent of the total tonnage) was 76c. per ton above the average. Average sales realizations by regions ranged from $3.05 per ton in the Central Competitive "Interstate" Region to $3.74 per ton in the Southwestern "Interstate" Region.

By districts, within the six major regions, the report shows that 52 districts, producing 8,940,751 tons, had an average margin of 31c. per ton, or 34c. per ton *below* the average margin (65c.) of the 566 operators for the United States as a whole. In twenty-seven districts, producing 7,529,490 tons, the margins realized averaged $1.03 per ton, or 38c. per ton above the average for the United States. The remaining nine districts produced 6,502,493 tons at an average margin of 64c. per ton.

Comparing April, May and June the report shows that the average sales realization of the 566 identical operators for all regions combined increased from $3.18 per ton in April to $3.26 in May and to $3.45 for June. Costs only increased from $2.68 per ton in April to $2.69 in May, but dropped to $2.62 in June.

Gibbs L. Baker Testifies on Misuse of Shipping Permits

IN connection with charges of corruption of railroad officials and employees by shippers endeavoring to obtain cars and permits for the shipment of coal, Gibbs L. Baker, general counsel of the Wholesale Coal Association of New York, on Saturday, Dec. 4, stated before Commissioner Aitchison, who is conducting the inquiry, that he had been informed in conversation with William S. Coale, of Cumberland, Md., of Coale & Co., of New York, that a representative of the American Fuel & Shipping Co. in September had obtained from an official of the Baltimore & Ohio Railroad Co. a permit for a large shipment of coal, approximately 100,000 tons, and had paid the railroad official $4,000 in connection with the matter. The coal, he said, was con-

signed to ships waiting for loading, and fictitious names of vessels were furnished. Mr. Baker stated that the B. & O. conducted an investigation into the charge, but that he (Mr. Baker) did not know the name of the official reported to be implicated.

Mr. Baker gave further hearsay evidence regarding the use of permits by the Davis Coal Co., of Morgantown, W. Va.; Henley & Co., of Baltimore, and Bradford & Co., of New York. William M. Speare, assistant U. S. Attorney at New York, also was quoted regarding misuse of shipping permits.

Mr. Baker denied previous statements ascribed to him and quoted by P. J. Farrell, chief counsel of the Interstate Commerce Commission, stating only that he had information that certain irregularities had been practiced in granting permits for the shipment of coal and the distribution of cars. In conclusion Mr. Baker said: "It has not come to my attention either directly or indirectly, nor do I think that any official or employee of the Interstate Commerce Commission had anything to do with any irregularities."

Prepayment Requirement on Shipments to Canada Is Restored

THE Interstate Commerce Commission on Nov. 27 issued the following order, designated Investigation and Suspension Docket No. 1,213, regarding prepayment of freight charges to points in Canada:

"It appearing that by order dated Oct. 4, 1920, the commission entered upon a hearing concerning the lawfulness of the regulations and practices stated in certain schedules contained in F. A. Leland, Agent, Supplement No. 11 to tariff I. C. C. No. 1,334, and suspended the operation of said schedules until Feb. 2, 1920;

"It further appearing, that on Nov. 17, 1920, in Investigation and Suspension Dockets Nos. 1,191, 1,191-No. 2 and 1,196, the commission found that respondents had justified proposed tariff rules requiring payment of charges in U. S. currency and vacated its orders of suspension in those cases, and good cause appearing therefor;

"It is ordered that the said order of Oct. 4, 1920, in this proceeding, be, and it is hereby, vacated and set aside as of Nov. 29, 1920, and that this proceeding be discontinued."

Martial Law Declared in Mingo County

GOVERNOR JOHN J. CORNWELL declared martial law in Mingo County on Nov. 29, Colonel Herman Hall commanding the provisional battalion of Federal troops from Chillicothe having found it necessary to publish a proclamation forbidding public assemblies except such as might be held regularly in organized churches. Governor Cornwell declared that Mingo County was in a state of insurrection.

Judge R. Bailey, of the Mingo Circuit Court, in a statement declared that the reason for the disorder was the inadequate budget appropriation for Sheriff Blankenship—$10,000. No emergency fund being available, no extra deputy sheriffs could be employed.

The decision of Governor Cornwell was made none too soon, for several acts of violence occurred and on the Kentucky side continue to occur. On Nov. 30 at Baranshee, on the Kentucky side of the Tug River, where the troops were not available to enforce martial law, two deputy sheriffs were wounded, one seriously, when they attempted to make an arrest. In West Virginia also on Nov. 28 two soldiers stationed at Rose Siding were fired on. L. E. Armentrout, manager of Mine No. 12, Borderland, W. Va., reported that a motorman at his mine was fired on when he tried to remove an obstruction on the track between the mine and the tipple, the shooting coming from the Kentucky side.

Colonel Hall's troops have seized several hundred guns and pistols since martial law went into effect. No person other than the regularly-constituted authorities may carry or possess arms or munitions. Reports from Matewan are to the effect that three deputy sheriffs accompanied by a soldier made a house-to-house canvass between Matewan and Red Jacket and collected more than 600 rifles and several pistols.

Allen H. Willett Heads Economics Bureau Of National Coal Association

ALLEN H. WILLETT has been chosen by the National Coal Association to head its Bureau of Economics. For the last two years Mr. Willett has been engaged in an investigation of wages and hours of labor in twenty-nine of the leading industries of the country. This investigation was authorized by the War Labor Board and was carried out by the Bureau of Labor Statistics of the Department of Labor. The investigation covers the entire country.

Mr. Willett is a native of Southwick, Mass. He is a graduate of Brown University and did graduate work in economics at Columbia University. From the latter institution he has a degree of Ph.D. in economics.

In 1909 he was one of the technical advisers called in to assist in preparing the schedules of the 1910 census.

Coal Consumption of Locomotives Increases Ten Million Tons in Nine Months

COAL consumed by locomotives in road transportation service only on the majority of the large steam roads from January to September, 1920, inclusive, is reported by the Interstate Commerce Commission as 81,752,821 net tons, at an average cost, including freight charges, of $3.95, compared with 71,619,009 tons, at an average cost, including freight charges, of $3.21, for the same period of 1919. The same authority gives the quantity of coal so used in September as about 9,000,000 tons, at an average cost, including freight, of $4.54, compared with approximately 8,500,000 tons in September, 1919, at an average cost, including freight, of $3.10. These statistics are given by operating regions in the following tables:

NINE MONTHS ENDED SEPTEMBER

Region	Net Tons 1920	Net Tons 1919	Cost Per Net Ton 1920	Cost Per Net Ton 1919
New England	3,621,484	3,181,602	$7.72	$5.67
Great Lakes	14,171,997	11,748,283	4.20	3.35
Ohio-Indiana-Allegheny	19,662,888	17,185,702	3.62	2.76
Pocahontas	3,795,143	3,317,480	3.52	2.60
Southern	12,593,922	10,596,766	3.69	3.15
Northwestern	10,808,591	10,104,717	4.04	3.49
Central Western	12,870,479	11,285,472	3.38	2.97
Southwestern	4,228,317	4,198,987	4.08	3.47
All regions	81,752,821	71,619,009	3.95	3.21

MONTH OF SEPTEMBER

Region	Net Tons 1920	Net Tons 1919	Cost Per Net Ton 1920	Cost Per Net Ton 1919
New England	404,691	362,946	$8.84	$5.30
Great Lakes	1,596,524	1,377,831	5.23	3.27
Ohio-Indiana-Allegheny	2,196,915	2,089,531	4.24	2.75
Pocahontas	424,314	404,837	4.38	2.59
Southern	1,301,161	1,179,546	4.15	2.91
Northwestern	1,221,671	1,218,468	4.43	3.43
Central Western	1,457,731	1,408,570	3.57	2.85
Southwestern	441,301	473,618	4.39	3.32
All regions	9,044,308	8,515,347	4.54	3.10

Car Situation Shows Notable Improvement

A DECIDED change for the better in the car situation took place during November, according to reports just tabulated by the Car Service Division of the American Railway Association showing an increase in the number of cars available in excess of current requisitions and actual shortage confined to limited sections. The seasonal falling off in the number of cars loaded with revenue freight in November compared with October has been less than usual.

Reports received from Class 1 railroads throughout the United States show that the car supply for grain loading is generally satisfactory except at certain points in the Northwest. Practically all roads, however, have a sufficient supply of box cars for ordinary loading.

The action of the Interstate Commerce Commission in cancelling its priority orders on coal cars has made available a large amount of open-top equipment for distribution of commodities other than coal.

Foreign Markets and Export News

October Figures Show Growth of America's Overseas Coal Trade

EXPORTS of coal and coke in gross tons, as reported by the Department of Commerce for October, 1919, and the revised figures for October, 1920, are as follows:

	Oct., 1919	Oct., 1920
Bituminous, total	2,934,686	4,580,169
Exported to:		
France		852,190
Italy	423,939	119,106
Netherlands	174,430	221,514
Sweden	60,734	123,694
Switzerland	69,999	189,635
Canada	1,448,605	1,994,832
Panama	5,396	10,741
Mexico	8,757	20,557
British West Indies	27,019	17,109
Cuba	115,366	115,380
Other West Indies	10,138	12,954
Argentina	95,865	268,053
Brazil	71,957	98,240
Chile	1,035	44,998
Uruguay	8,915	33,187
Other countries	412,531	457,979
Coke	81,962	103,353
Anthracite	433,742	444,391

It is significant that of the increases over the same month of last year France took 852,000 gross tons, and the Netherlands, Sweden and Switzerland all record substantial gains. Large gains are recorded also in South America, Argentina, Chile and Uruguay being conspicuous examples of the greater use of our coal.

Coal Sought for Austrian Industries

It was reported in Vienna Nov. 10, according to special correspondence that will appear in *Engineering and Mining Journal* Dec. 11, that England was trying to persuade France to release coal from the Saar district for the use of German industries. This would enable Germany to deliver large quantities of coal to Austria from the fields of Upper Silesia. Arrangements with the Polish Government are being discussed, also, with the object of furnishing from Austria the machinery and operating supplies needed by the still inactive Polish mines that the latter may increase their yield. These are the only practical methods for relieving the coal situtation in Germany, so that the latter can deliver large supplies of coal to Austria.

So far Germany has faithfully fulfilled her part in the Spa agreement, and as a result of the German coal deliveries to the Entente in recent months her own industries have had to substitute large quantities of lignite for the missing coal. Of course the full amount of this loss cannot be made up. Dispatches at hand indicate that France enjoys a superfluity of coal supply, and the coal situation in Paris is particularly favorable. Thus it would be possible at any time for France to release coal to German industries from the steadily improving deliveries from the Saar district, thereby releasing larger suppplies of Upper Silesian coal to Austria.

France's domestic coal production also is increasing, amounting to 2,400,000 tons in September as against 2,370,000 in August, which is already at the annual rate of two-thirds of the average peace-time yield. Furthermore, conditions in the wrecked mines of northern France are steadily improving. The coal output of the Saar mines by the French amounted to 702,680 tons in August, to 860,108 tons in July, and to 811,314 tons in September, 1920 (the decrease was due to the railway strikes), and is steadily rising. In January the deliveries amounted to but 727,465 tons. The Saar district needs little coal for its own industries and disposes of nearly the whole yield by sale and export monthly, so that it is clear that the present coal situation in France permits that country to dispense with the greater portion of the Saar coal. In fact several hundred thousand zentner of coal are left at the depots of the Saar district at the close of each month, which shows that France is not in urgent need of Saar coal.

The prices of Saar coal for France, Luxemburg and Switzerland have been greatly reduced since Oct. 1, 1920, another fact testifying to the favorable condition of that district and its ability to support exportations. Prices are as follows:

Kind	Today	Former Prices
Washed, lump	124 to 105 f.	136 to 115 f.
Nut, No. 1	124 to 100	136 to 110
Nut, No. 2	118 to 93	130 to 110
Unwashed lump	116 to 93	128 to 108
Run of mine	85 and 75	83
Coke, broken	150	160

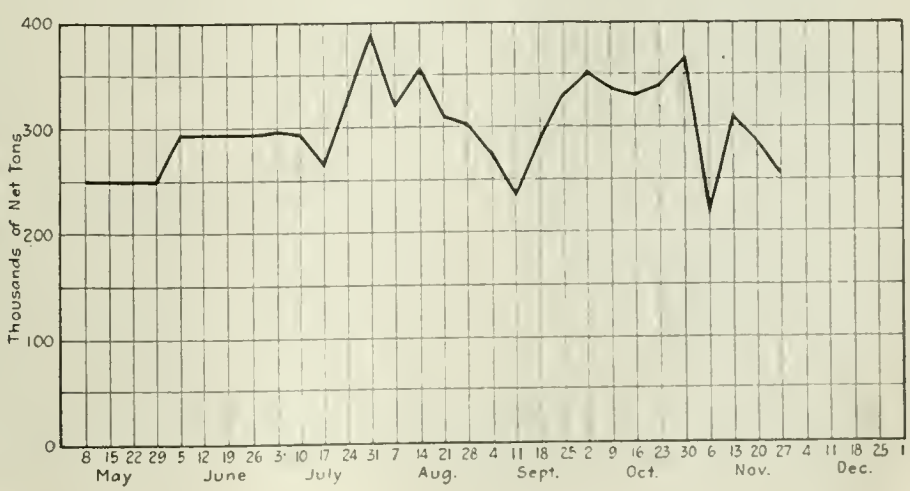
Concerning Poland, Austria could indeed aid in increasing the Polish coal yield by supplying machinery blasting supplies, whereby there also would result advantages to the Austrian supply of coal.

Export Dumpings by Ports

(NET TONS)

	Week Ended Nov. 28	Nov. 21
Philadelphia	62,000	75,000
Baltimore	69,000	159,000
Norfolk	257,000	286,000
Charleston	11,000	8,000
Total	399,000	528,000

Export Coal Dumped at Hampton Roads



Lehigh Valley Coal and Railroad Companies Ordered Dissolved by U. S. Supreme Court

THE U. S. Supreme Court on Dec. 6, 1920, ordered the dissolution of the intercorporate relations existing between the Lehigh Valley Railroad Co., the Lehigh Valley Coal Co., and the Lehigh Valley Sales Co. on the ground that the combination was in violation of the commodities clause of the Interstate Commerce Act and the Sherman Anti-Trust Act. The decision was a sweeping victory for the Government, although the bill was dismissed as affecting the New York & Middle Coal Field Railroad & Coal Co., the G. B. Markle Co., the Girard Trust Co. and the individual defendants. The court reversed the decision of the District Court for the Southern District of New York, which decided in favor of the Lehigh companies, and remanded the case with instructions to enter a degree in conformity with the opinion of the Court, which was rendered by Justice Clarke. Justices McReynolds and Brandeis did not participate in the decision, and while the Chief Justice and Justice Holmes did not dissent, the majority opinion did not represent their entire views in the matter.

Justice Clarke Reviews Company's History

The suit against the Lehigh Company was instituted by the Government in March, 1914. Justice Clarke in his opinion reviews the contentions of the Government and the history of the activities of the companies concerned.

"It is clear beyond controversy," says Justice Clarke, "that the coal company was organized and conducted as a mere agency or instrumentality of the railroad company for the purpose of avoiding the legal infirmity which it was thought might inhere in the owning of coal lands and in the conducting of coal-mining, shipping and selling operations by the railroad company, and that the policy of purchasing and leasing coal lands tributary to its lines for the purpose of controlling interstate trade and commerce in anthracite coal and of preventing and suppressing competition therein was deliberately entered upon by the railroad company, and in combination with its agency, the coal company, was consistently pursued, with increasing energy and scope after the passage of the anti-trust act until the commencement of this suit, unless these purposes and results, in point of law, were modified and cured by the organization in 1912 of the sales company and by the functions which it performed, which remain to be considered."

Reviewing the organization of the sales company the Court says: "It is too plain for discussion that with a company thus organized and officered the making of a contract by the coal company for the sale of all of its coal to the sales company was in substance and effect making a contract with itself, the terms of which it could determine in its discretion."

Contract Said to Violate Anti-Trust Act

The Court also declares that the contract between the coal and sales companies was the same as in the Lackawanna case, which the Court in that case had declared was void because it violated the anti-trust act and the commodities clause of the commerce act. "A corporation organized and circumstanced as is the sales company was neither an independent buyer nor a free agent," the opinion says. The Court contends that the purchase in form by the sales company did not so dissociate the railroad company from the transportation of coal in which it was interested as to meet the requirements of the law, and that the contract, nominally of purchase, was so calculated to restrain trade as to be obnoxious to the anti-trust act, and for this reason it is unlawful and void.

The Court also condemns the practice of the company in paying independent mines 65 per cent of the market price prevailing at Tidewater points, which it says it condemned in the Lackawanna case, on the ground that the defendants unlawfully combined by and through this 65-per cent contract for the purpose of controlling the sale at Tidewater of the independent output of anthracite coal.

"This history of almost twenty-five years casts an illuminating light upon the intent and purpose with which the combination here assailed was formed and continued," says the Court, after reviewing the activities of the companies. "It is clearly established that prior to the enactment of the anti-trust act the railroad company in combination with its coal company subsidiary deliberately entered upon a policy of making extensive purchases of anthracite land tributary to the railroad company's lines for the purpose of controlling the mining, transportation and sale of coal to be obtained therefrom and of preventing and suppressing competition, especially in the transportation and sale of such coal in interstate commerce, and that this policy was continued after the passage of the anti-trust act with increasing energy and tenacity of purpose, with the result that a practical monopoly was attained of the transportation and sale of anthracite coal derived from such lands. . . .

"Since we have also found that the contract between the coal company and the sales company was a mere device to evade the commodities clause of the Interstate Commerce Act and therefore void, it results that the decree of the District Court must be reversed and the case remanded with instructions to enter a decree, in conformity with this opinion, dissolving the combination effected through the intercorporate relations subsisting between the Lehigh Valley Railroad Co., the Lehigh Valley Coal Co., Coxe Bros. & Co., Inc., the Delaware, Susquehanna & Schuylkill Railroad Co. and the Lehigh Valley Sales Co. with such provisions for the disposition of all shares of stock, bonds or other evidences of indebtedness and of all property of any character of any one of said companies owned or in any manner controlled by any other of them as may be necessary to establish their entire independence of and from each other.

Revokes Contract of Coal and Sales Companies

"The contract of March 1, 1912, between the coal company and the sales company must be decreed to be void and all contract relations between the two companies enjoined which would serve in any manner to render the sales company not entirely free to extend its business of buying and selling coal where and from and to whom it chooses with entire freedom and independence, so that it may in effect as well as in form become an independent dealer in coal and free to act in competition, if it desires, with the defendant coal company or railroad company.

"As to the New York & Middle Coal Field Railroad & Coal Co., the G. B. Markle Co., the Girard Trust Co. and the individual defendants the bill must be dismissed."

Report of Calder Committee To Be Given To Senate This Week

DIFFERENCES of opinion on the part of members of Senator Calder's Committee on Reconstruction and Production prevented the issuance of a report on the opening day of Congress. Agreement has been reached on all sections of the report except that pertaining to coal. Senator Calder stated that on Monday a coal section would be written which he expects will meet the approval of other members of the committee. He expects to submit the report to the Senate later in the week. It is Senator Calder's intention to ask authority for the continuance of his committee, so that further hearings may be conducted.

Senator Frelinghuysen, chairman of the sub-committee of the Committee on Interstate Commerce, stated that he expects to continue his inquiry into certain phases of the coal situation, but his plans are not sufficiently mature to discuss until later.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

BUSINESS readjustment in the United States has proceeded at such a rapid pace, and the recent downward trend of prices has been so severe, the Mechanics & Metals National Bank of New York states, that there is no mistaking the distance which the country has proceeded along the path of after-war deflation. From prices early in the year, wheat before the close of November was down from $3.25 to $1.86, corn from $2.31¾ to 95c., coffee from 16½ to 6¾c., sugar from 23 to 8¾c., cotton from 43¾ to 16c. To a lesser extent meat and dairy products, metals and almost all wholesale commodities have participated in this decline. Security prices are severely shrunken.

Industrial and trade activity are far more curtailed than at any period since the early months of the war. With sellers of goods concerned over their inventories, with buyers holding aloof, with no confidence in the market, and with an increased rate of business mortality, factories that up to a short time ago made goods in abundant supply are closed, labor that as recently as three months ago was in demand is idle, and goods for which there was recently an unsatisfied and even urgent desire have piled up.

In contrast with the extreme optimism prevailing less than a year ago the severity of the present reaction has thrown a spirit of depression over the entire community. This has added to the momentum of the decline in prices and intensified the curtailment of business in a fashion that manifests afresh how strongly people are governed at times by their emotions rather than by their judgment. As a lack of buying helped to cause a fall in prices, the fall in prices has now caused a lack of buying.

Much of the labor absorbed by luxuries will now return to the manufacture of essentials. The efficiency of management will now increase; to overcome the handicaps of high costs of production and lower prices, improved methods of production will be introduced. The freight congestion problem, which for a time seemed insoluble, is solving itself.

Reductions in wages of 10 to 25 per cent have already been announced in many mills and factories manufacturing the goods that have most severely suffered in price. In some instances labor has taken these reductions without protest.

The determining factor in the entire credit situation, according to the *Commerce Monthly* of the National Bank of Commerce in New York, continues to be the reluctance of consumers to buy, partly because of their expectation that prices may go even lower and in part because of the curtailment of purchasing power of large sections of the buying public.

Rubber Companies Retrench

Directors of the Firestone Tire & Rubber Co., Akron, Ohio, notified common stockholders Nov. 30 that the dividend payable Dec. 30 would be at the rate of 6 per cent a year instead of 8 per cent. The directors also announced that all salaries would be reduced 10 per cent, effective at once. It was pointed out that salaries were increased 20 per cent within the last year to meet rising living costs. With living costs going down adjustment must be made in salaries, the directors said. No change was made in the wage scale now effective in the factory. The United States Rubber Company footwear division plant at Millville, Mass., posted notices Dec. 2 that it would shut down indefinitely Dec. 10, laying idle about 750 operators.

Canadian Pacific Gives Up Oil Fuel

On account of acute oil shortage the Canadian Pacific Railroad Co. is changing all its equipment, including steamships, to coal burners. It is estimated that the change will cost close to $60,000 for each steamer and $12,000 for each locomotive. The first coal-burning engine used by the road in the last five years left Vancouver, B. C., the night of Nov. 26, with a transcontinental train.

Thread Mills to Run 1 Day a Week

The four divisions of the American Thread Company in Holyoke, Mass., will go on a schedule of one day and two days a week beginning Monday, Dec. 6, it was announced Dec. 1. The company had announced Nov. 30 that beginning on Monday, Dec. 6, its mills at Willimantic, Conn., employing 2,700 operatives, would be operated only one day a week until further notice.

Rochester Shoe Factories to Reopen

Announcement was made Nov. 29 that within three weeks Rochester factories making women's shoes, now idle, would reopen at full capacity to fill orders for spring stock. The factories employ about 23,000 men and women, more than 20,000 of whom have been idle for two months.

Cedar Mill Cuts Wages 25 Per Cent

Announcement was made Nov. 29 by the Richmond Cedar Works of a reduction of 25 per cent. in the wages of the 800 men employed in its plant. The reduction is effective at once.

Ask Wage Raise; Cut Suggested

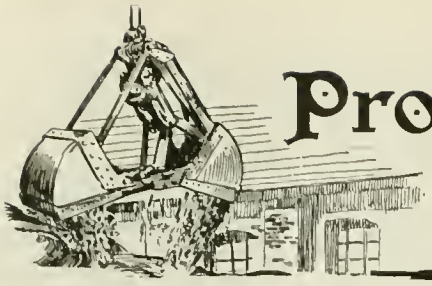
The Brockton Shoe Manufacturers' Association, responding Nov. 30 to a petition by dressers and packers for increases in wages, made a counter proposal for reductions of 10 to 30 per cent and asked that the matter be the subject of arbitration; 900 operatives are affected.

Cotton Mills Open and Close

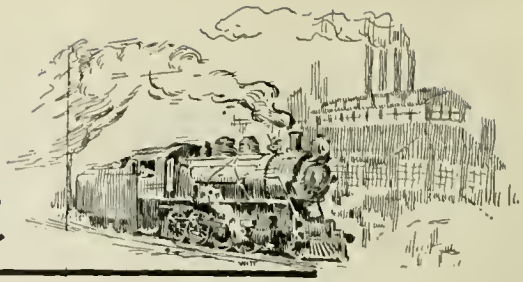
After standing idle for two weeks, cotton mills, including the Loray, the largest in Gastonia, N. C., and the Armstrong chain of fourteen factories, resumed operation Nov. 29 on greatly reduced schedules of working time. In Lowell, Mass., notices were posted Nov. 27 that cotton mills employing upward of 20,000 would run half time beginning Nov. 29.

Phonograph Plants Reduce Forces

The plant at Dubuque, Iowa, of the Brunswick-Balke-Collender Co., employing 500 men, closed Dec. 1 for an indefinite period. On the same date there was a layoff at the Edison factories in West Orange and Silver Lake, N. J., the idle now numbering 1,200.



Production and the Market



Weekly Review

SETTLING down to a game of waiting, the soft-coal trade, both sellers and buyers, are marking time until the situation crystallizes. About the only field in which car supply was not approximately adequate to meet the demands of the market was in West Virginia on the C. & O., although in eastern Ohio mines served by the B. & O. reported losses on this account. Spot-coal buying except at low figures has almost stopped and contracts are now being filled at a rapid rate.

Anthracite More Plentiful in the East

Prices are still moving down, with business for next year being quoted below present spot prices. The rush to cover is not so general or widespread as would appear from a consideration of current reports, because many important factors are holding back in the confident belief that the market will turn again before every demand is satisfied, but the fact that this movement to contract for next year has developed so early is strong evidence of a lack of confidence in the future. Exporters are digging deep for new business and shipping on contracts as heavily as foreign buyers will take coal.

Along the Atlantic seaboard the supply of bituminous and anthracite coal is better than a week ago, with outright cancellations and "hold-up" orders featuring the New England and New York situations. The Chicago market is well supplied with domestic sizes of bituminous coal, both local and from Eastern fields.

Railroad buying is negligible and contract receipts are being curtailed. In the Bellville district of Illinois the railroad mines are operating full time and some spot purchases for fuel have been made at approximately the old Government price of two years ago.

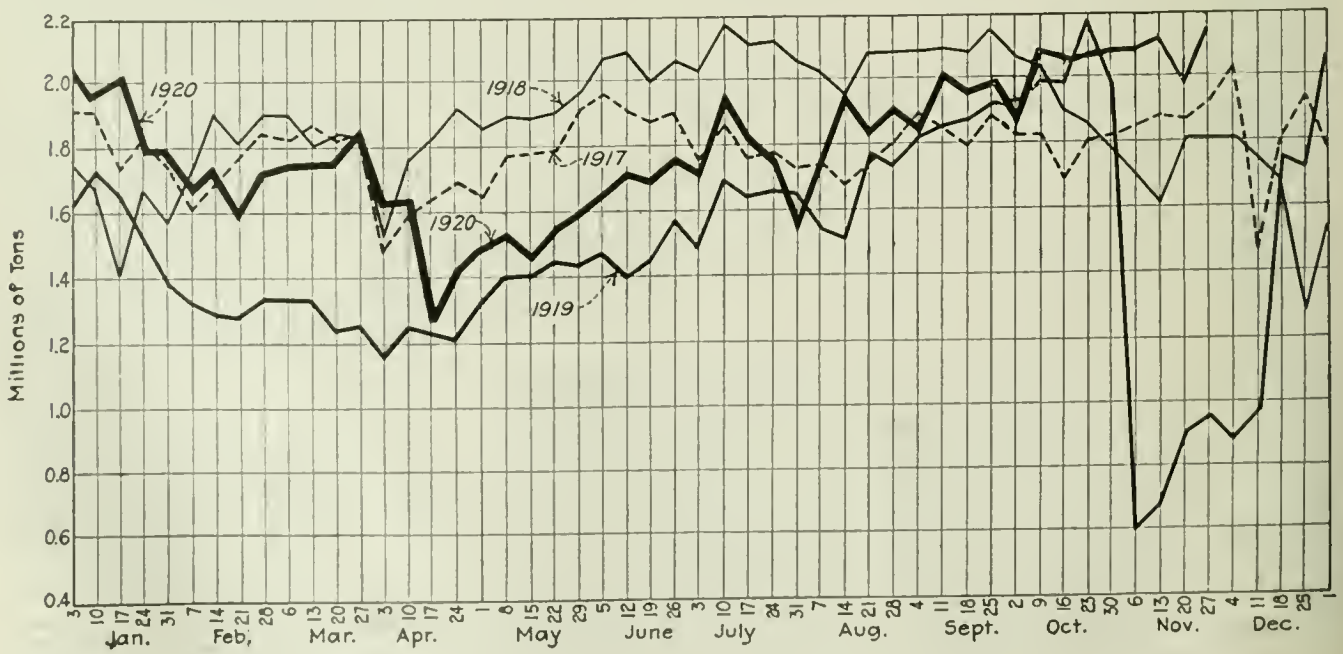
Action by Congress to bridle the coal industry is not seriously considered as a possibility because so far the active proponent of this doctrine, Senator Calder, has developed no angle to this many sided question that is not already pretty well known and discounted by the public.

Meanwhile the mild weather and good production of hard coal—the rate is now nearly 2,000,000 tons per week—have eased the market for the scalper and by the time this is read it is predicted independent coal will be quoted no higher than $9@$9.50 at the mines.

Bituminous

While total production during Thanksgiving week declined, the rate per working day increased. According to the Geological Survey, the output was 11,416,000 net tons, the largest in any Thanksgiving week of the last four years. Considering the holiday as about one-fifth of a normal working day, the average daily production was 2,174,000 tons, as high a rate as has been attained this year. Heavy pro-

Daily Average Production of Bituminous Coal*



*From weekly report of Geological Survey.

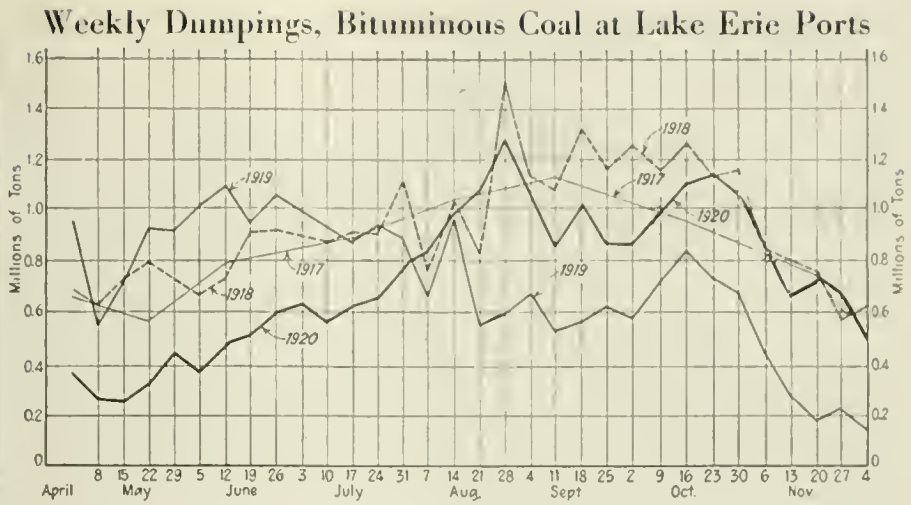
Lake Coal Dumped Season to Dec. 4

(NET TONS)

	1919	1920
Total	22,889,717	23,431,330

Week of Dec. 4, 1920

Cargo	454,605
Fuel	19,310
Total	473,915



duction on Monday and Tuesday (Nov. 29 and 30) is reported, with loadings of 85,349 cars of bituminous coal, compared with 84,956 cars the same days the week previous.

Losses attributed to labor are steadily declining. Labor shortages are disappearing in a gratifying manner and the men are working as if they meant it. The general release of labor from other industries, caused by the business depression, has produced a wholesome effect on the efficiency of mine labor, reflected in steadily increasing production in the strike areas of Alabama and West Virginia. The arrival of Federal troops in Mingo County, West Virginia, had an immediate stabilizing influence in that locality, and the military forces have apparently checked the depredations and intimidating acts of the strikers. District 17, U. M. W., has already sounded Governor Cornwell of West Virginia on the subject of intervention with a view of bringing about a conference with the operators, who are standing firm on their refusal to recognize the union in any manner.

Betterment in car supply was general throughout the country with the exception of Eastern Ohio mines served by the B. & O. and West Virginia operations on the C. & O.

Mild Weather Lowers Domestic Prices

The effect of the general business depression has been to again accentuate the decline in steam coal prices. Domestic coal also is lower, owing to the mild weather which has prevailed and the fact that many operators have turned to prepared sizes since the slump in the steam market. Many small operations have felt the effect of these price recessions and not a few have been forced to close down, as it was impossible to adhere to their higher wages on present coal prices.

The following table shows the trend in the spot steam market (mine run basis, net tons f.o.b. mines):

	Nov. 1919*	May 1920	Aug. 5 1920	Nov. 25 1920	Dec. 2 1920	Dec. 9 1920†
Pittsburgh steam	$2.30	$4.00	$10.00	$5.00	$5.00	$4.00
Pittsburgh screened gas	2.30	4.50	12.00	5.75	5.50	*4.75*
Hocking	2.50	4.75	9.00	4.50	4.50	*4.25*
Franklin, Ill	2.35	3.75	6.50	5.00	5.00	5.00
Indiana 4th vein	2.35	3.40	7.50	4.25	4.00	4.00
Eastern Ohio, No. 8	2.35	4.50	10.50	5.00	5.00	*4.50*
Fairmont	2.50	6.75	13.50	4.75	4.75	*4.25*
Kanawha	2.60	6.75	14.00	4.75	4.75	*4.50*
S. E. Kentucky	3.00	6.00	10.50	5.00	5.25	5.25
Western Kentucky	2.35	3.50	5.25	4.25	4.25	4.25
Clearfield	2.95	6.25	12.00	5.00	5.00	*4.75*
Cambria and Somerset	2.95	6.75	13.50	6.00	6.00	6.00
New River	2.70	6.50	14.00	5.00	5.25	5.25
Pocahontas	2.35					

*Government prices.

†Advance over the previous week shown in **heavy type**, declines in *italics*.

Tidewater dumpings in the week of Nov. 27 were 1,034,000 tons, a decrease from the preceding week of 107,000 tons, according to the Geological Survey. The decline was due largely to the falling off of exports, which amounted to 399,000 net tons, as against 532,000 tons for the week before. Foreign shipments were less than 60 per cent of those during the record week of Oct. 17, when exports were at the rate of over 2,900,000 tons per month.

As shown in the following table, shipments to New England increased slightly to 178,000 net tons:

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Totals
Coastwise to New England	61,000	16,000	.....	101,000	.....	178,000
Exports	.....	62,000	69,000	257,000	11,000	399,000
Bunker	97,000	13,000	14,000	63,000	.....	187,000
Inside capes	.....	49,000	23,000	4,000	.....	76,000
Other tonnage	155,000	3,000	.....	35,000	1,000	194,000
Totals	313,000	143,000	106,000	460,000	12,000	1,034,000

Shipments to New England via all-rail recovered during the week, showing an increase of 236 cars over the preceding week. The report for the week of Nov. 27 was 4,705 cars through the five rail gateways.

Lake coal dumped during the week ended Dec. 4 amounted to 473,915 net tons, as compared with 142,994 tons for the corresponding week of 1919. Shipments to the Lake ports have practically ceased and the cumulative movement for the year amounts to 23,431,330 tons, as compared with 22,889,717 tons for last year.

ANTHRACITE

Production of hard coal during the week ended Nov. 27 is reported by the Geological Survey as 1,692,000 net tons, a decrease of 283,000 tons from the previous week, attributed to the general observance of Thanksgiving Day. Recovery in output after the holiday was prompt.

Shortage of Fuel in East Remedied

With the practical cessation of Lake shipments of hard coal a large tonnage has been diverted to Eastern centers and the long-discussed shortage has been speedily remedied. Hard coal is now flowing to Baltimore, Philadelphia and New York, while New England is practically over the shortage panic. This diversion is causing some uneasiness in the Middle-West, where receipts have been reduced correspondingly. Independent quotations in New York range $10@$11 on domestic sizes, a sharp decline from last week, while Philadelphia reports a radical increase of $1.50@$1.80 on this product. At this writing no announcement has been made as a result of the conference of operators and miners concerning the latter's demand for adjustment of wage inequalities.

COKE

Beehive coke production increased slightly. Gains were recorded in all districts but Virginia and Kentucky. The Geological Survey places the output at 368,000 net tons, or 3,000 tons more than that of the preceding week.

Prices for spot coke are again falling, reflecting the greatly weakened demand. Furnace quotations are $7.25@$7.50; foundry, $8.50@$9. Operators and furnace men are negotiating on contracts for the first half of 1921, but neither side is showing any haste, because of the extreme uncertainty of the market.

Reports From the Market Centers

New England

BOSTON

Mixed Situation on Steam Grades — Railroads Are Quietly in Market—Receipts Continue To Diminish—Hampton Roads Market Is Dull—Anthracite Demand Sustained, but Easier Conditions in Sight.

Bituminous—While there is almost an utter lack of request for inferior grades both from West Virginia and Pennsylvania it is apparent that there is now something more than a straggling demand for the low ash, low volatiles. There is no new life to industry that would have any such result but there are utilities here and there that have not been getting their contract quotas, due to irregular car-supply and that in part accounts for the somewhat better inquiry. It is unlikely this is anything more than a temporary demand, however, and another week or so will doubtless see the market back in the doldrums.

Certain of the railroads are again seizing coal in considerable volume. While the roads here are in comfortable shape as to supply it is New England's coal largely that is being confiscated and it has been quietly intimated to large shippers that carriers are in the market for shipments during the next 30 days. Little is heard as to prices, but on much of the high-grade coal seized the invoice price is considerably up from the level at which railroad buyers would probably be able to cover in a considerable tonnage.

There is a steady falling off in receipts both by water and all-rail. Most manufacturers have coal on hand for 90 days easily. For the textiles in most lines there is practically no business. Shop-keepers have very little stocks of cloths and knitted goods, but there is no buying or incentive to manufacture. The paper mills are fast getting into the same class with rubber manufacturers and the metal trades and there have been several requests to coal shippers the past week to withhold deliveries.

At Tidewater piers in New York and Philadelphia there is only a relatively small volume of coal on hand. Bunker trade is fairly stable, although prices are fluctuating. Export demand is becoming increasingly erratic, and the more prudent shippers are not sending coal to the piers except on actual orders. Even through the Tidewater Coal Exchange demurrage charges have been heavy.

For Pocahontas and New River there is only an indifferent market. Contracts coastwise are absorbing regular tonnage, but the volume of these underwritten early in the season was less than in any other recent year and several agencies who were in the export trade up to their necks are now being hard put to move the output of mines they represent. Prices have sagged still further the past week, less than $8 having been rumored f.o.b. vessel.

Current quotations on bituminous at wholesale range about as follows:

	Clearfield	Cambrias and Somersets
F.o.b. mines, per net tons	$4 00@5 25	$5.00@ 6.50
F.o.b. Philadelphia, per gross ton	7 25@8.50	8.25@10.00
F.o.b. New York, per gross ton	7 70@9 25	8.70@10.50

F.o.b. Providence and Boston Pocahontas and New River are selling down to $11.50, with a very restricted market.

Anthracite—There is no let-up in demand for domestic sizes. Retailers are still besieged for prompt deliveries. Prolonged mild weather is having its effect, however, for there are many signs that hard coal will be in much easier position within a few weeks. Orders are being gradually filled, and while in the large cities there are insistent needs from day to day that must be met, it is beginning to be apparent that we are already through the worst phase.

The Boston newspapers on Dec. 2 printed the names of wholesalers here who have charged more than $9.50 per gross ton f.o.b. mines, the names having been furnished by the State Fuel Administrator. Quotations are being freely made up to $14 for spot shipment, although several shippers have named $12 as their upset price.

Tidewater

NEW YORK

Anthracite Conditions Improve with Increased Receipts — Demand Continues Strong — Independent Prices Drop — Bituminous Prices Are Lower—Cancellations Increase — Demand Falls Off Because of Business Depression.

Anthracite — Increasing production and a decrease in shipments to the West have resulted in more coal finding its way into this market. The situation is easier and the shortage which existed a few weeks back is considerably modified. Nevertheless, the market is ready to absorb a large tonnage before conditions become normal.

There are comparatively small stocks on most retail yards and some do not boast of much except buckwheat or smaller sizes. All of the larger coals are scarce and consumers are willing to take any size.

Buyers are not so willing to take high-priced coal as they were a few weeks ago. Weather conditions have not caused a heavy consumption and with the steady mining increased tonnages have resulted in easier prices.

With the passing of this month demand will simmer down to actual necessities here as this market becomes a weather market. Neither dealers nor consumers will want to keep their bins filled, preferring to take chances with lower prices for both company and independent coal on April 1.

Line trade is active. Heavy shipments are being made into New England which states salesmen say are better supplied than is generally believed. Dealers in the surrounding towns, particularly those on Long Island, are being given considerable attention while transportation is favorable.

Instead of hearing quotations of $13@$14.50 for the independent domestic coals, present quotations range $10@$12.

Steam coals are piling up. Consumption has not been heavy and dealers doing a heavy business with office buildings have large stocks on hand. There are many boats loaded with rice and the smaller sizes. Barley is the most prominent size. Independent prices are: Buckwheat, $4.25@$5.25; rice, $2.75@$3.50, and barley, $1@$1.50.

Bituminous—A drop in demand due to decreased consumption while production is going on at a steady pace, caused a further decline in prices. Spot coals are obtainable in larger quantities and shippers believe that they will steadily increase.

A bright spot in the situation is pointed out by some shippers, who compare present bituminous prices with those for which the better grades of anthracite steam can be obtained. Users of bituminous are obtaining better results and more heat than are the users of the small anthracite coals, and they believe that when this becomes generally known there will be an increased demand for the soft coals.

Requests, practically amounting to cancellations, that shippers hold up deliveries of coal are being daily received by operators. Instead of requests for coal, salesmen now find it necessary to go among the trade.

Operators are not having much trouble in keeping help nowadays while work is slow, but a brisk demand causes many of the miners to go into the woods for game. Reports from the Clearfield regions show that upward of 11,000 hunters' licenses have been issued this winter.

Quotations for the various pools show a wide range of prices: Pool 11 along the B. & O. is around $3.75, and up to $4.25 on other roads. Pool 34 is easy with quotations ranging $4.25 along the B. & O. and $4.50 on the Pennsylvania. Pool 10 ranged $4.75@$5.75 and Pool 14, $4@$4.40. It was reported that certain Canadian railroads were purchasing coals from mines along the New

York Central at $4.40. Quotations for Bessemer, an unclassified coal, was around $5.

There are many loaded boats about, some of which contain Pool 34 coal. Prices at the piers range $8@$9.50, with loaded boats in proportion, a stray cargo of Pool 4 being quoted at $8.50.

PHILADELPHIA

Anthracite Shipments Improve — Consumer Demand Still Strong — Steam Trade Eases Off — Bituminous Prices Still Shade Downward — Best Coals Freely Offered on Market — Contract Quotations Heard — Export Business Drifting Into Old Hands.

Anthracite—The improved condition as to shipments continues, although there is not the rush of coal that some had expected. Dealers in the city and vicinity, particularly those buying from the large companies, are getting fair receipts of all sizes. Consumer demand continues strong, but an inspection of the yards discloses the fact that the turn of the Eastern market has come at last. Dealers are wondering just how much more coal local buyers can absorb, for, with most moderate weather prevailing, they know that an unusual tonnage still remains in the cellars.

The recent turn in the wage discussion, where Washington decided that the problem of increased wages could be reopened, has caused much talk among the trade. There is a feeling that should the miners force an increase the operators might pass it up to the retailers with a sort of implied understanding that no increase in retail prices would be made. The more reasonable suggestion heard is that the big operators, at least, would absorb half the increase, adding the other half to the wholesale cost, and with the present gross margin of $4 and over in the retail trade the dealers might be able to do their share in holding down the price.

One of the biggest surprises recently experienced by the trade is a report that some of the independent shippers have radically increased their prices. These increases run as much as $1@$1.50 on pea and $1.50@$1.80 on prepared sizes. While we have seen no printed circulars, yet we have heard it quoted on reliable authority that this is the case. It was quite difficult at first to credit the report, but at this time there seems to be little doubt of its authenticity. At first it was thought that the operators, contemplating another increase to the miners, were thus taking advantage of the first of the month to adjust their schedules. Another reason advanced is that some independents actually have been selling at these figures and are now publishing the prices as a matter of record. The latter appears the more likely of the two.

Due to unabated easing off of bituminous prices, the independent steam figures are creeping close to company prices and independents are finding it difficult to get as much as twenty-five or fifty cents over the $4.25 buckwheat price.

Bituminous—The market has experienced another downward movement, with an extremely light demand. The very best coals are coming in greater volume, with Pool 9 offered at $5.50. Pool 10 is being sold for $5.25 and Pool 11 about $4.50. There is considerable unclassified coal being offered $3.75@$4 and this practically covers Pool 18. Pittsburgh gas coal Pool 61 quotations recently heard were $5.25 for screened, $4.75 for mine run and $4.25 for slack.

The railroads have become particular as to the acceptance of fuel. They seem to have adopted a higher standard of inspection, at any rate there is much refused coal standing around on this account.

One of the big producing companies is quietly renewing agreements with old customers which expire on Jan. 1, at practically the old figures. In one or two instances we have heard that the price is $4.30 and it looks as though this would be the ruling price on the high grade coals. Despite this report of a contract fixture it is certain that little tonnage has as yet been agreed upon by other shippers, as there is still a disposition to wait.

The export trade is still quiet. Although the railroads still have an embargo on the piers it is merely nominal, as a shipper with a boat at hand can get a permit if he has the coal enroute. Newcomers in the export trade have about retired and the business has revolved itself into the hands of the "old reliables," with well-established connections both here and abroad.

BALTIMORE

Fluctuation in Soft-Coal Market With Renewal of Car Shortage Apparent—Export Movement Falling Off Rapidly —Hard Coal Receipts Continue Good.

Bituminous—Rapid changes are taking place in the soft-coal market, and each day is setting its own levels. At times excellent coals have been offered here at a mine basis of $5 or little better; again the same grade coals are held firmly at $6. What applies to best coals also applies to the balance of the list, and sales have been made recently all over the range between $4@$6.25.

The one consistent thing is the rather poor demand for coal. The question of supply seems for the moment to be the regulating feature of the changing market. Recently the car run was much improved and hung in the 80@90 per cent class on many days. For the past few days, however, there has been a recession, and at this writing it is around 59 per cent on B. & O. lines East and 63 per cent on lines West. The Pennsylvania run is reported about the same ratio, with the Western Maryland Ry. better, but by no means perfect.

Daily loadings on the B. & O. are now quite often below the 3,000-car mark, while reserve at the pool on some days drops below 1,000 cars at all piers. Daily dumpings are falling, as the number of waiting ships for coastwise and export coal steadily decreases. At this writing, less than ten boats are at the piers or waiting astream for coal cargoes, and to take on only about 30,000 tons of coal.

The fall of exports began with November. In that month a total of 90 ships loaded export coal here. They carried 499,442 tons of cargo and 36,734 tons of bunker coal. In October 118 ships had sailed, with a total of 653,762 tons of cargo and 39,567 tons of bunker, the best record for a month ever made at this port. The drop in December loadings has been great and a poor showing will be made, even as compared with November.

Anthracite—Hard coal continues to come in with a fairly free run. Mild weather has continued so far and this is still aiding in holding down consumption while the emergency deliveries are made. The trade is working along the lines of best distribution as to shortages so far, instead of sticking to old customers.

Many coal accounts are being switched, and this of course at times creates feeling. It seems, however, to be a natural evolution of the conditions under which the business is being conducted.

Lake

BUFFALO

Bituminous Prices About at Bottom—No Prospect of Improvement Right Away—Cars Are Plentiful—Anthracite Situation Is Better—Lakes Closing.

Bituminous—Consumers are out of the market generally for they are getting about all the coal they want from their April contracts. Operators are out for larger sales, in fact doing all the walking, but mostly to no purpose. Consumers do not care to stock up on a falling market. The decline in prices is still on but is slow.

It mostly depends on the miners now as to how far prices will go down. If they can hold their wages up the decline will have to stop soon. Even now certain mines that did not pay very big wages have reached their limit and will have to shut down soon if wages remain where they are. Mines with a good amount of low-priced contracts are coming into their own now. They see the producers that secured high prices up against high wages with no more premium orders to pay these wages.

The indifference of the consumers to the market keeps it weak. Consumption is light and the car supply is so good that coal sellers are not able to urge buying on the score of low deliveries. Add to this the immense reduction of consumption from mild weather and the situation has played entirely into the hands of the consumers.

Bituminous prices are weak at $5 for Pittsburgh and No. 8 lump, $4.25

for mine run and slack, $4.50@$4.75 for Allegheny Valley mine run, $6@ $6.50 for Youghiogheny gas, and $6.50 up for smithing and smokeless, both very scarce.

Anthracite—The worst is over in the hard coal trade. The mild weather has continued so that but a light fire has been needed and shippers claim that there were a good many consumers begging for coal who already had at least a partial supply.

Lake trade is now practically at an end, so that in a week the supply locally ought to be large enough to meet all demands. It was the strike or vacation that upset all calculations. When that happened all efforts to make up deficiencies, either here, up the Lakes or in Canada had to be given up. For this reason the independent operators are able to get premiums, all the way up to $6 a ton occasionally, although most jobbers refuse to handle coal at such prices.

Coke—The demand is light for factory use as furnaces are not running strong, prices remaining weak at about former figures, $9 for 72-hour foundry, $8.50 for 48-hour furnace and $7.50 for off-grades and stock. Domestic demand is much more active as consumers are still buying in competition with anthracite. Prices range $6.50 for furnace sizes, $10.50 for stove and chestnut and $2.75 for breeze.

MINNEAPOLIS

All-Rail Market Declines—Unseasonable Weather Aids Dock Situation—Transportation Condition Improves.

The season of Lake navigation is officially closed and the docks on Lake Superior have all the Eastern bituminous that will be available. The dock figures on hard coal show a slight shortage only, as compared with a year ago, but the mild fall has offset it and the net stocks are very likely to serve well into the close of the winter.

But on soft coal the docks are undeniably short, even after all allowances for mild weather, diversion to Illinois fields and any other possible deductions. An unknown factor is the probable industrial consumption. At present this is running lower than a year ago, due to mild weather and reduced production. The downward tendency of prices has reduced buying considerably.

The all-rail situation is very easy. Lower grades of Illinois coal are off from the high point as much as $3 a ton. Screenings are at a discount. Better grades of steam are off $1.50@ $2 and domestic is lower by at least $1. Operators are ready to take contracts for January delivery.

The market promises to be very easy as long as mild weather continues. On the other hand, if severe weather should set in the market would rebound sharply.

Reduced prices are due to the lower demand and heavy production, with improved car movements. That traffic has cleaned up under limited tonnage does not establish that it would hold up if the normal volume of merchandise freight were moving. Railroad men declare that they will be able to maintain present conditions, but many shippers have that Missourianic cast of thought that intensely desires to be shown.

Despite the promising situation there are many coal men who feel that the Eastern mining companies having affiliated dock companies have not lived up to their implied obligations to Northwest consumers.

In serving the Northwest the docks have implied a continuous service through the winter, which their customers had a right to accept as a recognized obligation. Hence to the extent that they have diverted a portion of their usual tonnage to other customers, and have left their affiliated concerns with a curtailed supply, by so much have they failed to live up to the implied obligation which they have accepted in other years. Instead of profiteering because of the temporary emergency it is argued they should have had their usual stock to sell at the going market, which is made up of the usual profit and the various transportation and labor costs attendant upon delivering it to the docks.

CLEVELAND

Domestic Fuel Receipts Improve—Lake Season Winding Up — Retail Prices Show Little Change—Steam Coal Shaded.

Bituminous—Closing of the Lake navigation season Dec. 1 brings the assurance of an ample supply of soft coal for domestic consumers in this district. Although Lake shipments have been dwindling for some time improvement in receipts for use in this locality thus far has been comparatively small, but a more rapid increase may well be expected during the next few weeks.

Retail prices have remained practically unchanged for a little more than two weeks. Prices at eastern Ohio mines for spot bituminous now range $5@$6.50. Steam prices have been shaded in a few cases, due to a decline in the demand on the part of industrial plants which are curtailing operations or closing down. Somewhat lower prices are expected for steam coal within a short time.

The recent mild weather has greatly aided retailers in making deliveries and most concerns have been making good progress in catching up on orders. Unless cold weather comes unexpectedly the majority of dealers will soon be in good shape.

Retail prices of coal per net ton delivered in Cleveland are:

Anthracite—Egg, chestnut and stove, $15.10.

Pocahontas — Shoveled lump, $11.75; mine run, $11.10.

Domestic Bituminous — West Virginia splint, $11.75; No. 8 Pittsburgh, $9.65; cannel lump, $15.

Steam Coal—No. 6 and No. 8 slack, $9.50; No. 6 and No. 8 mine run, $9.65; No. 8 3-in. lump, $9.65.

Anthracite and Pocahontas — All grades of anthracite coal are still very scarce with little probability of a much greater supply for some time to come. Prospects of colder weather continue to add to the orders on books of dealers and to keep deliveries in arrears. Only about nine cars of anthracite a day are being received.

Lake regular vessel insurance for Great Lakes traffic has expired but a few boats are still expected to take cargoes by the payment of a higher insurance rate. Probably not more than a half dozen carriers will be required, however, to clean up the remaining supplies on the docks, represented by shipments which were slow to arrive from the mines.

MILWAUKEE

Demand Is Light Because of Mild Weather and Lessened Industrial Consumption—Buckwheat Very Scarce—No Change in Prices.

The market is dull and stocks are not moving as fast as is desired. Mild weather and industrial depression both contribute to this. Anthracite and screened Pocahontas are not so plentiful as to be affected in price, but soft coal is not as stable. A material decline at the mines would unquestionably affect prices in this district.

Much of the coal now on the docks was bought at stiff prices, hence the nervousness of receiving companies and their aversion to piling up stocks. Buckwheat anthracite is extremely scarce. Coal is still coming by Lake. Fourteen cargoes are now on the way and if mild weather continues coal will be received close up to Christmas.

November receipts by Lake, not including carferry, total 103,823 tons of anthracite and 335,955 tons of soft coal. This season's receipts to Dec. 1 foot up 805,186 tons of anthracite and 2,257,872 tons of soft coal, against 892,526 tons of the former and 3,053,733 tons of the latter during the same period last year.

Four coal companies which were penalized for inferior coal delivered on city contracts last spring had their money refunded following representation that the coal furnished was the best they could obtain at the time.

Inland West

CHICAGO

Local Market Is Swamped with Smokeless—Railroad Orders Are Curtailed—Indiana and Illinois Grades Are Firm, but Demand Greatly Weakened.

During these days of industrial depression and unseasonably warm weather, it is considered a fairly difficult feat to sell a car of either domestic or steam coal at a decent price. Buyers of all coals are feeling so languid in regard to fuel that it takes quite an inducement to make a sale. While conditions are far from ideal it ought, however, to be said that there is some improvement in the market over last week.

The Chicago coal trade is beginning to wonder what has happened to the export business, so long enjoyed by West Virginia operators. The local market is, apparently, swamped with Pocahontas and New River coals.

Those operators in West Virginia who have contracts at $4.25@$4.90 f.o.b. mines for mine run are shipping on these contracts on a one hundred per cent basis. In addition, many operators are forwarding their smokeless coals to Chicago wholesalers and allowing them to sell the coal at the best prices obtainable. On account of this situation, it is now possible to buy the best grades of Pocahontas or New River mine-run on the basis of $5@$6 per ton f.o.b. mines. It is noticeable that but very little Pocahontas or New River prepared coal is coming in, as practically the entire tonnage consists of mine-run.

The various railroads with headquarters in Chicago, who have been buying coal almost daily on the open market have now reached the point where they are able to discontinue this practice. Not only have they stopped buying at current prices but they have instructed the operators who have contracts with them to curtail shipments anywhere from twenty-five to fifty per cent. Taking into consideration that the mines have plenty of cars now, it means that all this extra coal is thrown on the market and must be moved. While prices are very much lower indeed than they were four, or even two weeks ago, it is not expected by those in close touch with the trade, that prices will go to lower levels this winter.

Current prices, f.o.b. mines, quoted from day to day on the open market are as follows:

Souther Illinois (Franklin, Saline and Williamson Counties):	
Prepared sizes	$5.25@$6.50
Mine run	4.50@ 5.25
Screenings	3.50@ 4.15
Central Illinois (Springfield District):	
Prepared sizes	$4.75@$6.25
Mine run	3.25@ 4.00
Screenings	2.75@ 3.25
Northern Illinois:	
Prepared sizes	$5.00@$6.00
Mine run	3.75@ 4.50
Screenings (washed)	4.00@ 4.50

Indiana (Clinton and Linton, Fourth Vein):	State	Outside State
Prepared sizes	$3.45	$4.75@$6.00
Mine run	3.20	3.75@ 4.25
Screenings	3.00	3.00@ 3.50

Indiana (Knox County, Fifth Vein Districts):	State	Outside State
Prepared sizes	$3.25	$4.25@$6.00
Mine run	3.00	3.25@ 3.75
Screenings	2.80	2.75@ 3.25

ST. LOUIS

Market Declines on All Grades—Steam Sizes Are Becoming a Drug—Railroads Buying at Low Figures — Carterville Operators Hampered by Poor Motive Power.

Mild weather, with the business depression is the cause of a continued decline in the coal market. Locally there is absolutely no domestic call and retail business is almost at a standstill. In steam it is almost as bad. Standard screenings are down to $2.75 with no demand. Country prices range 35@50c. higher in isolated cases only. Standard 2-in. lump is as low as $3.75 and 6-in., $4.75. Mine run is reported being sold to railroads as low as $2.35.

Car supply in the Standard field is good, with working time about three to four days, and five to six days at mines where railroad coal is being loaded exclusively.

There are no changes in prices or conditions in the Mt. Olive field. There has been a noticeable slowing up in the Carterville field of all grades, but sufficient orders are on hand to take care of all production for the present.

A few mines are having trouble moving steam sizes, especially screenings. Conditions other than that are satisfactory at all places excepting on the Missouri Pacific, where nine engines out of ten on the Coal Belt were taken out of service on account of bad order. Water shortage is causing some mines to shut down.

Carterville prices show a decline. Screenings are as low as $3.25, mine run, $3.50 and the top of the independent market on lump and egg shows $5, with the regular circular prices of $4 @$5 prevailing.

No anthracite is moving into St. Louis and there is no demand for smokeless.

DETROIT

Steam Prices Touch Still Lower Levels —Domestic Situation Is Easier—Bituminous Receipts Improve — Anthracite Supply Is Inadequate.

Bituminous—Neither steam nor domestic bituminous is at present in strong demand locally. Consumption in both divisions is being greatly curtailed.

Buyers of steam coal are in most instances confining their purchases to quantities required for only a few days ahead and are manifesting some indifference in the matter of increasing or building up reserves. This condition is attributed largely to the general state of business in industrial lines. Manufacturers do not feel that developments have yet reached a point where they can definitely make commitments. Under present conditions they are unwilling to have large amounts of working capital tied up in coal or inventories. Another factor tending to delay buying is the opinion that further reductions will be made in coal prices and that by waiting the consumer will be in a stronger competitive position.

Weather conditions have brought about a weakening in the domestic sizes. Pressure on retail dealers has eased off and is reflected in a less active inquiry coming to jobbers and wholesalers.

Bituminous shipments are making some gain in volume, although the quantity received does not appear to be excessive. Jobbers say little free coal is to be found around town. The supply of domestic is less plentiful than the steam sizes and in some instances domestic buyers have found it desirable to accept the latter.

Hocking lump is quoted $7 at the mines. Mine run is offered at $5 and slack $3.75@$4. For West Virginia lump $8 is asked, with mine run $5.50 and slack $4.50@$4.75.

Anthracite—Inadequacy of the supply is becoming more apparent, despite the present dropping off in demand from consumers. The retail dealers have no reserve stocks and most of them can offer no assurance of being able to fill orders promptly.

CINCINNATI

City Receipts Are Adequate—Retail Prices Unchanged—Anthracite Stocks Are Low—All Demands Are Fair.

Consumers in this vicinity are better able to withstand any shortage than other cities outside of the district. Sufficient coal is being received daily through river shipments to tide over the railroad coal car shortage, and while there is still a very strong demand for all grades, which cannot be fully met, the supply is adequate for almost normal operations.

Very little change is noted in general market conditions. Anthracite coal still is strongly in demand, but a very small supply is being received. Wholesalers say the outlook for improvement in the movement and supply of this grade is not very promising.

Because of the coal car tie-up operations at the mines are far below normal, the output being only in accordance with actual needs on the various contracts. Coal being shipped by way of the Ohio River is disposed of with but little trouble to both steam and domestic consumers in Cincinnati.

No change is noted in the retail prices, which are quoted as follows:

Bituminous lump	$9.25@$10.50
Nut and slack	8.50
Run of mine	8.75@ 9.25
Smokeless lump	11.25@ 11.50
Run of mine	10.00@ 10.50
Anthracite chestnut	15.00@ 16.25
Coke, domestic egg	16.00

COLUMBUS

Prices Are Still Breaking on All Grades —Lake Season Is Practically Ended— Better Car Supply in All Fields—Domestic Supply Is Good.

The feature of the trade is the break in prices all along the line. The extreme high prices are now a thing of the past and quotations are more reasonable in every way. While domestic sizes are still strong, prices have declined to a large extent on lump and egg. Mine run and screenings are lower than has been the case for more than a year. The tendency is still downward.

Domestic demand is still one of the best features of the trade. Retailers are buying actively as their trade is absorbing a large tonnage. In Columbus there is no shortage of domestic sizes and the same is true in many other sections. Some of the smaller villages and agricultural sections are still short of coal but no actual suffering has been reported. With the weather continuing rather mild, dealers have had no opportunity to catch up on orders.

Retail prices have declined in sympathy with those at the mines. Hocking lump retails $8.50@$9; mine run, $8@$8.50. West Virginia grades sell $9.50@$10 for lump with Kentucky coals about the same. Little Pocahontas is yet available.

The steam trade is quiet and buying is at a minimum. Steam users have succeeded in accumulating some surplus stocks and are not in the market, especially in view of many industrial contractions. Public utilities are supplied and the same is true of hospitals, schools and public institutions.

Lake trade is still progressing, although loading for the lower ports has stopped. Actual shipments are still going on for it will require some time for coal to be moved from the mines to the Lake. Vessels are still available and traffic is not disturbed by storms.

The H. V. Docks at Toledo during the week ended Nov. 27 loaded 99,543 tons as compared with 144,943 tons the previous week, making a total of 3,886,503 tons for the season. During the same week the T. & O. C. docks loaded 25,449 tons, as compared with 35,420 tons the previous week, making a total of 1,743,984 tons for the season.

Production has been gradually increasing under better car supply and labor conditions. Car supply on many of the roads is close to 100 per cent. Eastern Ohio is still somewhat short of cars and the same is true of the mines in the Kanawha & Michigan.

The Southern Ohio field for the week ended Nov. 20 produced 315,794 tons out of a capacity of 614,448 tons. Of the shortage of 298,645 tons, 110,516 was due to car shortage; 102,881 to labor shortage; 445 tons to a strike; 32,911 tons to mine disability and 51,901 tons to other causes.

Prices at the mines of the principal coals used in central Ohio are

Hocking lump	$4 00@$5.75
Hocking mine run	3 75@ 4.75
Hocking screenings	3 50@ 4.50
Pomeroy lump	4 50@ 6.00
Pomeroy mine run	4 00@ 4.75
Pomeroy screenings	3 50@ 4.50
West Virginia Splints, lump	5 00@ 6 50
West Virginia Splints, mine run	4 50@ 5 00
West Virginia Splints, screenings	4 00@ 5 00
Pocahontas, lump	6 00@ 6 50
Kentucky, lump	4.75@ 5 75

South

LOUISVILLE

No Demand for Steam Coal—Prepared Sizes in Good Call—Fight Is Launched on Poor Transportation Conditions.

Prices are generally off and there is no prospect of their improving with the present industrial situation of the country and light export, Lake and general demand. There is a good call for prepared sizes from retailers who are not equipped to screen mine-run coal and due largely to the fact that there is still no great amount of coal being prepared by operators.

The best demand experienced in eastern Kentucky is for gas coal. There is some movement to railroads, also a straggling lot of small orders coming from numerous sources. Public utilities in some instances are taking chances on future deliveries and using up stocks of high-priced coal on hand.

It is pointed out that this general tendency to use up high-priced stocks and replace with cheaper coal may result in better demand a little later in the season, especially if bad weather forces heavy consumption.

Eastern Kentucky block is very firm at prices ranging $6@$9, with very little to be had under $7.50 except from big companies to old customers. Screenings are quoted $3.25@$4.50; mine run, $4@$5.50, depending on quality.

Top prices for good eastern Kentucky gas are now around $5.50. On big orders and contracts it is reported this can be obtained as low as $4, some recent contracts having been closed at $4@$4.25 for six and twelve months.

A fight on inadequate transportation conditions has been launched, and it is felt that it is up to the L. & N. to improve the eastern Kentucky lines to supply present shippers instead of spending surplus in buying up feeders and connecting lines.

BIRMINGHAM

Market Is Fair for Good Steam Grades —Domestic Demand Brisk—Car Shortage Again Becomes Serious — Prices Remain Firm — Labor Supply Is Now Adequate.

A fair market prevails for all steam coal of the better grades that is available for the spot trade, in fact the demand is sufficient to absorb more than offered the past week, and this condition resulted in more ease in moving low-grade steam fuel, which has been sluggish. Railroads and furnaces have placed orders for considerable tonnage for delivery between now and the Christmas holidays, to supplement their supply from other normal sources and enable some stocking. Back Creek and Cahaba mine run are quoted $5@$6; Carbon Hill, $4.25@$4.50; Corona, $4.50 @$4.75; Big Seam, $4@$4.25 per net ton mines.

There has been little or no relief afforded the domestic supply from this class of operations, receipts at local yards and throughout the territory being diverted to consumers' cellars as fast as unloaded. Coal men are urging mine run for domestic use, but buying of this grade has not received much impetus as yet, but undoubtedly affords the only means of relief in sight. Lump prices at mines range $4@$6 per ton.

The Southern and L. & N. lines were considerably short on coal cars for the mines last week and operations were interrupted to some extent. The L. & N. has been attempting to make a more even allocation of its coal-carrying equipment in the several coal fields served and has taken a large number of cars out of the service here in carrying out this plan. Other lines have furnished good car supply.

The labor situation is now little affected by the prolonged strike and large numbers of union men have been placed at work during the past week. Influx of labor from farms and industrial operations, which have closed down or adopted short schedules, is now too great for absorption in the mining industry.

Southwestern

KANSAS CITY

Domestic Prices Are Weaker—Operating Conditions Are Satisfactory — Byproduct Coal in Good Demand.

During the past week there has been a leveling of prices throughout the Southwest territory and Arkansas smokeless is now held at $6.75 for lump and $5.25 for mine run. Kansas domestic grades are $6 and steam, $4.50@ $4.75. Missouri domestic grades range $6 and steam $3.55@$5.50.

Mines have had good running time, car supply being adequate and transportation uninterrupted. The weather has been unusually warm and demand has slackened off materially. Mines, generally, in the Southwest, have had good running time throughout the summer and fall months, and the ultimate consumer has profited by past experience and put his coal in early.

There is still some shortage of Arkansas smokeless suitable for byproduct coke plants. This class of trade is new to the Southwest, as Arkansas coal had not previously been used in byproduct plants, but a trial demonstrated its entire fitness for that purpose when shipped from mines producing coal of a low-sulphur content.

Western

SAN FRANCISCO

British Columbia Coal Coming by Water—High Freight Rates Cause the Change.

Shipments of coal from Comox, B. C., are to be resumed. For two years past nearly all of the coal for the San Francisco day district and for bunkering purposes has been shipped by rail from Utah. The change has been brought about by the high freight rates, put into effect some months ago. In years gone by between 500,000 and 600,000 tons of coal were shipped to this port annually from British Columbia mines. Quite a large quantity of coal was also imported from Australia.

The combination of high freight rates and available ocean tonnage resulted in the switch to water transportation. Numbers of freight steamships owned by the United States Shipping Board will be employed in bringing the coal.

News From the Coal Fields

Northern Appalachian

PITTSBURGH

Car Supplies Adequate — Industrial Consumption Continues To Decline — Spot Prices Lower Again.

The suspension of all priority orders as to car supplies at coal mines Dec. 1 has not had an appreciable effect upon the mines as railroads are much less busy with other freight than they were a few weeks ago. Car supplies are still well below mine ratings, but the decrease in demand makes the supply sufficient at most mines.

Slump in demand for coal by the industries has continued. The independent steel mills are hardly operating at an average rate of 50 per cent, while it looks as though many would be closed entirely during the last fortnight of the year. Byproduct ovens, however, are operating quite well and present indications at least are that there will be no great curtailment in that direction, though certainly there will be some. Demand for domestic coal continues good.

There has been a rather sharp reaction in the past week from the advance that began three weeks ago, and prices in the spot market are now fully as low as they were a month ago, if not lower. Steam coal of ordinary grade is readily obtained at $4, while screened gas coal brings $4.50@$4.75 according to grade. In byproduct coal there is a wide range. Some is said to have been offered at $4.25 but it is held that really good grades would command as much as gas coal, if not more. Prices quoted are per net ton at mine, Pittsburgh district.

UNIONTOWN

Both Markets Soften—Steam Coal Business the Only Feature—Coke Contracts Are Being Discussed.

Both coal and coke markets are decidedly soft. Sales are subject to individual agreement, with an average price of $3.75@$4 prevailing for coal and $7.50 for coke. Because of the difficulty operators and jobbers are having in disposing of tonnage already produced it would not be surprising if some sales had been made below those figures.

Virtually the only market for coal is line shipments for steam purposes. Few jobbers are now handling byproduct coal as such and when sales are made they conform in price to steam. With the Lakes closed to traffic and few export buyers in the market demand has slumped to the point where operators and jobbers are seeking to place as much tonnage as possible among their regular customers.

Discussion has commenced with regard to coke contracts for the first half of 1921. It would appear that contracts will be late in closing, neither producer nor consumer showing any haste in binding himself because of the extreme uncertainty of the market. Present conditions, however, undoubtedly will have a bearing on first-half contracts.

Contracts for the last half of the year generally were made upon a ratio of four to one. With pig iron now at $35 contract coke is moving at $8.75, ovens, a figure considerably above the market price. Before the war the ratio was generally five to one but during the days of acute coke shortage a shift was made in the producers' favor. Coke consumers will probably seek to establish the old five-to-one ratio or better in first-half contracts.

CENTRAL PENNSYLVANIA

Prices a Trifle Lower—Car Placement Is Good—Labor Situation Satisfactory.

Coal prices in the central Pennsylvania field have dropped a little lower than last week, ranging from $4.25 for the lower grades to $5 for the better coals. Retail dealers in Altoona are maintaining an average price of $8, with some selling low at $7.50, while others are asking up to $9.

Car supply has been fairly good for the month of November. The mines reached by the Pennsylvania lines in the eastern region were well supplied. Farther west in the central portion the car situation could have been better. A maximum production now depends on the car supply.

Production in the month of November proved to be satisfactory. Up to and including Nov. 27, 81,427 cars were loaded in the district as compared with 80,834 in October. The total output for the month will exceed 5,000,000 tons. With the exception of the mines at Morrisdale, Clearfield County, where a strike is in progress, work is proceeding satisfactorily everywhere.

FAIRMONT AND PANHANDLE

Fairmont Production Cut by Car Shortage—Holiday Idleness Further Affects Output—Prices Decline With Sluggish Market.

FAIRMONT

A marked car shortage, coupled with the Thanksgiving holiday, was responsible for a decline in the output for the week ended Nov. 27. Open-top cars were evidently being diverted for uses other than coal transportation.

Such Lakes shipments as were made moved under special permit and had entirely ceased by the end of the week. Prices reached a still lower level, mine run selling soft at $4.

NORTHERN PANHANDLE

Transportation conditions were generally improved, except as to points on the C. & P. Division of the Pennsylvania, where movement has been poor for the last few weeks.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

BITUMINOUS COAL

Total bituminous, including coal coked

	1920		1919 *a*	
	Week	Calendar Year to Date	Week	Calendar Year to Date
Nov. 13 *b*	12,132,000	476,525,000	4,024,000	409,368,000
Daily average *c*	2,128,000	1,771,000	671,000	1,517,000
Nov. 20 *b*	11,721,000	488,246,000	5,344,000	414,712,000
Daily average	1,953,000	1,775,000	891,000	1,503,000
Nov. 27 *d*	11,416,000	499,662,000	5,334,000	420,046,000
Daily average *c*	2,174,000	1,782,000	956,000	1,492,000

(*a*) Less one day's production during New Year's week to equalize number of days covered for the two years. (*b*) Revised from last report. (*c*) Counting Armistice Day, November 11, 1920, as 0.7 of a working day. (*d*) Counting Thanksgiving Day as 0.25 of a working day. (*e*) Subject to revision.

ANTHRACITE

	1920		1919 *a*	
	Week	Coal Year to Date	Week	Coal Year, to Date
November 13	1,753,000	53,873,000	1,880,000	57,610,000
November 20	1,975,000	55,848,000	2,055,000	59,665,000
November 27	1,692,000	57,540,000	1,759,000	61,424,000

(*a*) Less 2 days' production during first week of April to equalize number of working days covered for the two years.

BEEHIVE COKE

United States Total

Week Ended				
Nov. 27 *c*	Nov. 20 *b*	Nov. 29	1920	1919 *a*
1920	1920	1919	to Date	to Date
368,000	365,000	446,000	19,187,000	17,882,000

(*a*) Less one day's production during New Year's week to equalize number of days covered for the two years. (*b*) Revised from last report. (*c*) Subject to revision.

Prices eased off slightly, ranging $4.25@$4.75 for mine run. There was a general lack of demand in the export market, although it was impossible to ship much coal East, owing to embargoes.

CONNELLSVILLE

Spot Coke Resumes Decline — Contract Negotiations Remain in Preliminary Stage—Furnace Ovens Increase Output.

A large sale of furnace coke at $8 softened the market instead of stiffening it, and some sales have been made at $7.50. At this writing, the latest important sale reported is one of 1,000 tons, which went at $7.25, though $7.50 may not have disappeared entirely.

Spot foundry coke has softened about 50c. Many sales have been made at $8.75 to the consumer by brokers who paid operators $8.50. For a few very well-known brands higher than $9 might possibly be obtained.

Negotiations on furnace coke contracts for the first half of 1921 are still in the preliminary stage. While operators display an unwillingness to name final figures it is no secret that the furnacemen would be indisposed to close no matter what terms were offered, as there is no market at all for pig iron and furnacemen have no occasion to cover on raw materials. Ratio contracts are being talked of by furnacemen at 5 to 1, while it is claimed operators are not yet ready to accept such a ratio.

Very little is being done in foundry coke contracts. One prominent operator is offering on contract for the half year at $10, but buyers are not taking hold. The same operator some time ago made some contracts at $15, and the $10 quotation now may be made with an eye to readjustment of those contracts.

The spot market is quotable $7.25@$7.50 for furnace and $8.50@$9 for foundry, per net ton at ovens.

The *Courier* reports production in the week ended Nov. 27 at 212,420 tons, the increase of 12,060 tons being practically altogether on the part of the furnace ovens.

Middle Appalachian

LOW-VOLATILE FIELDS

Export Market Joins the General Price Decline—Domestic Is Easily Moved—Production Limited by the Holiday—Contract Movement Is Heavy.

New River and the Gulf

Production was forced downward in the New River field during the week ended Nov. 27, by Thanksgiving Day and its subsequent idleness. Car supply remained at its unsatisfactory figure of 30 per cent or little better.

Export prices were depressed to $7.50 by the low foreign demand. Steam sold at $5.50, while domestic ranged $5.50@$6.50. Even though there was little spot demand, operating conditions were not affected, as the entire output was utilized in filling orders of regular customers.

Winding Gulf tonnage was again seriously cut by car shortage on the C. & O. which road only laid down a 30 per cent supply. Virginian Ry. mines fared better, with 65 per cent placement. Thanksgiving Day idleness, from which the mines had not fully recovered at the end of the week also added to the loss of production.

There was no spot coal available, all available tonnage being shipped on contract. Operators are supplying local towns on the Virginian at $4.50@$4.80 and emergency coal for the state of Virginia at $4.50@$5.50.

Pocahontas and Tug River

In the Pocahontas region production was limited by the holiday labor idleness and low car supply of 60@70 per cent furnished by the N. & W. General market conditions were much the same as during the preceding week. Prices remained unchanged, about $5@$5.75 for mine run and export $7.50. However, foreign buying was not at all brisk and shipments were largely confined to contract. Production losses attributable to "no market" have not yet made an appearance.

While Tug River production increased slightly in the week ended Nov. 27, it was not more than 60@70 per cent of maximum.

There was a fairly strong demand for domestic, otherwise the market was quiet. Mine run ranged $5.25@$6, with export $7.50. Contract deliveries were heavy.

HIGH-VOLATILE FIELDS

Production Declines with Holiday Losses — Poor Transportation Conditions Affect Car Supply.

Kanawha

Congestion on the C. & O. during the last week in November reduced the car supply to about 50 per cent of normal. Production was especially light during the latter part of the week, caused by Thanksgiving Day and its attendant idleness. Transportation conditions on the Kanawha and Michigan were improved.

Domestic coal was in brisk call, but the weak spot steam demand was for the most part confined to Western points. The C. & O. embargo on Eastern movement was still keeping Kanawha coal off the Tide market and materially interfering with contract deliveries.

Mine run was quoted $4.50@$5; prepared sizes, $7.

Northeast Kentucky

Despite holiday losses production gained 10 per cent, reaching 54 per cent of capacity. An improved car supply enabled operators to offset holiday losses.

Gas coal was the only feature of the spot mine run market, as the general steam depression had made steam difficult to move. Domestic fuel was easily sold and the larger operations are again screening coal, apparently realizing the fact that mine run may be sluggish for some time to come. Prepared coals were generally quoted $7; mine run, $4.25@$6, according to grade.

Logan and Thacker

A very pronounced car shortage and the Thanksgiving lull curtailed the Logan output. Engine failures were responsible for a poor movement of loads and empties, the C. & O. being unable to use all cars returned by connecting lines.

The spot market was dull. However, the decreased production was barely sufficient to care for old business and but little free coal was being offered. Eastern and Tidewater shipments were practically out of the question with an embargo still in force.

Mine run averaged about $5 and prepared sizes up to $7.50. Such coal as could be sold for Tidewater delivery brought about $6.50.

Production had reached 60,000 tons during the first half of the month, a substantial increase over the same period in October. With the field under military rule it is hoped that conditions will soon begin to approach normal.

Steam prices ranged $4.50@$5; prepared sizes were in better demand at $7.50, yet little lump coal was being made. Shipments were largely to Western markets. Wagon mines are largely closed down because of the low price for mine run.

Virginia

Production declined during the week ended Nov. 27, losses reaching 30 per cent, of which fully 20 per cent were due to car shortage. The holiday idleness caused an increase in labor losses. At the outset of the first week of December, it was apparent that car supply would not average 60 per cent.

Demand for all grades was extremely sluggish. Prices remained practically unchanged. Operators are running behind on contract deliveries, due to the shortage of equipment.

Middle Western

MIDWEST REVIEW

Mild Weather Cuts Domestic Demand—Steam Market Is Soft—Only Best Coals Are Readily Saleable—Operating Conditions Good.

On account of the continuation of mild weather the demand for domestic is easing up very considerably. Those who have domestic coal for sale are now finding it fairly difficult to place unless the coal they are offering happens to be a standard product known to the industry for the excellency of its quality and preparation.

Some interesting developments are taking place in both the steam and domestic markets. Salesmen who have been out on their territories in an endeavor to sell coal find that buyers are in an unfriendly frame of mind. One man who buys a considerable

quantity of domestic coal, recently told a salesman that he was through with buying from jobbers, no matter what the circumstances. He gives as an example the fact that he bought a car of Indiana lump coal sometime back and paid a very excessive price for it. When the car arrived he found that it was but little better than mine run and of exceedingly poor quality. This buyer said that he took the matter up with the jobbers from whom he bought the coal and was promised a reduction in price provided they could get the shippers to take a part of the loss. It developed that the car had passed through the hands of three jobbers before it reached its ultimate destination, consequently the buyer had a poor chance of getting an adjustment on this particular shipment. This buyer, who is, by the way, a very influential man and well known to both operators and jobbers, went on to say that from now on he is through with buying anything but the better grade coals produced by companies who have a reputation to maintain. This is a typical example of the frame of mind of the average buyer of domestic coal.

According to latest advices the car supply at Illinois and Indiana mines continues to be satisfactory. In fact, some of the mines are receiving more cars than they can use and "No Bills" have been reported at more than one operation. Labor at the mines is satisfactory. The men are working hard and are showing a far more reasonable state of mind. Labor is very plentiful and nearly every mine in Indiana and Illinois have as much labor employed as they can use. The railroads are improving slowly but surely and after a lapse of some time are now giving reasonably good service to the public.

It is expected that when the cold weather comes, and its arrival is due any time, the market on both domestic and steam sizes will be strengthened materially. The industrial depression that swept over the Middle West reached its heights a few weeks ago and it is expected that factories will begin to open up in the near future and that conditions will be very much improved immediately after the holidays.

DUQUOIN

Operating Conditions Are Good — Domestic Demand Is Steady, but Steam Prices Shade Off — Good Northern Movement.

A marked increase in car supply and a steady demand were most noticeable during the week just ended. Also a slight change in the attitude of the miners was shown in certain parts of the region. Coal moved with more speed than has been observed for some weeks. This is due partly to the warm weather which still hangs on.

Large shipments are moving toward the Northwest. The Chicago territory as well as St. Louis is also receiving a large per cent of the output. However, a heavy depression is plainly noticed on steam sizes, while lump is more keenly in demand. Production averaged 85 per cent for the week. This is a large increase over the last two weeks.

Practically all mines have caught up with their contracts and many are now selling 80 per cent of their coal on the open market. Screenings weakened with a top price of $3.25@$3.50; mine run ranged $3.50@$4; lump was steady at $4.

WESTERN KENTUCKY

Car Supply Increasing and Demand Is Holding Up Nicely — Operators Well Satisfied with Conditions — Prices Are Steady.

Operators feel more than satisfied with the way the output has been maintained as well as price, in reviewing conditions existing during the past two or three weeks, during which time general bituminous markets have felt the effect of reduced industrial activity. Western Kentucky is having no trouble in disposing of production at good prices. Lump coal continues in good demand, while steam and screenings are holding their own fairly well.

Early this week operators were quoting spot lump at $5@$6.75, which is about on a par with last week. Mine run is quoted $4@$5.25. Screenings are selling $3@$4.50.

Car supply in western Kentucky is running 69 per cent on the I. C. R.R., and 56 per cent on the L. & N. The O. & N. division of the L. & N is still making a sorry showing, it being the poorest division on the line so far as car supply is concerned, the division not being equipped to handle heavy tonnage.

Western Kentucky, like all other fields supplied by the L. & N. R.R., has grown rapidly, there being an increase in production of 50 per cent between 1912 and 1918, but no improvement in transportation facilities or in through rates except where the carriers have been forced to come across through efforts of the coal traffic bureaus.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Car Supply Is Improved — Domestic Market Strong, with Little Tonnage Available — Steam Coal Is Not Marketed Easily.

From abnormal production losses because of a protracted car shortage, operators are fast approaching the point where a curtailed output will be chargeable to "no market." Producers are again taking to the road for the first time in many months and are pushing their sales.

Demand for steam is extremely light and some little effort is required to move current production. Gas coal is in better call. The domestic market is still good but the majority of operations are not equipped to make prepared sizes.

A better run of cars has been experienced lately. It is said that the L. & N. R.R. is receiving a larger number of its cars that have been off the line in Lakes business and will be able to give better placement, temporarily at least.

Prices range $4@$5.50 for mine-run, gas coals bringing in the higher figure, while on steam the price shades down with the quality. Some contracts are being made on high-grade coals at $4@$4.25.

Western

WASHINGTON

Domestic Demand Is Slack—Consumers Await Lower Prices—Jam Seen in the Event of Cold Spell.

Harold N. Moore, secretary of the Seattle Retail Fuel Merchants' Association, declares that never has the November demand for fuel been so slack as this year.

Three things are responsible for the peculiar situation. First, abnormally mild weather; second, the fact that unusually large purchases were made last summer when an early buying campaign was conducted at the request of the government, and third, a feeling among consumers that coal, like many other commodities, is going to "come down."

The only cause for worry among the coal dealers is that a sudden cold snap will find householders with little coal on hand and that the trade will be swamped with orders that cannot be filled without delay.

Mines are producing coal in plenty and dealers have large stocks on hand, but the distributing system can easily be overtaxed, as it has been occasionally in the past, thereby causing annoyance and discomfort.

There is no basis for the belief that coal prices will be lower soon. Miners' wages have been fixed by a contract that has more than a year to run, railroad freight rates are not at all likely to be revised downward and costs of distribution also are now as low as consistent with service and cannot well be reduced.

UTAH

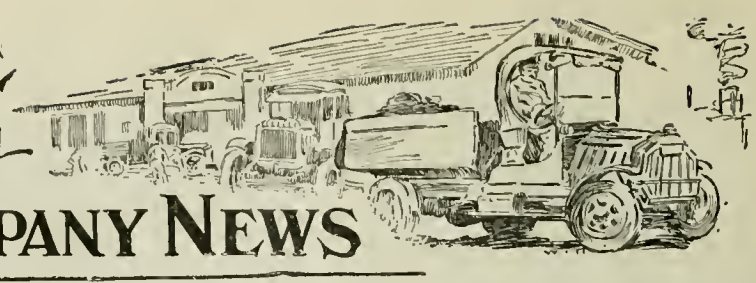
Retail Stocks Adequate, Despite Lowered Production — Final Rate Hearing Set for Dec. 13.

Despite a car shortage which has curtailed the output 25@50 per cent of late, the retailers report no shortage of coal. This is largely due to the mild weather which has prevailed.

Lake conditions are good. Skilled miners are still in demand, out production losses from a labor shortage have been much reduced of late.

The rate dispute between the Utah Public Utilities Commission and the Interstate Commerce Commission will be gone into again on Dec. 13. This will be the final hearing.

MINE And COMPANY NEWS



ALABAMA

Ten miners, eight white men and two negroes, recently met death as a result of an explosion from ignited gas in the mine of the **Railway Fuel Co.**, at Parrish, Walker County. Six of the men were instantly killed ,the other four dying enroute to hospitals. In addition to the killed, three white men and two negroes were more or less seriously burned by the flames. The mine had been closed about a week due to labor troubles and had just resumed operation and according to official information there were 160 men under ground at the time of the accident and the gas was set off by an employee entering a room which had been "marked off." Property damage was reported as slight.

COLORADO

Gross and net earnings of the **Colorado Fuel and Iron Co.** for the third quarter of 1920 show large gains over the corresponding period of last year but a considerable decrease from those of the previous quarter, according to the statement as of Sept. 30, just issued. The balance for the quarter, after all charges except preferred dividends, was $691,685, bringing the net income for nine months of the year up to a total of $2,659,133, compared with $1,572,637 for the same period of last year. This is equivalent, after the payment of preferred dividends to $7.30 a share earned on the common in the nine months. The common dividend is 3 per cent.

ILLINOIS

The Illinois Coal and Coke Co. is preparing to open the old Lefton mine, near Auburn, which has not been worked for a number of years. The Chicago and Alton R.R. is arranging to relay several hundred yards of trackage leading to the coal mine.

The Mitchell-Hopkins Coal Co. has been incorporated with capital of $25,000 to engage in general retail coal business, the yards to be located at Seventeenth Street and Second Avenue, Rock Island.

About 150 miners were rescued from the **Crescent mine** near Peoria after fire had trapped them for over an hour. The fire was caused by a spark from a circuit-breaker. The miners crawled to safety by an escapement in another part of the mine. Several were overcome by smoke. The fire did considerable damage to the mine.

INDIANA

The English-Princeton Oil Co., which has done well with oil and gas leases in Crawford County, has opened a mine on the Henry Wright lease, where it has a 48-inch vein which is being worked. Shipments have already started.

IOWA

Iowa coal production is approximately 50 per cent greater for 1920 than it was for 1919, with consumption practically keeping pace with production. During the first ten months of the year, 6,470,000 tons of coal were mined in the state and it is estimated by officials of the Iowa Coal Operators' Association that 1,300,000 tons will be produced during the last two months of the year.

KENTUCKY

The Landrum Co.] Co., Harlan, recently organized with a capital of $125,000, is planning for the construction of a coal tipple at its properties at Arjay. A housing development to include about 25 miners' residences will also be constructed. C. F. Wheeler is secretary.

Some recent incorporations in Kentucky are **Mineiga-Harlan Coal Co.**, Harlan, capital $15,000, M. I. Bowen, Nelson Cory and G. A. Smith. **Delaware Coal Co.**, Delaware, $15,000, T. H. Jennings, Dr. I. D. Crosby and R. S. Jennings. **The Vinson-Kolb Coal Co.**, has filed amendment, increasing its capital from $40,000 to $100,000, at Louisville.

MONTANA

Montana Mines are trying metal helmets for workmen as a safety device. Scores of the helmets have been distributed by the safety department of the **Anaconda Copper Mining Co.**, Butte, and if the experiment proves a success a supply sufficient for all miners will be obtained and sold at cost, it is announced. These helmets are somewhat similar to the trench helmet used in France, but they weigh only seven ounces. Much of the injury in mines is caused by falling tools and small rocks. The hats, it is believed, will resist or turn such objects.

MISSISSIPPI

The Mississippi Oil & Gas Co. of Ackerman, Mississippi, in the North Central part of Mississippi, has recently leased 2,000 acres of semi-bituminous coal, and clay land, to Jno. W. O'Bannon and S. W. Kendall, well known engineers; it is believed these men intend to fuel the Gulf, Mobile & Northern Railroad.

MISSOURI

A federal grand jury investigation of coal prices in Kansas City has been ordered by Federal Judge Arba S. Van Valkenburgh. The court's order to proceed with the investigation began several months ago by agents of the Department of Justice after Judge Van Valkenburgh upheld the constitutionality of the Lever act under which the probe is being conducted. Coal dealers and operators whose books the federal agents sought to examine made an effort to halt the proceedings on the ground that the Lever act was unconstitutional.

OHIO

The authorized capital of the **Shadyside Coal Co.** of Bellaire, has been increased from $30,000 to $50,000.

The Silver Ridge Coal Co. has been incorporated at New Lexington with a capital of $200,000 to mine and sell coal. Incorporators are J. Paskell, W. V. Bybee, A. W. Paskell, L. Paskell and M. E. Paskell.

PENNSYLVANIA

The Hillman Gas Coal Co., of Pittsburgh, has contracted with Roberts and Schaefer Co. for the complete machinery equipment for their new Bentleyville shaft tipple. In this equipment will be included weigh hoppers, loading chutes, and Marcus picking table screen. **The Diamond Coal & Coke Co.** has contracted with the same company for the installation of an additional Marcus screen to be installed in their tipple at Barking Station, Pa.

Fire of an undetermined origin totally destroyed the tipple of the Alicia No. 1 plant, of the **Pittsburgh Steel Co.** at Alicia. A considerable amount of coal was also burned. The loss will be about $100,000. Five hundred men will be idle as a result of the fire. The work of reconstructing the tipple has been started.

The Willcell Coal Co., Pittsburgh, is being organized by Harry H. Wolfe, John A. Williams and Robert C. Johnston to operate coal properties in certain Pennsylvania districts. Application for a state charter will soon be made.

Charles F. Roy of Somerset has purchased a tract of land in Somerset county containing 19 acres of the famous Listie coal from the George F. Baer estate. Through this deal, Mr. Roy and his brothers, Rob Roy and James Roy take rank among the largest independent mine operators in Somerset county.

WEST VIRGINIA

The Ureka Coal and Mining Co., Huntington, has filed notice of an increase in capital from $200,000 to $400,000.

The Wheeling Steel Corporatioo, Wheeling, has acquired 1,200 acres of coal lands in the Mason County, and is planning for its development at an early date.

The Osage Coal Co., Morgantown, has acquired 38 acres of coal lands in this vicinity for a consideration of $23,000.

The North Fairmont Coal Co., North Fairmont, has construction under way on the housing development at its mines. The structures will be two-story, 22 x 24 ft. and the project, including the installation of plumbing, heating and lighting, is estimated to cost about $100,000.

The New River Coal Co., MacDonald, has awarded a contract to the Austin Co. Union Arcade, Pittsburgh, Pa., for the erection of additions at its mines to be used as a machine shop, and warehouse.

The Monticello Smokeless Coal Co., Monticello, has construction under way on its new steel coal tipple and head house on a local site.

The Right Fork Mining Co., Ivaton, organized with a capital of $200,000, has acquired the property of the Right Fork Coal Co., and is perfecting plans for its improvement. The monthly capacity is to be increased from 200 to 3,000 tons. J. H. Moore, Huntington, W. Va., is president..

H. J. Booth and associates have acquired about 1,029 acres of coal lands in the Monongahela County district for a consideration said to be about $360,000.

The Beckshad Smokless Coal Co., Daniels, organized with a capital of $25,000, has acquired 200 acres of coal property and is having plans prepared for its development. A daily capacity of four cars of coal is expected.

The W. C. Williams Fuel Co., New York, has acquired an option on 500 acres of coal property in the vicinity of Farmington, and it is understood that arrangements for its development are being perfected.

BRITISH COLUMBIA

The production of the **Vancouver Island (B. C.) Collieries** for the month of October shows a marked increase. It is apparent that all the companies are speeding up their output in order to meet increased domestic and bunker demands.

Following are the figures for the Island Collieries for the past month:

	Tons
Canadian Western Fuel Co., Nanaimo	60,582
Canadian Collieries (D) Ltd., Comox	43,390
Canadian Collieries (D) Ltd., South Wellington	9,062
Canadian Collieries (D) Ltd., Extension	17,593
Pacific Coast Coal Mines Ltd., S. Wellington	7,610
Nanoose Wellington Collieries, Nanoose Bay	6,460
Granby Consolidated Mng. & Smelting Co., Cassidy	21,703
Total	166,400

The production of the Crow's Nest Pass Coal Field, B.C. for the month of October was as follows:

	Tons
Crow's Nest Pass Coal Co., Coal Creek	22,058
Crow's Nest Pass Coal Co., Michel	11,504
Corbin Coal & Coke Co., Corbin	14,678
Total	48,240

Traffic News

A number of coal interests are represented in **the Illinois rate case** which will be heard by the Commission on Dec. 13. The Commission last week decided that the intrastate passenger and Pullman rates must equal the interstate fares, and the question of freight rates will be considered at this hearing. Coal interests represented in the case are: Indiana Coal Trade Bureau; Central Illinois Coal Traffic Bureau; Coal Operators Assn.; Illinois Coal Traffic Bureau; Old Ben Coal Corporation; Spring Valley Coal Co.; Illinois Third Vein Coal Co.; Wenona Coal Co.; La Salle County Carbon Coal Co.; B. F. Berry Coal Co.; 5th and 9th Districts Coal Bureau and the Coal Trade Bureau of Illinois.

The case involving **coal rates to Atlanta, Ga.** via Cartersville and W. & A. Ry. has been assigned by the Commission for hearing at Atlanta Dec. 8.

An order just issued by the **Dominion Board of Railway Commissioners** empowers provincial fuel administrators to fix, in case of need, the maximum prices at which all classes and grades of fuel may be sold within a municipality. A general survey is also being made of the available coal supply in the various sections of Canada, to guard against local shortages.

The Denver & Rio Grande Rd. and the Utah Coal Road have filed an agreement to operate and maintain jointly the double tracks between Provo and Thistle. The second track was built by the Utah Coal Road and was used by the Denver and Rio Grande until about two years ago. The contract specifies that each company shall pay the other on a wheelage basis for the number of cars that pass over each others tracks, and have agreed to pay each other 6 per cent interest on the actual cost of the construction of [illegible] grades.

The Virginian Power Co., of Charleston, which furnishes power to mines in Cabin Creek district, Charleston and the Kanawha valley, has applied to the public service commission for an industrial rate. The rate asked would double the rate in effect in 1917. The company was granted an increase several months ago. The representatives of the company claim that no money is being made under the present schedule. An increase in electric rates also was asked for its Mingo and McDowell County operations by the Kentucky and West Virginia Power Co.

Much is expected of the Mississippi River as a rate equalizer on coal costs. At a meeting of the **Upper Mississippi Waterways Association** in Minneapolis it was estimated an annual saving of $40,000,000 may be made by shipping coal up the river from Illinois and Indiana by barges, figuring the present freight at $3.75, and the barge cost, 3,000 tons to the barge, six in a string, towed, at 75c. a ton, with hauling charges from the mines to the river and handling charge of around 25c. or a total of $1. Evidently the figures cover a tonnage of 14,000,000, tons, which is rather high.

Association Activities

Morgantown Coal Operators' Association

Claiming that the business and life of its members are at stake, the Morgantown Coal Operators' Association has renewed its fight before the Interstate Commerce Commission to secure just treatment at the hands of railroads, it is asserted. There are a number of companies belonging to the association who for several years while not owning tipples yet have been loading coal over tipples on private tracks.

Under Sevice Order 14 the Pennsylvania and New York Central systems classified the mines of members as railroad mines but the B. & O. refused to take such action unless a siding was used exclusively by one mine or company.

In September the Association took the refusal of the B. & O. to furnish cars up with the Interstate Commerce Commission and the commission promulgated an order requiring the railroad to furnish open-top cars and also requiring that such cars be loaded in twenty-four hours.

So far the railroad has refused to pay any attention to the latest order of the commission and the Morgantown association is again taking the matter up with the commission. Threat is made of damage suits to follow because of the failure to get cars since August and the resulting loss of business.

Monongalia Coal Operators' Association

Operators belonging to the Monongalia Coal Operators' Association at a meeting held at Morgantown, West Virginia, made it plain that they will demand of the railroads responsible for a shortage of 20,000 cars on the Monongahela Railway the sum of $100,000 as compensation for the loss of business as even if the car shortage prevailing over the period of a year and due to an inequitable distribution of cars, it would not suffice to compensate the operators for their loss owing to low prices now in force.

Northern West Virginia Operators' Association

Geo. T. Bell, secretary and executive vice-president of the Northern West Virginia Operators' Association, presented to the Interstate Commerce Commission at Washington on Nov. 20 the case of the operators on the Monongahela and Morgantown & Kingwood railroads against the director general of railroads for compensation for a car shortage accruing during a period of federal control.

The association first asked that the shortage of 20,000 cars between July 1, 1919 and March 1, 1920, be made, but the plea was changed on Nov. 20, the association requesting that individual operators be compensated instead for loss of business. It is charged that during the period previously alluded to both the Pennsylvania and the Pittsburg & Lake Erie who jointly own the Monongahela, furnished a larger percentage and a better supply to mines on their own line than to mines on the Monongahela and the Morgantown & Kingwood.

Not only did a shortage of 20,000 cars accrue during the period already mentioned but in the six months of quasi-control after March 1, a shortage of 12,000 cars accrued and therefore it is argued the Interstate Commerce Commission had jurisdiction in both cases.

Clarksburg Coal Club

It developed during a recent meeting of the Clarksburg Coal Club that operators of northern West Virginia are not very well satisfied with the management of the Tidewater Coal Exchange, claiming that the influence of the jobbers is so dominant that it gives them virtual control of coastwise and export shipments.

The Exchange determines to just what pools coals from various sections shall be sent, the producers of northern West Virginia having no say, it is asserted, as to just how their coal shall be classified. J. M. Orr, a member of a special committee appointed to investigate the administration of the affairs of the Tidewater Exchange, told just what he had found.

Associates of Mr. Orr on the special committee were S. D. Brady of Fairmont and E. Drennen of Elkins. It was rather plainly indicated by Mr. Orr in his talk to the Clarksburg Coal Club that unless the operators had a larger representation on the board of the Coal Exchange they would be slow to become members although many operators favored the object for which the exchange was created.

Industrial News

Pittsburgh, Pa.—Blaw-Knox Co., Blawnox, has established a new sales district in the South, with headquarters in Birmingham, Ala.

Prescott V. Kelly, formerly connected with the executive sales department at Pittsburgh, is in charge of the new office.

Cincinnati, Ohio—The Raleigh Smokeless Fuel Co. have opened a branch office. Walter D. Mills has been placed in charge as branch manager.

New York, N. Y.—The Cutler-Hammer Mfg. Co. has recently acquired new property in New York City, as an additional plant for the manufacture of "Thermoplax" and "Pyroplax" molded insulation.

Philadelphia, Pa.—Fairbanks, Morse & Co. have purchased the entire business consisting of all stock on hand, good-will and liabilities of the Luster Machine Shop and Railway Equipment Co. Fairbanks-Morse have opened a new branch at this address under the management of Mr. D. W. Dunn.

Washington, D. C.—The Paymaster General of the Navy in his annual report recommends that the government purchase the land on which its coaling plants are located, particularly in Boston and New York. During the past year the Navy consumed 1,515,000 tons of steam coal at an average cost of $5.90 a ton and 45,000 tons of anthracite at an average of $8.50.

Washington, D. C.—The Bureau of Mines has sent to Congress a deficiency estimate of $75,000 to supervise operations under the leasing law until June 30 next, Congress having made no previous appropriation therefor. Of this amount $10,000 is for supervision of coal, phosphate, oil shale and sodium leases and permits, and the balance for oil and gas lease supervision.

Washington, D. C.—To Nov. 1, there had been filed with the General Land Office 254 applications for prospecting permits for coal involving more than 250,000 acres and 39 applications have been made for coal mining leases involving 75,000 acres. Two coal mining leases have been granted to large coal mining companies and more than 300 coal miners are at work on those leased deposits. The royalty to the Government from these two leases will probably amount to more than $30,000 for the present year.

Buffalo, N. Y.—The Premier Coal Corporation of New York has opened a branch office here, with H. Snyder, from the home office, in charge.

Buffalo, N. Y.—Weston Dodson & Co. has established a coal office here, appointing as sales agent A. P. Rich, who comes from the home office in Bethlehem, Pa. He has been in this territory for some weeks, but was without an office till now.

Personals

Clifford F. Messinger has been appointed General Sales Manager of Chain Belt Co., Milwaukee, to succeed **L. C. Wilson** who has resigned to become secretary of the Federal Malleable Co. closely associated with the Chain Belt Co. Other promotions announced are **C. E. Stone**, assistant to the vice president and **J. A. Monahan**, purchasing agent.

Albert H. Hopkins has resigned from the Presidency of the Engineering Advertisers' Association of Chicago, and from the managership of Advertising and Sales Promotion departments of the C. F. Pease Co., Chicago, to become Chicago manager for the J. Roland Kay Co., International Advertising Agents.

Walter D. Stockley, president of the Fairmont Mining Machinery Co., has resigned. His successor is **Frank C. Davis**, who has been the assistant general purchasing agent of the **Consolidation Coal Co.** Mr. Davis' title being that of acting president.

Coming Meetings

American Institute of Mining and Metallurgical Engineers' annual meeting will be held in New York, Feb. 14 to 17 1921. Secretary, Bradley Stoughton, 29 West 39th St., New York City.

Coal Mining Institute of America will hold its annual meeting Dec. 8, 9 and 10, 1920, in the Chamber of Commerce Auditorium, Pittsburgh, Pa. Secretary, H. D. Mason, Jr., Chamber of Commerce Bldg., Pittsburgh, Pa.

The Wholesale Coal Trade Association of New York, Inc., will hold its annual meeting in New York City, Jan. 18, 1921. Secretary, Charles S. Allen, 90 West Street, New York City.

American Society of Mechanical Engineers' annual meeting will be held in the Engineering Societies Building, 29 West 39th Street, New York City, Dec. 7 to 10 inclusive. Secretary, Calvin W. Rice, 29 West 39th Street, New York City.

American Society of Civil Engineers will hold its annual meeting Jan. 19 and 20, 1921, at its headquarters, 33 West 39th St., New York City. Acting secretary, Herbert S. Crocker, 33 West 39th St., New York City.

CURRENT PRICES—MATERIALS & SUPPLIES

IRON AND STEEL

STRUCTURAL MATERIAL—The following are the base prices, f.o.b. mill, Pittsburgh, together with the quotations per 100 lb. from warehouses at the places named:

	Mill	New York		
	Pittsburgh	Current	One Year Ago	Chicago
Beams, 3 to 15 in.	$2.45@$3.00	$3.80	$3.47	$3.58
Channels, 3 to 15 in.	2.45@ 3.00	3.80	3.47	3.58
Angles, 3 to 6 in., ¼ in. thick.	2.45@ 3.00	3.80	3.47	3.58
Tees, 3 in. and larger	2.45@ 3.75	3.85	3.52	3.62
Plates	2.65@ 4.00	4.00	3.67	3.78

BAR IRON—Prices in cents per pound at cities named are as follows:

New York	Pittsburgh	Denver	St. Louis	Birmingham
4.75	3.63	4.95	4.07½	5.00

NAILS—Prices per keg from warehouse in cities named:

	Mill Pittsburgh	St. Louis	Chicago	Denver	Birmingham	San Francisco
Wire	$3 25	$3.35	$4.45	$5.50	$5.00	$6.45
Cut	None		8@11	....	....	8.95

TRACK SUPPLIES—The following prices are base per 100 lb. f.o.b. Pittsburgh for carload lots, together with the warehouse prices at the places named:

	Pittsburgh	Chicago	St. Louis	Denver	San Francisco	Birmingham
Standard railroad spikes ⅝-in. and larger	$4.00	3.40@4.00	$5.47½	$5.50	$7 75	$5.50
Track bolts	6@6.50	4.60@5.80	Prem.	6.75	8.75	8.50
Standard section angle bars	3@4	2.75@3.40	Prem.	5.05	5.45	....

COLD FINISHED STEEL—Warehouse prices are as follows:

	New York	Chicago	Cleveland
Round shafting or screw stock, per 100 lb. base	$5.50	$5.90	$6.00
Flats, squares and hexagons, per 100 lb. base	6.00	6.40	6.50

Denver base price is $7.60.

HORSE AND MULE SHOES—Warehouse prices per 100 lb. in cities named:

	Mill Pittsburgh	Chicago	St. Louis	Denver	Birmingham
Straight	$5.75	$7.00	$7.00	$8.15	$7.25
Assorted	5.85	7.15	7.15	8.40	....

STEEL RAILS—The following quotations are per ton f.o.b. Pittsburgh and Chicago for carload or larger lots. For less than carload lots 5c. per 100 lb. is charged extra:

	Pittsburgh			Chicago		
	Current		One Year Ago	Current		One Year Ago
Standard Bessemer rails	$45.00	$55.00	$45.00	$45.00@	$55 00	$45.00
Standard openhearth rails	47.00@	57.00	47.00	47.00@	57 00	47.00
Light rails, 8 to 10 lb.	2.88@	4.00*	2.585*	2.45@	3 00*	2.835*
Light rails, 12 to 14 lb.	2.84@	3 84*	2.54*	2.41@	2 95*	2.79*
Sight rails, 25 to 45 lb.	2.75@	3.75*	2.45*	2.32@	2.85*	2.70*

*Per 100 lb.

COAL BIT STEEL—Warehouse price per pound is as follows:

New York	Cincinnati	Birmingham	St. Louis	Chicago	Denver
$0.10	$0.16½	$0.18	$0.12	$0.16½	$0.18

DRILL STEEL—Warehouse price per pound:

	New York	St. Louis	Birmingham	Denver
Solid	12c.	18c.	20c.	....
Hollow, ⅞ hex	17c.	22c.	....	21c.

WIRE ROPE—Discounts from list price on regular grades of bright and galvanized are as follows:

	New York and St. Louis
Hercules red strand, all constructions	20%
Patent flattened strand, special and cast steel	20%
Patent flattened strand, iron rope	5%
Plow steel round strand rope	30%
Special steel round strand rope	30%
Cast steel round strand rope	22½%
Iron strand and iron tiller	5%
Galvanized iron rigging and guy rope	+12%

Western and California territory 20%, plow steel; 22½%, galvanized rigging and guy rope.

CONSTRUCTION MATERIALS

ROOFING MATERIALS—Prices per ton f.o.b. New York and Chicago:

Tar felt (14 lb. per square of 100 sq ft.) per roll	$3 05
Tar pitch (in 400-lb. bbl.) per 100 lb.	2 25
Asphalt pitch (in barrels) per ton	56.50
Asphalt felt (light) per ton	122 00
Asphalt felt (heavy) per ton	122.00

Common Brick—Per 1000:

Denver	$15.00
Chicago	15.00
St. Louis, salmon	17.00

LUMBER—Price of pine per M in carload lots:

	1-In. Rough 10 In. x 16 Ft.	2-In. T. and G. 10 In. x 16 Ft.	8 x 8 In. x 20 Ft.
St. Louis	$.....	$.....	$56.75
Birmingham	30.00	37.50	32.50
Baltimore	52.50@60	54@60	72.50

EXPLOSIVES—Price per pound of dynamite in small lots and price per 25-lb. keg for black powder:

	Low Freezing	Gelatin			Black
	20%	40%	60%	80%	Powder
New York	.....	$0.3325	$0.3625	.....	$2 80
Boston	.265	.282	.322	.352	...
Cincinnati	.2275	.2525	.2725	.....	2.30
New Orleans	.265	.295	.325	.3925	2.90
Seattle	.18	.205	.225	.2925	2.60
Chicago	.2175	.2525	.2975	.34	2.45
Minneapolis	.2272	.2476	.2731	.....	2.90
St Louis	.25	.285	.315	.3575	2.60
Los Angeles	.22	.27	.31	.....	2.95

MISCELLANEOUS

BABBITT METAL—Warehouse prices in cents per pound:

	New York		Cleveland		Chicago	
	Current	One Year Ago	Current	One Year Ago	Current	One Year Ago
Best grade	70.00	90.00	47.00	70	45.00	60.00
Commercial	30.00	50.00	18.00	1[illegible]	11.00	13.00

HOSE—Following are prices of various classes of hose:

	Fire
Underwriters' 2½-in.	50-Ft. Lengths 75c. per ft.
Common, 2½-in.	40%

	Air		
	First Grade	Second Grade	Third Grade
¾-in. per ft.	$0.50	$0.30	$0.25

Steam—Discounts from list

First grade..... 30% Second grade..... 40% Third grade..... 50%

LEATHER BELTING—Present discounts from list in fair quantities (½ doz. rolls):

Light Grade	Medium Grade	Heavy Grade
30-10%	30%	25%

RAWHIDE LACING—For cut, best grade, 35%, 2nd grade, 40%. For laces in sides, best, 63c. per sq. ft.; 2nd, 62c. Semi-tanned: cut, 25%; sides, 65c. per sq. ft.

PACKING—Prices per pound:

Rubber and duck for low-pressure steam	$1.00
Asbestos for high-pressure steam	2 00
Duck and rubber for piston packing	1 20
Flax, regular	1 20
Flax, waterproofed	1 71
Compressed asbestos sheet	1 00
Wire insertion asbestos sheet	1.50
Rubber sheet	.50
Rubber sheet, wire insertion	.70
Rubber sheet, duck insertion	.60
Rubber sheet, cloth insertion	.30
Asbestos packing, twisted or braided, and graphited, for valve stems and stuffing boxes	1 50
Asbestos wick, ½- and 1-lb. balls	1.10

MANILA ROPE—For rope smaller than ½-in. the price is ½ to 2c. extra; while for quantities amounting to less than 600 ft. there is an extra charge of 1c. The number of feet per pound for the various sizes is as follows: ½-in., 8 ft.; ¾-in., 6; ⅞-in., 4½; 1 in., 3½; 1⅛-in., 2 ft. 10 in.; 1¼-in., 2 ft. 4 in. Following is price per pound for ½-in. and larger, in 1200-ft. coils:

Boston	$0.28	Birmingham	$0 32½
New York	.27	Denver	28½
St. Louis	.26½	Kansas City	29
Chicago	.27½	New Orleans	26
Minneapolis	.27½	Seattle	.28
San Francisco	.25	Los Angeles	.28

PIPE AND BOILER COVERING—Below are discounts and part of standard lists:

PIPE COVERING		BLOCKS AND SHEETS	
Pipe Size	Standard List Per Lin. Ft.	Thickness	Price per Sq. Ft.
1-in.	$0.27	½-in.	$0.27
2-in.	.36	1 -in.	.30
3-in.	.45	1½-in.	.45
4-in.	.60	2 -in.	.60
6-in.	.80	2½-in.	.75
8-in.	1 10	3 -in.	.90
10-in.	1.30	3½-in.	1.05

85% magnesia high pressure..... List +5%

For low-pressure heating and return lines..... 4-ply.... 50% off; 3-ply.... 52% off; 2-ply.... 54% off

COAL AGE

The Weekly Journal of the Coal and Coke Industries

Volume 18 NEW YORK, THURSDAY, DECEMBER 16, 1920 Number 25

Let the Beneficiaries Pay

TALES of speedy termination of extravagance in executive departments at Washington—of a billion dollars to be cut from appropriations next year and of tens of thousands of civil service employees to be released—sound good to the citizen as he contemplates his individual tax bill. Few would object to having two billion dollars of expenditure cut off, providing it could be done intelligently—that is the problem!

The budget system offers a means of applying impartial analysis to the requests for public money, but do not expect too much from the budget system the first year (which we hope will be next year) because years will be required to develop an organization that can measure up to the requirements.

In the meantime Congress is hearing the various bureaus that do things for the coal industry and is preparing to chop here as elsewhere. We do not believe that in so far as it relates to coal the work of the Geological Survey and the Bureau of Mines can be curtailed without injury to the industry thus served. We are hopeful that Director Smith and Director Cottrell will be able to hold the ground they have gained, but they will need support.

Universal and unnecessary duplication of effort is charged in government work, and Senator Smoot, filled with misinformation by the self-complacent Bureau of Efficiency—fine title, isn't it?—more than a year ago charged endless duplication in the collection of coal statistics. The charge is without foundation except as it applies to the Bureau of the Census, and for that Congress is itself responsible.

The coal industry pays no small share of the taxes that make the income of the United States and as a shareholder in the vast business of our country can demand reasonable returns on its investment in government.

New projects calling for additional expenditures should be examined closely. The Bureau of Mines has again come forward with a request, this time for $750,000 to sample and to certify as to quality of commercial coal shipments. This an an ambitious undertaking and Director Cottrell at the annual banquet of the Coal Mining Institute of America in Pittsburgh, on Dec. 8, suggested that the bureau had no desire to urge such an innovation in coal without the support of the coal industry. Strange as it may seem, appropriation committees are more liable to look favorably on a request for a $750,000 than a modest suggestion for a $5,000 allotment. It is possible that Congress will look on this proposal to guarantee the quality of coal as a panacea for a lot of coal ills and adopt it despite its cost.

We believe in the sampling and testing of coal as measures to insure the consumer getting that for which he pays. The payment for such work, however, is not a proper charge on the public treasury, and if, as seems reasonable, the Bureau of Mines is the proper agent for doing the work, the Treasury should be repaid by collecting fees for the service. If it is worth something to the shipper to have a stamp of the government on his product, and if the consumer desires a measure of protection on his fuel quality, let them—the beneficiaries—pay the cost. Patent fees repay the cost of the Bureau of Patents, passport fees almost meet the total cost of the State Department; why not have a part of the Bureau of Mines thus self-sustaining?

No Time for Upward Coal-Wage Revisions

THE recent rise in the wage of day workers in the bituminous region was really based on a division of profits. Spot prices were abnormally high, and the mine workers felt that they were entitled to a division. They did not so express themselves, partly because it is a principle of the union not to seek wages based on profits, for union men and their leaders do not want wages to be reduced when profits decline and partly because it was the high pay of fly-by-night mines that caused the cry for higher wages all around. But in point of fact the high prices and profits were the cause of the higher wages that were granted to daymen, and those profits and prices have already been decidedly lowered.

A contract is a contract. The bituminous operators must and will keep that to which they have pledged their faith and signed their names. New conditions—the reduced cost of living and the lower prices, both present and prospective—not having been written into the contract cannot be permitted to change it. The wages made at the time the instrument was signed were higher than labor of a similar kind is making the country over, but that is no argument once a contract is made. It must be permitted to run its course. Revision at the end of that time is a matter for consideration later, and the action of the operators in deciding at that time on what they will do will doubtless take into account cost of living, wages current for similar work, public sentiment as to high wages and the high prices consequent thereon.

But the bituminous day wage, being abnormally high and representing conditions which do not reflect and which never have reflected conditions in the anthracite region, should not be duplicated there. The wage in the anthracite mines is based, moreover, on steady work, such as the mine workers in that region, except during strike periods, never fail to enjoy, while the price in the bituminous region is based on part-time operation. Consequently the wage in the anthracite region should not be changed. The Baltimore Coal Exchange is opposed to all negotiations that will result in a revision upward, and in this respect is representative of a sentiment that is country-wide.

New Complexities in Export Trade

SHIPPERS of export coal are experiencing sensations new to many in the trade, who know only the market of last summer. The decrease in demand abroad has been no less sudden and general than the decline in the market at home. Caution has succeeded headlong buying by foreigners, with the French market leading in the slump. It appears that France is far from having in sight the coal she requires for the ensuing year, but a slackening of industry in that country similar in most respects to that in the United States, coupled with unexpectedly satisfactory delivery of German coal, has taken the edge off the French demand. Spain's industries, crippled by universal strikes, are not in the market for coal and Italy has acquired supplies sufficient to warrant holding off for better prices.

The English are now determined to regain all of the former trade their production will permit, for in export trade lies their only opportunity for profit. In the next few months our exporters must learn to do business on a c.i.f. basis in order to meet rejuvenated British competition on a declining market. The all-important point to be developed is how low the British can afford to go, having in mind the settlement recently effected with their mine labor. England must maintain a sizeable share of the coal trade in South America to equalize freights and exchange in her necessary business in wheat, hides, etc., with Argentina and Brazil.

Ocean freights are uncertain as well. Several of the larger American interests have their representatives abroad, which indicates that next year's business so far is in the hands of the buyers. The danger to our foreign trade in coal now is that prices will be named that are as much too low as they were too high last summer. There are items of costs and elements of risk in foreign trade that require a longer margin for the shipper than obtains in the home trade. He who undertakes to deliver coal next year without discounting these features may do the American trade as much damage as those who more than took advantage of the abnormally high market last summer.

An Urge or a Restriction

STANDARDIZATION has been long urged as a means of conservation of labor. The enthusiasts would have every type of instrument modeled after one and that the best. But what is best, and will it be best tomorrow? Let us be careful that we do not set a limit to invention and prevent development. Railroads are all of standard gage. How much better had they been in accord with the gage advocated by Sir Isambard Brunel—six feet instead of four feet eight and half inches! Travel would be easier, cars would be larger, tractive effort would he reduced and all of our railroad engineering on a higher plane. Yet we might easily have compromised on a meter gage, and so have fallen far below our present level of accomplishment.

The figure for mine gages is set by one sub-committee of the Standardization Conference of the American Mining Congress at forty-two inches, but another would add to these gages thirty-six inches and forty-eight inches. Even these gages will hamper development, for some mines are using cars on standard railroad gage tracks, and surely they should not be restrained in pioneering.

This attitude with regard to standardization is quite general. Everyone is a little afraid it may be too successful and clamp our American spirit in too Byzantine a mold. When some over-zealous standardizer wanted to name a lower limit for the weight of power drills—about 25 lb.—one of those who were present at the conference declared that drills used to weigh 200 to 300 lb., and everyone then felt assured that the weight was right, for only a drill of that weight would meet the strenuous demands of underground work.

Now we are down to 35 and 50 lb. and some good drills weigh only 18 lb. or less. No one wants to put a limit on weight, on the maximum size of a clock or the minimum size of a watch. From the old Nuremberg timepieces we have traveled up and down. We shall do the same with drills if standardizers will let us.

Still there is work for standardizers—work enough and to spare. The standardizer will save many a heartache and much waste of time. He will give us more for our money and better thought-out designs. Still let us hope there will always be those who, seeing a need, will break freely with standards as with other conventions, if they impede the progress of mining.

Concentrating Tables

TO EVERYONE at some time has come the vain hope that by comminuting coal it would be possible to divide even bone coal into pure coal, slate and pyrite, the former containing only intrinsic ash. But when the dream had been exposed to the garish day, it was found that the jigs as then constructed failed to separate what crushing had appeared to have so completely parted. The product was too fine to submit to such washing. The waste water of the washery tended to take away coal, ash and pyrite together, so that fine crushing fell into disrepute.

Recently something has been done to remedy conditions. Better jigs, thickeners and concentrating tables have helped, and today it may be said that all the free ash can be taken out of finely-crushed coal and almost all the non-microscopic pyrite, but the intrinsic ash and the organic sulphur cannot be removed. Many a good jig and concentrating table has been condemned because it could not perform those wonders that only chemical action can achieve.

It is remarkable that concentrating tables have not been in larger use. True they take up larger floor space, but that fault is met by the fact that they do not take the same amount of headroom, so the loss in floor space is at least partly met by increasing the number of floors. This can be done without markedly increasing the height of the washery. They cost much less to drive—perhaps one-twentieth as much as a heavy jig—but as their capacity is less, the driving cost per ton of product is only one-fifth as much as with the older form of machine. They take about one-twentieth as much water, and that is often an important consideration. Moreover, they require much less attention after the slope of the table and the feed of water and of raw coal are provided. However, so little has been as yet decided as to jig and concentrating-table service on fine coal that it would be ill-advised at the present time to offer the public a judgment.

New jigs are being developed as time passes. Some of the power costs are being lessened. What time will prove it would be vain to forecast, and perhaps no general dictum will ever be accepted for all coals, but we are getting nearer and nearer to the time when we can arrive at the truth.

Coal Mining Institute of America Holds Its Most Successful Session

Institute Has Gained About 51 Per Cent in Membership Within a Year —Meditates Establishing Letter Ballot Banquet Speeches Are More than Usually Attractive—About Three Hundred Members Present

By R. Dawson Hall
New York City

THOUGH there were but 821 members a year ago, the number had risen to 1,206 when the Coal Mining Institute of America met, on Dec. 8, in the Chamber of Commerce Building, Pittsburgh, 385 new members having been accepted since the last meeting. To this must be added 36 members who turned in their applications at the first session. Instead of deficits such as have too often plagued secretary-treasurers and members in the past was a comfortable balance in the bank of $414.41 and $1,000 of Liberty Bonds. Though this fell behind last year's surplus by $200, there is nothing but prosperity ahead of the organization, and that despite the fact that the dues are only $3 per year. In the twelve months past $2,711.12 was expended. During the past year six members of the institute have died: W. R. Elliott, Horace T. Knight, W. L. McDonald, James D. Simpson, A. C. Stollknecht, H. M. Wilson and Roger Hampson, and appropriate resolutions were offered, accepted and forwarded to their surviving relatives.

RESULTS OF ELECTION

A. R. Pollock . . .	President
D. R. Blower,	First Vice President
J. I. Pratt,	Second Vice President
R. Z. Virgin,	Third Vice President
Alexander McCanch	Executive Board Members
W. L. Affelder	
W. E. Fohl	
E. S. Moore	
H. D. Mason,	Secretary-Treasurer

President Joseph Williams made his annual address, in which he called attention to the power of the Coal Mining Institute of America as the most representative body of coal-mine engineers, coal-mine executives and state and Government officials in America to settle many of those problems which are perplexing the coal-mine industry. The relations between mine workers and executives, he declared, could be greatly improved if the deliberations of the institute were rightly directed. He commented on the fact that among the new members ten different states were represented and six different foreign countries—Peru, Venezuela, China, Mexico, Russia and New Zealand. The institute, he said, was gradually beginning to justify its name.

In this report I shall make no reference to any of the technical addresses or to the discussions of the queries which members had presented for comment. Every item, but one, on the technical program was presented and all elicited much interest among the 300 or more who were present at all the sessions.

The only paper which failed to be forthcoming was "Modern Safety Appliances for Hoisting Shafts and Cages," by William G. Duncan, director of extension work, Pennsylvania State College, that contributor having been compelled by long sickness and death in his family to delay till the coming year the completion and delivery of his paper, on the preparation of which he had already expended no little time and labor.

At the election A. R. Pollock, general manager of the Ford Collieries Co., was elected president, the other names presented being those of E. S. Moore and R. Z. Virgin. E. S. Moore, who is dean of the School of Mines, Pennsylvania State College, withdrew his name. The elected candidate received 98 votes and Mr. Virgin 69. For vice-president D. R. Blower, mine inspector for the Vesta Coal Co., California, Pa., received 124 votes; J. I. Pratt, state mine inspector, of Pittsburgh, 123 votes; and R. Z. Virgin, mining instructor, Pennsylvania State College, 108 votes. The other candidates were W. D. Nesbit, of the Keystone Coal and Coke Co.; W. G. Duncan and W. L. McCoy, safety inspector, Bertha Coal Co., Pittsburgh, Pa., who received 90, 40 and 37 votes respectively.

On vote, it was decided that the policy of the institute be not changed and that the resolution offered by the executive board providing for a reduction in dues to student members be tabled. The students of Carnegie Technical School had paid their full dues and did not desire a lower priced membership with reduced privileges. In fact, as all the members of that school are already men who have had active experience in the mines, they naturally feel as much qualified as many others of equal experience and less training to assist in the direction of the affairs of the institute.

W. E. Fohl, Alexander McCanch, W. L. Affelder, E. S. Moore, Joseph Williams, W. P. Pilkington, W. L. McCoy and A. C. Callen were then nominated for board members. Mr. McCanch received 94 votes; W. L. Affelder, 88; W. E. Fohl, 82, and E. S. Moore, 79 votes. They were declared elected. H. D. Mason, whose salary is set at $300 a year, was elected secretary-treasurer by acclamation.

It was proposed by W. L. Affelder that at the next meeting shall be discussed a change in the bylaws which would constitute the executive committee as a nominating board, requiring them within thirty days of the meeting to prepare a ballot showing at least two names for each office, leaving a space for each member to fill in a third name if he so desires. The ballots thus voted are to be returned to the secretary-treasurer for count within ten days of the meeting. This arrangement will make it possible for the secretary-treasurer to announce the elected officers at the opening of the session and thereby save much undue delay and confusion. Mr. Affelder declared that at the meeting, out of 1,242 members, only 167 persons voted for president. This inadequate vote would be increased if ballots were sent to the homes of the members. The proposition was strongly opposed by Richard Maize, state mine inspector, of Uniontown, and it was carried by the close vote of 65 to 58. A year from now will decide whether the vote was merely for an opportunity to decide on the matter, or a real declaration in favor of that method, which, by the way, is already the usual system of voting in all large institutes.

Indigestible Elements in Our National Diet

W. L. Affelder presided at the banquet. The Rev. Dr. John McDowell, secretary of the Presbyterian Board of Missions, who did his first underground work as door boy at Maltby Colliery in the anthracite region, getting that work so early in life that he could only secure it by misrepresenting his real age, made, perhaps, the most interesting address of the evening. He advanced from door boy to nipper, or mule leader, and then to mule driver. While he was doing this work he was severely injured, losing an arm and receiving several other injuries, so that his father was obliged to give him a good school and college training to make up for these physical defects. His talk emphasized the importance of the human element in mining, and the fact that after all the industry could not function without the correct impulse of the hearts of those engaged in it.

Frank J. Raymond, of the Inter-Racial Council of New York, spoke on the aims of the Council: Friendly relations between the immigrants and American workmen, reduced labor turnover, and selective immigration. He declared that the American Federation of Labor sought to exclude all foreigners for a long period if not indefinitely. The Inter-Racial Council believed that selective immigration would not be conducted on sane grounds so long as it excluded merely those who were unable to support themselves were illiterate.

Many highly literate foreigners were distinctly undesirable. Moreover, when admitted some attempt should be made to distribute them and prevent colonies of foreigners forming indigestible elements in our national economy. He said that in one-half of the country there were about 5,000 colonies of foreigners.

Dr. Riley F. Little, of the Safety Institute of America, New York City, also spoke on co-operation, urging that the workmen needed not only wages but justice, opportunity and security. Every man likes to feel he has treatment to which he is entitled, opportunity to rise to such places as fit his abilities, and a security that he and his family will be assured against misfortune in the years to follow.

Jack Armour, of *Coal Age*, made an address under two heads: "Shortage of Men," and "What Are You Going To Do About It?" It was not discoverable that what he said threw any light whatever on the subject, but many of those who heard his speech are laughing yet in unexpected moments and trying hard to explain their inexplicable behavior.

Word Regarding the Coal in the Balkans

Howard I. Smith, consulting mining engineer to the Kingdom of the Croats, Czechs and Slovenes, former member of the U. S. Bureau of Mines and mining engineer of the Vandalia Coal Co., spoke on the political problems of the country where he has been engaged as consultant. He said that the coal of the Balkans was principally of lignitic character, although some small areas showed coal running up to 15,000 B.t.u. The coal varied from most any thinness up to 150 ft. thick, though this largest deposit of all had only 100 ft. of pure coal. At the present time seventy-seven mines were operating. He had visited all these and several that had been worked in Roman times and had been reopened by the Germans.

The mines do not have a large output even where well equipped. Those operated by the French are producing daily only 0.28 ton per employee, and at one mine, where the coal is 10 ft. thick and found in a favorable condition for mining, 0.8 ton per man employed is the daily output. The power plants are up to date, but an immense amount of coal is used—at one plant one ton out of every five mined, at another one out of every seven, at another forty tons out of every 140. Some of the mines have an extremely low production. In six shaft-mines thirty tons were produced in operations of three shifts. Much work has been done in the use of liquid oxygen, because it has been most difficult to obtain all other kinds of explosives, as railroad facilities are lacking. All explosives must come through German or Austrian territory. The Teutons will not let their own cars go out of their country and keep all railroad equipment that is allowed to cross the line.

Would Test Coal for All Who Desire It

Dr. F. G. Cottrell, director of the U. S. Bureau of Mines, completed the evening by remarks on the proposed work of that bureau in relation to the testing of coal. He said that the bureau compelled no one to submit explosives to its approval but, having established such a means of testing explosives, many manufacturers were well pleased to submit such of their products as they believe would meet the approval of the bureau and receive its certification.

Similarly operators at their pleasure will be able to name certain mines the product of which they desire to be certified as being of a definite quality. The Bureau of Mines will sample and analyze the coal as found in the cars, will determine on the class in which such coal can be placed, and will then, by sampling and analysis of the necessary frequency, find out whether the coal can continue to receive that certification or must accept a position in an inferior class. The development of this plan depends on the willingness of Congress to grant the necessary appropriation. Unless the industry shows an interest the money will be obtained with great difficulty. Some of the sampling and analysis is already being done by the bureau for the Tidewater Exchange.

A. R. Pollock, the new president, then made a graceful acknowledgment of the honor he had received in his election, thus fitly closing the function.

Under the Microscope Coal Has Already Lost Much of Its Former Mystery—II*

Resins in Bright Coal So Little Changed That We May Be Able to Convert Them Into Varnishes—Spores in Dull Coal and Oil Shales Provide Most of the Oil and Gas—Resins and Species of Spore and Pollen Cases Still Distinguishable under Microscope

By Reinhardt Thiessen†
Pittsburgh, Pa.

PEAT is a deposit of semi-decayed and semi-macerated plant products formed in a wet or poorly drained area. In it are found all the plant products that a plant growing in it may yield. The woody plants are by far the most important and the most abundant in the peat-forming processes, and woody matter forms by far the largest part of the deposit.

The best examples are the deposits formed of and now covered with dense growths of trees adapted to a very wet condition. As already intimated, the plant products are semi-decayed and in various stages of maceration. The harder or more woody parts have resisted maceration more than the softer parts, such as bark, young parts, leaves, etc. But much of the wood also has been disintegrated and has been transformed with the other products of decay into a general débris.

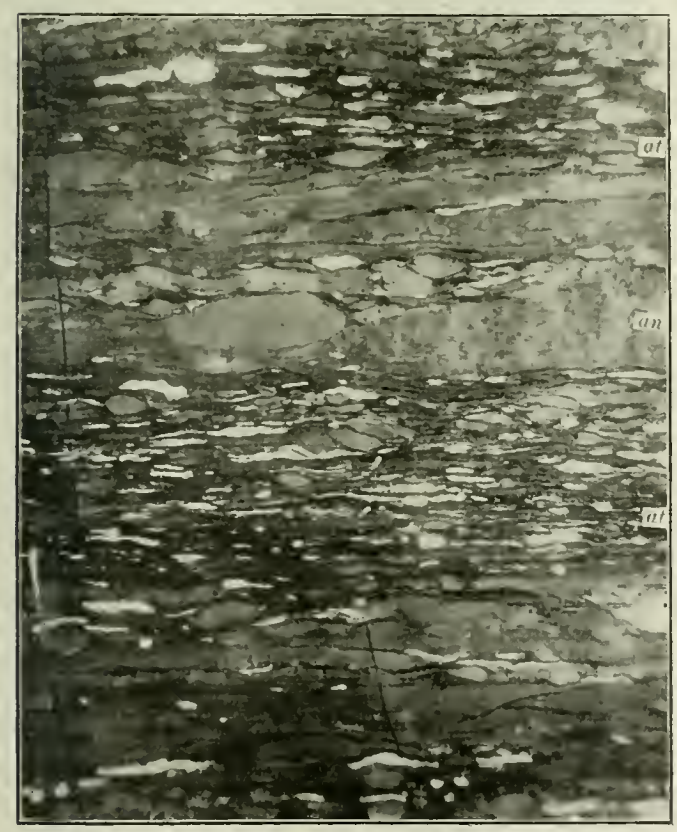


FIG. 1. SECTION OF COAL FROM THE BROOKVILLE SEAM

Shows the general appearance of dull coal; *an* represents thin anthraxylon constituents, and *at* the attritus, the latter composed of spore-exines, cellulosic degradation matter, resinous matter and some inorganic matter. Magnification 155.5 diameters.

FIG. 2. SECTION OF PITTSBURGH COAL

Consists mostly of attritus including some thin anthraxylon strips and resinous particles. The attritus is rich in spore matter. Magnification 158.8 diameters.

We have then a mass that consists of semi-decayed tree trunks, limbs and roots and fragments thereof embedded in a mass of débris. When this general débris is more closely examined it is found to consist largely of smaller fragments of wood matter in the shape of chips or fragments of stems and twigs. These are again embedded in a mass that consists of very finely macerated plant matter.

It has very much the appearance of mud. When examined under the microscope it is shown to consist of bits of all kinds of tissues and plant cells and fibers of all kinds, as well as of pollen grains, spores, cuticles, resinous matter and some dirt. The mass of this plant material, most of which consists of woody matter, is in a peculiar physical condition. It has been turned into a sort of a jelly that has retained the plant structure and contains more water than plant matter.

Ascent from Peat to Bituminous Coal

It is the nature of substances in this condition to form a hard, rather brittle mass when dried. Mature peat has exactly that property; it has made the first steps toward coalification, and when dried it is much like coal. Unmatured peat may be brought into this condition by artificial means, and when dried resembles bituminous coal in many respects.

*Article entitled "Recent Developments in the Microscopic Study of Coal" presented before the Coal Mining Institute of America, held at Pittsburgh, Dec. 8 and 9.

†Research chemist, U. S. Bureau of Mines.

The lignites are similar in composition to the peats, but in the lignites all the plant matter has been compressed, flattened and hardened, and to a larger extent has been deprived of water. Coalification has taken place to a considerable extent, but has not nearly been completed. Indications show that it once was in the same peculiar physical condition as peat.

The sub-bituminous coals, the geologists tell us, were formed at the same time as the lignites. Some are part of the same bed; some in fact are younger than the lignites, but through earth movement or, as the geologists call it, dynamic action, the sub-bituminous coals have proceeded further toward coalification than the lignites. Microscopic examination shows that on the whole they are composed of the same kind of plants and the same kind of plant fragments as the lignites.

It is hardly necessary to say that plant structure has been retained to a large extent in the lignites and in the sub-bituminous coals, but it is important to emphasize that as we go from peat to lignite, and from lignite to sub-bituminous coal the plant structure has been more and more effaced or obscured because the mass has been more and more compressed and hardened and has become more opaque.

Dull Coal Has Mixture of Bright Matter

When we come to the bituminous coals the coalification, in general, has proceeded still further and hence we should expect the plant structure to be still more effaced, or rather made less evident. The fact is that it has not been effaced, but the structures have been hidden or obscured. The anthraxylon in every coal examined has revealed abundant woody structure (Fig. 3).

The duller portions of the coal are shown on close examination to be composed of numerous thinner strips of bright jetty black coal interlayered by a mass of granular appearance—the attritus. This interleaving of bright and dull strips in the dull coal was well illustrated in Fig. 2 of the first installment of this article, which appeared in last week's issue. The jetty black strips represent, like the larger portions of the bright coal, anthraxylon constituents derived from woody matter. Woody structure is preserved in all of them (Fig. 1). Some of them represent small chips of larger stems, branches, or roots; others represent fragments of smaller branches, twigs or roots, and still others represent twigs, rootlets and the petioles themselves.

Gradual Transition Between Layers

There is in reality no boundary line between the larger, the smaller and the smallest layers of bright coal. There is a gradual transition in size from the largest to the smallest. It is safe to say that in all of them plant structure is abundantly preserved and that there is not a cubic centimeter of coal in which the plant structure has been entirely eliminated. It may not always be easily discernible in cross-section, but in sections taken horizontally it is always revealed.

The pieces of bright coal are embedded in a mass that has been derived from all kinds of plant products, such as finely macerated woody matter, bark, pith, cortex, leaves, leaf stalks, plant fibers, plant cells and parts of the same, all derived from the cellulosic parts of plants; among these are distributed constituents that stand out clearly, such as resinous matters, spores and pollens. This part is called the attritus (Figs. 1, 2 and 3). Intermingled with this are to be found cuticles, megaspores, sporangium walls, carbonized parts of tissues and plant cells and particles and other mineral matter.

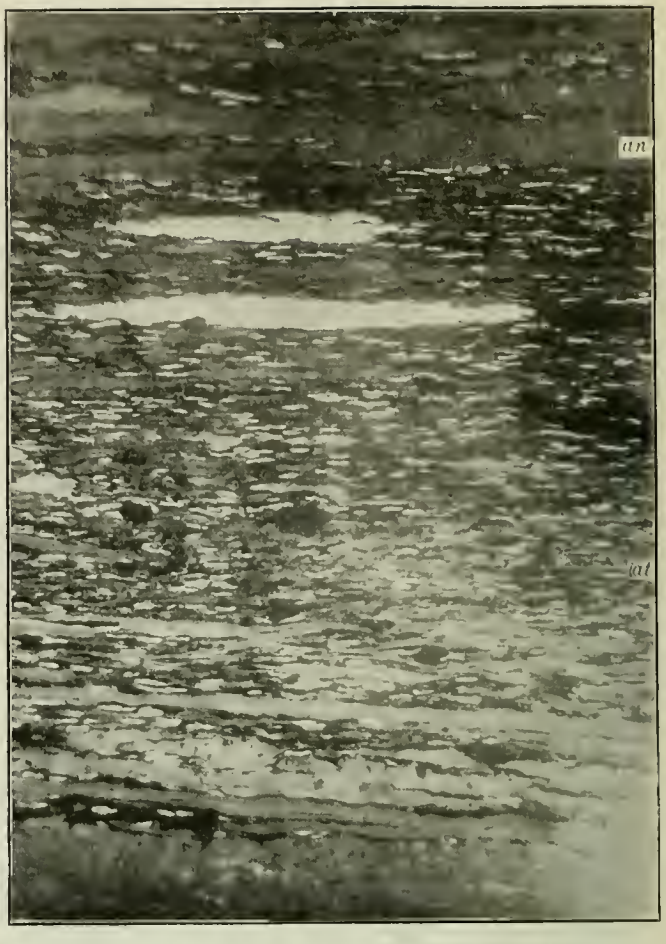


FIG. 3. VERTICAL SECTION FROM UPPER FREEPORT SEAM

Composed chiefly of attritus with a few thin strips of anthraxylon. Magnification 156.5 diameters.

All the vegetable matter has been subjected to putrefaction and decay, and at one time was soft and pliable; it was later compressed and flattened, the flattened parts lying horizontally to the bedding planes. The attritus has been generally referred to as the ground mass, fundamental matter and binding matter. The different constituents named are present in greatly varying proportions. Sometimes the attritus may consist largely of spores instead of woody matter, and then again resinous or cuticular matter, or of earthy material.

In the foregoing analysis it is seen that all the ordinary bituminous coals were derived largely from woody growths. The peat bogs that gave rise to them consisted of wooded swamps similar to those found in Minnesota, Wisconsin and Michigan and the Dismal Swamp of Virginia and North Carolina. The lignites of North Dakota and Montana are analogous to these and form intermediary steps between peat and coal.

By far the largest part of the mass of the ordinary coals, therefore, is made up of woody matter. By woody matter is meant all that which is generally understood under the term "wood," such as tree trunks, branches, limbs, twigs and roots. This wood, of course, is present in various degrees of fragmentation, as already noted. The larger fragments are represented by the bright or glans coal; the small fragments by the thin sheets of bright material in the dull coal. In the attritus there

is further represented woody degradation matter in a finely divided state where it is mixed with other plant matter, such as resins, spores, pollens, cuticles, bark, etc.

It should be noted that besides that part of the plants generally designated as wood, such as the stems, branches and roots, the more delicate part of the plant also contains woody matter. The cell walls of succulent plants, the leaves and their petioles, the bark, growing parts and pith all contain the same substances that compose wood, namely, cellulose and ligno-cellulose. The macerated matter of all of these contributed to the attritus. It is clear, then, that the largest part by far in coal is derived from woody matter, and a very large share is derived from wood; that is, that part of the plant usually termed wood.

Lomax and Glover see but little evidence that coals contain any great amount of matter derived from woody parts of plants, such as stems and branches, and what there is occurs in the form of mineral charcoal. They conclude that the ordinary bituminous coals have been derived mainly from the droppings of trees and plants in the form of spores, fruits, leaves, twigs and sometimes fragments of stems. If this be true our whole conception of coal formation has to be changed. We have here no deposits analogous to that of their conception.

Resins are found in both the anthraxylon and the attritus of coal (Figs. 4 and 5). Much has lately been said about resins in coal. The term, however, is used rather loosely and indefinitely. We read of resins, resinous substances, resinic substances, resinic extracts and resinic residues in coal without a definite knowledge as to what they really are.

Resins of Many Varieties in Living Plants

In the living plants there are so many kinds of resins that it is hard to define them and bring them all under one head. But in speaking of resins in plants it usually is quite well understood what is meant. They have peculiar characteristics of their own that differentiate them sharply from other substances. Rosin, Canada balsam, gum dammar and tamarack gum are well-known examples.

The chemist who is working with resins has arranged them precisely and systematically into many groups and kindred orders. For him to follow the large and intricate array of resins is as easy a task as to plan the outlay on a coal mine is to the coal-mining engineer.

Under resins are comprised a large number of specific substances, most of which belong to the ring compounds. These may be divided into resin acids, resin phenols, resin alcohols, resin tannins and resenes, each group having a large number of members. Several or many of these, as esters, or as esters and mixtures, form definite kinds of resins; as rosin and Canada balsam. Similarly as fatty acids and alcohol they form fats or oils, as lard, butter and olive oil.

In the peats the resins are easily recognized. They are still found without much change in character in the tissues just where they existed when the plant was living, or they form a part of the attritus, having been set free by decay, and then they are easily determined by means of micro-chemical tests.

In the lignites resins are found both in the anthraxylon, or woody part, and in the attritus, where they are in most cases easily recognized. The woody part of the coal, the anthraxylon, has in most cases been well enough preserved so that generic and in some cases specific determinations can be made, and these resins are found to be closely related to species living today.

FIG. 4. DULL COAL FROM PITTSBURGH SEAM

Photographed by transmitted light at a low magnification. The narrow lighter bands represent thin strips of anthraxylon, or bright coal; the darker, mottled bands between them represent the attritus, showing that the dull coal is compiled of alternate layers of anthraxylon and attritus. Magnification 10.

They are in the very tissues where they would be expected were the tree still living. In the attritus of the lignites it is not quite so easy to determine the origin of all resinous constituents. Most of them, however, can clearly be traced to their sources without doubt; others are not so clearly defined and their origin is doubtful.

The resin inclusions found in the anthraxylon of the

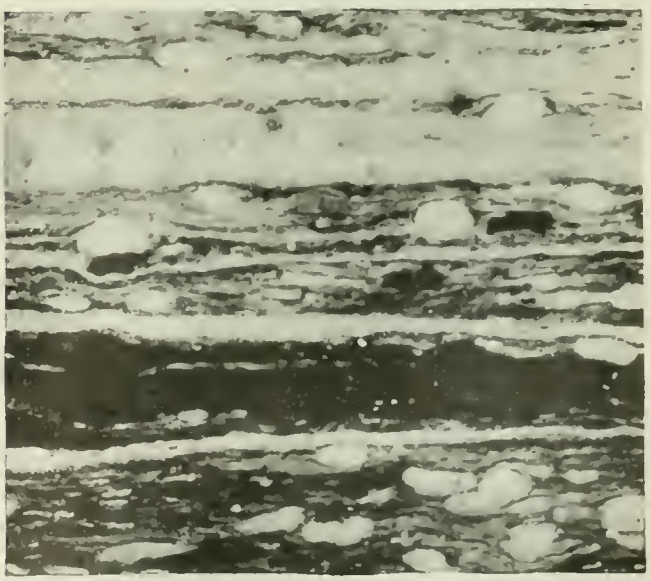


FIG. 5. THIN SECTION OF PITTSBURGH COAL

Resinous matter is clearly in evidence. The magnification employed in this case is 200 diameters.

lignites are highly concentrated. The largest proportion of resin in the stems of certain living pines is about 12 per cent of the dry weight. In the lignites sample after sample of anthraxylon, shown to be part of a tree trunk, is found where the resin content is far above 12 per cent—in many pieces it is close to 50 per cent. Though the wood decayed and largely disappeared its resin remained and thus was concentrated. The sub-bituminous coals are similar to the lignites in every respect in regard to their resinous content.

In the bituminous coals also resinous bodies are found both in the anthraxylon and the attritus. An examination of the anthraxylon shows that they are held in the tissues and in the cells where they might be expected to occur were the tissues living (Fig. 4). It is fair to assume, therefore, that the resins found in coal are the resins natural to the plants of which the coal is composed. In some cases such resinous bodies form a considerable part of the coal.

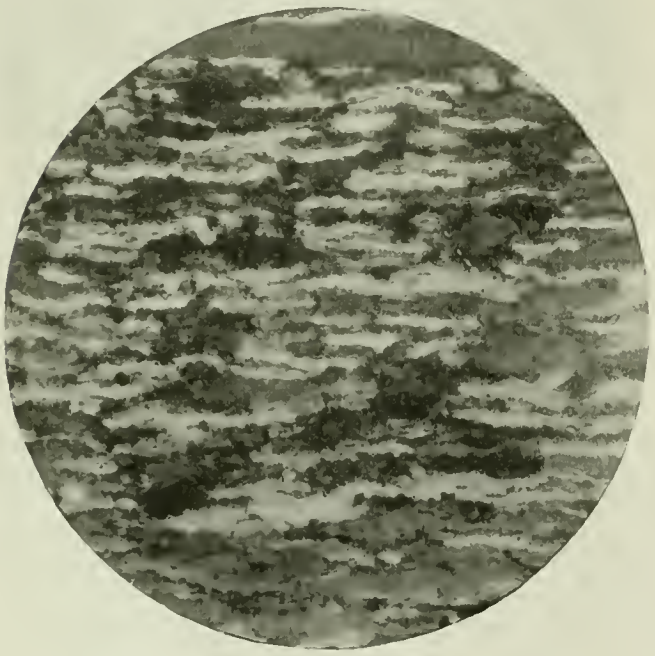


FIG. 6. PITTSBURGH COAL SECTION

Highly magnified to show in detail the character of the spore-exines and that of other constituents of the coal body. Magnification 1,000.

White, after a number of years of experience and study of fossil plants, concludes that the plants of the Carboniferous period contained as much resinous matter as the plants of the later ages. He further concludes that the amount of the wood found in the Paleozoic coals containing resin justifies the conclusion that the quantity of resin contributed by the coal-forming plants and preserved either in place in the wood or as accumulations in various layers of the coal may have been as great in the Paleozoic as in later periods.

Coal Resins May Yet Serve as Varnishes

There also are invariably scattered through the attritus of all bituminous coals bodies of a resinous appearance, usually of a rounded to oval shape but also of cylindrical and irregular shapes (Fig. 5). A good many of these can directly be traced to be of the same origin as those in the anthraxylon; others are inferred by analogy and through their similarity to those in lignite to be derived from the natural resins; regarding others it is not safe to venture any conclusion. On the whole it is quite safe to say that they are derived from plant substances similar to the plant resins of today.

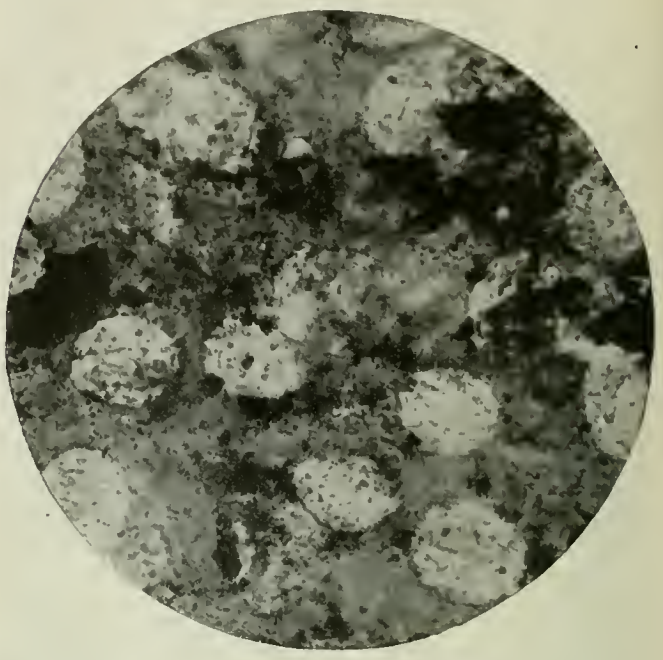


FIG. 7. THE BROAD SIDES OF SPORE-EXINES

Horizontal section of Pittsburgh coal at the high magnification of 1,000 diameters.

The fossil resins, whether found in lignite and coal or in the ground, like amber, fishtelite and succinite, are among the most stable substances known. It took the best chemists years of work to find the composition of fishtelite, for example, on account of its resistant nature. It is, therefore, little wonder that the chemistry of coal is so difficult. In view of this fact, if certain constituents of coal, like the resins, could be

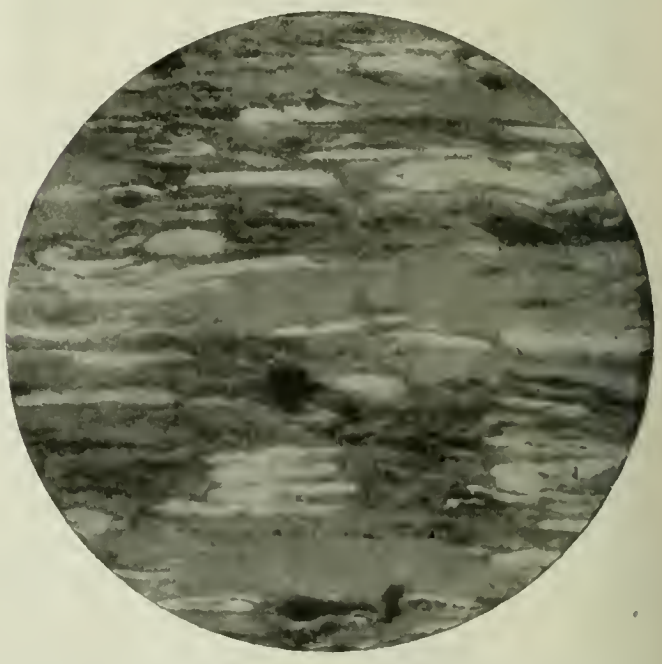


FIG. 8. NOTE SMOOTH OUTLINE OF SPORE-EXINES

Part of a thin section of the Pittsburgh seam at a high magnification, showing the constituents in detail. Magnification 1,000.

isolated and dissolved, they should yield durable commodities like lacs and varnishes.

On account of their beautiful colors and brilliant appearance under the microscope the spores were the first objects discovered in coal. Since their discovery they have often usurped a place as the main objects of investigation, the main subject under discussion being put in the background or left out altogether. More prominence and more importance has therefore been placed on them than they deserve. It must, however, not be construed that they do not form important constituents in all the coals.

The spores and pollen grains are found only in the attritus of coals, usually mixed with the other constituents (Figs. 1, 2, 3, 6, 7 and 8), but here and there they are found in mats. Frequently they are in lumps still held together the way they grew in the plant. Before it was known what they really were, various names were given to such lumps. Occasionally whole cones of the coal-forming plants remained in the coal with all the spores intact.

Spore Cases and Pollen Cases Most Durable

The spore content of coal may vary greatly in the same bed from place to place, from top to bottom and also from seam to seam. When spores form a considerable part or a large proportion of a coal bed or a part of a layer of a coal bed they lend distinctive characters to it.

The important part of the spores in coal formation are their outer walls or exines. In the peat stage the inner or living parts were soon destroyed. But the outer walls or exines are highly resistant to bacterial activities and chemical reagents and have thus escaped decay and disintegration to a large extent. In this respect the spore-exines of all the spore-bearing plants

FIG. 9. MUCH SPORE MATTER IN BONE COAL

Thin vertical section of bone coal, showing that it is largely composed of spore matter. Most cannel coals present a similar appearance. Magnification 200.

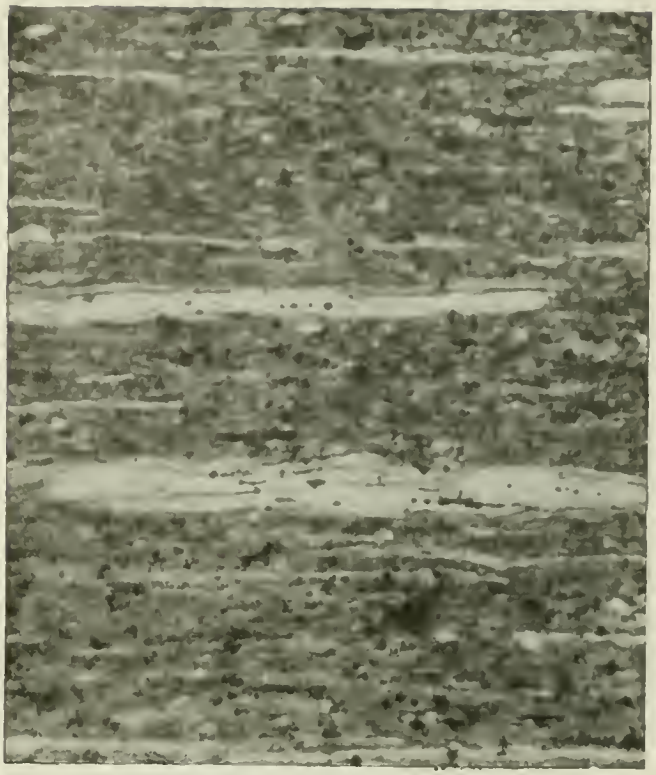


FIG. 10. OIL SHALES CONTAIN SPORE-EXINES

Thin cross-section of oil shale or chocolate shale from the Devonian of Illinois. The lighter bands are recognizable spore-exines, the black mottlings represent pyrite particles. Magnification 200.

are alike, as are also the exines of pollen grains of the seed plants.

In the living plants they are composed chiefly of oils, waxes, fatty acids, alcohols, some resinous matters and cellulose. Langer found in the spores of a club-moss 49.3 per cent oil. Besides this they contained phitosterine, benzol derivatives, and acid called pollin, and cutin.

When the attritus forms a relatively thick layer in a seam, say half an inch or an inch or more in thickness, and is composed largely of spores it is called horne coal (Fig. 9). When such a layer is still thicker, so that it forms a considerable part of the bank or forms a bed by itself, it is called cannel coal.

Oil Shales Are Clays with Attritus

In other words cannel coal is an attritus in which spore matter forms the predominant part. Some cannel coals contain little else than spore matter. Others contain varying quantities of other plant-degradation matter. The ash content usually is high in such coals. There is no distinction between cannel coal, boghead coal, torbanite and torbane mineral. Spores form by far the largest part of the organic matter in all of them.

A layer of attritus, having much mineral matter, or ash, mixed with the spores and other organic materials of which it is formed, if of such thickness as to be noticeable, is called bone coal. When it is composed still more largely of mineral matter it becomes carbonaceous shale.

When a layer of attritus in a coal seam is so rich in clay that the latter is the predominant constituent it is called carbonaceous shale. Such shales often form beds by themselves and are occasionally of considerable thickness and extent. They are found all over the world

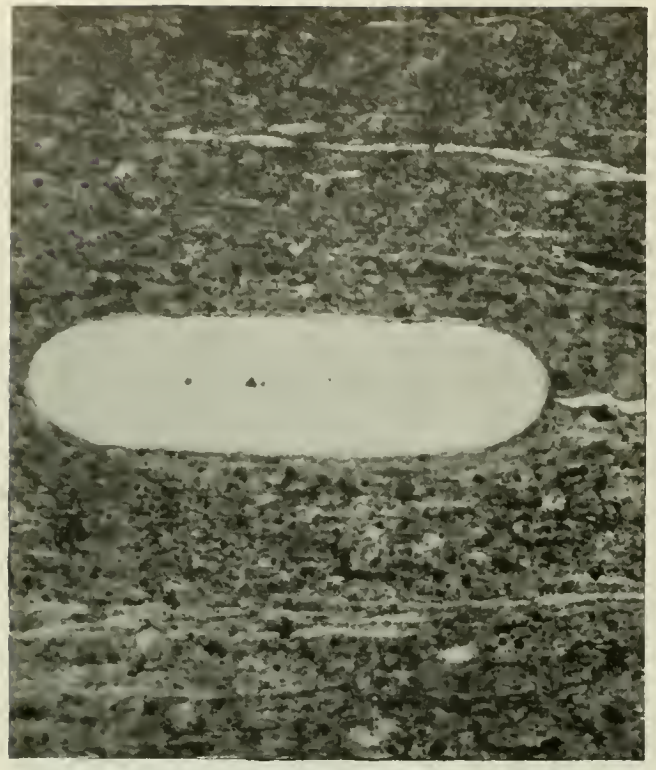


FIG. 11. LARGE SPORE IN ILLINOIS SHALE

Thin cross-section of oil or chocolate shale from the Devonian of Illinois. The large spore-exine is Dawson's *Sporangites Huronensis*. Magnification 200.

and are generally called black or carbonaceous shales.

When such deposits or rocks are so rich in organic matter that when subjected to distillation they yield oils, they are called oil shales (Figs. 10 and 11). Microscopic examination shows that the oil does not exist in the shale as such, but is generated from the organic residue, or attritus, in the shale when heated. Because the organic remains yield oil on distillation they are now generally called "kerogens," from the Greek "keros," meaning wax, and "genesis," birth.

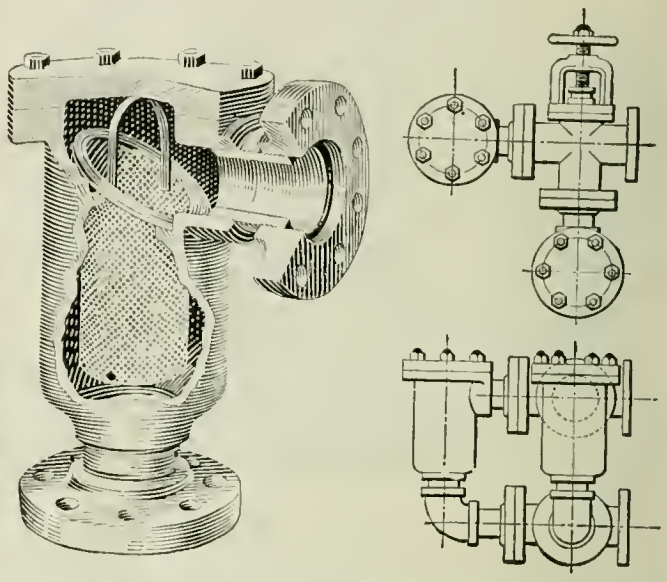
The kerogens, however, are nothing more or less than the remaining parts of plants, residues of plant matter, or plant-degradation matters. Spore remains predominate in the organic matter of those that have been examined. In the oil shales of the Devonian from Illinois, Indiana, Kentucky, Ohio and Tennessee the organic matter consists almost entirely of the remains of spores, intimately mixed with a fine clay. More or less pyritic matter and a few sand grains also are distributed through the mass. The spores are of the ordinary fern type prevalent in coals of the Carboniferous age, and present the same general appearance.

The deposits evidently were formed over a very large area, which must have been a plain with very poor drainage and for the most time covered with a shallow sheet of water. The basin was the habitat of aquatic and semi-aquatic plants related to the coal-forming plants of the Carboniferous era. As happens in such present-day habitats, the main plant parts largely decayed and disappeared, the most resistant parts, the spore-walls, remaining and forming a deposit with the mineral matter of the plants, and with that carried in by wind and perhaps water. It is probable that spores form the larger part of the organic matter of all oil shales and that the spores are the source of the oils distilled from them.

Strainers to Remove Solid Foreign Matter

FOR the removal of the solid foreign material in suspension strainers are required on suction and discharge lines of lubricating-oil, fuel-oil and quenching-oil systems. Also power plants which obtain their raw-water supply from such sources as rivers, streams or lakes require strainers to prevent weeds, sticks, marine plants and small fish from entering the system.

For this purpose the Griscom-Russell Co., 90 West St., New York, has placed on the market the G-R



STRAINER FOR CLEANSING WATER AND OIL

In almost any liquid matters are bound to be found, making straining necessary. As these impurities clog the screens, a large screening area must be provided if the intake of liquid is not to be impeded.

strainer, as shown in accompanying illustration. The body is constructed of cast iron and the strainer basket of perforated sheet steel, which is lined with wire mesh whenever the strainer is to be used on an oil line.

This strainer is of the single type and may be installed either as a single unit or as a strainer set. The latter consists of two of these strainers connected complete, including two three-way valves and necessary connecting elbows, unions and nipples. The use of a set permits the cleaning of either of the two units without interruption of service.

THE HOUSE COMMITTEE ON WAYS AND MEANS will conduct hearings on tariff revision beginning Jan. 6 and terminating Feb. 16. The free list, which includes coal, will be considered Feb. 11, 12 and 14. Interested parties should request assignment of time for hearing by direct communication to the clerk of the committee.

THE NUMBER OF CARS loaded with revenue freight on the railroads of the United States during the week ending Nov. 20, according to the car service division of the American Railway Association, was 880,928, or 26,000 more than were loaded during the corresponding week of 1919 and 23,000 more than during the corresponding week of 1918. The number of cars loaded, however, was 39,000 less than during the preceding week. While there was a considerable decrease in the volume of freight traffic which the railroads were called upon to handle in November, as compared with the record month of October, car loading has continued to exceed that for the corresponding period of the last two years, as it has since the first week of August. A reduction in the amount of traffic is seasonable for November and December.

What Type of Mine Pump Shall I Specify?*

Two General Varieties of Pump, Positive-Acting and Centrifugal, Are Employed in Coal Mines—The First Should Be Used Where the Quantity of Water To Be Handled and the Head Are Small and the Second Where the Quantity and Head Are Large

By John W. Hallock†
Pittsburgh, Pa.

TO SOME USERS of pumps it never occurs that there may be a certain particular type of machine that will best suit their conditions. To them a pump is a pump, and under such circumstances price is usually the determining factor when a choice must be made. They are somewhat like the man who wrote a manufacturer in regard to a hydraulic ram. His letter asked that he be sent a catalog showing "male water sheep."

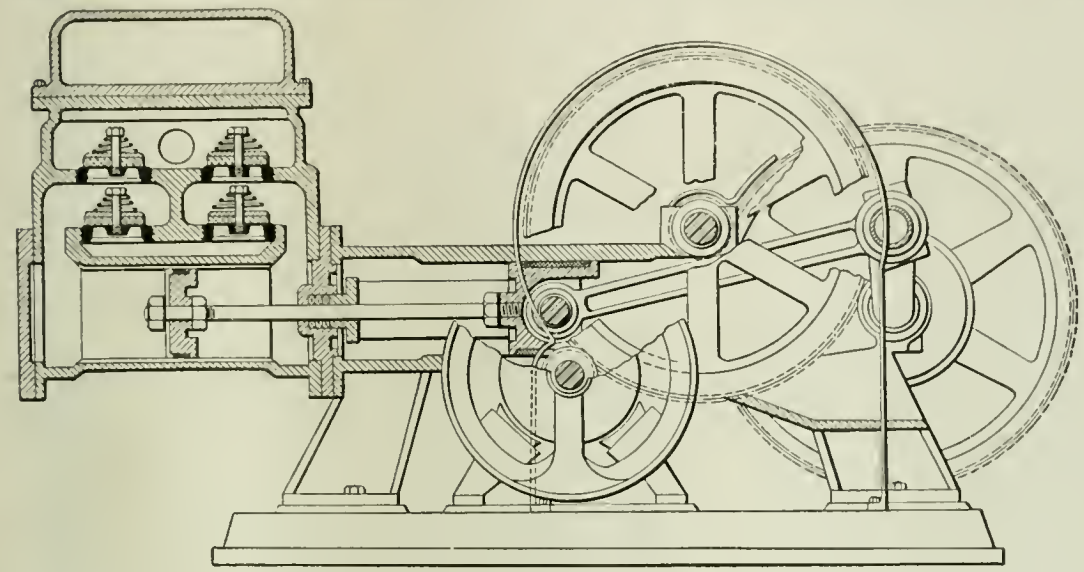


FIG. 1

Positive-Acting Pump

The upper valves are for the discharge and the lower valves for the suction. The actuating motor can be seen on the bedplate between the standards which support the pump and gears.

It will not be necessary to state here that the type of pump used may mean all the difference between success and failure in a mine drainage system. Failure may entail the loss of much time in operation with its resulting economic disadvantage, to say nothing of possible sacrifice of life. It is important, therefore, that the right type of machine be installed—more important, I believe, in the case of mine pumps than in that of any other type of equipment.

Pumping manufacturers and jobbers today realize this as never before. In fact, I believe this to a large degree explains why pumps are now being handled through a sales agency rather than direct from the factory. The sales agency is in far more intimate contact with operating officials in the coal fields than any factory salesman possibly could be. Its force also is familiar with any particular or peculiar local conditions which may govern pump selection or use. Lastly, the pump user may have the benefit of large local stocks of repair parts at the headquarters of the agency.

The time arrived long since when those who have anything whatever to sell—be it pins, needles, mining machinery or automobiles—have seen that what must be sold is not as large a bill of goods as possible but exactly the equipment that the purchaser needs, and that only. True, it is often necessary to recommend to a prospective buyer that he purchase equipment more extensive and costly than he at first deemed necessary. More often, however, it is possible to show the prospect an actual ultimate saving, obtained either through higher efficiency or a rearrangement of present equipment that will effect an economy of one kind or another. Realizing that this is or should be the usual state of affairs today, we are forced to the conclusion that most representatives of factories and sales agents are highly trained specialists in their line. No longer are they mere "order chasers." They are men whose success or failure depends on their ability to serve their customers, and through them society in general.

Admitting then that the pump salesman comes to the operator as a trained specialist in his line, why should any mine official equip himself with a knowledge of the principles underlying pump selection? Why not leave all this to the salesman? The answer is obvious: Operating men are paid by their employers for the service they render. They can give greater service by buying or specifying the right kind of equipment for use in their employer's plant than the wrong kind, and they can be sure of obtaining the best equipment only by specifying the right kind of machines.

Neglecting, for the present, the matter of price, two variables, chief of many affecting the type of pump to specify, exist. These are the quantity of water per minute or per hour to be handled by the pump and the total head against which the machine is to operate.

*Abstract of paper entitled "The Type of Pump to Specify," presented before the Mine Electricians and Mechanics' Institute, Charleston, W. Va.

†Professor and head of the department of industrial engineering, University of Pittsburgh.

Of course, others are present, such as the degree of acidity of the water, for example, but these two are the most important and will be considered first.

The capacity of any pump is usually specified as being so many gallons per minute. Thus for gathering purposes, pumps of standard makes are built in 30,- 50,- 75,- 100- and even 200-gal.-per-minute capacities. How fast the pump shall run to produce this capacity is a matter resting with the manufacturer. He designs his pump so that piston and gear speeds, bearing pressures and water velocities may lie within the limits that past experience have shown to be most advantageous.

Capacity Not Determined Solely by Size

Never ask for a price on a "3-in. pump," for the expression means next to nothing. It might signify a piston pump having a 3-in. discharge connection or a 3-in. diameter piston, or it might mean a centrifugal pump having 3-in. connections. Obviously, the expression gives no idea as to the capacity required.

Second of the principal variables mentioned is the total head against which the pump is to operate. In naming this figure too great care cannot be exercised. The importance of absolute accuracy will be shown later. Let us now confine ourselves to a consideration of what makes up this total head. First, the total head consists of three kinds of head or pressure acting on the pump, namely, the static, or standing, head; the friction head, and the velocity head.

The static head is the difference in level between the water in the suction pit, or sump, and the highest point of discharge. It has no relation whatever to the length or size of discharge line or anything else except the vertical distance between the water surfaces mentioned. This, of course, includes the distance of suction as well as that of discharge, and right here let it be said that, all things else being equal, the suction head should be kept as low as possible. It should be kept down to 8 or 10 ft. if circumstances will permit, and a foot valve should be installed unless this is absolutely impossible.

The second element going to make up the total head is called the "frictional head." This is exactly what its name signifies. It is the additional pressure imposed on the pump because of the friction of the water against the walls of the pipe. This is, of course, greater in a small pipe than in a large one discharging the same quantity of water. Also in the same size of pipe, the larger the quantity of water, the greater the friction.

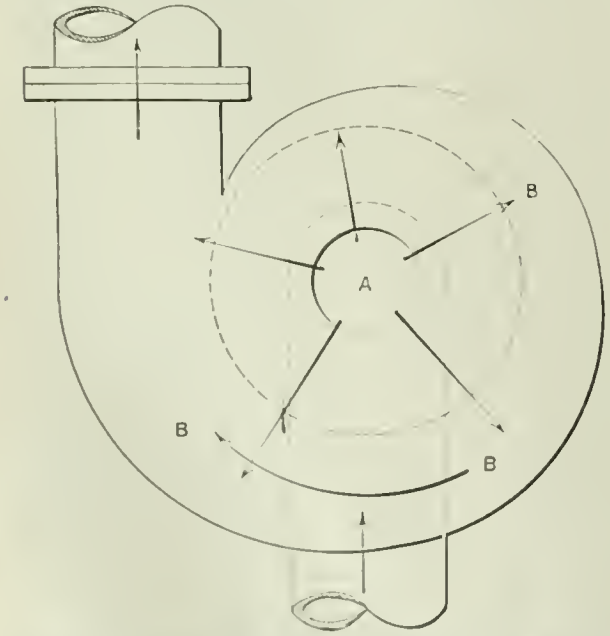


FIG. 2. CENTRIFUGAL PUMP, IMPELLER REMOVED
Water enters from the suction pipe at the eye or center (A) and flows radially to the volute (B) and thence up the discharge pipe. The flow of the water is marked by arrows.

Friction head usually is expressed as so many feet of water pressure per hundred feet of discharge pipe. This amount has been determined by actual experiment and long and accurate tables have been compiled and are embodied in various trade catalogs. Table I gives an idea of the way in which such tabulations are made. These tables are always based on the use of new, clean pipe. If the pipe is old, and consequently somewhat corroded inside, the friction will be greater. This added amount due to old pipe usually is taken care of by increasing the figures in the table by several per cent. For instance, in pipe that is extremely rough inside, the friction values may be taken as being 50 per cent greater than those shown. Elbows and fittings also increase the friction head. Table II is a characteristic tabulation giving friction in new, clean cast-iron elbows.

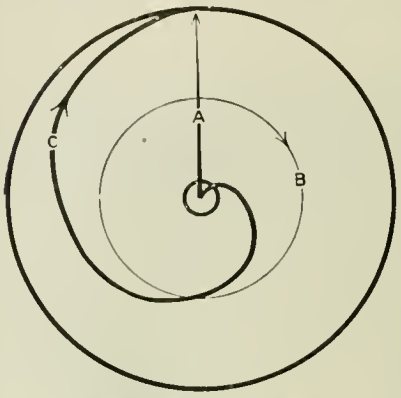


FIG. 3. MOVEMENT FROM FORCES IN TWO DIRECTIONS
The water has a centrifugal movement (A) and a revolving movement (B) which results in its taking a curved path (C), commencing at the eye and ending at the periphery of the wheel.

The last separate item going to make up the total head is known as the velocity head. This is the pressure imposed on the pump in starting a column of water from a state of rest and accelerating it to full velocity. It is similar to the big inrush of power on a motor when starting. This head usually is not accurately calculated for each specific case, but due allowance is made in design and specification to take care of this portion of the total head.

Calculation of Total Head in Special Case

To illustrate the method followed in using the tables to determine the total head against which a pump is to operate let us assume the following data: Quantity of water to be handled, 200 gal. per minute; static head, 110 ft.; size of pipe line, 4-in. (new pipe); length of pipe line, 1,250 ft.; line contains ten 4-in. 90-deg. elbows.

Referring now to Table I, the friction of 200 gal. per minute through the 4-in. line is 3.12 ft. per 100 ft. length of pipe. Through 1,250 ft. the friction would therefore be $12\frac{1}{2} \times 3.12 = 39$ ft. Referring to Table II, the friction of 200 gal. per minute through one 4-in. 90-deg. elbow is 0.4 ft. The friction in ten elbows is therefore $10 \times 0.4 = 4$ ft. The velocity head in this case may be neglected and we may say that the total head is 110 ft. + 39 ft. + 4 = 153 ft. A pump would thus be required that would deliver 200 gal. per minute against a total head, including friction, of 153 ft. It is usual to specify total head, "including friction," so as to show that friction has been taken into account and that no further additions for length of line, size of pipe, or number of elbows are necessary.

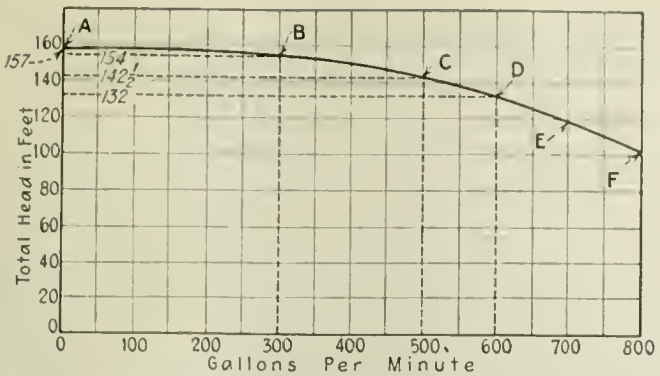


FIG. 4. HEAD-CAPACITY CURVE FOR CENTRIFUGAL PUMP
The gallons per minute are measured by running a horizontal line from the left vertical to the curve, and the head for that capacity is measured by running a vertical from the base line to the same point in curve.

Now, assuming that the number of gallons per minute, or the quantity of water to be handled by the pump as well as the total head against which the pump is to operate, can be accurately determined, how may the type of pump best adapted to the particular conditions at hand be selected? In approaching this question two broad rules may be laid down, which it will be understood are only general and, therefore, subject to change as other circumstances may require. These are:

(1) Use some form of a piston or plunger pump (in other words, a positive-acting type) where the quantity of water is relatively small and the head relatively high.

(2) Use a centrifugal pump where the quantity of water to be handled is relatively large, the total head comparatively low, or where both these conditions exist.

Four Secondary Considerations in Ordering

Before proceeding to a discussion of these two general types of pumps—positive-action and centrifugal—the other conditions that may influence a choice should be explained. These conditions usually are four in number: (1) The amount of floor space and headroom available for installation; (2) the method of drive to be employed (that is, whether electric motor, steam or gas engine); (3) the degree to which safety of life and continuity of output depend on the constant operation of the pump, and (4) the allowable first cost of the installation.

As an example of the influence of these factors, consider the use of a gathering pump. Here the quantity of water usually is small (and likewise the head). Furthermore, the floor space and headroom required by a gathering pump of small capacity also are small. As a result the pump used is usually a positive-acting machine of the horizontal piston or plunger type.

On the other hand, for voiding water from a large sump served by several gathering pumps the quantity of water in gallons per minute to be handled is relatively large. The use of a positive-acting pump would entail a machine of large size, requiring considerable floor space and plenty of headroom. Here, therefore, is a place where a centrifugal pump requiring small floor space and low headroom may profitably be employed. The use of a centrifugal pump is further justified if an electric motor is to drive it, as a motor can be direct-connected to the pump and the use of belting or gears eliminated.

Bearing the above broad underlying principles in mind, we may now consider the two general types of pumps. A positive-acting pump is one in which a piston or plunger works directly against a portion of the water, forcing it to take a prearranged path through suction valves into the cylinder and thence through another set of valves into the discharge line. A sectional view of such a machine is shown in Fig. 1.

In this type of pump good practice permits a piston speed of not over 100 ft. per minute for continuous service. Therefore, as the piston must actually displace all of the water to be moved, it is readily seen that to handle large quantities per unit of time, either an excessively large piston or a number of pistons working simultaneously will be required.

Where the size of such a pump becomes prohibitive from the standpoint of first cost or the considerations of headroom and floor space, the centrifugal pump may be properly considered. There have been so many ill-advised installations of centrifugal pumps and so many cases of the failure of such machines to come up to the expectations of users that I believe a brief explanation of their operation will be helpful.

Some Consideration of Centrifugal Pumps

First, consider Fig. 2. This is a diagrammatic sketch of a centrifugal pump or shell with suction and discharge piping but with impeller or rotating element removed. Now suppose water is caused to flow up the suction piping. This water would enter the casing at the eye or center (*A*) and flow radially from there to the volute (*B*), and thence up the discharge pipe. It is seen, therefore, that if energy could be exerted on the water in the pump instead of from the outside, as assumed above, and the water caused to flow radially within the casing, it would move through the piping in the same manner and direction as above described.

Now the only means available whereby the water may be moved radially in the casing is by a rotating or revolving motion. This does not give a true radial flow. Instead, such a rotating action gives two distinct motions to the water, a radial motion and a whirling or rotary motion. These two movements take place at one and the same time and the result, or the resultant effect, is a curved path from the eye to the periphery of the wheel. Referring to Fig. 3, *A* represents the radial motion or that in the direction of the radius of the impeller or rotating element; *B* represents the whirling motion given to the water by the wheel.

As these two motions take place simultaneously, the result is a movement in the general direction shown in line *C*. After leaving the impeller in the direction shown by line *C*, the water is guided by the shape of the casing or shell into the discharge pipe. By having

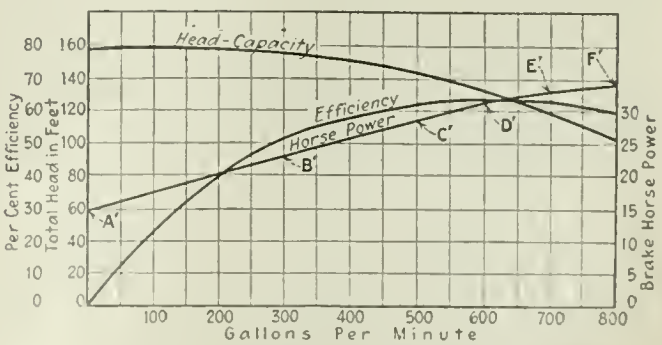


FIG. 5. HEAD-CAPACITY, EFFICIENCY AND HORSE-POWER CURVES
This pump makes the most efficient use of the power supplied when pumping about 650 gal. per min., when the brake horsepower is roughly 32, the efficiency 62 and the head about 125 ft.

a number of blades in the impeller and keeping this element revolving at a constant speed, water is made to flow continuously up the suction pipe to the casing, then out of the casing into the discharge line. Thus the water is brought from a state of rest in the sump through the suction pipe at low velocity up to the eye of the impeller. Here the velocity increases steadily to a maximum at the tip of the impeller blades. Between the impeller tip and the discharge openings this high velocity is transformed to pressure. This transformation must be gradual and uniform, as a quick change means the introduction of shock with consequent loss of efficiency.

Calculating Required Speed of Impeller

To illustrate briefly the method used to arrive at some of the details of correct centrifugal pump design, refer again to Fig. 2. Suppose the discharge pipe to be 50 ft. long and vertical. A study of mechanics shows that a particle falling through any distance (h) will attain a velocity after traversing this distance equal to $\sqrt{2gh}$ where g is the acceleration due to gravity and is equal to about 32.2. Then if we consider a particle of water falling down the discharge pipe, it would attain a velocity by the time it has traversed the 50 ft. of $\sqrt{2 \times 32.2 \times 50}$ = about 56½ ft., or 678 in., per second.

In order to balance the falling particle of water, any other particle on the rim of the impeller would have to be moving at the same velocity. Suppose the impeller is 11 in. in diameter, or about 34½ in. in circumference. In order, therefore, to move 56½ ft., or 678 in., per second, the impeller would have to travel 678 ÷ 34½ or nearly 20 revolutions per second or 1,200 r.p.m.

By following quite similar lines of reasoning other important figures in the design are calculated. The sectional area of different points in the casing and impeller, throat area, etc., must all be carefully designed in order to produce an efficient pump. The methods followed in arriving at these figures in the design are not of interest here, and their further consideration, therefore, will be omitted. The actual behavior of centrifugal pumps in service is important, however, and accordingly, the few facts in which users of this class of equipment are most vitally interested will be briefly considered.

It is a well-known fact that if no foot valve is used on the suction of a centrifugal pump, the water can flow easily down the discharge pipe through the pump casing and impeller and back into the suction pit, or sump. This is evident because no valves are present to retard such a backward flow. It is also a well-known fact that a gate valve in the discharge line of a centrifugal pump may be entirely closed without injuring machine or piping in any way. Perhaps the reason for this is more evident if reference is made again to Fig. 3.

If the gate valve is entirely closed, the radial motion (A) is stopped but the whirling motion (B) is retained. In other words, the impeller then simply whirls or churns the water. If the valve in the line is only partly closed, the quantity of water being pumped is reduced. Thus by changing the relation between the two velocities (A and B), the head against which the pump may be used is varied. In fact by partly closing such a gate valve, the head against which the pump operates is altered, for the head is governed by the amount of the friction imposed by the valve itself. This

TABLE I. LOSS OF HEAD IN FEET PER 100 FT. OF PIPE LENGTH

Quantity of Water in Gallons per Minute	Sizes of Pipe					
	1 in.	1¼ in.	2 in.	3 in.	4 in.	5 in.
25	45.5	5.60	1.96	0.27	....	....
50	....	20.2	7.10	0.98	0.24	....
75	....	42.7	14.9	2.11	0.52	0.16
100	....	73 0	25.6	3.52	0.88	0.29
150	....	....	54 0	7.72	1.82	0.63
200	....	....	....	12.80	3.12	1.06
250	....	....	....	19 70	4.80	1.60
300	....	....	....	27 10	6.70	2.25
400	....	....	....	....	11.30	3.81
500	....	....	....	....	17.20	5.80

TABLE II. FRICTIONAL LOSS IN FEET FOR VARIOUS SIZES OF 90 DEG. ELBOWS

Quantity of Water in Gallons per Minute	Sizes of Elbows					
	1 in.	1¼ in.	2 in.	3 in.	4 in.	5 in.
25	1.35	0 25	0 09	.....	.....	....
50	....	0.99	0.35	0.08	.....	....
75	....	2 0	0 75	0.20	0.05	....
100	....	....	1 41	0.29	0.10	....
150	....	....	3 20	0.66	0.22	0.09
200	....	....	....	1 18	0.40	0.16
250	....	....	....	1 84	0.62	0.25
300	....	....	....	2.63	0.89	0.36
350	....	....	....	....	1.24	0.50
400	....	....	....	....	1.59	0.63
500	....	....	....	....	2.47	1.01

principle is utilized in plotting curves showing exactly what a given centrifugal pump may be expected to do.

To illustrate the plotting of what is known as the head-capacity curve, suppose a pump is mounted with a gate valve in the discharge line, a pressure gage at the discharge of the pump and a means of measuring the quantity of water discharge per minute by the machine. (For all ordinary sizes of pumps, a barrel or tank of known capacity may be used for this latter purpose. The discharge piping is so arranged that it may be swung so as to discharge into the barrel or tank, and the time required to fill the receptacle measured by a stop watch.)

Now if the gate valve be fully closed no flow will take place, but we will suppose that the pressure gage reads 68 lb. Now, as is well known, 1 lb. of pressure per square inch is equivalent to a head of about 2.3 ft. of water. Hence, 68 lb. is equivalent to 157 ft. of head. Suppose then that, as in Fig. 4, two lines are laid off at right angles to each other, one vertical and one horizontal, intersecting at 0. Now if distances on the horizontal line represent quantities of water in gallons per minute and vertical distances, on the other line, represent feet of head, it is evident that the point just found by test will be located at A.

Again, suppose the gate is opened slightly to allow a little water to flow, and it is found that the pump is delivering water at the rate of 300 gal. per minute, but that the pressure has dropped to 67 lb., equivalent to a head of 154 ft. This gives the point B on our plot.

Opening the gate valve still further might show that the pump delivers 500 gal. per minute against 61 lb. pressure (142½ ft.). This gives the point C.

Similarly, points D, E and F might be located. Now if a smooth curve be drawn through all of these points, the head-capacity curve for that particular pump running at that certain speed will result. From this curve may be read the relation between head and capacity at any point.

Now if the power actually required to drive the pump at each of the points mentioned is measured (this can be done by means of a voltmeter and ammeter or by a wattmeter if the pump is directly connected to a motor) other points—A', B', C', etc., in Fig. 5—may be obtained. This also gives a smooth curve known as the horsepower-capacity curve.

By a little calculation, remembering that the efficiency of a unit of this kind is the ratio of the output to the power input, on top of the two curves already found, may be plotted the capacity-efficiency curve, shown also in Fig. 5. These three curves then show all of the operating characteristics of the particular pump under consideration. In buying a centrifugal pump the purchaser should be furnished with such a set of curves. It will then be possible for him or his engineers to judge, at least in a general way, whether this pump may be used in another place where the head will be slightly different.

Reference was made above to the fact that in plotting these curves, the speed of rotation of the impeller must be kept constant. If the speed is lowered, the position of the head-capacity curve also is lowered. For instance, if the curves in Figs. 4 and 5 were plotted at 1,700 r.p.m., the corresponding curve for 1,450 r.p.m. would have the same general shape, but would be lower. The horsepower curve also would be lower, while the efficiency curve would be moved slightly to the left.

Before leaving the subject of centrifugal pumps the matter of keeping such machines up to speed must be emphasized. If such a pump is directly connected to a 250-volt motor and the voltage drops to 160, the speed will decrease to about three-fifths of normal. This will cause a serious drop in the volume of water discharged and may even cause the machine to stop pumping altogether.

A multi-stage centrifugal pump is similar in action to a single stage. Each of the lower stages discharges into the suction of the next succeeding stage, each adds to the pressure of the water, and hence to the total head against which the machine may be used.

There is no definite dividing line between the conditions which call for a positive-acting pump and those which permit the use of a centrifugal. This is largely a matter of judgment based on experience and data as to cost, power available, power expenses, etc. And here again it should be repeated that the pump salesman who serves most by selling the types of pump best adapted to particular existing conditions is the man who judges most accurately along the lines indicated.

This has necessarily been a quite general presentation of the subject in hand. It is hoped that the basic principles cited will be helpful to those having a pumping problem to solve. It should be understood, however, that peculiar local conditions may to a marked degree further influence the type of pump to specify.

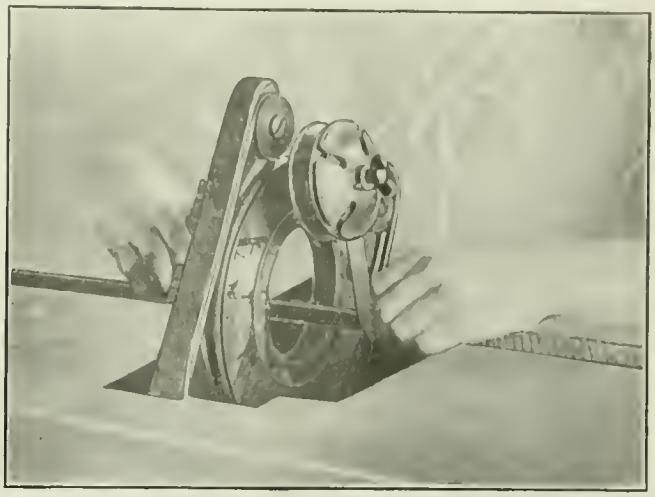
IN HIS ANNUAL REPORT, issued Dec. 14, Secretary of Commerce Alexander refers to the work of the Bureau of Foreign and Domestic Commerce in developing American trade abroad. He says that through the assistance of the commercial attaché's office at Rome the Societa Angelo Romana bought $200,000 worth of American coal, and the Trade Commissioner at Brussels placed Belgian manufacturers' groups in touch with American interests prepared to furnish raw materials and fuel in return for finished products to be sold in export markets.

W. F. MCKENNEY HAS BEEN appointed to assist F. G. Tryon in the gathering of coal statistics for the U. S. Geological Survey. Mr. McKenney has been doing field work for the Bureau of Labor Statistics of the Department of Labor for the last three years. Prior to his service with the Department of Labor, he was librarian at the United States Naval Academy. Mr. McKenney is a native of Gloucester, Mass.

Right Tapes to Use for Special Purposes

TAPES of various kinds have long been used for insulation purposes. This is because of the ease with which they can be applied to the irregular shapes of coils, cores, etc., upon which it would be difficult to place insulation in sheet form. Such tapes are either woven from fibrous materials—in which case they are known as stays or webbings—or they are cut from treated or untreated fabrics.

The General Electric Co. will soon place on the market a complete line of such tapes, including several



TAPING A CONDUCTOR WITH A WINDING MACHINE
Note the conductor, already wound, on the right side of the picture and the manner in which the tape is fed from a reel which gives it the right tension.

varieties cut from black or yellow varnished or oiled cloth. They will be adaptable for winding armature or field coils, transformer coils, etc.

Ordinary white cotton tape has selvaged edges, an open structure, smooth surface and medium strength It may be used to tape armature coils to form a basis for varnish. Asbestos tape contains a small percentage of cotton to facilitate the spinning of the yarn and is adaptable for use on windings where heat-enduring insulation is required.

Another class of these insulators is known as friction or splicing tape, such as is commonly used when splicing or connecting conductors, to cover joints that otherwise would be exposed. One type, known as splicing gum, is an all-rubber compound containing no cloth and made from fine Para rubber. At ordinary temperatures the heat of the hand is sufficient to cause the tape to unite, forming a solid, watertight joint. Gum-faced tape is made of a layer of 98-per cent pure rubber on a backing of unvulcanized high-grade rubber compound containing only fine Para. It is valuable for taping joints on underground rubber-covered cables or other places where high insulation and water proofness are necessary. Joints made from this tape may be vulcanized if desired.

Temporary binding or friction tapes are made of an unbleached cotton cloth, coated and filled with either black asphalt or rubber compounds. They are slightly adhesive at normal temperatures and form excellent temporary bindings for ordinary purposes.

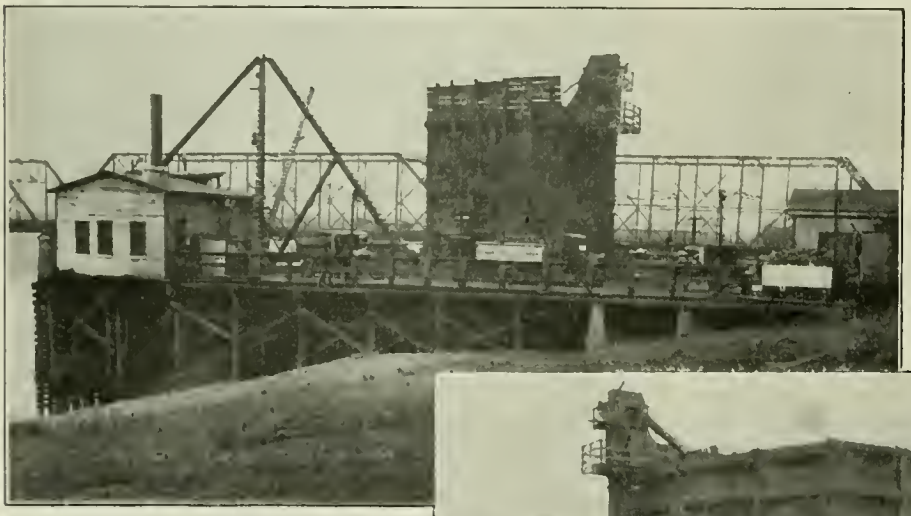
THE FUEL SUPPLY of the world was discussed before the meeting of the American Society of Chemical Engineers in Washington, D. C., by Prof. L. P. Breckenridge, of Yale. He urged fuel conservation.

Youghiogheny Coal Co. Delivers 60,000 Tons Monthly by Motor Trucks

Careful Accounts Show That It Costs 17.5c. to Move One Ton of Coal One Mile; $3.53 to Operate a 6-Ton Truck One Hour, and That the Total Yearly Saving Made by Trucks Over Horse-Drawn Wagons Handling the Same Tonnage Amounts to About $43,000

By Donald J. Baker
Wilkinsburg, Pa.

ON ONE day, Oct. 12 of this year, the Youghiogheny Coal Co., which is the retail subsidiary of the Pittsburgh Coal Co., moved 3,158 tons of of coal by motor truck and thereby exceeded all its previous records for a single day's transportation of coal by this means. This concern, which is by far the largest retail dealer in the Pittsburgh district, moves over 60,000 tons of coal monthly by motor truck.



FIGS. 1 AND 2

Truck Supply Bins, Eighth Street and Duquesne Way, Pittsburgh, Pa.

Coal is unloaded from barges by means of a crane and grab bucket and is discharged into the open-top bins. This is one of six truck supply stations maintained by the Youghiogheny company.

Certainly this is a notable achievement and one particularly worthy of publicity at the present time. It is true that this tonnage was transported over relatively short distances, as is all the coal sold by the Youghiogheny firm, for the company caters exclusively to the retail trade and the major portion of its business is supplying with fuel the large office buildings and hotels of downtown Pittsburgh.

Undoubtedly the coal-producing industry as a whole would register a much keener interest in the feat just noted if the subsidiary of the Pittsburgh Coal Co. had moved this immense tonnage directly from "mine to cellar." On the other hand, the transportation of any large quantity of coal is interesting, regardless of the distance traversed or the operating conditions with which the trucks are forced to contend, for in such a movement a remedy is suggested for the present shortage of open-top railway equipment, to say nothing of the possibility of circumventing the recent advances in freight rates. Little wonder that nearly every operator is interested in learning more regarding the transportation of coal by gasoline power. Many sense the possibility that trucks will be applicable to their own individual needs, and that the truck may ultimately be the means by which their mines may be kept in full operation throughout the year.

Coal sold to retail consumers in the Pittsburgh district by the Youghiogheny company is supplied by the parent concern from its mines, all of which with two exceptions front on the Monongahela River. Six supply stations for loading trucks are maintained, all of which lie near the heart of Pittsburgh's business section. One

is located in the "South Side." This station is supplied from the Fair Haven mine of the Pittsburgh Coal Co., which dumps coal directly from mine cars into storage bins. Another is situated on the Baltimore & Ohio R.R. and is built so that the bins supplying the trucks may be filled by dropping the bottom gates of railroad cars that have been loaded at tipples of the company's mines on the outskirts of the city proper.

Of the four remaining stations or supply bins, three front on the Monongahela River and one on the Allegheny. The bins forming the loading station on the Allegheny water front, located at 8th Street and Duquesne Way, near the Eighth Street Bridge, are by far the largest of the six, mainly because they are located near the heaviest consumers. The coal, however, for the maintenance of all four stations is floated down the Monongahela River in barges. To supply the Allegheny river station the boats are moved down the Monongahela to its junction with the Allegheny and thence up the latter stream a distance of half a mile. At all four stations the barges are unloaded by steam crane and bucket; the tops of the bins, of course, being open.

Large Consumers Served by Allegheny Dock

Fig. 1 is a view of the large bins that front on the Allegheny River, showing the shovel unloading barges. As was mentioned, this is the largest truck supply station of the Youghiogheny company. All the big business houses and hotels of downtown Pittsburgh are located less than half a mile from this point, so that the trucks in every instance are assured of minimum hauls.

As all the trucking stations are situated near the heaviest consumers, the movement of the trucks is short. In fact the length of the average round trip is well under a mile. Quite naturally the assertion will be made that moving coal directly from "mine to cellar" by auto truck over distances five, ten or even fifteen times as great as those traversed by this subsidiary of the Pittsburgh Coal Co. is an entirely different proposition. This is, of course, true.

Especially does the comparison seem less apt when it is remembered that the trucks in the one instance run over improved city streets; whereas those operating directly from the mine tipple would of necessity be forced to traverse macadam or even unsurfaced roads. The analogy, however, between the movement of coal "from barge to cellar" and "from mine to cellar" is a trifle closer than first impressions would seem to indicate.

Difficulties in Operating City Trucks

Trucks operating wholly over busy, narrow streets in the downtown sections of a city the size of Pittsburgh are laboring under handicaps never encountered by similar vehicles on the unrestricted highways of the country. In the first place the grades of Pittsburgh's streets are heavy, and, by reason of the traffic regulations, it is impossible for the truck drivers to give their machines a running start before encountering the stiffer hills.

Secondly, the streets are extremely narrow; in the downtown section many of them are "one-way" thoroughfares only. Finally, the traffic rules are many and varied. While these, of course, have been created to facilitate the movement of vehicles and to prevent congestion, yet much has been left undone that might well be desired. Pittsburgh's parking regulations are strict, yet during the day long columns of cars fill the narrow streets and leave for passage nothing but the smallest of lanes.

All these conditions are imposed upon the city trucks, and all, without exception, make for a reduction in speed of travel, which is one of the most important factors in the efficient operation of any conveyance. Thus the Youghiogheny firm has its difficulties and what it has learned about costs of operation of trucks must necessarily be accepted with due allowance for these obstacles to efficient operations. Machines operating under mediocre or even unfavorable working conditions have, of course, not shown themselves to the best advantage.

By operating at night, many of the difficulties above mentioned have been to a degree overcome, but in their stead others have been introduced, so that the greater portion of the business is still handled during daylight hours. The only exceptions are large orders from business houses equipped with their own power plants and situated on streets that are both extremely narrow and unusually busy during the day.

The Youghiogheny Coal Co. did not, of course, adopt trucks in order that the mines of the Pittsburgh Coal Co. might be kept in operation the year around. The officials of the firm purchased the first trucks in 1912 to replace teams that were then being used to deliver coal. An account, therefore, of the activities of the company is primarily a recital of the advantages of the motor truck over team haulage.

The first trucks were procured at a time when sentiment ran high against them. Though the move, it was hoped, would prove to be an economical one, few grounds existed for any such assumption and other considerations largely influenced the purchase.

Chief of these was the humane stand taken by the officials. The company desired to give the horses then in use a little more freedom from work during the hot midsummer days and to keep them to a greater extent off the icy streets in the winter. It also was hoped that the average life of the stock might thus be somewhat raised from its excessively low figure of 53.5 months, about 4½ years.

Much Opposition to Introduction of Trucks

Just why much opposition to the motor truck developed among retail coal coal dealers at the time in question is difficult to explain. It probably arose from the same prejudice that is shown to any method that differs radically from the one in force. It was next to impossible to find anyone who had kept a close tab on truck-operating expenses, yet the feeling prevailed that the gasoline-driven vehicle was not only expensive but highly extravagant in operation.

Much of the same prejudice is now encountered when trucks are mentioned as an economical means of keeping mines working the year round. Few operators have experimented with them, and it is difficult to gather data to prove to those operators who are open to conviction just how flexible and economical the motor truck is when operated over short hauls.

Fortunately the officials of the Youghiogheny company were shrewd business men. They had already gathered the facts as to what it was costing them to move one ton of coal one mile by team, as well as how much per hour it costs to handle a span of horses. They determined to gather like facts concerning truck operation. Merely because some livery-stable owner had

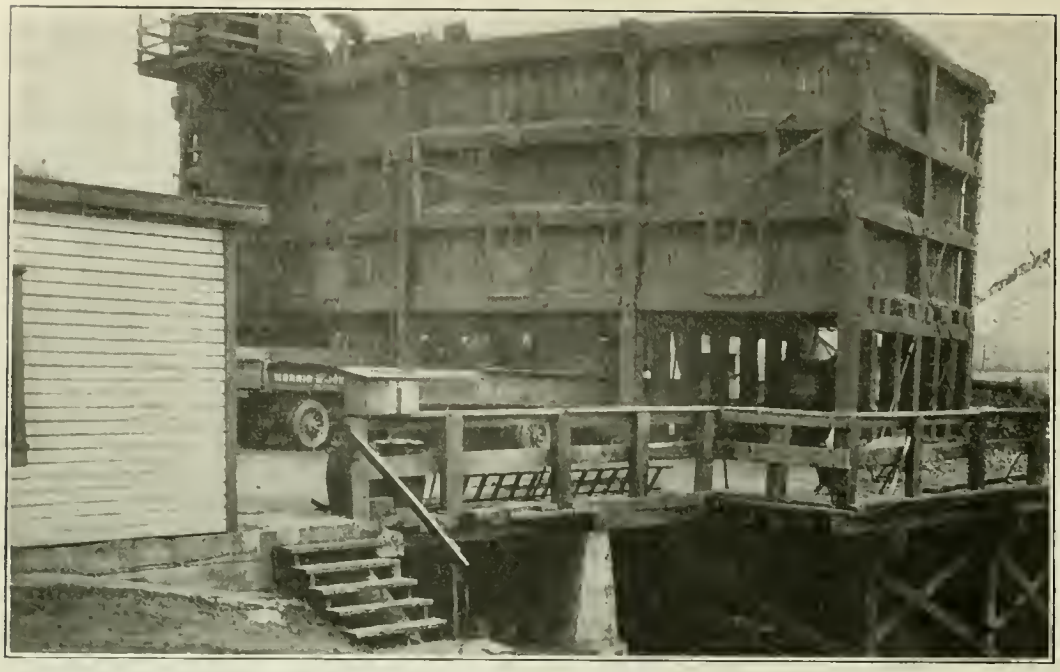


FIG. 3

Bin Approach

Only a small portion of the coal from these bins is handled by company trucks. Other trucksters pick up loads here. Each load is weighed upon scales near by and the truck driver is given a slip stating the net weight of his load.

ventured a bald statement about a truck that he had purchased was no reason for assuming that all trucks were uneconomical.

What this concern has learned about truck transportation in the last few years is a revelation. It was found by actual comparison with the figures of operation extending over the past year, 1919, that the company has saved over $43,000 as against the movement of the same amount of coal if handled entirely by teams. As a result orders were placed several weeks ago for ten 6-ton Packard trucks at $8,000 apiece.

As might be expected, the Youghiogheny Coal Co. is standardizing on the type and make of motor truck used. A move of this nature is almost imperative with any concern which operates a fleet of these trucks, as only by so doing can spare parts, tires, etc., be made always available, and only by standardizing can accessories be purchased in wholesale quantities. There is the additional advantage that the repairmen work more rapidly and efficiently when they have to familarize themselves with only one type of machine.

This company has selected the Packard 6-ton truck as its standard, and with the arrival of the cars now ordered fifteen of these machines will be in use. All trucks are equipped with a Babcock cab for the protection of the driver in inclement weather, as well as Sewell wheels, which insure additional resiliency to the body. Though the chassis and cabs are standard, the construction of the bodies varies to a certain degree. Some of the machines have been built to special specifi-

FIG. 4

Six-Ton Standard Truck

The body may be divided into either two or three compartments, so that 2-, 3- or 4-ton consignments may be delivered. As most of the company's customers are big consumers, such as hotels, apartment houses and large office buildings, these boards are seldom used. Loads are dumped by backing against curb, and where the streets are narrow this is done at night.

cations and carry a bed that may be divided into either two or three compartments, so that two 3-ton loads or three 2-ton loads may be carried to fill small orders. The trucks built in this manner are equipped with a side discharge chute so that the compartment nearest the driver may be discharged while the machine is in restricted quarters.

Cannot Back Truck Against the Curb

Several of the older machines were constructed with a side-discharge, rear-end, tail-gate chute to permit of unloading directly into sidewalk bin openings while the truck was standing parallel with the curb. This arrangement was deemed necessary by reason of the narrow streets in the busy downtown section, it being against traffic regulations for a machine to choke a street as it would do if unloading backward from the rear. This feature of dumping is being eliminated, however, and soon none of the trucks will have to resort to side discharge.

As already mentioned, the orders of large business houses which are situated on narrow streets are filled at night. It is thus possible without breaking any of the traffic regulations for the trucks to unload while backed-up against the curb. Rear-end unloading, is, of course, more rapid than any kind of side discharge.

It has been found that these 6-ton trucks will cover 2.15 miles on a gallon of gasoline and that an equal measure of lubrication oil furnishes sufficient lubricant to the motor for 130 miles of travel. In computing truck-operation costs, nothing is overlooked by the Youghiogheny officials. Table I shows the costs of operation of a single 6-ton truck for one year.

TABLE I. COST OF OPERATING COAL TRUCK FOR ONE YEAR

Wages	$4,064.46	Tires	$164.35
Depreciation	1,365.45	Repairs and supplies	692 28
Gasoline	1,196.11	License	25.00
Lubricants	119.83	Superintendence	179 38
Garage	700.20	Workmen's compensation	59 78
Insurance	369.57		
Total expenses			$8,936 41

TABLE II. AVERAGE YEARLY RECORD OF MACHINES IN SERVICE

Total hours	2,529
Total miles	9,103
Tons hauled	17,581
Total expenses	$8,936.41
Cost of operating one hour	$3.53
Cost of hauling one ton one mile	$0.17
Average tons to a load	5.87

In figuring the cost of hauling one ton one mile the mileage figured is that made by the truck in running under load. The wages may appear high but this expenditure is for two men, for to each truck a driver and a helper are assigned. The company owns its own garage, but this expense is charged up to the trucks as if space of equal area were being rented. This illustrates how closely operating costs are calculated.

The operating expenses revealed by the Youghiogheny company's experience are of more than usual interest because they afford a means of answering the question: What is the maximum distance over which a motor truck can haul economically? By reason of the wide difference in the operating conditions encountered by the trucks of this firm and those traveling between mine and cellar, the hourly cost of truck operation quite possibly is a safer figure to use than that covering the cost of moving one ton of coal one mile; although, both, of course, are closely related.

This expense, shown as $3.53 in table II, is rather high because a company using trucks from its tipple over a comparative long haul probably would not have need of two men on the machine. Therefore in round figures it should not cost more than $3 per hour to operate a 6-ton

TABLE III. ONE NIGHT'S WORK OF A 6-TON TRUCK OWNED BY THE YOUGHIOGHENY COAL CO. OF PITTSBURGH

Truck "T". Weather, Wet 54-70. Shift, Night. Date, Mar 17, 1919
Driver H Coleman ....Arrived Helper R Tolbert. Arrived....

Trip	Arrived	Time Loading Min.	Destination	Net Tons
1	6 00	2	Union Bank Building	6 25
2	6 09	2	Union Bank Building	6 00
3	6 20	2	Union Bank Building	6 10
4	6 30	2	Union Bank Building	6 00
5	6 40	2	Union Bank Building	6 25
6	6 55	2	Union Bank Building	6 10
7	7 05	2	Union Bank Building	6 25
8	7 18	2	Union Bank Building	6 15
9	7 30	2	Peoples Bank Building	6 25
10	7 40	2	Peoples Bank Building	6 25
11	7 55	2	Fort Pitt Hotel	6 00
12	8 05	2	Fort Pitt Hotel	6 00
13	8 14	2	Fort Pitt Hotel	6 10
14	8 23	2	Oliver Bldg. Power Plant	6 00
15	8 30	2	Oliver Bldg. Power Plant	6 25
16	8 40	2	Oliver Bldg. Power Plant	6 15
17	8 46	2	Oliver Bldg. Power Plant	6 05
18	8 52	2	Oliver Bldg. Power Plant	6 25
19	9 00	2	Oliver Bldg. Power Plant	6 25
20	9 05	2	Oliver Bldg. Power Plant	6 20
21	9 10	2	Oliver Bldg. Power Plant	6 15
22	9 18	2	Oliver Bldg. Power Plant	6 20
23	9 25	2	Oliver Bldg. Power Plant	6 00
24	9 30	2	Oliver Bldg. Power Plant	6 20
25	9 36	2	Oliver Bldg. Power Plant	6 10
2	9 42	2	Oliver Bldg. Power Plant	6 15
27	9 50	2	Oliver Bldg. Power Plant	6 20
28	9 55	2	Oliver Bldg. Power Plant	6 15
29	10 00	2	Oliver Bldg. Power Plant	6 10
30	10 06	2	Oliver Bldg. Power Plant	6 25
31	10 11	2	Oliver Bldg. Power Plant	6 25
32	10 18	2	Oliver Bldg. Power Plant	6 00
33	10 25	2	Oliver Bldg. Power Plant	6 25
34	10 30	2	Oliver Bldg. Power Plant	6 10
35	10 35	2	Oliver Bldg. Power Plant	6 25
36	10 41	2	Oliver Bldg. Power Plant	6 20
37	10 45	2	Oliver Bldg. Power Plant	6 25
38	10 51	2	Oliver Bldg. Power Plant	6 00
39	10 56	2	Oliver Bldg. Power Plant	6 15
40	11 01	2	Oliver Bldg. Power Plant	6 10
41	11 08	2	Oliver Bldg. Power Plant	6 00
42	11 15	2	Oliver Bldg. Power Plant	6 00
43	11 20	2	Oliver Bldg. Power Plant	6 05
44	11 26	2	Oliver Bldg. Power Plant	6 10
45	11 33	2	Oliver Bldg. Power Plant	6 20
46	11 40	2	Oliver Bldg. Power Plant	6 00
47	11 50	2	Fort Pitt Hotel	6 25
48	12 00	2	Chamber of Commerce Bldg	6 15
49	12 44	2	Chamber of Commerce Bldg	6 00
50	1 05	2	Farmers Bank Building	6 25
51	1 15	2	Farmers Bank Building	6 10
52	1 25	2	Farmers Bank Building	6 00
53	1 33	2	Farmers Bank Building	6 05
54	1 40	2	Farmers Bank Building	5 95
55	1 50	2	Farmers Bank Building	6 00
56	2 00	2	Farmers Bank Building	6 00
57	2 10	2	Farmers Bank Building	5 95
58	2 20	2	Farmers Bank Building	6 00
59	2 30	2	Farmers Bank Building	6 25
60	2 40	2	Farmers Bank Building	6 10
61	2 50	2	Farmers Bank Building	6 25
62	3 10	2	Farmers Bank Building	6 20
63	3 22	2	Farmers Bank Building	5 95
64	3 30	2	Farmers Bank Building	5 90
65	3 45	2	Oliver Bldg. Power Plant	5 90
66	3 55	2	Bell Telephone Co.	6 15
67	4 15	2	Bell Telephone Co.	6 00
68	4 30	2	Bell Telephone Co.	6 10
69	4 42	2	Fort Pitt Hotel	6 20
70	4 52	2	Fort Pitt Hotel	6 20

RECAPITULATION

Time from 6 p.m. to 5 a.m. is 11 hours.
Supper from 12 to 12:30 a.m.
Actual operating time is 10½ hours.
Total of 70 loads is 428.15 tons.
Total mileage is 52 miles.
Average round trip is ¾ mile.

Delivered to	Loads	Minutes	Average Minutes to Trip	Total Tons	Average
Union Bank Bldg	8	90	11 3	49 1	6 14
Peoples Bank Bldg	2	25	12 5	12 5	6 25
Fort Pitt Hotel	6	56	9.3	36 75	6.12
Oliver Bldg. Power	34	217	6.4	208 45	6 13
Chamber of Commerce	2	35	17 5	12 15	6 08
Farmers Bank Bldg	15	160	10.7	90 95	6 06
Telephone Building	3	47	15 7	18 25	6 08
	70	630	11 9	428 15	6 12

On March 17 rain threatened to fall all day. At the hour (6 p.m.) when the first load was being hauled precipitation commenced. Rain came down heavily until 11:30 p.m., when a drizzle set in for the balance of the night. A heavy wind was experienced after midnight. Owing to the wet streets the driver could not chance driving as fast as on dry streets. Neither was the efficiency of the workmen as high as on a clear, calm night, as they had to contend with heavy rains, winds and wet clothes.

truck. Greater mileage in this case would be registered per day, as far less time would be consumed in loading and unloading, for the machines would make fewer deliveries.

These trucks, when operated free of traffic regulations, should have little difficulty in averaging ten miles per hour. Location of mine and consumer and the condition of the roads traversed should not affect this speed of travel to any great degree. In the Pittsburgh district it would appear that a distance of ten miles approaches the maximum at which the trucks can compete with the railroads.

For the shipment of fifty tons of coal over ten miles in a single day two trucks would be required. This transportation might be accomplished at a cost not exceeding $50. If the railroads were to move the same amount of coal over a like distance, approximately $50 would be demanded as freight charges. Trucks, however, can in practice be operated profitably by the coal producer over a distance greater than ten miles, for this distance is merely that which will make the cost of delivering by truck the same as that for delivering by railroad car. The fact that the mine may be kept in daily operation when trucks are employed is no small consideration, and is a factor of sufficient advantage to make it advisable to haul fifteen miles instead of ten.

So many and varied are the conditions under which each operator would ship his product that only an experiment with motor vehicles would definitely determine the maximum distance that could effectively be negotiated. The Middle West, being free of steep hills, perhaps offers the best geographical location for the movement of coal by this method. Here, however, the mines are not situated near the large consumers, as they are in the Pittsburgh district.

Bench Drilling Stand Makes Fast Work Possible with Little Effort

A NEW bench drilling stand recently put on the market by the Black & Decker Manufacturing Co. takes ⅜-, ½-, ⅝-, ¾- and ⅞-in. Black & Decker portable electric drills, which can be quickly and easily attached and detached. The bracket carrying the drill can be raised or lowered on a vertical column and may be secured in any desired position by means of a split collar and clamping screw. The drill may be swung clear of the base, making it possible to use this stand for such operations as applying ring gears to automobile axles, drilling in the ends of shafts, and other work too high to be drilled on the bench. Both vertical and horizontal adjustments are secured by means of the clamping screw.

An extra long feed lever gives a feed ratio of 6 to 1, so that 100 lb. pressure applied to the handle feeds the drill under a pressure of 600 lb. This means fast work with little effort. In the base are six tapped holes to accommodate ½-in. studs, used to clamp work in place. One stud with nut and clamp is supplied with the stand.

This bench drilling stand is exceptionally rigid, all parts being of unusually generous size. For instance, the vertical column is a solid steel shaft 1⅞ in. in diameter. The base is provided with four holes for fastening the stand to the bench. Four ⅜-in. lag screws are supplied for this purpose.

The principal dimensions are as follows: Height (bottom of base to top of vertical column), 30 in.; vertical adjustment of drill, 12 in.; drilling radius (distance from center of drill bit to circumference of vertical column), 7 in.; horizontal adjustment of drill, 360 deg. (complete circle); feed (vertical travel of drill when operated by feed lever), 4 in.; net weight, 70 lb.

ADAPTING A PORTABLE DRILL TO A BENCH STAND
Suspension on the standard is made by a spiral spring and the whole mounting bracket may be swung sidewise to clear the bench, thus rendering possible the drilling of long work.

THE ANNUAL REPORT of the chief of the Bureau of Engineering of the Navy contains the following reference to coal: "The existing Navy acceptable list and supplementary list of mines were continued in use with such slight revisions as seemed desirable in order to maintain a proper and an adequate supply of coal to the Navy. The naval commission to inspect the Matanuska, Alaska, coal fields, Captain S. E. W. Kittelle in command, returned and made a report on the conditions existing in this field. As a result of this report the Navy Department has decided to continue the investigations in this field. On May 21, 1920, Commander O. C. Dowling left Washington, D. C., for Alaska, as senior member of a naval coal commission. At the end of the fiscal year this commission was engaged in a general investigation of the facilities of the Matanuska field for supplying coal for the Navy."

THE QUARTERMASTER GENERAL of the Army in his report for the year ending June 30 last says the army purchased during the year 2,638,700 tons of coal at $11,103,932. Difficulty was experienced in obtaining the necessary supplies of anthracite coal for the army in the Northeastern and Eastern Departments because of the exorbitant prices demanded by individual anthracite producers. Arrangements, however, were made with the National Committee of Anthracite Operators which resulted in procuring coal required in these departments at $5.98 per ton, the requirements being allocated to the producers by the committee and shipped by them as allocated. This method resulted in a saving of nearly $7 a ton on approximately a milllion tons of coal.

Problems of Operating Men

Edited by James T. Beard

Factors Affecting Economy of Working Low Coal

Attention is drawn to a few factors of varying importance in respect to securing a maximum of economy in the working of low coal. Particular reference is made to reducing the length of haulage roads to be maintained.

PERMIT me to refer to the letter of V. Frodsham, which appeared in *Coal Age*, Oct. 14, p. 808, where he illustrates a combined pillar-and-stall and panel system for the working of a seam of low coal about 35 in. in thickness. The panel system that he suggests is a good idea and well adapted to the working of thin seams such as this one. However, it would seem that the question of realizing a low cost of maintenance has been almost completely overlooked in the arrangement of his system of haulage.

In the working of low coal, the problem of cost is a most important one and everything possible should be done to reduce this item to a minimum. From an inspection of the figure given by Mr. Frodsham to illustrate his method, it would appear that there are too many haulage roads to be maintained. Each panel appears to be surrounded by these roads and split with temporary tracks. Again, it would seen that there would be some difficulty in recovering the coal in the chain pillars, which would cause a considerable loss of coal, all of which means an increased cost of production by the method proposed.

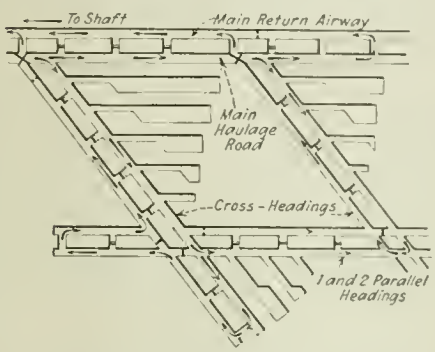
Too Great Concentration of Work May Prove a Hindrance

It is stated that 30 per cent of the coal would be taken out in the first working, which leaves 70 per cent to be recovered when drawing back the pillars or retreating. The writer suggests taking out the pillars in skips, working ten of these at a time, or twenty on both sides of the track and employing from 80 to 100 men.

The objection to this plan, as I regard it, is that the men are in too close contact with each other and the work too consolidated. In my opinion, better results would be obtained if this number of men were scattered over a larger territory, and there would be less danger of starting a squeeze. I believe the same tonnage of coal could be produced by 40 to 50 men in place of the 80 or 100 men proposed.

My experience has been that where the men are crowded together too closely, or too large a number are put to work in the same panel, they are unable to make the same money that they could if given a larger space to work. Moreover, where the men are thus bunched together, there is more opportunity for trouble; complaints are more frequent and the chances of disagreement among themselves are increased.

Allow me, now, to refer to the plan shown in the accompanying figure, which represents a cross-heading panel system that I believe is best adopted to the working of low coal. One of the chief advantages of this plan will be found in the reduction of the number of haulage roads and the length of haul. The diagonal cross-headings shown in the figure, when laid out with due regard to the inclination of the seam, possess the advantage of facilitating the movement of the loaded cars.



DIAGONAL ROADS REDUCE GRADES AND FACILITATE HAULAGE

As indicated in the figure, it is possible to drive the rooms off these diagonal roads in a direction such that the grade of the track will favor the movement of the loaded cars. In like manner, rooms can be turned off the other headings paralleling the main haulage road, and the grade in these rooms also will favor the movement of the loads.

In working this seam my plan would be to take up enough bottom on the roads to give the required headroom for the cars. I have generally found that brushing the roof leaves it in bad shape and gives future trouble. I would lay out the work so as to drive the rooms from 80 to 100 yd. in length. The roomnecks should be driven 12 ft. wide for a distance of, say 50 to 60 ft., and then widened out to a width of 20 or 24 ft.

This arrangement will leave a barrier pillar not less than 50 ft. in width for the protection of the headings until the panel is finished, when everything can be drawn back. It will seldom happen that there will be more than from 15 to 30 men working a single panel, which will afford the men every advantage for putting out the largest amount of coal.

G. W. BREEDEN.

Thorpe, W. Va.

The Safe Miner

Probably the most important item affecting the safety of the average miner is his attitude toward the timbering of his place, though there are few miners, indeed, who realize the truth of this statement.

READING the several letters discussing the question of what constitutes a skilled miner, particularly the letter of an assistant foreman of Johnstown, Pa., which appeared in *Coal Age*, Nov. 11, p. 1003, I have been impressed with the idea that the really safe miner is the one who presents a favorable attitude toward the timbering of his place.

The fact is well known that the largest number of mine accidents is caused by falls of roof and coal, and their frequency is none the less as time goes by. It would be interesting to have the views of our men and learn of the methods followed in certain fields and in individual mines having good records for safety. To my mind the greatest factor that distinguishes the safe miner from one who employs unsafe methods is the attitude of the man toward the timbering of his place.

Miners Naturally Indifferent To Their Own Safety

There are certain well known conditions common to workers in all coal fields, and these conditions must be met successfully if mine accidents are to be avoided. Ignoring for the time those physical conditions that call for special methods of timbering the working places in different mines, probably the most difficult condition to be met in mining is the downright indifference of the average miner regarding his own personal safety, and the childlike logic displayed by many when giving their reasons for having failed to set needed timbers and make their places safe before doing other work.

Almost invariably a miner will point to the posts behind him and claim that he cannot set timbers nearer the face as they would be in the cutter's way. The truth of the matter is that he does not want the extra work and prefers to run the chance of being caught. Men who assume that there is no danger are generally the first to get hurt. Such men take no extra precautions to safeguard themselves. But where a man once *realizes* that he is

working under a roof that is unsafe he will either timber it or get out.

However, the safer plan to pursue is for a man not to depend wholly on his judgment regarding the condition of the roof above him. Should his judgment fail he may pay the penalty with his life. A uniform method of timbering and the setting of extra posts under bad roof are the surest safeguards against this class of accidents.

Speaking of uniform methods of timbering, preferences will differ, but having adopted the method best suited to the particular conditions in the seam that method should be closely followed and there must be no delay in setting the timbers before performing other work. This is of the greatest importance at the working face, where men are employed 80 per cent of the time they are in the mine.

Set Temporary Posts Near Face

It is no excuse to say that the cutter must have elbow room and posts cannot be set nearer than twelve feet to the face. To adopt such a plan is to invite accident. The difficulty can be avoided by setting temporary posts, which the cutter can remove as his machine reaches the place, resetting the same afterward. A cutter may be careless and fail to reset the post; but in that case the miner will lose only a few minutes in doing the work.

A most common fault of miners, particularly in the setting of temporary posts, is their failure to do the work properly. A post that is not set plumb, with a well balanced cap above it, is a menace to safety. How often it happens a man is found caught by a fall of slate with good timbers lying buried at his side. A post that is not properly set will invariably fail when it takes the weight. The same care must be taken in setting mine timbers as in standing supports beneath a building. They must be plumb and the weight well balanced.

Every Miner Knows What Work Rightly Belongs to Him

The most difficult problem the mine foreman has to combat is the attitude of the average miner regarding his own safety, and his natural disposition to take chances. It is not wise for the foreman to ask a miner to do work that does not naturally fall to his lot. The man thinks that he is being asked to do something for which he is not paid. Every miner knows, however, that it is a part of his work to make himself safe.

When a foreman goes into a man's place and begins to upbraid the man for not having set needed timbers he is most sure to meet with a rebuff, as the average miner will resent the imputation that he has failed in his duties. A good rule is to mark up the place and say to the man, "Bill, when you put these posts up you will have your place in good shape." This gentle reminder will be all that is needed to bring prompt action in most cases.

It is a dangerous practice to follow the plan that some foremen and assistant foremen are apt to regard as the line of least resistance and start to set a miner's timbers for him. It is obvious that such a plan cannot be followed to any extent in a large mine. It establishes a bad precedent, as many miners will leave this work until the foreman or an assistant comes around, in the hope that it will be done for him, at least in part. The miner will be good natured about it, but this much needed work will be constantly delayed and the miner exposed to danger, for which he has a natural contempt.

The making of rules is one thing, but their enforcement is quite a different thing. The visits of a foreman or his assistants will not number more than two or three a day, each lasting perhaps five minutes. As a consequence the miner is alone practically the entire time he is in the mine.

Under the conditions prevailing at present the foreman has no "big stick" to cause or urge compliance with rules and regulations. His only safe course, therefore, is to strive to change the attitude of the miner, and bring him to realize his responsibility for his own safety. See that he has the needed tools, which must always include a good ax, and supply him with what timber is needed and watch the results.

Pikeville, Ky. G. E. Daugherty.

Preparedness for the Unexpected

An important lesson is often taught by the sad experiences of a great disaster; and we can learn at least one lesson from the calamity that befell the generally up-to-date mine of the Union Collieries Co., at Renton, Pa., not long ago.

With deep regret one reads accounts of instances where the work of rescue, following a mine disaster, is handicapped by reason of the lack of a properly equipped rescue crew. Such it seems was the case at the explosion that occurred, July last, at Mine No. 3 of the Union Collieries Co., located at Renton, Pa.

The Renton mine had always been considered well equipped and up-to-date. Its machinery, including the ventilating fan was operated by electric power furnished by another company. The mine was well ventilated and such a thing as a serious explosion had not been expected. It might be said it was farthest from the thought of the management. The result was this unlooked for occurrence found the company wholly unprepared, there being no suitable apparatus and appliances available for descending the 509-ft. shaft and conducting the work of rescue.

Rescuers Are Handicapped

After reading the interesting letter of Richard Bowen, *Coal Age*, Oct. 28, p. 904, regarding the heroic work of the Bureau of Mines rescue crew, who reached the mine in record time only to find that they were sadly handicapped by reason of the lack of suitable means for descending the shaft, I have been impressed with our general lack of preparedness for the unexpected things that so frequently happen.

The Bureau of Mines' men, on their arrival, found that a mere excuse for a bucket had been made fast to the end of a §-in. wire rope, and this was the only available means at hand for lowering men into the shaft, a depth of 509 ft. What followed is well described by Mr. Bowen, who rightly regards the work of one member of the rescue team as foolhardy, notwithstanding the acknowledged fact that it was heroic.

Why Are Not Rescue Cars Equipped With All Needed Appliances?

The account leads me to offer one suggestion that may prove of value should a similar condition arise in the future. The thought comes to me, Why should not every rescue car provided by the Bureau of Mines, be equipment with a suitable bucket and a sufficient length of ½- or §-in. rope, coiled on a reel that could be quickly mounted and the rope made available for use in descending a shaft in which the hoisting apparatus had been destroyed or rendered useless by the explosion.

The same suggestion will also apply to equipping every mine with an extra length of rope that would be at once available under similar conditions. The mine equipment should also include a strong bucket capable of holding two men. Every up-to-date mine should have a well organized, trained rescue team, familiar with rescue and first-aid work. The equipment should include approved breathing apparatus, safety lamps, and other rescue and first-aid appliances and supplies. These should be examined and tested at regular intervals, so that everything will be available and in good condition when needed.

Rescue Teams Should Visit Mines

Very much can be done in the way of being prepared for what we do not expect but which is liable to happen. I would suggest further that it would not be a bad plan for state and government rescue teams to have their members visit the mines in their several districts, from time to time, for the purpose of being more fully acquainted with their conditions and knowing what equipment is available should the occasion require. In this way, much can be done to strengthen rescue organizations in the different mines and improve their equipment.

Another thought comes to me in this connection. Would it not be well for every Mine-Safety Committee to map out the quickest and safest roads for men to follow in getting out of the mine. These roads should be marked plainly not only by a white arrow showing the direction to be taken, but also by some means that would enable a man to determine, in the dark, the proper direction to take to reach the mine entrance.

At Renton, the foreman made the fatal mistake of permitting men to enter the mine after the ventilation had

been cut off for a considerable time and before the mine had been examined and found to be safe. It is understood that this was contrary to orders and the dread result should emphasize the necessity of absolute compliance with safety rules and regulations on the part of mine officials and men.

Gans, Pa. R. W. LIGHTBURN.

Origin and Growth of Coal

Many of the facts taught by a careful study of the geological conditions and characteristics of coal seams help to make the mining of the coal less difficult and far less dangerous. A lack of this knowledge on the part of the miner is often his chief handicap.

FROM time to time there have appeared in *Coal Age*, articles and letters relating to the origin of coal and the gradual changes that have taken place in its formation. I recall one excellent article by C. W. Hippard, explaining the various theories relating to the origin of coal, Vol. 16, p. 104. On page 460 of the same volume Richard Bowen, wrote an interesting letter in which he appeared to favor the "Drift Theory" of the formation of coal; and a little later Robert McCune, in another letter, Vol. 17, p. 150, urged the *in situ* theory as being the most acceptable.

Concerning the history of coal, the seams themselves tell us many things regarding their origin; but other matters, particularly the length of time required for the transformation to take place, are left wholly to speculation. Science has positively determined that the origin or source of our coal is the growth, development and decay of vegetable matter.

During the long ages of transformation this matter was overspread with other deposits and subjected to tremendous pressure, with the consequent development of heat. By these agencies the vegetable matter was finally transformed into mineral coal. But regarding the length of time required to effect these changes no definite information is afforded.

We are told that the coal-forming period in the history of the earth was introduced by climatic conditions that invited and sustained a luxurious plant growth, which provided immense quantities of vegetable material as year followed year. The successive growth and decay of this material continually added to the deposits that were to form the coal. The *in situ* theory describes this growth and deposit of vegetable matter as taking place where the beds of coal are now found. On the other hand, the "drift" theory describes this material as having been drifted from the places where it grew and deposited later where the seams of coal were formed. To my mind the former of these two theories appears the more plausible one. If the coal-forming material drifted from other localities to the place where the coal is found I would like to ask, Where is it supposed to have originated?

All students of geology agree that the time during which our coal was in forming has been immensely long, perhaps hundreds of thousands of years. It is easy to understand that during this long interval of time the coal measures, through the action of geologic forces, have been alternately submerged and elevated and that foreign matter such as sand and clay were deposited from the overflowing waters and later formed the interstratified shales, slates, limestones and sandrocks of the coal formations.

With Richard Bowen, I believe that if the conditions affecting the formation and character of coal seams were studied more closely the knowledge gained thereby would be of great assistance in the intelligent and systematic planning of mines. It is strange how little the average miner, who has spent the most of his life in coal mines, knows or thinks of the geologic forces that have given rise to the slips, faults, and pinchouts with which he comes in contact in mining the coal.

It goes without saying that if the miner had a broader knowledge of the conditions and forces that produced these disturbances with which he is familiar in the mines it would make him more cautious in his methods of mining, and enable him to protect himself better from falling roof where the formation is traversed by slips and faults or rendered dangerous by reason of other changing characteristics. Could the violent as well as the slower changes that have taken place during the formation of coal seams have been photographed, and were these now to be passed before our eyes like a moving-picture scene, we would witness a sublime spectacle that would tax the imagination to grasp. JOHN ROSE.

Dayton, Tenn.

Inquiries Of General Interest

Heating Locomotive Feedwater in Injector Practice

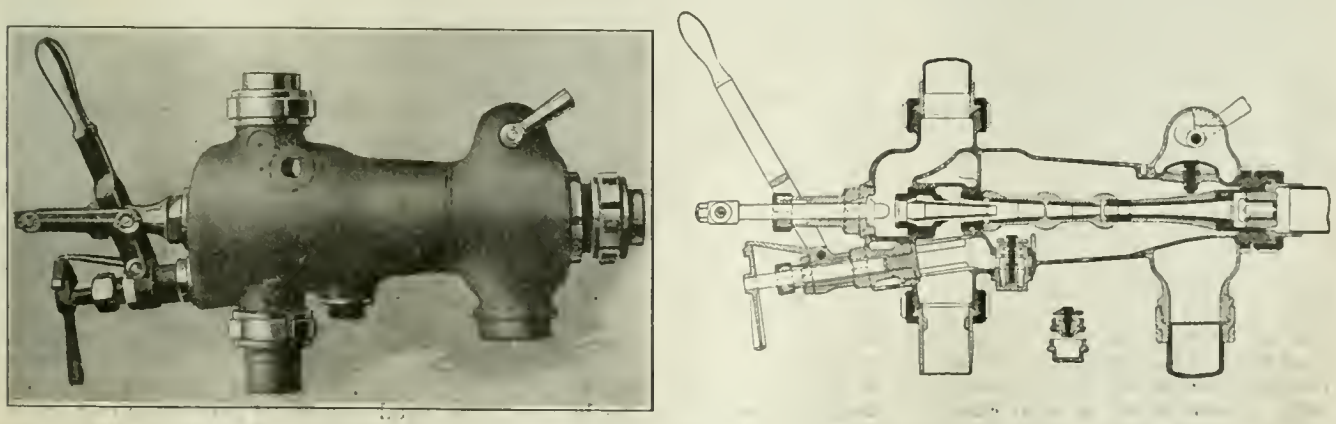
Heating the feedwater of a locomotive or other boiler equipped with an injector, for the purpose of saving fuel, is only applicable to a limited extent, as the injector fails when the water is too hot.

AT OUR colliery, we are operating eight steam locomotives on the surface. These are equipped with William Sellers injectors. At present we are using feedwater at a temperature of 40 deg. F. and it has been suggested that a large saving in fuel could be effected by heating the feedwater to a temperature of, say 180 or 200 deg. F. The objection has been raised, however, that the injectors will not handle water at this high temperature. The water is carried in saddle tanks astride of each locomotive boiler, which maintains a fairly uniform temperature of about 40 deg. in the tanks.

What has *Coal Age* to say in regard to this suggestion? Is it a good one and will the injectors operate under this increased temperature?

Wilkes-Barre, Pa. ENGINEER.

A little reflection on the dual principle that controls the action of an injector using steam will serve to make



FRONT VIEW AND CROSS-SECTION OF THE WILLIAM SELLERS, "CLASS N," IMPROVED INJECTOR

clear the fact a relatively larger percentage of the heat energy of the steam supplied to the injector is transferred to the injected water as the difference in their temperatures is greater. In other words, the lower the temperature of the feedwater, the higher the efficiency of the injector.

To explain in another way, assume a boiler pressure of 160 lb. gage, at sea level, corresponding to an absolute pressure of, say 175 lb. per sq.in. At this pressure, the temperature of both the steam and the water in the boiler is 371 deg. F.; but the heat per pound of steam, at this pressure (1,196 B.t.u.) is far greater than the heat per pound of water (343 B.t.u.), owing to the amount of heat absorbed and rendered latent in the steam (853 B.t.u.).

The accompanying figure shows a view and sectional arrangement of the "Class N." improved Sellers injector, the general action of which is too well known to need description here, further than to say the present improved type consists of a movable combining tube that is made automatic, self adjusting to provide against changing pressures.

As previously stated, there is a dual principle involved in the operation of an injector. At the zone of contact of the steam and water, the condensation of the steam to water at the temperature of the feed develops a heat energy that is imparted to the water. In addition to this, there is formed by the condensation of the steam a vacuous condition, which increases the head that forces the water into the boiler.

The theoretical velocity of water due to a pressure equal to that to be overcome in the boiler is

$$v = \sqrt{2gh}$$

$$= \sqrt{64.32 \times \frac{175}{0.434}} = 161 + \textit{ft. per sec.}$$

Owing to the expansive quality of steam, it is estimated that the rush of steam, for the same pressure head, is about twenty-two times that of the water or $22 \times 161 =$ say 3,540 ft. per sec. The difference in these two velocities is suggestive of the heat energy of the steam that is imparted to the water, which is thereby injected into the boiler.

Making all due allowances for frictional and other resistances and possible reduction of velocity in the passage of the steam through the injector, it is evident that any slight increase in the velocity of the injected water, imparted to it by the rushing steam—say an increase to 200 ft. per sec. would represent a pressure much in excess of the boiler pressure; thus,

$$p = \frac{0.434 \times 200^2}{64.32} = \textit{say 270 lb. per sq. in.}$$

It is stated in a "Handbook of Injectors," published by William Sellers & Co., Philadelphia, Pa., "Cold water is best for the injector. Hot water reduces the life and efficiency. At 120 deg. F., the capacity is about one-quarter below the listed capacities."

Examination Questions Answered

Anthracite Foremen's Examination, Tenth District, May 4, 1920

(Selected Questions)

QUESTION—*What is the angle made by two lines, the bearings of which are N 25° W and S 12° W?*

ANSWER—Since one of the bearings is in the northwest and the other in the southwest quadrant the sum of the bearings and the angle included between the two lines is 180 deg. Therefore, the included angle is 180 — (25 + 12) = 143 deg.

QUESTION—*How much air will be required to dilute 500 cu.ft. of methane to a mixture containing 4 per cent of the gas?*

ANSWER—In this case, 500 is 4 per cent of the proposed mixture of air and gas. The volume of the mixture is, therefore, 500 ÷ 0.04 = 12,500 cu.ft., and the required air volume is 12,500 — 500 = 12,000 cu.ft.

QUESTION—*What is the lowest oxygen content in which an oil-fed flame will burn?*

ANSWER—When no carbon dioxide is present or any extinctive gas other than the nitrogen of the air, an oil-fed flame will cease to burn when the oxygen content falls to about 16.4 per cent. If the oxygen of the air has been depleted by the addition of carbon dioxide, however, an oil-fed flame will be extinguished when the oxygen content ranges from 17.6 to 18 per cent.

QUESTION—*(a) What danger should be guarded against when driving a gangway in the direction of old abandoned workings? (b) How would you provide against those dangers?*

ANSWER—(a) In driving a gangway in the direction of abandoned workings, it is necessary to safeguard the work against the possibility of tapping a body of gas or water that may have accumualted in the old works.

(b) To avoid this danger, a borehole should be kept at least 20 ft. in advance of the face of the heading and flank holes making an angle with the direction of the heading should be drilled in each rib. The width of the entry shall not exceed 12 ft., as required by the Anthracite Mine Law.

QUESTION—*If it requires 5 hp. to produce 30,000 cu.ft. of air per minute, in a certain mine, what horsepower will be required to produce 90,000 cu.ft. in the same mine?*

ANSWER—In mine ventilation, the power producing the circulation varies as the cube of the quantity of air. In this case, if the air is to be multiplied three times the power must be increased in the ratio of the cube of 3 or 27 times. The required horsepower is, therefore, 5 × 27 = 135 hp.

QUESTION—*The horizontal distance between two stations is 200 ft. If the elevation of one station is plus 30 ft. and the elevation of the other is minus 30 ft., what is the distance between the stations referred to, in the mine?*

ANSWER—The vertical height of the one station above the other is 60 ft., and the distance between the two stations, as measured on the incline or pitch of the seam, is $\sqrt{200^2 - 60^2} =$ 208.8 ft.

QUESTION—*(a) How much must the ventilating pressure be increased in a mine in order to double the quantity of air in circulation? (b) How much must the power be increased to double the quantity?*

ANSWER—(a) In mine ventilation the pressure varies as the square of the quantity of air in circulation. Therefore, to double the air the pressure must be increased $2^2 = 4$ times the original pressure.

(b) Likewise, the power producing a circulation varies as the cube of the quantity of air; and, in this case, the power must be increased in the ratio of $2^3 = 8$ times.

QUESTION—*The quantity of air passing through a crosscut, in a gaseous mine, is 20,000 cu.ft. per min. and the area of the crosscut is 30 sq.ft. Would the law permit the use of gauze safety lamps in this opening?*

ANSWER — The velocity of the air passing through the opening is 20,000 ÷ 30 = 666⅔ ft. per min. The Anthracite Mine Law (Art. 10, Rule 7) limits the velocity of air in any opening, in a gaseous mine where gauze safety lamps are in use, to 450 ft. per min. Therefore, the use of gauze safety lamps in this opening would be unlawful.

QUESTION—*What are the advantages and disadvantages of electric safety lamps?*

ANSWER—The illuminating power of an electric mine lamp is greater than that of any oil-burning lamp. As compared with safety lamps, the electric lamp can be worn in the cap, leaving the hands free to perform work. There is no danger of explosion in the use of an electric lamp, unless the bulb is broken.

The disadvantage in the use of electric lamps is that the lamp gives no indication of a dangerous atmosphere, and the worker has no warning that he is breathing impure air until he is overcome.

Nova Scotia Miners to Vote on Montreal Agreement

Rejection May Not Mean a Strike in View of Wage Reductions in Other Trades and Results in West Virginia and Alabama

TILL a referendum vote has been counted it will not be possible to know how the Nova Scotia miners view the agreement signed tentatively at Montreal, Nov. 8, by the operators and representatives of the mine workers. Even if the agreement is rejected a strike will not necessarily follow.

To recapitulate, meetings of the operators and mine workers were held Oct. 20 and 21 at Montreal, at which representatives of the Dominion Coal Co., Ltd.; Nova Scotia Steel & Coal Co., Ltd., and the Arcadia Coal Co. were present, as also Robert Baxter, president, and J. B. McLachlan, secretary-treasurer of District 26. The Department of Labor was represented by Gerald H. Brown, assistant Deputy Minister, and the Royal Commission by E. McQuirk, chairman.

The mine workers were prepared to make extremely drastic demands, but were anxious to learn to what extent they would be backed by the International authorities. They therefore desired that the meeting be adjourned till Nov. 3. The interim was used by Baxter and McLachlan to attend conferences at Montreal and Indianapolis. According to their own statement on Nov. 13 they soon found that it would be best to accede to the best terms available. At Montreal they learned that the shipbuilding trades, the textile workers and the boot and shoe workers were already accepting reductions in wages and were even offering to work for less money, and also that the number of unemployed was increasing.

Has Too Many Strikes to Handle Already

At Indianapolis they found the International union in a quandary because it had fathered two expensive strikes—one in Alabama and one in West Virginia. It did not see how it could, in addition, manage to take care of 40,000 striking men in Nova Scotia. They learned that coal prices had fallen in the United States, and, although they wrongly ascribed that fall to government intervention, it was nevertheless a fact that it had occurred, and it promised severe competition for the Nova Scotia operators and hence for their employees.

Here it may be well to quote a further statement of Mr. Baxter made on Nov. 17. He said: "It costs from $4.60 to $5.60 a ton to produce coal in the Province of Nova Scotia. In the United States the men produce upward of three tons each day. An increase of 27 per cent to them adds possibly 40c. a ton to the coal cost. In Nova Scotia an increase of 27 per cent would raise the cost of coal $1.25 per ton. Thirty-five per cent of the mine workers in the United States are datal [day] workers, but in this province from 65 to 70 per cent are datal hands."

But, to refer again to the Baxter-McLachlan statement of Nov. 13, they learned other unpleasant truths. Gerald H. Brown, Deputy Minister of Labor, informed them that the government's orders for ships' plates from Sydney would run out in the course of a week. Already the federal government had sent a man to Europe to sell steel products for the manufacturers of Nova Scotia. It looked as if the companies would have to shut down. In fact McLachlan on Nov. 21 declared that the Dominion Steel Co. would let out its furnaces if there was a coal strike and make necessary repairs. Nor was this all; the government was strongly against a strike and was known to be preparing to send the Northwest mounted police into the district to protect any who might want to continue working.

To Meet Conditions Signed Montreal Pact

In face of the uncertainty, now grown to a painful assurance, and with John P. White to back them as representative of the International union, Baxter and McLachlan met the operators and tentatively agreed that tonnage rates be increased 10c. per ton and that day hands be advanced 55c. All local contract rates were to be advanced 12½ per cent. The new contract was to become effective as of Nov. 1, 1920, and to run to Nov. 30, 1921, it being agreed that both parties would meet in Halifax twenty days before the expiration of the agreement to arrange for a new understanding.

Right to hire and discharge is vested solely in the companies, except that no discrimination is to be shown because of any man's affiliation with the United Mine Workers of America. Collieries are to commence to hoist coal at 7 a.m., when all men must be in the mine. The day's work will cease at 3 p.m., when "all arrangements will be available for conveying men to the surface." The surface men around the bankhead and screens associated with the handling of coal are to be on duty from 7 a.m. to 3 p.m. and "for a short time after, if necessary, for the purpose of attending to such duties as will facilitate their own work, such time not to exceed a half hour." Other surface laborers around the collieries will work from 7 a.m. to 4 p.m. with half an hour for dinner.

The union may not, because of a dispute, close the mine unless that dispute arises out of a refusal of the employer to pay on the regular payday without satisfactory explanation or because of a condition which endangers life or limb. The usual arbitration clause is made part of the suggested contract, but the provision is added that if within ten days the representatives of the operators and miners fail to agree upon an arbitrator an arbitrator shall be selected by the Prime Minister of Nova Scotia, who shall make such a selection within ten days, and such selection shall be final, the miners to continue at work from the inception until the final adjustment.

The writing of a "funeral" clause, regulating layoffs when funerals take place, is left to be decided later. Housing and rent "are not a part of this contract." The contract specifically recognizes that bettered housing should command more rent. Where delivered coal to the miner is sold at less than $2.25 a ton it shall be raised to that figure, and if any railroad transportation is a part of the delivery system the cost of that service shall be added.

Truro Convention Turns Down Agreement

A convention was called on Nov. 16 at Truro so that the officials of district 26 might present an argument in favor of the suggested contract. Some of the delegates were already instructed against it, notably those of Dominion 1 local. Fire was directed on the "hiring-and-discharging" and the "housing-and-rental" clauses. On Nov. 19 the convention turned down the proffered agreement, but this is no more final than its acceptance by the officials. The man behind the pick is yet to be heard from, and meanwhile Baxter and McLachlan will swing the circle and argue for what they have signed.

They will explain that there is still the MacKinnon award, which terminates Jan. 31. Giving thirty days' notice at that time the men will then be fully entitled to demand a new contract. By that time it will be March. With more and more men out of work, with coal plentiful, with the winter ended, more industrials accepting lower wages and with prices falling, will the miners be able to make as good a bargain as has been already offered them?

The case argued by Baxter and McLachlan seems clear. It is safe to prophesy that the contract will be accepted. If it is not there must be another vote, and even then a strike will be called if only 75 per cent of the men concur, and it will have to be made in violation of contract. The International Union may back it with money or, what is more likely, may refuse to do so.

THE NAVY HAS requested Congress to appropriate $37,000,000 for its use during the next fiscal year for coal and other fuel including expenses of transportation, storage and handling.

A TOTAL OF $3,469,638 has been asked by the Director of the Bureau of Mines for the work to be conducted by that bureau during the next fiscal year. A considerable portion of that fund is spent directly or indirectly in the interest of the coal-mining industry.

Bituminous Output in 1920 by Groups of States Estimated by Geological Survey

ESTIMATES by the Geological Survey on bituminous production, by section and state, in the first ten months of 1920 have just been issued. As the estimates are based on rail shipments, it is sometimes difficult to apportion the tonnage of a road originating coal in more than one state, and the figures are therefore tentative and subject to revision. By groups of states the 1920 production has been as follows, shown in the first column as the total for the ten months, January to October, and in the second column as a full year's production at the same rate:

PRODUCTION OF SOFT COAL IN THOUSANDS OF NET TONS

Section	First Ten Months of 1920	Year 1920 at Same Rate as First Ten Months[7]	1919	1918	1917
Northeast[1]	271,388	323,983	288,250	351,365	333,440
Southern Appalachian[2]	20,628	24,626	20,420	26,083	26,381
Eastern Interior[3]	106,408	127,030	94,600	130,768	122,953
Western Interior[4]	24,357	29,078	22,590	30,724	30,707
Mountain States and Northwest[5]	31,502	37,607	32,090	40,341	38,212
Totals[6]	454,283	542,324	457,950	579,281	551,693

(1) Michigan, Pennsylvania, Ohio, West Virginia, Maryland, eastern Kentucky and Virginia. (2) Alabama, Georgia, and Tennessee. (3) Illinois, Indiana, and western Kentucky. (4) Iowa, Kansas, Missouri, Oklahoma, Arkansas, and Texas. (5) Colorado, New Mexico, Utah, Wyoming, Montana, North Dakota, and Washington. (6) Alaska, California, Idaho, North Carolina, Oregon, and South Dakota not included. (7) The first ten months contained 258 out of the 308 possible working days of the year.

Comparison of 1920 with the earlier years is assisted by expressing the 1920 rate in terms of per cent of 1918 and 1917, as given in the following:

Section	Per Cent of 1918	Per Cent of 1917
Northeast	92	97
Southern Appalachian	94	93
Eastern Interior	97	103
Western Interior	95	95
Mountain and Northwest	93	98
Totals	94	98

Of the five sections, the Eastern Interior has made the best record in 1920 in comparison with the war years, producing at 97 per cent of the 1918 rate and 103 per cent of the 1917 rate. The other Western fields, Western Interior and Mountain-Northwest, have averaged about 95 per cent of the war rate. Least favorable is the position of the Southern Appalachians and the Northeast. In the former, 1920 averaged 94 per cent of the war rate. In the Northeast, supplying the Lake, Canadian, New England and export movements as well as the region of greatest industrial activity in the United States, the 1920 production has averaged 97 per cent of the 1917 rate and 92 per cent of the 1918 rate.

Royalties Paid on Anthracite Output

CURRENT discussion of conditions in the coal markets have been marked by references to royalties paid by anthracite-mining companies to owners of anthracite lands, particularly the Girard estate, and there seems to be some confusion as to the actual facts. Considerable detailed information can be found in the report of former Judge Gordon, who as master in a case involving Girard estate leases made a report to the Orphans Court of Philadelphia, under which a decree was handed down March 3, 1920.

The Girard estate is getting an average of about 20 per cent of the mine price of coal, all sizes, from all of its tenants. The actual percentage charged in the leases themselves varies. In the case of one lease it is 16 per cent, nine others carry 18 per cent, three are for 20 per cent, and one—the Locust Mountain property—pays 28.1 per cent. These percentages are based upon the selling price of coal, all sizes, f.o.b. mine, the output of all tenants being lumped to get the average price. This average price, so determined, governs the payments for the succeeding year. Thus the average price per ton f.o.b. mine in 1919 is the basis upon which the percentages this year have been collected.

The average receipts of the Girard estate per ton have grown almost continuously since 1914. The royalties received have been as follows: 1914, 54c.; 1915, 55c.; 1916, 53c.; 1917, 62c.; 1918, 76c.; 1919, 97.9c.; 1920, $1.094. Royalties to be collected next year probably will be considerably higher.

Girard estate leases are based not only upon the sliding scale but on a guaranteed minimum royalty. The master's report referred to above says that by the beginning of this year the Girard estate had received an amount equal to the entire minimum royalties calculated to the end of the present leases, which do not expire for eight years more. The report also said that the figures showed that while for the year 1919 the lessees actually lost $731,352.26 as one of the results following war-time fuel regulation, the Girard estate that year received from its lesees $2,051,933.37. "The leases have been extremely profitable to the Girard estate," the master said.

Average f.o.b. mine prices for 1919, on which the Girard estate is now collecting royalties, run thus: Egg, $6.50; stove, $6.75; nut, $6.88; pea, $5.11. On that basis it can be calculated that the Locust Mountain Coal Co., which has the highest royalty rate—28.1 per cent—is paying a royalty of $1.933 per ton on nut coal. As a matter of fact the recorded testimony of Captain Archbald, engineer for the Girard estate, is that the Locust Mountain Coal Co. will average a royalty of $1.494 per ton on all sizes of coal for 1920.

To use the Locust Mountain Company for a further illustration, it can be said that if the price of nut coal at the mines on the Girard estate this year averages $9 a ton the royalty to be paid next year will be 28.1 per cent of that amount, or $2.529 a ton. It might be added that the income of the Girard estate is exempt from the customary income taxes, as it is a charitable institution.

Testimony was given before the U. S. Senate Committee in Pottsville, in January, 1919, regarding royalties paid to the Girard estate, and it was brought out at that time that when the Fuel Administration increased the miners' wages and allowed barely enough—or even not enough—to be added to the price of coal to cover that additional expense, this addition to the price constituted a basis upon which royalties would be collected in the future. It was brought out as a distinct possibility that the cost of coal would be put so high as to ruin companies operating under lease.

The illustration of this was worked out in this way: Suppose a wage increase to be given, as was done under the Fuel Administration, which would add $1 to the cost of a ton of coal at the mine. The Locust Mountain Company, for instance, by increasing its price $1 to meet this expense would thus make itself liable for 28.1 cents a ton additional royalty to the Girard estate. If the price of coal were raised $1.28, to cover both the wage increase and the royalty, then the following year the percentage would be based on that entire increase, and so on. The Gerard estate is not the sole lessor of anthracite lands, but its policy with regard to leasing forms a sort of standard which other landowners have endeavored to establish when executing leases of their property to operating companies.

COAL CONSUMED BY public utilities and central power plants in September was 3,013,429 net tons, approximately the same as in August and slightly greater than in any month this year since March, according to the division of power resources of the U. S. Geological Survey. The total amount of fuel used by public-utility plants in generating electricity from January to September, 1920, is given as 27,700,000 short tons of coal, 9,900,000 barrels of fuel oil and 18,200,000 cubic feet of gas. Compared with the same period of 1919 there was an increase of 15.5 per cent in power output, a portion of which increase was obtained from water power.

THE SUIT OF P. M. Riefkin to recover $491,000 from the Du Pont de Nemours Co., of Delaware, as compensation for obtaining for the company 3,168,000 tons of bituminous coal and 41,000 tons of anthracite is being tried in the District of Columbia Supreme Court. He claims a commission on the basis of 15c. a ton for the bituminous and 20c. for the anthracite.

Existing Legislation Will Assure Adequate Coal Production, Morrow Says

INTERVIEWED by a representative of the United Press in regard to the necessity for further legislation for the coal industry, J. A. D. Morrow, vice-president of the National Coal Association, spoke as follows:

"I notice some talk of the need of legislation for the regulation of the coal industry. This is surprising, and proceeds, I am sure, from failure to understand what legislation is now available for the protection of the public against interference with the sufficiency of coal supply for the nation.

"There are some 10,000 soft-coal mines open and shipping coal. These mines are fully equipped with underground haulageways, ventilating systems, mechanical equipment and employees, so that they can produce year in and year out some 700,000,000 tons of bituminous coal. This is 30 per cent more coal than the country usually needs. Accordingly there is no shortage of coal-mining facilities or potential ability to ship more than enough coal for everybody.

"With 7,000 producers, operating 10,000 mines in twenty-six different states, it is nonsense to talk about combinations among bituminous-coal producers to restrict production or put up prices. There are thousands of acres of coal deposits adjacent to railways which can be opened at any time that the open market offers opportunity for profit. During the last year on one railroad more than 1,000 new mines were opened. There can be no successful combination among producers for the restriction of production under such conditions as these, any more than the farmers can successfully combine to put up the price of wheat, corn, cotton or other agricultural commodities. You ask, then, what causes these periodical shortages of coal. Just two things.

Esch-Cummins Law Safeguards Transportation

"First, some deficiency of transportation which for a period makes it impossible to ship from the mines the tonnage of coal needed to meet current demands. This is a matter, it may be argued, against which the public should be safeguarded and protected. I agree. What is not generally understood, however, is that this has already been done, and that the public now, through ample legislation, is fully protected against that kind of emergency. I refer to the Esch-Cummins law—the new Transportation Act.

"On June 1 of this year the United States was shorter of bituminous coal than it had ever been on June 1 in any year of which we have a record. We were far worse off than on June 1, 1917. We faced a very grave situation because the railways, disorganized by government control and the switchmen's strike, were unable to ship more than about 9,000,000 tons of bituminous coal per week, when the country needed 12,000,000 tons per week. However, under the newly enacted Esch-Cummins law, the Interstate Commerce Commission, in co-operation with the National Coal Association and the American Railway Association, put into effect some practical service orders which applied enough transportation service to the business of handling soft coal to fill up the deficit and to give consumers the reserve supplies they needed before winter and to restore conditions to normal.

"Through the advantage afforded by the Esch-Cummins law the country today, instead of facing national disaster, as it did in the beginning of the winter of 1917-1918, is back to normal conditions of bituminous-coal supply. Thus the Esch-Cummins law and the Interstate Commerce Commission have been subjected to the severest possible test of their efficiency in the face of a grave transportation emergency, and they have more than made good. Clearly, then, no more legislation is needed to protect the public against that kind of interruption in its coal supply.

"Now, the only other serious interruption to coal supply arises from strikes. This may come from strikes not in the coal industry at all, but among railway employes, dock men, truck drivers, etc., as well as among coal miners. So far there is no protection whatever to the public against that kind of interruption of its coal supply.

"The National Coal Association, by charter limitation, has nothing to do with labor matters or wage-scale negotiations in the coal industry and, therefore, as an officer of that association I shall make no comment whatever upon that phase of the coal situation or what ought to be done about it. But I do want to point out, as an individual consumer of coal, that my own individual supply for my house and for any business in which I might be interested is subjected to vital interruption in coal supply on account of strikes.

"As an individual consumer of coal, let me say, therefore, that with the legislation now on the statute books it is clear that no further law is needed for the control and regulation of the production and distribution of coal. If any legislation is needed to protect the public against deficiency in the supply from the mines, which, as I have pointed out, are so amply able to furnish currently all the coal needed, then it is legislation which will protect the public against the interruptions which come from strikes, whether they be at the mines, or on the railroads, or wherever they may be."

Fuel and Transportation Discussed at Mechanical Engineers' Meeting

THE forty-first annual meeting of the American Society of Mechanical Engineers was held in the Engineering Societies Building, 29 West 39th Street, New York City, Dec. 7 to 10. About 3,000 engineers, economists and educators were in attendance at the various sessions.

The general theme of the meeting was the conservation of fuel and the improvement of transportation. This, of course, emphasized the importance of those sections which devote their attention to fuels and railroads. Four papers were presented before the Fuels section. These were: "The Fuel Supply of the World," by L. P. Breckenridge; "Fuel Conservation; The Need for a Definite Policy and Its Requirements," by D. M. Myers; "Distillation of Fuels as Applied to Coal and Lignite," by O. P. Hood, and "Form Value of Energy in Relation to its production, Transportation and Application," by Chester G. Gilbert and Joseph E. Pogue. Abstracts from some of these papers will be printed soon in *Coal Age*.

Probably the most sensational paper presented was that of Mr. Myers. He stated that changes could be made through the application of well-known but commonly neglected engineering principles, which would save at least $450,000,000 per year in the nation's expenditures for coal. The coal actually savable would equal one and one-half times the freight-carrying capacity of the Pennsylvania R.R. lines east of Pittsburgh. The conservation of this fuel would release 75,000 miners to other productive employment or permit them to produce the ever-increasing supply of coal demanded by industry.

Prof. Breckenridge showed that North America was the most favored of all continents and the United States the most fortunate of all the nations of the earth in the matter of fuel reserves. He stated, however, that although our stores of fuel were still large, increase in consumption had been so rapid that the time appeared to be ripe for "co-operation in conservation."

Mr. Hood stated that while low-grade fuel, such as lignite, could be greatly improved by distillation, this process being accompanied by the extraction of numerous valuable by-products, it probably would be vain to hope that a superior fuel could be produced at low cost. Mr. Gilbert and Mr. Pogue drew attention to the fact that the applicability of a certain form of energy to a certain purpose often dictated the employment of energy in that particular shape to the

exclusion of all others. Thus the ready applicability of electricity to certain heating processes often determined its use to the exclusion of, say, bituminous coal, which costs only a fraction as much per unit of heat.

Discussion following the presentation of the papers was long and animated, requiring the fuels section to sit two full sessions, or about six hours in all. Conservation of coal and heat was treated from many viewpoints. One of the speakers attacked the problem from the sensible ground of its utility. Why should we endeavor to save fuel? Was it to gain an immediate, tangible, financial advantage, or were we to conserve fuel in order that our descendents may be blessed with a fuel supply? It appears that the former is the only tenable proposition. Unless we ourselves may reap benefit from our efforts at coal saving, we are not warranted in making those efforts and may safely assume that future generations will be able to solve the problems of their age and time as past and present generations have solved or are solving theirs.

Interest manifested in fuel saving far exceeded expectations and plans are now being formulated for further papers and discussion at the spring meeting to be held at Chicago.

Instead of Cancelling Order, Foreign Buyer Sues for Non-Delivery of Coal

NOT all claims for settlement in the backwash of the now historic splurge in coal exports of last summer arise from cancellation of orders and contracts by foreign buyers. On the other side of the fence are American export shippers who are being sued for failure to deliver and an interesting angle of this is described in a letter to Charles S. Allen, secretary of the New York Wholesale Coal Trade Association. Messrs. Haight, Sanford, Smith and Griffen have advised Mr. Allen as follows:

"One of our clients, a member of your association, last spring sold coal abroad and chartered steamers to carry out the sale. Practically all charters contain a provision "the act of God, the restraint of princes, rulers, people, etc., mutually excepted." Our clients had coal at their own mine which they could ship, but subsequent to the making of the charters the government introduced a permit system by which the railroads could deliver coal for export only if the shipper had obtained a permit for foreign shipment from the Interstate Commerce Commission. Our client was unable to obtain permits for two shipments and suits have been brough claiming demurrage and damages for breach of charter.

"The claim is made that the 'restraint of princes' clause applies only to matters at the port of loading. At a preliminary hearing the District Judge in Baltimore expressed grave doubts as to whether the defense was good. The trial will take place Dec. 17. The attorneys who are bringing the case themselves have more than sixty other pending cases awaiting the decisions in these and many other attorneys also have cases. We are told that the ship owners have combined to win their case, and feel that your attorneys and members may be interested to assist us."

Permanent Injunction Against Indiana Fuel Board May Force Return of Fees

INDIANA'S state general fund may be forced to stand the shock of heavy drawing, should the Federal Court return a finding for the plaintiffs in the hearing for a permanent injunction to prevent the Coal Commission from carrying out its orders, thus divesting the coal body of any power in regulating the coal industry in Indiana. Should the commission be stripped of its power, coal operators and retail and wholesale coal dealers may insist that the state return to them money paid the commission as license fees and as tonnage fees on production.

Members of the State Board of Accounts who served on the commission were forced, under the provisions of the Coal Commission Act, to serve without additional compensation. But the salaries of clerks and other expenses to be paid out of the treasury will nearly deplete the finances.

Section 13 of the Special Coal and Food Commission Act, in addition to providing means for raising funds for carrying on the work of the commission, says: "The money so paid shall be used in paying the expenses of said commission, including salaries, compensation and expenses of the commissioners, agents, clerks, employees, special counsel and assistants, but if not sufficient for that purpose, there is hereby appropriated out of the treasury and out of the funds not otherwise appropriated a sum sufficient to pay all expenses."

Those who have been discussing the possibility of a refund of license fees have declared that out of the general fund will come the money for this purpose. In fact, unofficial opinion from those who are in a position to interpret the act have been to the effect that this is the only place whence the money can come.

New York Public Utilities Well Supplied with Coal

PUBLIC utilities in New York City, including railroads, street railways, gas, electric and steam companies, had on hand Dec. 6, 1920,.358,762 tons of bituminous coal. This is all used for steam and power purposes only, and does not include coal used in the manufacture of gas.

According to the Public Service Commission this statement reflects much better conditions than prevailed in the fall of the year.

Of bituminous coal the Brooklyn Rapid Transit Co. had twenty-one days' supply; the Interborough Rapid Transit Co., nine days' supply; the Richmond Light & Railroad Co., six days' supply; the New York Steam Co., sixty-two days' supply; the New York Edison Co., including the United Electric Light & Power Co., thirty-three days' supply; the Brooklyn Edison Co., forty days' supply; the electric department of the Flatbush Gas Co., fifty-two days' supply; the Queensboro Gas & Electric Co., eighty-four days' supply; the Bronx Gas & Electric Co., nine days' supply; the Kings County Lighting Co., forty-four days' supply; the New York & Richmond Gas Co., fifteen days' supply; the Brooklyn Borough Gas Co., 105 days' supply; the Brooklyn Union Gas Co., twenty-six days' supply.

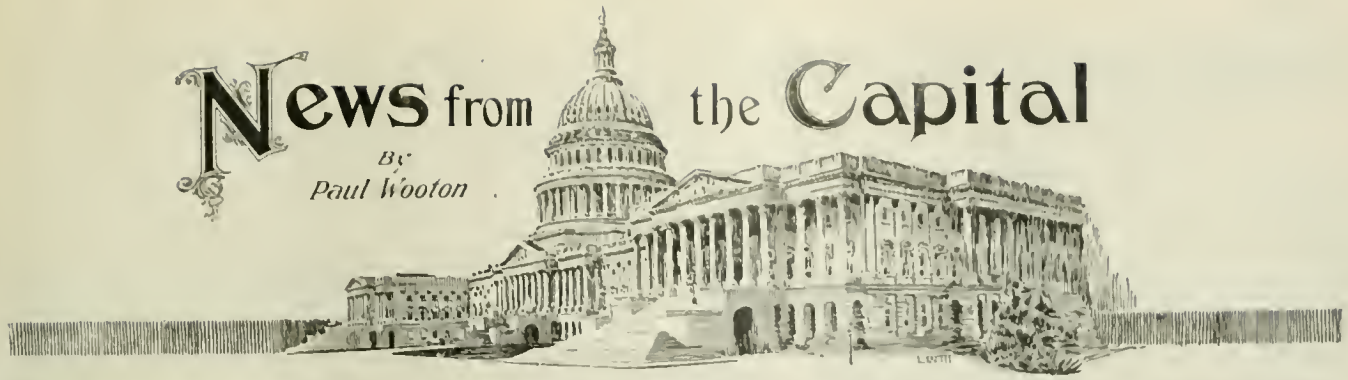
In addition, the various companies have supplies of anthracite coal used for making gas. According to the same report the Queensboro Gas & Electric Co. had enough anthracite coal on hand for 163 days, the Bronx Gas & Electric Co. enough for 114 days, the Kings County Lighting Co. enough for twelve days, the New York & Richmond Gas Co. enough for eight days, the Consolidated Gas Co. enough for fifty-nine days, the Brooklyn Borough Gas Co. enough for thirty-nine days and the Brooklyn Union Gas Co. enough for twenty-two days.

Some of the companies also report supplies of bituminous gas coal over and above the bituminous coal used for steam and power purposes. Of this kind of coal the Queensboro Gas & Electric Co. has three days' supply and the Consolidated Gas Co. has thirty days' supply.

Decrease in Season's Loadings Shown as Lake Shipping Closes

THE Hocking Valley docks at Toledo, Ohio, loaded 4,008,-112 net tons of coal for shpiment to the Northwest, according to a recent report following the formal closing of the season, Dec. 7. During the week ended Dec. 4 the loading machines handled 106,260 tons, as compared with 99,543 tons the previous week, while 15,349 tons were loaded from Dec. 4 to 7. Compared with 1919, the record for 1920 represents a decrease, although the season extended more than two weeks later than last year. During 1919 the docks loaded 4,247,524 tons, which was transported in 83,024 cars. Coal handled in 1920 was transported in 74,313 cars.

During the week ending Dec. 4 the T. & O. C. docks at Toledo loaded 39,016 tons, as compared with 25,449 tons the previous week, making 1,783,000 tons for the season, which had not closed on Dec. 8. In the season of 1919 these docks handled 1,193,626 tons and in 1918 a total of 2,124,696 tons.



Palmer Notes Lower Bituminous Prices: Gougers To Be Prosecuted

ATTORNEY GENERAL PALMER in his annual report of the operations of the Department of Justice for the last year reviews the work of the department in prosecuting profiteering in coal. He notes that following negotiations of coal interests, including the National Coal Association, looking to reduction in prices, bituminous prices have progressively receded in various regions. He says, however, that any operators or dealers who persist in charging high prices will be prosecuted.

The Attorney General says that action of the department in prosecuting anthracite profiteering has been limited owing to decisions of the Pennsylvania courts adjudging the Lever Act, on which the cases are based, to be unconstitutional. The department, however, has appointed special assistants to negotiate with dealers and operators in the anthracite region, and he notes that they have appointed committees to discourage unreasonable prices by producers. Investigations are also being conducted to prevent dealers charging high prices in sales to consumers.

The Attorney General says the government has moved to dismiss the petition of the Arcadia Coal Co. and other coal companies of Kentucky who have sought to annul Interstate Commerce Commission orders for car distribution, but the case has not yet come up for hearing.

Referring to the 1919 coal strike Mr. Palmer says phases of ultra-radicalism appeared, but that Judge Anderson's injunction ended the strike and radical activities.

In its high-cost-of-living work under the Lever law he says the department obtained two sentences, nine indictments and two arrests in coal cases.

Railroads Must Supply Adequate Equipment, Traffic Experts Contend

THAT the railroads must supply sufficient equipment to take care of the peaks of requirement seems to be the prevailing opinion among members of the Interstate Commerce Committees of Congress. The heavy losses suffered by the farmers because they could not move their grain promptly this year, as well as the losses occasioned to numerous industries because open-top cars were not available for commodities other than coal, have been brought vividly to the attention of members of Congress.

Other classes of common carriers and public utilities, it is pointed out, must provide for the peak load. Street railways must have enough cars to handle the traffic at the busiest hours of the day and enough cars to take care of holiday and excursion requirements. Electric-light plants must have the equipment necessary to supply power during the hours that the demand is greatest. That the railroads should be allowed to have only enough equipment to handle the average volume of business apparently will not be tolerated, even if it should be found necessary to add somewhat to freight rates in order to justify the additional investment which would be required.

Opposition to government regulation of the coal industry or restrictions on the exportation of coal was expressed by Representative L. S. Echols, of West Virginia in an interview with a representative of *Coal Age*. Mr. Echols represents in Congress one of the largest coal-producing districts in the country—the great Kanawha and New River fields. He considers adequate transportation facilities the only relief necessary in the present coal situation.

"I am opposed to government regulation of the coal industry," said Mr. Echols. "The blame for the present high prices is not chargeable to the operators, who are selling their coal for from $3.50 to $5.50 a ton. The addition in the cost to the consumers, some of whom are paying from $10 to $15 a ton, is not chargeable to transportation. I know of one small mine which is selling its entire product at $4.50 a ton. The jobbers, brokers and scalpers are responsible for the high prices, and they should be forced out, when prices to the consumer would go down. The only relief in the situation is through added transportation facilities, and competition will normally reduce the price of coal. If they get the transportation the operators can produce from 25 to 50 per cent more coal than the consumers require. The exportation of coal should not be stopped."

Wants Navy to Have Permanent Authority To Commandeer Fuel Supplies

IN his annual report Josephus Daniels, Secretary of the Navy, says that during the last year the navy expended $9,115,500 for 1,545,000 tons of steaming coal at an average cost of $5.90 per ton (gross at mines, it is assumed) and $382,500 for 45,000 tons of anthracite at an average cost of $8.50 per ton.

The Secretary of the Navy, in discussing the oil shortage, said it might be necessary to conserve oil for vessels by changing from oil to coal those industrial plants which have adopted oil burning. Oil required for the navy is increasing as coal-burning vessels are replaced by modern battleships burning oil, which is necessary for long voyages and cheaper operation.

He recommends that permanent authority be given the Navy Department to commandeer fuel supplies, including coal. He declares that exorbitant prices were demanded of the navy for coal, which made it necessary to resort to commandeering orders to obtain coal supplies for the navy at reasonable rates. Although repeated efforts were made to obtain supplies of coal through competitive bidding the quantities offered were not sufficient and the prices were excessive. The only alternative was to continue commandeering orders. While reasonable compensation governed the determination by the navy of the prices paid the Secretary says that the contractor who may consider the price inadequate has recourse to the law.

THE U. S. SUPREME COURT on Dec. 6 dismissed the application for review of the case of the Producers Coke Co. vs. the McKeefry Iron Co., in which the coke company was assessed damages for failure to deliver under contract coke to the iron company, due to car shortage.

IN THE CASE of the Wilbur Lumber Co. and F. C. Mintzlaff vs. the Director General, a tentative report of an examiner to the U. S. Supreme Court recommends that combination rates on coal from Illinois, Indiana, Kentucky and Eastern mines to points in Illinois and Wisconsin, which were subjected to the so-called double advances, are not unreasonable or discriminatory and that the complaints be dismissed.

Estimated Bituminous Output, September, October, and First Ten Months, 1920*

(In Net Tons)

State	September	October	Total first ten months, 1920
Alabama	1,359 000	1,568,000	15,197,000
Arkansas	188,000	210,000	1,941,000
Colorado	854,000	869,000	7,852,000
Illinois	8,074,000	9,009,000	76,633,000
Indiana	2,395,000	2,622,000	20,925,000
Iowa	688,000	817,000	7,554,000
Kansas	532,000	631,000	5 507.000
Kentucky	2,826,000	2,851,000	26,551,000
Maryland	295,000	292,000	3,313,000
Michigan	115,000	117,000	1,189,000
Missouri	478,000	485,000	4,795,000
Montana	375,000	457,000	3,901,000
New Mexico	297,000	302,000	2,873,000
North Dakota	62,000	74,000	596,000
Ohio	4,182,000	4,268,000	36,702,000
Oklahoma	302,000	338,000	3,316,000
Pennsylvania (bituminou	15,042,000	15,842,000	133,749,000
Tennessee	490,000	586,000	5,431,000
Texas	100,000	113,000	1,244,000
Utah	449,000	455.000	4.775,000
Virginia	724,000	743,000	7,915,000
Wa hington	294,000	354,000	3,024,000
West Virginia	8,003,000	8,027,000	70,819,000
Wyoming	939,000	1,002,000	8,377,000
Other States†	9,000	11,000	104,000
Tota' bituminous	49,172,000	52,143,000	‡454,283,000

*Prepared by F. G. Tryon and based on railroad shipments and subject to material revision.

†Includes California, Georgia, Idaho, North Carolina, Oregon and South Dakota.

‡As these State estimates are calculated in a slightly different way from the weekly estimate for the country as a whole, the cumulative totals differ slightly from those published elsewhere.

Loaders and Mine Accidents Discussed by Institute Held at Wheeling

THE thirty-third session of the West Virginia Coal Mining Institute was held in Wheeling, W. Va., on Tuesday and Wednesday, Dec. 7 and 8. It was one of the most interesting of any held by this institute in a number of years, but, unfortunately, it was attended by few mining men, though there was no dearth of salesmen representing various companies manufacturing mining machinery. The sessions were held in the auditorium of the Wheeling Chamber of Commerce.

The morning session opened with an address of welcome from Mayor Thoner. Following this short formality the meeting adjourned in the hope that more would be present after dinner. In the afternoon an exceedingly interesting and instructive paper was read by G. C. McIntosh, the editor of *Solvay Folks*, Huntington, W. Va. Following this address, A. B. Benedict, engineer of the Goodman Manufacturing Co., read a paper on scraper loaders, in which he divulged some valuable information as to the cost of their operation in various mines in West Virginia.

Dean C. R. Jones of West Virginia University, at Morgantown, read a paper on "Some Phases of Mining Education," in which he outlined the courses that are now being given at the university for the education of mining engineers. He also described the vocational work that the university is doing throughout the state, calling the attention of the institute to the appropriations that were to be made for carrying on this work. The suggestion was offered that a committee be appointed to carry to the Legislature the recommandations made at this session.

The meeting then adjourned until 7 p.m. to meet at a banquet at the Hotel McLure. Too much credit cannot be given to the entertainment committee for its excellent menu and service and for the entertainment which "Riley" Wilson furnished the guests.

As the Coal Mining Institute of America was to hold its banquet on Wednesday night at Pittsburgh and many desired to be present, it was decided that the institute continue in session on Wednesday until the program was finished. This would permit the members who so desired to leave Wheeling to attend this banquet.

The first paper of the second day's session was by D. J. Parker, engineer in charge of the mine-rescue work of the Bureau of Mines at Pittsburgh, Pa., his subject being "Value of Oxygen Breathing Apparatus in Mine-Rescue Work." Mr. Parker pointed out that standardization in instruction was absolutely necessary, as serious results might happen where men were trained in different systems. He also pointed out that because a man stood up well in his tests did not mean that in case of an accident he would be a good helmetman, as often, no matter how well trained a man may be, he will lose his self-control and thereby endanger himself and the rest of the rescue party.

Robert Lambie, chief of the Department of Mines, Charleston, W. Va., then read a paper on the "Prevention of Mining Accidents," and George F. Dillig, of Pittsburgh, described the operations and construction of the Dillig loading machine, which is a development that promises to solve some of the problems that have been encountered in the design of this type of machine. Important features of this loader are that it has a caterpillar tractor to propel it from place to place and also that it has and needs no device to pick up the coal and deliver it to the conveyor, as the machine can bury itself in the material it is loading.

After the discussion of this paper J. F. Joy, the inventor of the Joy loading machine, gave a demonstration of a model of his loading machine.

The session closed with a business meeting, the officers for the next year being as follows: J. W. Bischoff, president; R. F. Carson, first vice-president; E. D. Knight, second vice-president; E. E. Jones, third vice-president; W. A. Craven, fourth vice-president; Joseph W. Reed, fifth vice-president; R. A. Sherwood, secretary-treasurer; the executive board consisting of J. R. Cameron, Frank Haas, James Paul and Joseph Keely.

Efficient Transportation Indispensable to National Prosperity, Willard Says

DANIEL WILLARD, president of the Baltimore & Ohio Railroad Co., in an address on "1920—The Record Railroad Year," before the fourteenth annual convention of the Association of Life Insurance Presidents in New York City on Dec. 9, dealt at some length with the experience of the railroads since their return to private control on March 1 of this year. After saying that if our country is to enjoy commercial, industrial and domestic prosperity it must have an adequate and efficient system of transportation and that the most generally satisfactory and efficient agency so far developed is the steam railroad, Mr. Willard said that it is as certain as anything that the demand for rail transportation will greatly increase and on that account large capital expenditures, probably exceeding in the aggregate $1,000,000,000 each year, must be made for additional facilities and equipment.

He said that the most recent statistics available show that the steam railroads in the United States move on the average 4,000 tons one mile per capita per annum for our entire population, while previous to the war the average tonnage per capita per annum moved by the railroads in the five largest European countries was less than 400 per mile.

Referring to the matter of freight rates and saying that it has been clearly demonstrated by the conditions during the last twelve months that the transportation rate has little significance in affecting the ultimate price of an article transported when compared with the indirect cost which would result from inadequate transportation, Mr. Willard spoke as follows:

"The price at which soft coal has been selling at times and places during the last six or eight months is a case in point. It is estimated that we have in this country in the ground upward of a thousand billion tons of good bituminous coal, and we have a productive capacity actually developed capable of producing 15,000,000 to 18,000,000 tons per week, equal to 750,000,000 tons a year, but we have never in any one year consumed more than 560,000,000 tons. With this condition actually existing we have seen coal selling at prices from three to five times higher than normal, largely because the railroads were unable to transport the coal with promptness and reliability from the point where it could be produced in almost unlimited quantity to the point where it was required."

Calder Report Advises Legislation Governing Quality, Production, Distribution and Price of Coal

LEGISLATION to check irregularity of delivery, inferior quality of coal, profiteering and monopoly of transportation facilities, is recommended by the Senate Committee on Reconstruction and Production in a preliminary report to the Senate Dec. 13. The committee also advocates that coal operators, wholesalers, jobbers and retailers be compelled by law to file with a federal agency reports on tonnage produced or handled and prices. The report recommends that a check be placed on the issuance of priority orders by the Interstate Commerce Commission on the ground that they offer opportunity for profiteering.

The committee declares that coal profiteering has been a national disgrace, "and that it is the duty of the government to take steps to remedy the evil." Government regulation, however, should be a last resort. The coal situation is scored by the three Senators making the report—Calder, of New York; Edge, of New Jersey, and Kenyon, of Iowa—in statements of their individual views given out simultaneously with the committee's preliminary report. Senator Calder declares that profiteering has been rampant and must be eliminated. He says the committee will soon present and urge favorable action upon measures in line with its recommendation. Senator Edge of New Jersey suggests revision of the Interstate Commerce law by transferring judicial powers of the Interstate Commerce Commission to the courts and its administrative powers to some agency to be established. He suggests a fuel division and a transportation division in the Department of Commerce to enforce observance of coal contracts and to cure the reconsignment evil. Senator Kenyon says Congress has power to prevent "this continuous plundering of the people" and declares that if present conditions continue he will favor the government taking over the coal mines.

The text of the coal section of the report is as follows:

"National development depends upon an ever-increasing supply of power. Heat is as necessary for production—in fact, for human existence—as is air or water. Its use must be continued from day to day and cannot be deferred or interrupted.

"The nation is dependent upon coal as its chief source of heat and power, yet the production and distribution of coal are badly organized and subject to manipulation at the expense of the people. Coal profiteering, especially as it has followed the priority orders issued by the Interstate Commerce Commission, has continued unchecked by the Department of Justice and is a national disgrace. Coal speculation has been permitted to monopolize the transportation facilities of the country, retarding necessary construction and increasing the basic cost of manufacture and distribution of commodities in general. It has bled the home owners, public utilities and the industries.

Contract Breaking Arraigned

"The imperative necessity of continuity of supply of fuel demands the fulfillment of contractual relations in this industry more than in any other, and yet one of the primary causes for the disgraceful and disastrous conditions during the last six months has been the repudiation of contracts. An exceptional demand not only brings about reckless and unwarranted repudiation of contracts made for delivery of coal but the substitution of inferior quality at higher prices. Indeed coal contracts are so drawn as to be breakable in delivery, in quality and invoice.

"Our investigation into the coal situation has convinced us that the private interests now in control of production and distribution of coal, in spite of efforts by some, are actually unable to prevent a continuance or a repetition of the present deplorable situation and that it is the duty of the government to take such reasonable and practical steps as it may to remedy the evil.

"An inherent responsibility of the government is the protection of its people. To assure the mining, transportation and distribution of coal at fair prices is a public duty from which the government cannot escape. But

Bids Submitted on Shipping Board Coal Requirements for 1921-22

NEW YORK

Total required, 900,000 gross tons

Company	Quantity	Pools	Price Bid 1	2	3	4
Pennsylvania Fuel Co...	150,000	10, 11, 71	.....	9 93	9 93	....
Universal Transportation Company.....	300,000	.....	.....	10 25	.	9.00
Ainsworth Coal and Iron Company.....	900,000	10	9 85	10.88	9 625	9 95
L. Stern.....	240,000	.		....	8 64	....
Geo. D. Morris & Co....	48,000	....	7.55	7.04	6 97	....
H. B. W. Haff.....	50,000	.....	.....	.....	.....	9.50
Commercial Coal Co....	60,000	10	.....	10.35	.....	9.20
Commercial Coal Co....	40,000	9, 71	.....	10.55	.	9.40
Commercial Coal Co....	60,000	2, 9, 10	.....	10.05	...	8 90
Commercial Coal Co....	30,000	10	.....	10 75	.....	....

NORFOLK

Total required, 480,000 gross tons

Company	Quantity	Pools	1	2	3	4
Lake & Export Coal Corporation.....	240,000	1, 2, 42	.....	..	9 00	
Maryland Coal and Coke Company.....	480,000	1, 2	..	...	8 75	...
Universal Transportation Company.....	480,000	. ...	8.95	10 45	8 65	8.95
Central Pocahontas Coal Company.....	240,000	1, 2	10.46	.....	10.16	.
W. C. Atwater, Inc.....	120,000	1, 2	.....	.....	9.35	.
Forr Dearborn Coal & Export Co.....	60,000	.....	.....	.....	10 00	..
Chesapeake & Ohio Coal & Coke Co.....	18,000	.....	.....	.....	10 00	

BALTIMORE

Total required, 240,000 gross tons

Company	Quantity	Pools	1	2	3	4
W. H. Bradford & Co....	180,000	9, 10, 11	.....	9.46	8 21	8 56
Maryland Coal & Coke Company.....	240,000	4, 9, 10, 11	.....	.....	8.20	..
Universal Transportation Company.....	240,000	.....	8.70	9.80	8.35	8 70
L. Stern.....	240,000	.....	.....	...	8.00	
Jewett, Biglow & Brooks	30,000	9, 10, 11	...	...	8.60	
Geo. D. Morris & Co....	48,000	.....	7 55	7.04	6.97	

[1]Trimmed in bunkers U. S. Shipping Board's ships (owned or controlled) taken under the chutes at the wharves or piers of the supplier, in lots as required.

[2]Trimmed in bunkers U. S. Shipping Board's ships (owned or controlled) at anchor within harbor limits, from supplier's lighters or barges, in lots as required or.

[3]F.O.B. (under chutes at wharves or piers).

[4]F.A.S. (ships at anchor within harbor limits from supplier's lighters or barges).

PHILADELPHIA

Total required, 180,000 gross tons

Company	Quantity	Pools	Price Bid 1	2	3	4
G. Patchel & Co.	180,000	4, 10, 11	...	.....	7.99	9 07
Courtright, Demmick & Company	180,000	10, 11	8.85	9.63	8.55	8.78
Maryland Coal & Coke Company	180,000	4, 9, 10, 11	...	.....	8.28	....
Universal Transportation	180,000	.....	9.70	9.80	8.35	8.70
Ainsworth Coal and Iron	180,000	9, 10	9.85	10.88	9 625	9.95
L. Stern	180,000	.....	.....	.....	8.07	
Jewett, Biglow & Brooks	30,000	9, 10, 11	.....	.....	8.60	..
Geo. D. Morris & Co.	48,000	.....	7.55	7.04	6.97	..

NEW ORLEANS

Total required, 125,000 gross tons

L. Stern & Co.	125,000	....	.....	.....	7.45	..
Chas. Allan & Co.	50,000	.....	8.53*	.....	8.43	....
New Orleans Coal Co.	125,520	..	11.50	11.00	11.25	10.75
W. G. Coyle & Co.	125,000	..		11.75	....	11.20
Hyams Coal Co.	120,000	.....	..	.....	9.05	....

*10c. additional overtime work in Alabama mines.

CHARLESTON

Total required, 50,000 gross tons

L. Stern & Co.	50,000	.	.	.	8.40	
U. S. Fuel Corporation†	50,000				...	
Petros Coal Co.	10,000	....	.....	.....	9.15	..
Taggert Coal Co.	50,000	...	9.55	12.55	9.25	10.00
Ship Rode Coal & Timber Mfg. Co.	50,000	1, 2, 4	..		8 90	

†$10.50 per ton f.o.b. mines

MOBILE

Total required, 50,000 gross tons

L. Stern & Co.	50,000	.....	.....	..	6.90	....
Charles Allan & Co.	50,000	.....	7.98	.....	7.88	....
Horace Turner	50,000	....	10.35	10.75	..	....
Horace Turner‡	50,000	....	9.35	9.35		..
Mobile Coal Co.	50,000	.	10.50	11.22	10.10	10.74
Southern Coal Co.	49,992		8.75	.....	10.25	....
Gulf Coal Co.	53,000		8.85	9.60	8.45	9.20
Gulf Coal Co.	50,000	..	8.00	8.75	7.60	8.55

‡Alabama coal

SAVANNAH

Total required, 40,000 gross tons

L. Stern & Co.	40,000	.	....	.....	7.70	....
Petros Coal Co.	10,000		.....	.....	9.30	....
Taggert Coal Co.	40,000		9.95	10.77	9.80	10.00
Standard Fuel Shipping	50,000		.....	9.64	.....	..
Godley & Griffen	40,000		.....	12.10	.....	....

JACKSONVILLE

Total required, 40,000 gross tons

L. Stern & Co.	40,000		..	...	8.25	....
Jewett, Biglow & Brooks	40,000		.....	.....	8.75	10.50
Southern Coal Co.	40,000	..	11.89	11.64	11.44	11.24
Southern Coal Co.¶	40,000	.	11.35	13.00	12.85	12.60
Logan Coal & Supply Co.	40,000		9.45	10.95	9.00	10 45
Petros Coal Co.	15,000			.	9 40	....

¶Pocahontas coal

BOSTON

Total required, 30,000 gross tons

Maritime Coaling Co.	100,000	.....	.....	15.00	.	..

SYDNEY, NOVA SCOTIA

Total required, 30,000 gross tons

Johnson & Co.	20,000		..	.	10.25 or 10.00	....
Chesapeake & Ohio Coal	2,500 x 12		10 25		...	..

GALVESTON

Total required, 25,000 gross tons

L. Stern & Co.	25,000			.	11 00	..

TAMPA

Total required, 24,000 gross tons

L. Stern & Co	24,000		.	.....	10.75	

PENSACOLA

Total required, 12,000 gross tons

L. Stern & Co	12,000		..	.	6 90	
F. Gillmore & Co.	12,000		10 00	.	9 50	
Hartwell & Lester, Inc.	12,000		.....	.....	10 08	

PORT ARTHUR

Total required, 8,000 gross tons

L.Stern & Co.	8,000		.	.....	11.50	....

your committee believes that governmental administration of the production and distribution of coal should be a last resort, as governmental activities should always be directed toward encouragement of private initiative and enterprise.

"While the fulfillment of contractual relations is of first importance to the stabilization of the industry in the interest of the consumer, the producer, and labor as well, your committee believes that the government should at all times be informed as to coal distribution and at this time recommends:

"That all coal operators, wholesalers, jobbers and retailers be compelled by statute to file at regular and frequent periods with some federal agency reports on the total tonnage produced or handled, the size and quantity thereof, the amount of tonnage contracted for, the amount sold on contract and at spot sale, to whom, together with the prices made or received under such contracts or sales, and producers and distributors to make regular reports sufficient to determine their costs and profits, and the corporate interrelations or the communities of interest, if any, between companies producing and distributing coal.

Perhaps Federal Licensing

"With this and collateral information in the hands of federal authorities for possible use by the Department of Justice and other government agencies, prevailing evils as to irregularity in deliveries, inferiority of quality, profiteering in prices, and undue monopoly of transportation facilities should be to a great extent eliminated. But if no other remedy can be devised it may be necessary to enact some form of federal licensing to meet the situation. Fuel thrift by the small user and fuel thrift by the large user through storage, scientific combustion and transmission should be strongly encouraged by the federal government."

Senator Edward J. Gay, of Louisiana, a member of the committee, has announced that he will submit a minority report on the coal section of the committee's report. Senator Gay does not believe that the federal government should single out the coal industry nor should it require any private industry to submit reports of costs and profits or to be subjected to federal interference, such as the majority of the committee recommends.

Supreme Court Notes

THE U. S. Supreme Court on Monday, Dec. 13, did not hand down its decision as to the constitutionality of the Lever fuel control law. The court will meet again Dec. 20 and then recess until Jan. 3.

The Court dismissed for want of jurisdiction the appeal of Truman A. Ketchum, contesting title of the Pleasant Valley Coal Co. to Utah coal lands.

The Court denied an application for a review of the case of the Lambert Run Coal Co. vs. the B. & O. involving assignment of cars to mines.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

SLIGHT reactions from the business stagnation of the last two months is noted by such authorities as Babson, but Archer W. Douglas, vice-president of the Simmonds Hardware Co., of St. Louis is not so optimistic. Speaking before the Merchants Association of New York, Dec. 1, Mr. Douglas said:

"How long lack of demand will continue is beyond any man's ken even to state. My guess is it will last until the ultimate consumer, who has brought it about by ceasing to buy because of what he believes to be unduly high prices, makes up his mind that it is time to buy again; and I do not think he will make it up in a hurry.

"You can sell goods now at bargain prices but you cannot sell them at reasonably receding prices—just moderate recessions.

"I am afraid that it is going to last for some months at least, that we shall have a dull winter with more falls in prices and probably lessened production, for readjustment is a painful process. The question of production is, in industrial life, a thing now that need not concern us so much by its quantity as by its nature."

Those who believe as does *Coal Age*, that in the export market—for coal and other commodities—is our brightest prospect for next year will read with interest the comment from the *Financial Chronicle:*

"Europe is undoubtedly still in the market for large quantities of American commodities, but the apparent inability to formulate any comprehensive plan for financing foreign trade requirements and the gradual exhaustion of existing credit arrangements is making it impossible for American exporters and business men to continue their accommodations to needy European customers. In the opinion of some thoughtful observers, curtailment of exports under present conditions is not wholly an unfavorable symptom, since it is argued that the piling up indefinitely of huge debts by Europe is regarded as a hazardous if not actually dangerous procedure."

Meeting in Chicago this week are leading bankers of the United States formulating a plan for financing our foreign trade under the Edge law, in the expectation that the way will thus be opened for extending new credits and starting a renewed flow of our commodities to Europe.

Textile Mills to Cut Wages

A wage reduction of 22½ per cent in textile mills in New England and New York State was forecast Dec. 9 in a statement issued after a conference of textile manufacturers in Boston. About 75 per cent of the industry in New England representing makers of cotton and woolen products was represented. The industry employs 300,000 operatives. The Erco Manufacturing Co., of Fall River, Mass., which employs 150 persons in making cotton waste products, announced a wage reduction of 15 per cent Dec. 9. The five cotton mills in Greenwood County, S. C., are now operating on full time after having curtailed production several weeks. With one exception the plants have day and night shifts. A 50-per cent cut in cotton production in 1921, through curtailment of the acreage planted to one-third of the total land in cultivation, was agreed on at a conference of Southern bankers, merchants and farmers, held in Memphis, Tenn., Dec. 8.

Silk Mill Closes Indefinitely

Notices were posted Dec. 7 at the Standard Silk Mill, the largest mill in Phillipsburg, N. J., that beginning Dec. 8 the plant would be closed indefinitely. Market conditions are given as the cause. About 3,000 employees are affected.

American Sugar Co. Cuts Wages

A reduction of 10 per cent in wages effective from Dec. 6 has been announced at the Jersey City plant of the American Sugar Refining Co. The reduction is said to be operative in all the Northern refineries of the company. Only 200 men are at work in the Jersey City plant, which in full operation employs 2,500 men.

Ingot Production Declines

Steel ingot production during November, according to figures compiled by the American Iron and Steel Institute, amounted to 2,638,670 tons, a decline of 377,312 tons as compared with October, or about 12½ per cent. This production represents the output of thirty companies producing slightly more than 85 per cent of the total output of the country. For the eleven months of this year production has been 32,091,887 gross tons. No comparison is available with last year, as the institute failed to keep figures during the last three months of 1919 because of the disruption caused by the steel strike.

Orders for Locomotive Company

The American Locomotive Co. has received orders for the following engines: The Missouri Pacific has ordered twenty-five engines of the Mikado type; Hetchy Railroad, one locomotive of the Prairie type; American Agricultural Chemical, one locomotive of the four-wheel switching make; West Pennsylvania Power Co., one four-wheel switching; Old Ben Co., two four-wheel switching locomotives.

N. Y. Central to Close Toledo Shops

Closing of the Campbell shops of the New York Central near Toledo on Dec. 16 was announced Dec. 8 by George F. Wilson, general shop foreman. The closing will be for an indefinite period. More than 500 men will be out of work. Only car and engine repair crews will be maintained.

Railroads Place Big Steel Orders

Orders for 388,000 tons of steel rails had been placed or were about to be given Dec. 7 by the railroads entering Pittsburgh. At the prevailing rate of $47 a ton the orders will total $18,236,000. The contracts include Baltimore & Ohio R.R., 85,000 tons, order placed Dec. 6; Pennsylvania R.R., 150,000 tons, contemplated; Pittsburgh & Lake Erie R.R., 15,000 tons, requisitioned; New York Central Lines, 135,000 tons, requisitioned; Pittsburgh & West Virginia Railroad Co., 3,000 tons, requisitioned. One of the railroad officials in Pittsburgh said that the big business of the nation in 1921 would come from the railroads.

Foreign Markets and Export News

FRANCE is now the center of interest for the American export coal trade. This is true because of the slump in demand in that country brought about by causes similar in every way to those in the United States. Last summer foreign buyers were very much in evidence here seeking coal—today the American shipper is abroad seeking contracts for next year. In France, the nearest large market to England, will be fought out the first skirmish in the trade battle between English and American coal for the export market.

It is to Great Britain, therefore, that American exporters should turn instead of to France for the key to next year's business. The wholesale cancellation by the French of orders for American coal, of which the daily press has contained much news of late, are but the clearing away of the débris of the spree of the last six months. There is nothing more unusual in French buyers cancelling high-priced contracts in a rapidly falling market than in American consumers taking the same action.

Turning to Great Britain, we find that the national policy in coal contemplates the distribution of coal for the home market at less than cost of production, with a "standard profit" guaranteed the mine owner and the expectation that average realization on exports will make up the deficit on inland sales, pay the recent wage advance, cover the guaranteed profit and return a tax to the government. If export prices drop so low as to produce a loss for the industry as a whole, the government will of necessity render financial assistance.

It is evident that such a course cannot be pursued for long and that ultimately a readjustment will be made if necessary to keep the coal industry in Great Britain on a self-supporting basis. Against a mine cost in England of around $6@$6.50 per ton we have a *cost* at Hampton Roads of the same or a smaller amount. As far as competition with England is concerned the French market is ours only to the extent that the British have the coal and hold up the price.

Ocean freight is the variable that determines this. The differential against us to French Atlantic ports is too great for the United States to hold permanently any large share of French business, therefore what we get this next year will be what Great Britain and Germany cannot supply. There is a minimum quantity here the size of which no one can at present estimate, which must come from this side of the water. If that is sold today in a bearish market, it cannot be sold next summer when things look up again.

Port of New York Exports Show Gain

There were 22,899 tons of anthracite shipped to foreign countries through the Port of New York in October. This was in comparison with 6,929 tons in the corresponding month of 1919; 11,656 tons in 1918, and 3,288 tons in 1917. Of the coal shipped France got 9,581 tons; Denmark, 5,209 tons; Norway, 2,682 tons. Canada secured 1,853 tons. Of the 71,665 tons of bituminous sent to foreign countries during the same month, 16,297 tons went to France and 34,521 tons to the Netherlands. Of the balance Egypt got 1,000 tons; Sweden, 6,985 tons; Portugal, 4,200 tons; Denmark, 4,528 tons, and Finland, 1,970 tons. Shipments of coke were 6,894 tons. Belgium received 1,202 tons; Finland, 2,200 tons, and Sweden, 1,636 tons.

Freight Market Is Very Soft

According to W. W. Battie & Co.'s weekly coal trade report, the freight market on export coal to all destinations is very soft. Steamers are offered freely, with a scarcity of export orders. Freight rates by steamer follow:

	Nov. 29	Dec. 6	Tons Discharged Daily
Malmo	About $9.50	$8.00/ 8.50	1,000
Copenhagen	About 9.50	8.00/ 8.50	1,000
Stockholm	About 9.50	8.00/ 8.50	800
Gothenburg	About 9.50	8.00/ 8.50	1,000
Antwerp/Rotterdam	6.75/ 7.00	5.00/ 5.50	1,000
Hamburg	About 8.00	About 6.50	1,000
French Atlantic ex. Rouen	7.00/ 7.50	5.50/ 5.75	700
Algiers	8.50/ 9.00	7.50/ 8.00	800
West Italy	8.50/ 9.00	7.50/ 8.00	1,000
Marseilles	8.50/ 9.00	7.50/ 8.00	1,000
Piraeus	10.50/11.00	9.50/10.00	1,000
Trieste/Venice	11.50/12.00	9.50/10.00	1,000
Port Said	10.00/11.00	9.00/ 9.50	1,000
Constantinople	About 12.00	10.50/11.00	500
Gibraltar	About 8.50	7.00/ 7.50	1,000
Pernambuco	About 9.50	About 8.50	500
Bahia	About 9.50	About 8.50	500
Rio	8.50/ 9.00	About 8.00	750
Santos	9.00/ 9.50	8.25/ 8.50	500
Buenos Aires, Montevideo or La Plata	8.50/ 9.00	About 8.00	500
Para	9.00/ 9.50	About 8.50	500
Rosario	9.50/ 9.75	8.00/ 8.50	750
To Nitrate Range	About 7.25	About 6.50	500
Havana	About 5.00	About 5.00	500
Sagua or Cardenas	About 6.00	About 5.50	300
Cienfuegos	About 6.00	5.50/ 6.00	500
Caibarien	About 6.00	About 5.50	300
Guantanamo	About 6.00	5.50/ 6.00	500
Manzanillo	About 6.50	About 6.00	300
Bermuda	About 5.50	About 5.00	300
Kingston p. c. and dis. free	About 7.00	About 5.50/6.00	400
Barbados	6.50/ 7.00	6.00/ 6.50	500
St. Lucia	6.50/ 7.00	6.00/ 6.50	500
Santiago	About 6.00	5.50/ 6.00	500
Port of Spain, Trinidad	6.50/ 7.00	6.00/ 6.50	500
Curacao	About 6.50	About 6.00	500
St. Thomas Free p. c. Curacao	About 6.00	About 6.00	500

HIGH PRICES OF steaming coals in foreign ports are adding heavily to the cost of operating American ships, according to advices received by the Universal Shipping & Trading Co. of Seattle. At Pernambuco, Brazil, and Callao, Peru, ships have to pay approximately $45 a ton for coal.

PERNAMBUCO RECEIVES its coal supplies from the North Atlantic ports of the United States while Callao gets its coal from Newcastle, Australia. Pernambuco is on the northeast coast of Brazil.

ACCORDING TO THE Universal Company's advices, the end of the coal strike in South Africa found Delagoa Bay and Durban filled with ships. Progress at present is slow in working off the volume of tonnage to the ports named.

OWING TO LOADING congestion, coal stocks in South Wales are excessive. Buyers holding loading berths are able to secure 10 to 15 shillings a ton concession. Otherwise prices are fairly well maintained.

GERMANY IMPORTED 18,500 tons of American coal from Oct. 10 to 24 of this year. Of this quantity, 7,800 tons went to the rubber industry, 6,200 to chemical works, 2,200 to the woodpulp industry, and the rest to miscellaneous works.

Final Statistics of Tidewater Movement of Coal for November, 1920

TIDEWATER dumpings during November fell below the 5,000,000-ton mark. The total dumped is reported to the Geological Survey at 4,784,000 net tons, a considerable decrease from the figures for October. The decrease was shared by all the ports, and the greatest shrinkage was in export shipments, which fell off 848,000 net tons, or over 29 per cent. New England shipments showed a decrease of 47,000 net tons, while tonnage for other purposes—bunker, inside Capes, and other tonnage—decreased 57,000 net tons.

TIDEWATER BITUMINOUS SHIPMENTS FOR NOVEMBER, AND TOTAL TONNAGE SHIPPED JAN. 1-NOV. 30, 1920

(In Thousands of Net Tons)

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Totals
Month of November:						
Coastwise to New England	254	59	61	415	3	792
Exports	4	327	558	1,116	58	2,063
Bunker	421	61	68	302	10	862
Inside Capes	..	182	108	20	...	310
Other tonnage	673	2	9	67	6	757
Totals	1,352	631	804	1,920	77	4,784
Jan. 1-Nov. 30:						
Cumulative coastwise to New England	2,463	725	700	5,715	7	9,610
Exports	17	2,563	4,699	12,250	720	20,349
Bunker	3,531	611	832	3,251	102	8,327
Inside Capes	..	1,732	1,073	279	4	3,088
Other tonnage	7,335	16	41	674	34	8,100
Totals	13,346	5,647	7,345	22,269	867	49,474

The cumulative tidewater movement for the first eleven months of 1920 amounted to 49,474,000 net tons, of which 9,610,000 tons were destined for New England and 20,349,000 tons for foreign ports.

Want Agreement Changed but Not Abrogated

THE parley between operators and miners of District 16, United Mine Workers, covering the Upper Potomac and Georges Creek fields, at Baltimore on Nov. 30, was of short duration, further conferences being postponed until Dec. 7, after the miners had presented their side of the case in written form requiring seven typewritten pages. While both sides maintain the utmost secrecy as to the gist of grievances of the operators, there is little doubt that the miners are seeking the "closed shop," a concession, from what can be learned, the operators are unwilling to make.

The agreement now in force and which the miners desire to have changed in some respects has been in effect since May 15, 1918. It is not the purpose of the miners, it is asserted, to reopen the present contract but rather to readjust, as they express it, the working conditions. Neither side appears to have any desire to discard the 1918 agreement, but the miners desire it changed.

There were two meetings at Baltimore at the time stated but neither lasted more than fifteen minutes. When the demands of the miners were handed to the operators their adoption was espoused by John P. White, at one time international president of the United Mine Workers.

Production of Bituminous Increases in the Northern and Middle Appalachians

A SLIGHT increase marked production of bituminous coal in the Northern and Middle Appalachians during the week ended Nov. 27. The recovery doubtless would have been much more pronounced had it not been for the occurrence of Thanksgiving Day during the week. From reports of cars loaded, furnished by the American Railroad Association, the Geological Survey estimates the output in this region at 6,703,000 net tons, an increase of 76,000 tons, or slightly over 1 per cent, when compared with the preceding week.

WEEKLY PRODUCTION IN NORTHERN AND MIDDLE APPALACHIAN REGION *

(In Net Tons)

1920 weekly average, January-September	6,076,000
Week ended Nov. 6	6,670,000
Week ended Nov. 13	7,280,000
Week ended Nov. 20	6,627,000
Week ended Nov. 27	7,703,000

* Including Ohio, Pennsylvania, Maryland, West Virginia, Virginia and Eastern Kentucky.

Anthracite Operators Refuse Blanket Increase to Mine Workers

WHILE expressing a willingness to adjust any individual causes of injustice or inequality within the present agreement representatives of the anthracite mine operators notified the mine workers Dec. 8 that they were against granting any general additional wage increase or taking any action that would tend to reopen the award of the U. S. Anthracite Commission.

The attitude of the mine owners toward demands of the miners for general additional wage increases, a $6 minimum day labor rate and a universal eight-hour day for the anthracite mine workers was made known to the miners in Philadelphia late Dec. 8 at an executive session of the joint sub scale committee of the anthracite miners and operators, which had been holding almost continuous conferences for three days.

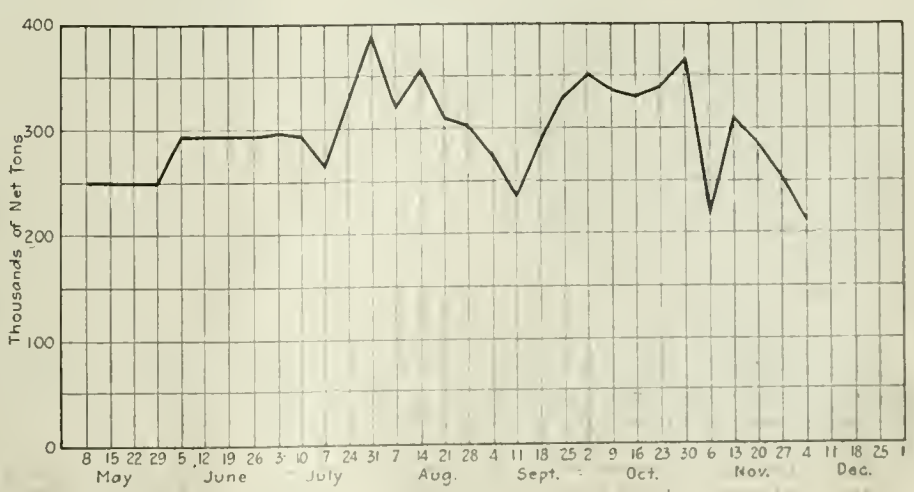
In addition to the offer to adjust alleged inequalities that may be mutually agreed upon, the operators also offer the eight-hour schedule to some of the long-hour men. There will be a reconvening of the joint scale committee as soon as the operators' representatives have made their report to the general scale committee.

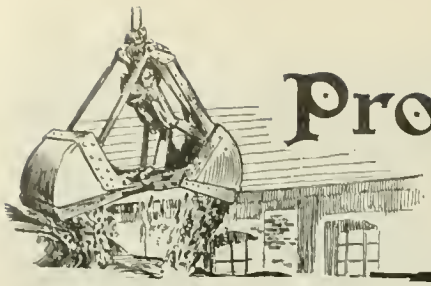
Export Dumpings by Ports

(NET TONS)

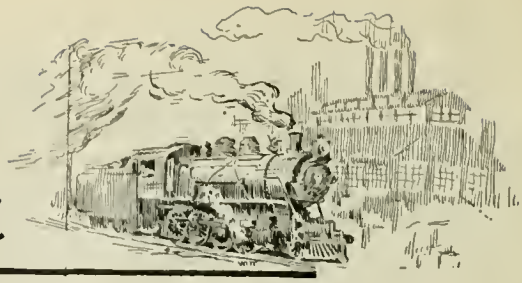
	Week Ended Dec. 4	Nov. 28
Philadelphia	61,000	62,000
Baltimore	82,000	69,000
Norfolk	223,000	257,000
Charleston	21,000	11,000
Total	387,000	399,000

Export Coal Dumped at Hampton Roads





Production and the Market



Weekly Review

AN UNUSUAL rate of production in the face of a steadily declining market is the chief item of interest in the coal trade this week. This combination of conditions together with the extraordinary mild weather give rise to predictions that 1921 will see a repetition of those of last year when, following the armistice, the buying of coal was delayed and consumption was for a time largely out of accumulated stocks. The rate of production will go down just as soon as consumers in the aggregate have on hand sufficient supplies of bituminous coal to carry them through the winter, or until March or April 1. A careful survey of the data available on stock indicates that the supply above ground and in the hands of customers now is in excess of 40,000,000 tons, which with the lessened rate of consumption is certainly very nearly normal for this time of year.

Spot buying of bituminous coal is at a low ebb and the coal that is going forward day by day is in fulfillment of contracts made nearly a year ago. Already there are reports of numerous suspensions and hold-ups on these contracts, which clearly indicate that the certain decrease in production of the holiday weeks will cause no hardship among consumers. The all-important question now is whether demand will be resumed after the first of the year in a measure to be compared with that of today. There is nothing to indicate resumption of demand in the next thirty days sufficient to give new life to the spot coal market.

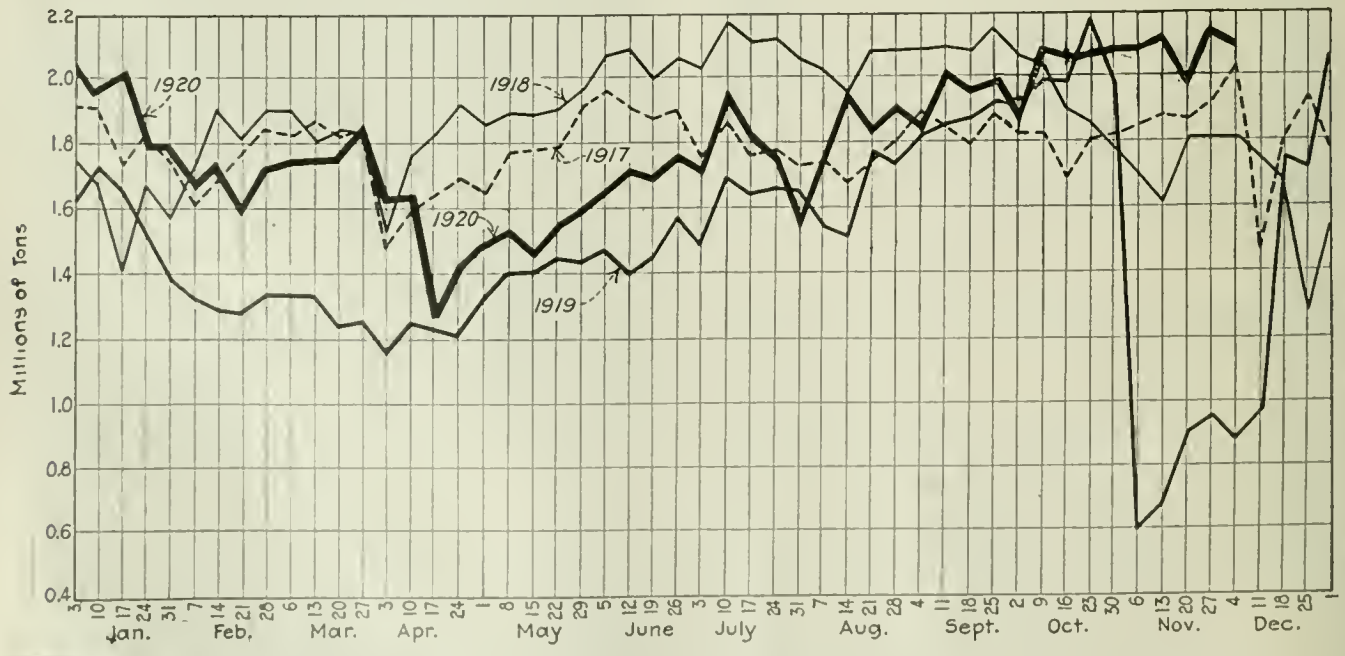
While shippers to American consumers are thus marking time the export market is undergoing serious readjustment. Lack of demand abroad and in New England for smokeless coal has resulted in heavy shipments in the Inland Western markets, where competition with Illinois and Indiana coal is forcing the prices of these coals to new low levels for the year.

There is this distinction, however, between the future of the foreign demand and that within the United States and Canada: Whatever the consumption of coal may be within the United States next year the supply must come from mines in this country. Abroad our producers and exporters must compete with increasing output in Germany and France and an increased supply in Great Britain in the hands of the most experienced exporters of coal in the world, determined to regain, as far as possible, markets lost during the war.

BITUMINOUS

Record production of soft coal is reported by the Geological Survey for the week ended Dec. 4. The total output, including lignite and coal coked, is estimated at 12,757,000 net tons, the highest mark attained during the present season. Even heavier production was reported on Monday

Average Daily Production of Bituminous Coal*



*From weekly report of Geological Survey.

and Tuesday (Dec. 6 and 7) due to excellent car placement. The year 1920 to date is about 33,000,000 tons behind 1918, but is 87,000,000 tons ahead of 1919 and is now within three and three-quarter million tons of 1917.

Car supplies are entirely adequate to move tonnage on present orders. The record production was made possible by the placement and loading of 232,340 cars during the first week of December, an achievement the more noteworthy because of the recent withdrawal of priority in the use of open-top cars for coal loading. A general shortage of equipment was experienced by West Virginia operations on the C. & O. due to poor and inadequate motive power. The eastern Ohio district supply continued short with a B. & O. placement of 65 per cent of capacity.

Industrial Uncertainty Raises Labor Efficiency

Labor conditions continue to be generally satisfactory. The men are working steadily and it is plain that the unemployment ensuing from many industrial shutdowns has had a beneficial effect on efficiency of mining labor. Just now there is practically no idle labor, but losses are sure to occur from this source from the effect of Christmas and New Year "vacations." Operators are vitally interested in the plan to restrict immigration. If a ban is established they fear it will produce a shortage of common labor which will affect costs of production. Strikers are no longer a bar to Alabama coal production, as shown by late tonnage reports. More mines have resumed operations in the Williamson field of West Virginia and strikers' places are being steadily filled by labor enlisted from other fields. A committee of the strikers in the Georges Creek and Upper Potomoc fields has presented proposals to the operators which embody virtual recognition of the closed-shop principle. It is expected the operators will fight the closed shop to a finish.

Decline in the spot market continued, although the break last week was not so heavy. It is apparent that the decline has passed the point where profitable operation can be conducted by smaller producers with no contract affiliations and this is evidenced by a general closing down of such operations. Prices are nearing the bottom and much curtailment of operation may be expected before the business readjustment is completed. The steam market is now below the $4 level, with demand unimproved. Indiana operators are finding their State Commission price now compares favorably with outside market quotations. Domestic coal also is easier, the prolonged mild weather and unusually heavy shipments of prepared sizes having weakened this market and flooded the trade with screenings.

Coal Buyers Now Insistent on Quality

High-grade steam fuels are moved without much difficulty, but many refusals have been heard of coal that is "off-color." One New England road recently refused a large consignment because of this complaint, and it is plain that shippers of medium and inferior grades will be the heavier losers from the present more discriminating market. Midwest markets are inactive and some railroads are seeking outright cancellation of contracts on the ground that the greatly lessened freight movement has curtailed their fuel requirements. With these factors and the closing of Lake navigation an increasing amount of free coal is being thrown on a quiet market.

The following table shows the trend in the spot steam market (mine run basis, net tons, f.o.b. mines):

	Nov. 1919*	May 1920	Aug. 5 1920	Dec. 2 1920	Dec. 9 1920	Dec 16 1920†
Pittsburgh steam	$2 30	$4 00	$10.00	$5.00	$4 00	*$3.75*
Pittsburgh screened gas	2 30	4 50	12.00	5.50	4.75	*4.50*
Hocking	2.50	4.75	9.00	4.50	4.25	*3.75*
Franklin, Ill.	2 35	3.75	6.50	5.00	5 00	*4.00*
Indiana 4th vein	2 35	3 40	7.50	4 00	4 00	*3.25*
Eastern Ohio, No. 8	2.35	4 50	10 50	5 00	4 50	*4.00*
Fairmont	2 50	6.75	13 50	4 75	4 25	*3.75*
Kanawha	2 60	6.75	14 00	4 75	4 50	4 50
S. E. Kentucky	3.00	6.00	10.50	5.25	5 25	*4.75*
Western Kentucky	2 35	3 50	5 25	4 25	4 25	*4.00*
Clearfield	2.95	6.25	12 00	5 00	4 75	4 75
Cambria and Somerset	2.95	6.75	13 50	6.00	6.00	6.00
New River	2 70	6.50	14.00	5.25	5 25	*5.00*
Pocahontas	2 35					

*Government prices.
†Advance over the previous week shown in **heavy type**, declines in *italics*.

Tidewater shipments during the week ended Dec. 5, as reported by the Geological Survey, amounted to 1,110,000 net tons, an increase of 76,000 tons as compared with the preceding week. Shipments to New England increased 23,000 tons and the combined tonnage for bunkering, inside capes and other purposes showed an increase of 65,000 tons. Exports declined about 11,000 tons. Foreign demand was at a low ebb and quotations as low as $12 c.i.f. French-Atlantic ports were reported. Refusal of tonnage due on some French contracts is causing heavy losses to American shippers and further depressing the export market. Quotations f.o.b. mines for immediate shipment overseas are fast approaching prices for home delivery.

The tonnage handled at Tide the week of Dec. 5 was destined as follows:

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Total
Coastwise to New England	58,000	25,000	10,000	106,000	2,000	201,000
Exports		61,000	82,000	223,000	21,000	387,000
Bunker	81,000	14,000	17,000	98,000	7,000	217,000
Inside Capes		42,000	28,000	8,000		78,000
Other tonnage	207,000		1,000	19,000		227,000
Total	346,000	142,000	138,000	454,000	30,000	1,110,000

New England all-rail movement increased 506 cars during the week ended Dec. 4, when 5,211 cars were forwarded through the five rail gateways. This is the largest week's shipment since that of Oct. 23, when 5,532 cars were forwarded.

Close of Lake Traffic Shows Higher Receipts

Cumulative Lake movement for the season reached a total of 23,432,000 net tons cargo and vessel fuel, some 600,000 tons in excess of the movement for the season of 1919.

Receipts of soft coal on the Duluth-Superior docks are in the neighborhood of 7,000,000 tons. Mild weather and diversion of buying to the Illinois and Indiana all-rail fields have combined to avert any possibility of a serious fuel shortage in the Northwest this winter.

ANTHRACITE

Production of hard coal, like that of bituminous, reached a new maximum for the year during the week ended Dec. 4. Cars loaded, as reported by the Geological Survey, numbered 39,214, indicating a total output of 2,051,000 net tons. This was an increase of 76,000 tons over the latest full-time week. Shipments to Eastern centers are steadily improving and already much of the insistent demand has ceased. The Chicago market also reports an increase in current receipts, although the supply is still below normal. Steam sizes are plentiful and independent quotations are generally down to company circular figures, while domestic prices also are weaker.

Conferences between representatives of the miners and operators show that while the latter are willing to adjust any individual cases of inequalities, they will not consider any flat wage increase at this time because of the downward trend of all commodities and lowered cost of living.

COKE

Beehive coke production increased slightly during the week ended Dec. 4, when 376,000 net tons were produced, according to the Geological Survey. This was an increase of 9,000 tons as compared with the preceding week and was caused almost entirely by greater activity in Pennsylvania and Ohio. Cumulative coke production for 1920 is now 19,569,000 tons, an increase over 1919 of 1,290,000 tons.

Softening of the spot coke market because of failing demand is having the natural result in the Connellsville region, that of restricting output. Many ovens have been put out and indications are that the number will be increased before the first of the year. Furnace interests are not yet curtailing their output, as the steel men are taking this opportunity to stock coke at point of consumption. The stagnant market is reflected in lowered prices; furnace is $7@$7.25 and foundry $8@$8.50. Contract negotiations for the first half of 1921 have not yet passed the preliminary stage, as producers and consumers are still far apart on price basis.

Reports From the Market Centers

New England

BOSTON

Much Coal Offered, but Few Sales—No Great Surplus of Better Grades—Receipts Continue Fairly Even—Hampton Roads Market Extremely Dull—Prices Show Little Change—Signs of Better Movement of Anthracite.

Bituminous — The less favorably known coals from central Pennsylvania and West Virginia are being freely offered, but buyers show little or no response. The market is actually glutted with cheap grades and sooner or later there must be a decrease in production of this kind of fuel. Something over 300 cars have been rejected at the Hudson River gateways by one of the New England roads, desperate efforts to sell having been made both by the railroad and original shippers. Prices as low as $3 f.o.b. mines have been made, but consumers generally are so well stocked and have so little business in hand that sales are very few.

On the other hand, the choice grades are in fairly firm position. Most producers have a fair amount of contract business at prices that usually are below the current market level for similiar coals. This has a tendency to keep the coal moving, even though the consignee has accumulated ample reserves. There is still a feeling among conservative buyers that high grades will be as scarce as ever in the spring and that the new contract figures may be well in advance of those made last spring even with the wage increases that have since been added. There is certainly very little pressure needed to move best grades.

Receipts both by rail and water are maintained about at the level of November. This is a surprise to many, but it is quite likely that this month as a whole will show a decrease. Railroads are taking on less fuel than 30 days ago and since this has formed a large proportion of shipments all-rail it is clear that receipts generally are on the wane.

At all the Tidewater piers there is a lack of inquiry. At New York, Philadelphia, and Baltimore there is practically no inquiry for spot shipment coastwise, and at Hampton Roads the situation is only very little better. Dumpings for New England were at low ebb the week ending Dec. 4 and the export market is becoming increasingly inactive. The amount of cargo coal either at or enroute to European ports is understood to be very large and there have been liquidations that show tremendous losses. Several modern coal carriers that were built for the trade between Norfolk and Boston are back in the old channels, this being due largely to the slump in trans-Atlantic freights and the fact that oversea markets also are getting overstocked.

Current prices on bituminous at wholesale are about as follows:

	Clearfield	Cambrias and Somersets
F.o.b. mines, per net ton	$4 00@5 50	$5 00@ 6 50
F.o.b. Philadelphia, per gross ton	7 15@8 80	8.25@10.00
F.o.b. New York, per gross ton	7 60@9 25	8 70@10 50

On cars, Providence and Boston, Pocahontas and New River are quoted $13@$13.50.

Anthracite—There are signs that domestic sizes will soon be in much better supply. Several originating companies who have not been taking on business even from regular customers the past six months are now offering late December delivery.

Retail trade is falling off with the continued mild weather and unless we get much lower temperatures for long periods the saving in fuel this winter will amount to a very large tonnage. Cancellations are beginning to be frequent in the retail trade and it is generally conceded that we are very nearly over the hump.

Tidewater East

NEW YORK

Further Improvement in Anthracite Situation—Receipts Increase Slowly—Shortage Reported from Nearby Small Towns—Steam Coal Receipts Increase—Bituminous Market Quiet—Demand Is Low—Loaded Boats Plentiful and Prices Are Lower.

Anthracite—The local situation has eased considerably. Shipments are steadily increasing and a few weeks more of mild weather ought to find the supply in good shape. Reports from some of the small neighboring towns indicate a lack of coal, but there has been no suffering.

Some retailers are still without coal in their yards, deliveries to consumers being made direct from barges or cars. This condition exists more generally in Brooklyn than in Manhattan. With the tonnage increasing some consumers are willing to wait a few days longer if there is any prospect of getting the size ordered instead of taking substitutes.

Line trade demand continues strong with stove, nut and a good sprinkling of pea mostly wanted. Independent coals move quickly, but buyers are more conservative and delay considerably before closing sales. They are also refusing to take a portion of their order in buckwheat, unless it is absolutely necessary. Quotations for independent domestic are $10@$12, with most sales being made $11@$12.

Steam supplies are becoming larger, due in part to the low prices at which bituminous can now be gotten. Best grades of independent buckwheat are being quoted around $4.50 while some qualities are being offered as low as the regular company schedule of $4.10. Rice coal is quoted $2.75@$3, while some shippers were willing to let their supply of barley go at anything from $1 up.

Bituminous—Continued depression in business has caused a further lowering of prices. On all sides one hears of "no business" but there is much optimism among the trade.

The reports heard here of French firms refusing to pay for American coals shipped to France are being borne out in newspaper dispatches. Some shippers are facing large losses. Foreign shipments from this port are much smaller.

Local houses are in receipt of many cancellations or requests to hold up shipments until business improves. This has resulted in many shippers finding themselves with a cargo or two of spot coal on their hands for which they must find a buyer.

The larger supply of coal is reflected in the stocks of local public service corporations as of Dec. 6, they having at that time a total of 358,762 tons of steam and 69,386 tons of gas coal. Some of the companies have nearly two months supply on hand.

Quotations range $4.25@$4.75 for Pool 10 at the mine; $4.75@$5.25 for Pools 9 and 71, and $3.50@$4 for Pool 11. Prices at the local piers are on the above basis.

Loaded boats are plentiful and some low offers are reported. Stocks at the piers were not large but this was said to be due in part to the loading of boats which were afterwards anchored near by. Pool 10 was quoted $8@$8.25 alongside while Pools 9 and 71 were 50c.@$1.25 higher. A cargo of Pool 34 was offered at $8.50 alongside.

PHILADELPHIA

Fair Anthracite Shipments Being Received — Retailers Strive To Avoid Credit—Miners Denied Wage Increase—Steam Sizes Weakening—Bituminous Fairly Firm—High Grades Only in Demand — Coal Accumulates at Tide — Export Inquiries Are Light.

Anthracite—A moderate tonnage is still reaching this market. Naturally the best shipments are being made by the companies. Retailers report the demand fairly active, although much of the edge of the insistent call has worn off. Dealers have all received coal of the different sizes recently and most of them have sufficient stock to keep them going nicely.

There has actually been a feeling among retailers lately they they are not at all anxious to accumulate much stock. The public without a doubt has much less money to spend and many dealers are importuned to give credit to former cash customers. More than one dealer has been in a position to refuse this by the fact that he has had no coal for immediate delivery. Dealers are determined to protect themselves as the industrial situation is anything but promising.

One spot of uneasiness is that the operators recently denied miners any further increase in wages. Should the men determine to strike it would cause almost endless trouble, inasmuch as the yards contain very little in the way of stocks.

Retail prices remain unchanged, although radical increases made by some of the independents have cut severely into dealers profits. With the Western market about shut off it is a question how long the independents can maintain these prices, particularly should the weather continue mild.

Steam sizes are beginning to cause some shippers much uneasiness. Most independents are glad to be able to move their output at company prices, although a few still try to do a little better than $4.25 on buckwheat. Barley can be had in almost any volume at $1.50. The companies are now willing to accept new buckwheat business at the $4.25 rate, which indicates the changed conditions.

Bituminous—The trade has remained somewhat firm as compared with the previous week, yet many evidences of softening are still noticeable. Inferior grades have almost slipped out of the market, as the consumer when he does buy is inclined to pick good coal.

High grades have been freely offered, with the exception that Pool 1 has not been put on the market as extensively as others. This grade has been quoted quite firmly at $6, while the next best, Pool 9, is moved in fair volume at $5.25. While we believe the average price range on Pool 10 has been $4.50@$4.75, bona fide quotations of blocks at 50c. less are known. The same also applies to Pool 11, the general selling price of which has been $4@$4.25. Pool 18 when asked for by the consumer is quoted $3.50@$3.75, with little being sold. Pool 34 has been about $3.50 for mine run, $3.75 for screened and $3.25 for slack, with the demand somewhat weak.

The chief incident of the export trade has been the accumulation of coal at Tide. Due to some shippers having much coal on hand at the piers sales have been made around $2.75, plus reconsigning charges and demurrage. There is also reported quite a little coal standing at the piers below standard and this has caused shippers much trouble. Inquiries from abroad continue to decline.

Coke—The market is extremely quiet, due to curtailment in the iron trade. Connellsville foundry is $8@$8.50 and furnace $7.25@$7.50.

BALTIMORE

All Prices Are Lower — Export Movement Greatly Diminished — Foreign Bankers Blamed — Anthracite Receipts Are Entirely Adequate.

Bituminous—The soft coal market is weak in all its phases. Prices are still declining and demand, especially for the poorer grades, is extremely light. Export movement has gone to smash as compared with recent high figures, and prospects for the near future are poor.

Charters to Rotterdam are being quoted at $5, the lowest since before the war, and the c.i.f. price in France is reported as low as $12, or about what was paid by many French purchasers not so long since in America, f.o.b. mines. The European situation is being blamed by some shippers here on propoganda of some of the English banks to the effect that French and other buyers should be cautious because of the decline in exchange rate of the American dollar. Coal men here say that English "smalls" is bringing 70 shillings at Cardiff and European buyers will shortly awaken to the fact that they can purchase again on this side to advantage.

Few charters are being announced and the Curtis Bay piers of the B. & O. have reduced working forces to one-third of recent shifts. For the first ten days of December less than 70,000 tons were loaded here on export cargo account, whereas the month of October had a total of 499,442 tons.

Prices on both export and domestic coals are the lowest in months. Of gas coals the best ¾-in. is offering freely at $5 f.o.b. mines, net ton, Pool 34 at $3.50, and Pool 33 at $4. Best steam coals, such as Pool 9, are offering at $5; Pool 10, $4.50 and Pool 11, $4@$4.25. There is hardly any call for Pool 18, which can be had around $3.50.

Anthracite—Local receipts continue fair, and the last threat of famine has been wiped out. Mild weather held down consumption all through November, and during that time some 60,000 tons were received. If this rate is continued there should be no real trouble, although the dealers will be kept busy most of the winter making belated deliveries.

The thing that worries the trade just now is the price condition and the fact that a big jump has been made in rental basis of yards, trestles, etc., leased by them from the railroads. Rentals have been jumped at the yards here, in some cases more than 100 per cent, it is stated. This makes the margin of profit so low that the trade is looking forward to another retail price increase unless there is a cut in wholesale costs.

BUFFALO

Tendency of Bituminous Prices Is Still Downward—Consumers Getting Enough from Contracts—Deliveries Are Prompt —Anthracite Stress Is Over.

Bituminous — The tendency of all prices, except possibly on the scarcer gas and smithing varieties, is still downward. Some days ago jobbers agreed that they were no longer able to get $5, mine price, for steam coal. Most of them object to any quotation, saying that the prices are too unsteady. Still the variation is and has been small from day to day, but without a shadow of recovery. Jobbers are already predicting a price as low as $3.50. And why not? A great part of the bituminous coal that has gone into consumption since last April has been on annual contracts ranging $3.25@$4.75 and operators seem to believe that they are now getting the best of the bargain, after sitting by and seeing others make most of the money in the business.

Quotations are: $4.25@$4.75 for Pittsburgh and No. 8 lump, $4 for mine run and slack, including Allegheny Valley; $6@$6.50 for Youghiogheny gas, smokeless and smithing, to which add $2.36 for Allegheny Valley and $2.51 for all other to cover freight.

Anthracite—Retailers now have coal for all comers, though not in much quantity. The weather is colder, but not severe, the Lake season is closing and all this means that the sortage is practically over. As to districts North and West that are covered from here it will be practically impossible to say for awhile, as consumers are still buying all the anthracite they can get.

Independent anthracite premiums are dropping. There are quotations at $13 at the mines, which is about $4.50 over the standard prices. Demand is light, which shows increasing confidence in the standard mines being able to meet the needs of consumers.

Lake—The last cargo has not been shipped yet, but only one shipper is in the market for tonnage. The showing is fair, shipments to December being 3,507,389 net tons, to 4,076,118 tons to the same date last season. With a winter of ordinary severity the supply ought to be sufficient.

December shipments have been good, being for the week 77,000 tons of which 28,500 tons cleared for Milwaukee, 24,300 for Chicago, 17,000 for Duluth and Superior, 4,200 for Port Arthur and 3,000 for Fort William.

Coke—Prices have been going down pretty fast. Jobbers differ as to quotations from the ovens, but a good average would be $7.50 for 72-hour Connellsville foundry, $7 for furnace and $6 for off-grades and stock. The market for domestic coke has weakened still more, on account of the expectation of a better supply of anthracite. Furnace sizes sell at $6.50 and small sizes $10.50.

Northwest

MINNEAPOLIS

Mild Weather Causes Buying Slump—Trade Awaits Lower Prices—Increasing Competition of All-Rail Coal—No Fears of Severe Shortage.

The excitement has well died out of the coal situation for the Northwest,

and has been replaced by an ambition on the part of buyers to break the market. Some of the ones who but a short time ago were frantic to get coal at any price, are now figuring carefully to get prices down considerably. The transition from the attitude of importunacy to disdain has been almost lightning-like in its speed.

With December well started, there has been only a little freezing weather resulting in a sharp decrease in consumption. If there is the slightest touch of severe weather, it will find many dealers short of coal and ready to pay the market price. Many shippers have not attempted to find a market for the dock stocks, confident that the market would have to find them the minute cold weather prevailed. Yet a continuation of mild weather will doubtless mean carrying over some high-priced coal on the docks. Already the all-rail market is fairly demoralized. Lower grades have been cut $3 and more in an effort to hold business, which began slipping to the better grades the minute there was an opportunity to select.

The shortage of hard coal has been completely wiped out. Dock receipts are about equal to those of 1919,—showing only a difference of 63,000 tons, and reduced consumption already has more than saved that amount. Receipts of soft coal on the docks to Dec. 1 are 100,000 tons over 1919, with a total of 6,955,000 tons. However there is a difference in the carry over from the preceding season which gives around 2,000,000 tons in favor of 1919. But this has been about offset by reduced consumption plus the diversion of buying to other fields.

Navigation may continue for some time into the month, and quite a little additional tonnage be forwarded, the weather permitting. So the comparison with a year ago will become more and more in favor of the present season. Already the fears of a severe shortage are pretty well past. A severe winter, however, would cause a shortage of soft coal toward spring, while a continuation of mild weather may force a reduction in dock prices.

Movement of coal from the docks shows a decrease of around 15 per cent. This might be accounted for on the theory of the mild fall. But that would not take into consideration that there is usually, in the fall, advance preparation and stocking of all the coal that bins will hold. While dealers' bins are probably far from empty, yet the rush that follows severe weather will speedily run them down. The hope of lower prices has held back orders.

Stocks on the docks are not excessive. Anywhere near an average buying would clean them up. Yet if the trade continues to hold back there may even be a surplus at the end of the season. And if the mild weather continues, competition from cheaper all-rail sources will be increasingly strong. For this production has been on a cold-weather basis, and consumption has been far from it.

MILWAUKEE

Rail Receipts Are Satisfactory—Mild Weather Eases the Situation—Prices Continue Unchanged—Coal Investigation Report Not Made Public.

Mild weather has curtailed the demand for domestic and the slowing up of industries has checked the drain on steam stocks. Coal of all kinds is easily obtained; in fact, coal men are soliciting business. It is estimated that city consumers are 100 per cent supplied but that the country is still 40 per cent short of normal. However, the latter needs are now being made up rapidly.

Milwaukee's winter supply will be ample provided rail conditions permit a fair inflow. Coal is still coming by Lake but the end is near, and another week will probably see the last cargo docked. The expected closing rush did not materialize. December receipts thus far aggregate 44,417 tons of anthracite and 110,806 tons of soft coal. The season's receipts by Lake will be about a million tons short of last year.

Coal is coming steadily by rail from Illinois but at the present time dealers are so well supplied that they are turning down offers of Western producers. The result of the coal investigation is being withheld by Attorney-General John J. Blaine, who says he is not entirely satisfied with the facts adduced at the several hearings and who intends to continue the inquiry.

Inland West

CLEVELAND

Acute Car Shortage Disturbs Domestic Trade—Close of Navigation Fails To Bring Expected Relief — Bituminous Mine Prices Drop — Anthracite and Pocahontas Scarce.

Bituminous — Improvement in the coal supply expected as a result of the closing of the Lakes has failed to develop, due to a greater scarcity of cars within the last week or ten days.

The Ohio coal situation, if it were not for present transportation difficulties, would now be easier than at any time within the last year. Continued mild weather has not only tended to facilitate deliveries, but has held back the flood of orders that otherwise would have been placed with dealers. Retailers are caught up with deliveries for the first time in many months, but are now getting barely enough coal to meet current demands.

One explanation of the growing car shortage is that many cars badly in need of repairs have finally been sent to the shops. This is believed to be particularly true of cars used in the Lake trade.

Prices at eastern Ohio mines dropped this week. Domestic is now selling $4.25@$4.50, and steam $3.75@$4. Both operators and wholesalers are inclined to regard these prices as rock bottom for some time to come as domestic demand is likely to become more pronounced during the next few months.

Severe cold weather and continued car shortage might cause a serious situation in this section. The miners, probably due to the nearness of the holiday season, are working as steadily as the car supply will permit.

Assigned-car supply in the No. 8 field is estimated at 65 per cent, for unassigned about 55 per cent. Railroads are coming into the market for Ohio coal and operators are attempting to meet some of these requirements in addition to supplying the domestic market. Operators recently have received inquiries for coal from points in Indiana and some sales have been made.

Anthracite and Pocahontas—Hard coal has advanced in the retail market from $15.10 to $15.30. The supply continues scarce, daily receipts for the past week being only 12 carloads. Dealers are taking orders for domestic sizes without promising delivery and at prices to be determined by the market. Shoveled Pocahontas lump has advanced from $11.75 to $12 at retail and is about as difficult to obtain as anthracite. All other retail prices are practically unchanged.

Lake—The coal rate to the head of Lake Superior was advanced Dec. 6 to $1.50 and two boats were loaded at this figure. Shipments for the season up to Dec. 6 were 22,366,876 tons compared with 21,713,341 tons for the same time last season, and 28,153,317 tons in 1918.

DETROIT

Demand Is Sluggish — Prices Slightly Reduced — Buying Confined to Current Needs Only — Anthracite Receipts Improve.

Bituminous—Though coal is arriving in fair quantity, the amount is apparently not so great as to create any excess of supply or leave accumulations on tracks. Wholesalers and jobbers say free coal is not yet easily found.

Buying in the steam branch reflects the sluggish condition of business in general. Buyers usually are taking only about enough stock to satisfy current needs of their plants and appear unwilling to add much to reserves. There is a feeling that the business situation is such that it is desirable to maintain resources in as liquid a form as possible, while waiting for a clearer development of future prospects. The belief among some of the buyers that coal prices are likely to be lower also is an influence encouraging delay in purchasing stock.

Domestic consumption has been greatly reduced by mild weather. Retailers, with a shrinkage of business, hesitate about increasing yard stocks to any substantial extent until a more active distribution of present supplies is under way.

Hocking domestic lump is quoted at the mines at $7 while mine run is around $5 and slack $3.75@$4. For West Virginia lump $8 is asked, with

mine run $5.25@$5.50 and slack $4.75@$5. Smokeless coal is still scarce although larger shipments are expected.

Anthracite—With Lake shipments terminated receipts are reported showing gradual improvement, though the supply is still far below normal.

CINCINNATI

Rail Receipts Still Lag—River Coal Aids—No shortage for Cincinnati District—Strong Call for Domestic.

Very little change in the condition of the coal market in Cincinnati was reported during the past week. Although the movement into the local market still lags to a certain degree enough is being received by consumers to keep operations somewhat near normal.

Shipments from West Virginia fields by way of the Ohio River continue to be a big factor in the supply. Dealers state the coal shortage, which is being felt to a great extent in other sections of the country, is not noticeable here.

Rail shipments continue very light, due to the shortage of cars at mines, although enough contract coal for steam consumers is being received. Dealers express the hope and belief that the car shortage will soon be relieved, which will bring the supply near normal.

Real winter weather is bringing all grades of coal in strong demand. Dealers say that the majority of the domestic demands have been supplied and that there will be no acute shortage, at least in the Cincinnati district.

Prices quoted by dealers for coal and coke, delivered to the home, remain unchanged.

COLUMBUS

Sharp Decline in All Grades — Consumption Is Still Decreasing—Production Is Good.

Several factors are uniting to produce weakness in all grades of coal in Ohio territory. One of the most potent is the continued warm weather which tends to ease the call for domestic grades. Weakness in mine run and screenings is due largely to the industrial let-up. Car supply in all fields is quite good and this still further tends to depress prices. Producers believe that prices will range throughout the winter at about the present levels with possibly still further declines in domestic.

Domestic trade is still active but the edge is off the market. Dealers are now cancelling orders and this has a depressing effect. Buying on the part of the public is not as active as formerly because they are waiting for lower prices and are buying only for present requirements. Retail prices do not yet reflect declines at the mines, although lower levels prevail. Hocking lump sells $8.50@$8.90, mine run is $8.25@$8.50. Pomeroy grades are selling at about the same prices. West Virginia splints retail $10.35 for lump and $9.75 for mine run, while Pocahontas lump is $11.50 and mine run $10.50.

Steam demand has fallen off to a large extent and screenings are becoming a drug on the market. Prices were generally lowered throughout the week. Railroads are taking some tonnage and a disposition to stock up for the future is noted among trunk lines. Public utilities are well supplied and reserve stocks are being built up.

Production is holding up fairly well in all fields. Toward the latter part of the week some shortage of cars appeared in the Hocking Valley although this was not serious. The principal cause of reduction from capacity figures is labor shortage, which means a disposition on the part of miners to take frequent holidays. The output of the Hocking Valley has been about 75 per cent and the same figures are reported from Cambridge, Jackson, Crooksville and Pomeroy.

Prices at the mines of the principal coals used in central Ohio are:

Hocking lump	$4.00@$5.00
Hocking mine run	3.25@ 3.75
Hocking screenings	2 75@ 3 25
Pomeroy lump	5 00@ 5 25
Pomeroy mine run	3.50@ 4.00
Pomeroy screenings	2 75@ 3 25
West Virginia splints, lump	5 00@ 6.00
West Virginia mine run	3 75@ 4 25
West Virginia screenings	3 25@ 4.00
Kentucky lump	4 75@ 5 75
Pocahontas lump	5.75@ 6.50

ST. LOUIS

Market Decline Continues — All Demands Soften — "No Market" Losses Appear—Prices Tumble.

Continued mild weather has almost shut off the local domestic demand. A continued depression in industrial circles has reduced the price of steam very near to production cost in the Standard field. Retail prices are firm: Carterville, $9.50; Mt. Olive, $8; Standard, $7.50; Anthracite $17.25@$18; Smokeless $16.50.

Locally, a little hard coal is moving in but there is no call for domestic. Alabama coke is moving through to points Northwest to replace the shortage of anthracite.

Standard mines are experiencing "no market" conditions. Screenings are down to $2, mine run to $2.15 and lump ranges $3.25@$3.75. Mt. Olive conditions are somewhat better as the market is holding firm, lump coal at $4@$4.50 and steam largely absorbed on contract. Mines in both fields who are working on railroad coal are generally running five days a week.

For the first time in months Carterville coal is being freely offered on the open market. Independent quotations have come down to circular prices.

Water shortage continues to hamper some southern Illinois operations and water is being hauled in by the railroads.

MID WEST REVIEW

Steam Coals Slump — Large Buyers Cancel Contracts — Operating Conditions Excellent — Domestic Sizes Are Firm.

The weather man certainly has it in for the coal industry, as another week has passed and we are being treated to a temperature just about what it should be during the Indian Summer.

In the country, domestic coals are holding up very well indeed, but all through the territory steam is slumping. Mine run and screenings are especially weak although 1¼-in. lump and egg are by no means strong.

There has been an epidemic on the part of the coal-buying public to cancel contracts and current orders. Apparently a contract means just as little to the public now as it did to a great many coal men during times when coal was abnormally high. The trouble is, however, that a great many perfectly responsible coal companies are now being called upon to suffer for the transgressions of their less reliable associates.

We understand that an attempt has been made on the part of some railroads to cancel their coal contracts outright. The reason given is that they are not handling anywhere near the freight that they expected to and consequently can not use the contracted amounts.

Various manufacturers in the Middle West are not very optimistic and additional plants are shutting down almost daily. No strengthening of the coal market can be looked for until American industries get in better shape.

At the mines cars are now plentiful. Some of the roads that are not as well equipped as others have been able to furnish their mines with so many cars that tipples and switches have been blocked with loads. Labor is most certainly on the job.

Current mine prices quoted on the open market are as follows:

Southern Illinois (Franklin, Saline and Williamson Counties):	
Prepared sizes	$4 25@$6 00
Mine run	3 50@ 4 25
Screenings	2 50@ 3 25
Central Illinois (Springfield District):	
Prepared sizes	$4 00@$5 25
Mine run	2 25@ 3 00
Screenings	1 75@ 2.25
Northern Illinois:	
Prepared sizes	$5 00@$6 00
Mine run	3 75@ 4 50
Screenings (washed)	4 00@ 4 50

Indiana (Clinton and Linton, Fourth Vein)	State	Outside State
Prepared sizes	$3 45	$4 25@$5 25
Mine run	3 20	3 00@ 3 50
Screenings	3 00	2 25@ 2 75

Indiana (Knox County, Fifth Vein):	State	Outside State
Prepared sizes	$3.25	$3 50@$5 00
Mine run	3 00	2 25@ 3 00
Screenings	2 80	1 75@ 2 25

CHICAGO

Trade Is Stagnant — Heavy Domestic Shipments Being Received — Some Cut in Anthracite Prices — Shortage Is Ended.

Chicago coal trade is not only dull but stagnant. Manufacturers have more coal than they want on hand and the average retail dealer has his bins full. Substantial price reductions must be made to move any product.

During the past week a very substantial tonnage of Pocahontas and New River mine run has arrived. Early in the spring those dealers who were fortunate, as it seemed to them then, placed contracts for smokeless at $4.25

@$4.90. Until lately they received no coal on contract but now that the export business has stopped for the time being, local dealers are getting more Pocahontas than they can comfortably handle.

There has been a very little weakening on anthracite. Some of the "Independents" have been offering small price concessions. They have been so small that they have had but little effect on the market. Hard coal, however, is becoming plentiful and it is only a question of time before the agencies will not only reduce their prices but be in want of orders.

Southwestern

KANSAS CITY

Steam Sizes Weaken — Car Supply Is Ample—"No Market" Losses Cut Production—Labor Is Adequate.

During the past week there has been a further leveling of prices, but Arkansas coal is being held firm at last quotations.

Kansas domestic grades are steady at $6; steam grades are quoted $4@$4.75. Missouri domestic is $6, steam $3@$5.50, depending on quality.

Some mines have had idle time during the past week on account of lack of demand. Car supply has been ample and transportation exceptionally good for this season of the year.

The weather continues warm. This has resulted in a great many cancellations on all grades of coal. Labor at the mines is ample and the disposition of the men is to stick closer to jobs than they have for several years.

Broken running time is to be expected during the holidays and probably not more than 50 per cent of the usual tonnage will be produced, and with seasonable weather we will again have a cry of coal shortage. So far as the Southwest is concerned, there never has been a coal shortage, but we have had a coal buyers' panic.

South

LOUISVILLE

Production Increasing with Demand Decreasing—Steam Prices Show Steady but Slow Decline — Gas and Byproduct Grades in Better Demand.

Production is rapidly increasing as a result of good weather, fair labor conditions, and much better car supply. Some sections of eastern Kentucky are now operating 80 per cent of capacity, the best record of the year. Some districts of that section are not getting as good a supply due to poor railroad facilities for handling cars in and out.

A good deal of coal is now being screened, but the demand for lump is slumping fast as retailers are finding a poor demand in view of mild weather and a feeling among consumers that prices will be lower.

Steam coal is being disposed of, but it is a matter of selling organizations today, and the concern without these facilities is having some trouble in marketing fuel. Orders for steam are expected to continue only fair until after Jan. 1, which is Federal inventory time for tax returns with the bulk of consumers. After that time buying should be more freely done, as supplies will not have to be shown on invoice basis as stock on hand.

The first shipment of river coal of any size in weeks arrived, Dec. 4, when the "J. T. Hatfield," of the Reliance Coal & Coke Co., brought one barge of West Virginia coal to Louisville, and seven to New Albany, Ind.

Eastern Kentucky mine prices are; prepared sizes, $6@$7, mine run, $4@$5, screenings, $3.25@$3.50. Western Kentucky lump is $5@$6, mine run, $3.50@$4.50, screenings, $2.75@$4.

Retailers are cutting prices on western Kentucky coals by $1.70 a ton, due to drop in the market there. Retail prices show lump coal delivered, $11.50 for eastern Kentucky; $8.80 for western Kentucky. Western Kentucky mine run is quoted $7.50, slack, $6.50.

BIRMINGHAM

Steam Demand Is Very Light—Domestic Market Easier—Car Supply Somewhat Short—Labor Forces Practically Normal.

Demand for steam from industrial sources continues light, but all high-grade fuel is disposed of without much difficulty. Larger producers are still behind on contract obligations and are producing little coal for the spot trade. Producers of low and medium grades are having to cast about considerably to provide disposition for their output.

Quotations have changed little and apparently are about to stabilize around $4@$4.25 for Big Seam mine run; $4.50@$4.75 for Corona; $4.25@$4.50 for Carbon Hill and $5@$6 for Cahaba and Black Creek.

Continued mild weather has eased the demand for domestic, though there is business in hand and offered far in excess of the production. There is no acute shortage for present needs at any point.

Production has assumed normal proportions, figures compiled by the Alabama Coal Operators Association for the week ending Dec. 4 showing 297,321 tons output for that period, with a shortage of 411 cars reported.

Labor is no longer any hindrance to production needed in this trade territory and a much larger tonnage could be taken out if required. Operations have been cut in some instances to five days per week. The strike has spent its full force and the open shop remains the fixed policy of mine owners in Alabama. Car supply is short on the L. & N. and somewhat less than requirements on the Southern. Other lines have furnished fair service.

Western

DENVER

Prices Are Weaker — Labor Situation Is Quiet — Production Is Cut by "No Market" Losses.

The market is soft, bituminous having joined with lignite in an uncertain demand. Thus far bituminous prices have been maintained, but lignite of second grade has dropped 25c. at the mines, which is reflected in retail prices.

Recent developments indicate that prices will go no higher. Operators are taking the stand that there has been no reduction, reconciling the 25c. lignite cut by claiming uniformity in mine price. The Rocky Mountain Fuel and the Colorado Fuel and Iron companies were among those that cut the retail price to $8.90.

Best lignite is $10.15 retail and $6 at the mine. Lignite steam remains at $5.30 retail, while Routt bituminous steam is $6.75 in Denver markets. Bituminous coking slack, mixed, is $8.05, and Walsenburg steam is $7.50. Domestic from Routt fields is $12.50, while southern Colorado grades are $11.50@$12. Furnace size anthracite is $17.60.

Production for the week ended Nov. 27 was 210,744 tons, representing 80 per cent of full time. Traffic problems are assigned to a lost output equal to 10 per cent.

The labor situation has quieted down, following the disturbance in lignite fields. Many of the mines are now running on half-time basis, due to unseasonable weather and hesitancy on the part of the public to buy.

Canada

TORONTO

Continued Shortage of Anthracite—Famine Only Averted by Mild Weather —Soft Coal Plentiful, Demand Light and Prices Lower.

Owing to the diversion of anthracite coal to New England and Western points the supplies coming to Toronto have lately been very limited. A coal famine has only been averted by the continuance of unusually mild weather. Dealers have none in the yards and are much behind with deliveries.

Fuel Controller H. A. Harrington states the Province is 235,000 tons short of its normal supply of anthracite and urges strict conservation and the use of substitutes wherever possible. Bituminous is plentiful and the demand light, with a general downward tendency in price.

Quotations per short ton are as follows:

Retail:	
Anthracite egg, stove, nut and grate	$16.90
Pea	15.40
Bituminous steam	14.50
Domestic lump	15.00
Cannel	20.00
Wholesale f.o.b. cars at destination:	
Three-quarter lump	10.25
Slack	9.90

News From the Coal Fields

Northern Appalachian

PITTSBURGH

Car Supplies Ample — Spot Prices Irregular—Reduced Consumption Is Making Coal Hard To Move—Bonus Cuts Causing Dissatisfaction.

Car supplies have been adequate in the past week. Occasional shortages have been of no importance and at not a few mines there have been more cars than operators could use, on account of the state of order books.

The leading interest, the Pittsburgh Coal Co., has ample orders for the amount of coal it can mine and is not seeking new business, although it is acting favorably upon some requests of regular customers to increase their allotments. Many of the independents, if not the great majority, are actively seeking orders, particularly for spot and prompt shipment, and naming such prices as they think will secure business. The difference in position is due, of course, to the difference in price policy this year, the Pittsburgh Coal Co. having rigidly adhered to its regular prices while in the open market some very fancy figures were obtained by many of the other shippers.

There are conflicting reports as to spot prices named, indicating that buyers and sellers are more or less at sea, but a steadier market is expected to be developed shortly.

Consumption has been falling off rapidly in the steel and other industries just at the time when Lake shipments ceased, this readily explaining the large increase in offerings.

The spot market is quotable about $3.50@$3.75 for steam mine run and $4@$4.50 for ¾-in. gas. The Pittsburgh Coal Co.'s prices are maintained, as formerly, at $3.75 for slack and mine run and $4 for screened.

During the period of scarcity many operators in the district paid bonuses or extras of various sorts to labor, and these extra payments are now being cut off, creating a little dissatisfaction and causing some men to shift their employment.

CONNELLSVILLE

Spot Market Turns Stagnant — Prices Are Easier—No Interest in Contracts.

The coke market has turned absolutely stagnant, and precise prices are difficult to quote on account of the absence of transactions. Some operators have been soliciting bids for spot coke rather than quoting prices. Shipments against contracts are ample so that furnaces having agreements do not need to buy spot coke, and there are few furnaces in blast that are not supplied with contracts. Many have gone out and others are preparing to go out. Off-quality coke is offered at particularly low prices, though such coke commanded the full market price during the period of scarcity.

Coke producers who purchase electric power for their operations and who contemplate closing down with the low market are finding that a flat rate in many cases as high as $50 per day charged by power plants is a factor of overhead which may necessitate continuing their operations.

Producers find it impossible to interest furnacemen in contracts for the first half of the new year, and discussion as to what would be a fair price is dying out. Furnace men are disposed to await evidence that they will have occasion to operate before they think seriously about coke. In the case of foundry coke likewise there is an indisposition to contract. A large operator who some time ago made a number of contracts at $15 has revised them to $10, but other consumers are unwilling to take hold at this price. It is understood some operators have quoted $9 or less on contract without booking business.

The spot market is quotable at $7@$7.25 for furnace and at $8@$8.50 for foundry, per net ton at ovens. The *Courier* reports production in the week ended Dec. 4 at 217,900 tons, an increase of 5,480 tons, this being entirely on the part of furnace ovens, as the merchant output decreased slightly.

UNIONTOWN

Many Coke Plants Close—Coal and Coke Prices Seek Lower Levels—Operators Refusing to Make Further Price Concessions.

Softening of the spot coke market because of failing demand has had the natural result in the Connellsville coke region, that of restricting output. Several hundred ovens at various merchant operations have been put out within the past week and indications are that the number will be substantially increased throughout the month.

Plants of furnace interests as yet have not commenced curtailing output and it may be assumed that the steel interests are taking this opportunity to stock some coke at point of consumption. This may be done very readily now when transportation conditions are good.

While both the coal and coke markets evidence a very delicate tone there is no alarm felt here over the situation. There is a conviction among operators that the period of readjustment is now in full swing and once inflated prices have found a normal level business will develop easily and steadily. The transition, however, cannot be accomplished in a short time and few operators expect a change until early in the year.

Coal is to be had in most any quantity at prices ranging $3.50@$3.75 and the furnace coke market is quotable $7 @$7.50. The status of the demand is such that a market level is almost impossible of determination. It may be said, however, that if sales not conforming to these quotations were made they were probably at lower figures.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

BITUMINOUS COAL

	1920 Week	1920 Calendar Year to Date	1919 a Week	1919 a Calendar Year to Date
Nov. 20b	11,693,000	488,218,000	5,344,000	414,712,000
Daily average	1,949,000	1,775,000	891,000	1,503,000
Nov. 27b	11,456,000	499,674,000	5,334,000	420,046,000
Daily average c	2,182,000	1,782,000	956,000	1,492,000
Dec. 4d	12,757,000	512,431,000	5,245,000	425,291,000
Daily average	2,126,000	1,790,000	874,000	1,480,000

(a) Less one day's production during New Year's week to equalize number of days covered for the two years. (b) Revised from last report. (c) Counting Thanksgiving Day as 0.25 of a working day. (d) Subject to revision. All figures in net tons.

ANTHRACITE

Week Ended	1920	1919
November 20	1,975,000	2,055,000
November 27	1,692,000	1,759,000
December 4	2,051,000	2,014,000

BEEHIVE COKE

United States Total

Week Ended Dec. 4c 1920	Week Ended Nov. 27b 1920	Week Ended Dec. 6 1919	1920 to Date	1919 a to Date
376,000	367,000	458,000	19,569,000	18,279,000

(a) Less one day's production during New Year's week to equalize number of days covered for the two years. (b) Revised from last report. (c) Subject to revision.

While both the coal and coke markets are undoubtedly in favor of the consumer there is no disposition on the part of producers to sacrifice tonnage for price. Several interests seeking to buy standard fuel at off-prices have found that operators are perfectly willing to allow tonnage to remain unconsigned rather than dispose of it at what they consider bargain prices.

This rather independent attitude is explainable by the fact that most operators are sufficiently reinforced financially to weather a pretty hard storm.

CENTRAL PENNSYLVANIA

Car Shortage Again Being Felt—Slight Recession in Prices—Demand Is Greatly Lowered — Wagon Mines Closing.

Operators are again complaining of a shortage of cars. Throughout the fall there had been an ample supply in the eastern region of the district, including the Cresson and the Tyrone divisions but conditions were not so good in the central region which comprises the territory along the main line of the Pennsylvania in Cambria County and points west. Operators expected a better supply due to the industrial shut-down. The supply for the week over the entire field is placed at 50 per cent. Completed figures show a total of 89,375 cars loaded with coal during November. This will aggregate 5,000,000 tons.

Coal prices show but little change in the week. A further decline was noticeable in the vicinity of Johnstown. Pool 18 is quoted at $3.25. This is a low-grade coal but was selling at $12 a few weeks ago. Pool 9 is quoted $5 @$5.25, and Pool 10 $4@$4.25. It is predicted that the price will decline still further unless big buyers bid for supplies.

The majority of wagon mines throughout the central Pennsylvania field have been forced to suspend operations there being no demand for the fuel. Open weather is partly responsible for this condition, and dealers in the cities and towns can now depend on shipments by rail.

FAIRMONT AND PANHANDLE

Better Production Possible With Improved Car Supply—All Markets Quiet and Prices Are Lower.

Fairmont

During the earlier part of the week ended Dec. 4 an excellent car supply was maintained, the supply dropping, however, to about 50 per cent the latter part of the week on all lines. The B. & O. shortage during the later period was due to another accumulation of loads. Tidewater movement decreased, Michigan and Ohio markets securing the bulk of the Western movement.

Prices reached a new low level, mine run being quoted $3.50@$3.75, lump ranging $4.25@$5 with a better call. There was but little activity in the spot market from any sources, and particularly in so far as foreign buying was concerned.

Northern Panhandle

In common with other districts in Northern West Virginia, this field was plentifully supplied with equipment, especially during the early part of the week. Transportation conditions on both the B. & O. and Pennsylvania were improved.

Buyers were still out of the market and spot prices declined further, mine run being $3.75, domestic $4@$4.25. Shipments were largely confined to contract obligations and there was no loss in production because of "no market."

EASTERN OHIO

Labor Working Better—Car Supply Is Still Unsatisfactory—Prices Recede Further—Market Weakens With Closing of Lakes.

Production in the eastern Ohio No. 8 district for the week ended Dec. 4 was approximately 380,000 tons, as against a potential capacity production of 622,000 tons, based on total mine ratings.

Output was restricted in the main by the car supply, which averaged a little better than 65 per cent, with only 55 per cent supply for loading of commercial coal. Figures also indicate about 50 per cent of production is now going to railroads for fuel.

Inadequate car supply is attributed to closing of the Lake season when loading of coal to lower Lake ports was discontinued and cars were consigned to more distant destinations, thereby consuming greater time for their return empty.

Cargo coal on track at lower Lake ports amounted to 900 cars as of Monday, Dec. 6, which will be cleaned up this week, docks closing Thursday, Dec. 9. With final dumpings at Lorain, Toledo and Ashtabula during past few days total movement of Lake coal, cargo and fuel, for the 1920 season amounts to approximately 23,500,000 tons.

Prices have broken during the week, ranging $4.25@$4.50 per ton for lump coal and $3.75@$4 for mine run and slack, f.o.b. mines, apparently due to closing of navigation and limited demand of industries.

Middle Western

WESTERN KENTUCKY

Prices Are Somewhat Weaker—Shortage of Cars Holding Production Back—Market Conditions Are Still Good.

In view of short car supply operators are managing to maintain prices very nicely, and selling production without much trouble. Demand for steam continues fair, with block moving very well, the principal weakness being in screenings, for which demand generally is slumping in all fields.

Lump coal is being quoted $3.75@$7.75, the bulk of sales being $5@$6, with the field average at $5.80. Mine run is quoted $3@$6, bulk of sales being $3.50@$5, average, $4.30. Screenings sold as low as $2.15, and up to $6.50, the bulk being $2.75@$4, average, $3.20.

Car supply for the first week of December has been 58.8 per cent on the Illinois Central, and 38.8 per cent on the L. & N., this being below the average for November. However, better results are anticipated later in the month.

Movement South has been very fair, with some good demand for lump in several markets. Discriminatory freight rates have hurt movement into Indiana. Western shipments have also been good.

DUQUOIN

Excellent Car Placement Maintains Production—Steam Market Inactive—Unseasonable Weather Lowers Call for Domestic.

With a good car supply during the first week in December, production ranged 80@90 per cent of capacity. The mild weather is a very important factor in the improved movement, as usually about this time only 60 per cent car supply is to be had.

Labor conditions reported during the week were very good and no time of any importance was lost by any of the operations in this district.

The steam market was very inactive and because of this most of the output was being screened to meet the domestic call. Shipments dragged throughout the week and even the domestic trade seemed unusually quiet for this time of the year. Mine run was dull and tonnage was moved with increasing difficulty. No mine run quotations are available; screenings sold off $2.75 @$3, while lump ranged $3.75@$4.25.

INDIANA

Heavy Output, Decreasing Demand and Mild Weather Depress Prices—Labor Is Working Smoothly.

The past 60 days have been unsurpassed from a production point of view and the result is a vast output that is supplying the Indiana demand. There have been no marked declines in prices, but more free coal is finding its way to the markets and the calls are becoming fewer. Many industries have closed completely, cutting off the usual coal market there. Extremely moderate weather has also reduced consumption.

In spite of the fact that operators gained a considerable victory in the Federal court when two companies were granted a temporary injunction against the special coal and food commission to prevent its operation, producers are selling coal at the same prices as those set by the commission. Every indication points to a reduced price in case the declining demand continues.

November was marked by a lack of labor disputes, miners evidently desiring to get in all the work possible before Christmas. On Dec. 8 twenty-three mines were down because of car shortage, a larger number than usual, but most of the mines were small and the total loss was about 14,000 tons.

Middle Appalachian

HIGH-VOLATILE FIELDS

C. & O. Congestion Lowers Car Supply —Eastern Embargo Removed, But Little Coal Available—All Demands Ease—Prices Reduced—"No Market" Losses Appearing.

Kanawha

Car supply fluctuated during the week ended Dec. 4, but the trend was downward, averaging 75 per cent on Monday and only 35 per cent on Friday. While the long-standing Eastern embargo had been lifted the output was so curtailed that scarcely any headway was made in contract arrears. The dearth of cars was due to the fact that the C. & O. found it impossible to accept cars from connecting lines, owing to some congestion of loads. Mines on the K. & M. received a better supply which, however, dropped to about 50 per cent at the end of the week.

The free coal market was most apathetic, prices for steam ranging $4.50@$5; lump off at $5@$6. Resumption of Eastern buying was responsible for steam quotations remaining firm.

Northeast Kentucky

Production declined with a poorer car supply approximately 47 per cent of capacity being produced. The growing scarcity of cars common to all parts of the C. & O. system was brought about by serious congestion which made it impossible to accept empties for loading. On the L. & N. better service was maintained throughout the week.

There was a lack of demand from all sources and only in gas coal was there any activity. The steam market was quiet, owing to the general industrial situation. Prices ranged $3.50@$4 for steam mine run, lump, $8@$8.50. Screening ran strong, $3.50@$4.50.

Logan and Thacker

Conditions in the Logan field were discouraging. Poor car supply was the direct result of an accumulation of loads on the Guyan branch as well as elsewhere on the C. & O. Eastern territory has been opened after a long period of embargo. However, the car supply was so poor that but little tonnage was available for the East.

Spot demand was dragging on steam and byproduct coals, with a better call for domestic. Export buying was particularly sluggish. Mine run declined to about $3.50 a ton, while domestic ranged $6. Tidewater quotations slumped to $4.50.

Several companies whose mines have been shut down in the Williamson field because of the strike, resumed operations during the first week in December when it became evident that the military authorities had the situation well in hand. The November output is estimated at 135,000 tons. Transportation losses were light and the available tonnage was easily marketed. Prices ranged $3.50@$5 with a depression appearing toward the end of the week.

The fact that several operations did resume work was pointed out as demonstrating that despite low prices operations were not being interrupted so far by the falling market.

Virginia

Mines were greatly handicapped with a car shortage which enabled a run of only 60 per cent of capacity, a decline as compared with the preceding week. Some labor shortage was also noted. Despite the general dullness of the demand very few operations were closed because of "no market."

Domestic sizes led the demand. The steam trade was very inactive. Export coal sold off, $4.50@$5.50 while steam ranged $3.50@$4 Retrenchment and curtailment of industrial operations has cut steam buying to the limit.

LOW-VOLATILE FIELDS

Operating Conditions Improve Only in Tug River—Poor Car Supply Elsewhere—Export and Domestic Demands Are Light—Contract Obligations Take Majority of Output.

New River and the Gulf

Production was extremely light in the New River field during the week ended Dec. 4, a placement not exceeding 30 per cent greatly curtailing operations. While all demands were greatly decreased the output was so curtailed that the supply was not sufficient to meet such demands. Foreign buying was almost at a standstill and there was no activity in home markets. Prices were practically unchanged, $5 for steam, $6 for domestic and export up to $7.50. Owing to congestion on the C. & O. coal moved to its destination very slowly.

All car supplies declined in the Winding Gulf district. On the Virginia Ry. there was only a 50 per cent placement, while the C. & O. furnished a meager 25 per cent supply. The C. & O. had so many loads on hand and congestion was so serious that permission was asked of the Interstate Commerce Commission to discontinue delivery of empties for four days until the tangle could be straightened out.

Some contract negotiations were heard covering the entire year 1921 at prices offered by prospective buyers of $4.75@$5.50. Operators are so far behind on existing contracts that there is no spot coal available, and they are not actively negotiating on these contract offers. The foreign demand has slumped. The general price on whatever spot coal is available for home markets ranges about $5 a ton.

Pocahontas and Tug River

Poor transportation facilities afforded by the N. & W. continued during the first week in December. While the demand was greatly lowered poor loading time offset any possibilities of production losses from "no market" sources in the Pocahontas region.

For such spot tonnage as was available a price was made around $5@$6. There was total absence of foreign demand although coal was being rapidly shipped to piers on old business. An influx of idle miners from other fields made for an adequate labor supply.

Tug River production increased approximately 20 per cent during the week with an excellent outlook for the second week of the month. Prices were still following the downward tendency of most other staple commodities. But little spot tonnage was available, contract shipments taking a large majority of the output.

Mine run ranged $5@$6, with prepared sizes slightly higher. Spot foreign orders were few nor was there any strength in the home market.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Car Supply Improves Materially—Poor Transportation Handicaps Production —Market Is Weak and Prices Decline.

During the week ended Dec. 4 car supply on the L. & N. improved materially. Some sections are getting as high as 80 per cent supply, the best record of the year. With increased production poor handling facilities are slowing up mine operations somewhat. Labor conditions in general were satisfactory.

The spot market continued extremely sluggish, with a price range of $4@$4.50. Prepared sizes were in better demand at $6, and in some instances higher. Of the mine run available gas and byproduct coal was in better demand. Smaller producers with no contract provisions are practically out of the running as the present low price levels do not make for profitable operation.

Western

UTAH

Better Car Supply Enables Producers to Fill Old Orders—Mild Weather Curtails Demand — Future Prices Are Uncertain.

For the first time since March producers have caught up on orders, due to an improved car supply. Operations are being maintained 80 per cent of full time, instead of 50@75 per cent, as has been the case for some weeks.

Mild springlike weather is curtailing the domestic demand and at the same time aiding transportation conditions. It is now practically certain that there will be no increase in retailers' prices unless the Interstate Commerce Commission succeeds in its efforts to give the railroads higher freight rates.

MINE And COMPANY NEWS

ILLINOIS

The Chicago & Alton R.R. handled 157,575 tons of coal on its Springfield tracks or in its Springfield yards during the month of November. This tonnage was handled in 2,865 cars. Of this amount 222 cars or 110,000 tons were commercial coal and were shipped out of the district. The amount used by the Chicago & Alton constituted 665 cars or over 36,000 tons. Eighty-eight cars were delivered to public utilities or other large manufacturing concerns by the Chicago and Alton.

The King Solomon Coal Mining Co., Springfield, of Indiana has filed papers of incorporation in the amount of $5,000 with the Illinois secretary of state, the company giving its principal Illinois office at Harrisburg. The officers named are W. H. Harrison, president and Arthur J. Franklin, secretary.

Two men were killed at **Slogo Mine Marion, Illinois**, in an explosion caused by a windy shot. When the shot firers went down the shaft they found several props on fire and then found the bodies of the two men about 50 yards apart and about 500 feet from the scene of explosion which caused their death.

The Fairbury Mine, Fairbury, west of Duquoin on the Toledo, Peoria and Western Railroad, is delivering about $3,500 worth of coal monthly to the railroad company, all trains stopping there for fuel. Wagon trade is also served. About fifty men are employed.

Madison County Mining Co., at Edwardsville, has resumed operations after being idle for over a week with labor trouble. The men employed at the plant recently went out on strike, claiming inadequate washing conditions in the wash house.

Coal is being hoisted daily from the new shaft of the **Jewel Coal & Mining Co.**, at Du Quoin. The new switch which the Illinois Central railroad has been working on for several weeks is almost complete. Up to the present time the coal which has been hoisted has been dumped on the ground, and as soon as the switch is completed it will immediately be loaded and shipped.

INDIANA

The Indian Creek Coal Co. of Indianapolis, which owns and operates the **S. W. Little coal mine** at Littles, and the Blackburn mine, three miles north of Petersburg, started a large number of men and teams to work recently, grading a switch, two miles north of the city, where it will open the Blackburn No. 3 mine which is to be one of the largest coal mines in Pike county.

The Indian Creek Coal Co. during the last few months has leased hundreds of acres of coal land adjoining the property of the **Pike County Coal Co.**, and the new mine being put down by the Indian Creek Company is just one mile north of the Big Atlas mine, owned by the **Pike County Co.**, which is being equipped to handle more than 5,000 tons of coal daily.

John T. Beasley, member of a Terre Haute law firm and counsel for Terre Haute and New York capitalists, was in Princeton recently taking up leases on 1,100 acres of coal land near Somerville, eight miles southeast of Indianapolis, for which the syndicate paid $25 an acre. One thousand acres more will be taken up in a short time, Mr Beasley said. The capitalists also are interested in the Evansville, Terre Haute & Indianapolis R.R., the old Evansville & Indianapolis line, and the development of the Somerville coal lands is a step toward enlarging the coal-carrying facilities of this road. Work on two shafts is to be started within thirty days.

Indications are that Gibson County will experience a boom in coal mining during the coming year. At Francisco, the **Ayrshire Coal Co.**, operating what was formerly known as the Royal shaft, is building a twenty-four room hotel a block and a half from the mine to house its unmarried employees. Some of the employees of this company live in Princeton and make the fourteen-mile round trip daily by truck.

The Great Lakes Coal and Coke Corporation of West Virginia, with a capitalization of $250,000, has been organized by Indiana and West Virginia capitalists and will have its general offices in Indianapolis. K. C. Adams, publisher of the *American Coal Miner*, of Indianapolis, is president of the corporation. The company has a lease on 1,292 acres of coal land in Boone County, W. Va., on Little Coal river. The acreage is known as the prize lease of West Virginia, owing to the unusual quality of the coal. The company will do an export business largely.

The St. Mary's Coal Company, Terre Haute, the holding company for the **Sanford Mining Co.**, has acquired 500 acres of additional coal land adjoining the 2,500 acres owned by the company a few miles west of Terre Haute. The price paid for the coal was $20,000.

IOWA

A new coal mine near the station of Howell, north of Knoxville, on the Wabash railroad, has been opened by **Lloyd Greenland**, formerly of Knoxville. He has been engaged for the past month in sinking a shaft and has gone through a good vein of coal.

The West Virginia Coal Co., Des Moines, which was awarded a contract to supply some of the city institutions with coal during the next year, has informed Supply Commissioner Thomas that they would not accept the contract and that the deposit of $500 which the company had made the city should be returned. The Board of Standardization, consisting of Comptroller Nolte, the Supply Commissioner and President Kinsey of the Board of Public Service held a meeting following the receipt of the notification and awarded the contract to other companies. The refusal of the West Virginia company to accept the city contract will cost the city of Des Moines approximately $10,000 because of the fact that the contract had to be awarded to the next highest bidder.

KENTUCKY

The Harlan Gas Coal Co., employing about 100 men, has a strike on its hands, which is reported to be resulting from refusal of the company to recognize the union Several other disagreements are reported in the district, with other strikes in prospect.

The Canoe Creek Coal Co., operating inside the city of Henderson, has struck a five foot vein of coal at 194 feet, which is said to be one of the largest struck in western Kentucky. The company is composed of Morgan S. McCormick, Alexander Blair, Jr., and Edward P. Hart.

The Possum Ridge Coal Co. of Boonville, is putting in another switch to the Southern Ry., and a new tipple, spending $100,000 in improvements.

The John Bull mines, operated by the Cypress Creek Coal Co., have closed down for two weeks for repairs, putting 200 men out of work for that period. Other mines in the district are running almost full.

The Consolidated Fuel Co. of Pittsburgh, Pa., have contracted with the Roberts and Schaefer Co. of Chicago, for the installation of a Retarding Conveyor and Marcus Screen to be used in connection with their new tipple at Elsie Mine at Dalna, Ky.

The Victoria Coal Co., owner of the Monarch Mine No. 11 and the Victoria Mine No. 9, both in Hopkins County, a few miles south of Evansville, Ind., disposed of its property to the Hart Coal Corporation, of Madisonville. The consideration was not made public, but it is said it will run into several hundred thousand dollars. Chicago capital is interested in the Hart Corporation, which also owns the Kingston Mine near White City.

The power house of the **Kentucky Cardinal Coal Co**, Harlan, recently burned, resulting in a loss of several thousand dollars. The fire was caused by a hot coal dropped by the fireman.

The Devonian Coal Co., Allen, recently organized, is planning for the erection of a coal tipple at its properties.

The Mossy Bottom Coal Co., Pikesville, has filed notice of an increase in capital to $50,000.

The local properties of **The Elkhorn Co.**, Praise, and the **Peerless Coal Co.** have been acquired by the Kanawha-Elkhorn Coal Co., with headquarters at Buffalo, N. Y. The new owner is planning for extensive development work, and proposes the installation of equipment for this purpose.

Representatives of the **Uniontown Mining Co., Uniontown**, visited Evansville recently to get labor. The mining company has started sinking a shaft near Uniontown. Joseph Steinmetz, in charge of the Federal employment office, sent ten men to work in the new mine and ten more will be sent the first of next week. About fifty men will be employed in the mine. More than 150 ft. of the 300-ft. shaft has been dug.

MINNESOTA

Twin Cities—A report of the government engineers in charge of river improvements on the Mississippi between Minneapolis and St. Paul, points out that the use of the river for navigation of freight barges has not been developed. Minneapolis has shown little interest as no terminal facilities have been provided. Traffic men of Minneapolis, however, say that there is keen interest in the use of the river for freighting, but the terminals could not be provided sooner because of charter limitations. Steps have been taken to remedy this matter.

MISSOURI

The Karr Mining Co., Eugene, is planning for the development and operation of about 10 acres of coal property. Machinery will be installed for this purpose. J. W. Karr is president.

Options on 4,000 acres of rich coal lands have been taken and test holes have been drilled in preparation to the sinking of a large mine near Gillespie, Macoupin County, by the **West Virginia Coal Co.**, of St. Louis. The holes which were drilled in the neighborhood of where the two shafts are to be sunk, showed a nine-foot vein of coal with a solid rock top over it. The mine which is to be located about 2 miles north of Gillespie, will be served by the Illinois Traction System.

NEW MEXICO

The Cherokee and Pittsburgh Coal Co.'s assessment for coal lands was cut from $105,069 to $52,960 by the tax commission as the result of the company's appeal, which alleged its assessment was far higher than that of other companies operating in Colfax County.

NEW YORK

The Mountain Coal Co., has been organized with $50,000 capital stock. It will take over the individual trade of **Thomas M. Byrne**, who is the principal stockholder in the company. Mr. Byrne was formerly Buffalo agent for Thorne, Neale & Co.

NORTH DAKOTA

The Beulah Coal Mining Co., of Bismarck, has contracted with the Roberts & Schaefer Co. for changes in its tipple and hoisting equipment at the mine at Beulah.

OHIO

The Universal Fuel Co., of Nelsonville, chartered recently with a capital of $100,000 has secured a lease on a tract of 300 acres near Murray City which will be developed at once. A switch and tipple will be constructed and it is hoped to be loading coal shortly after the first of the year. Organization of the company has been effected by the election of F. J Iliddle, president; C. S. Graham, secretary-treasurer nnd William Huddy, George Kelly of Pittsburgh and H. H. Orr of Columbus, directors.

The Carrington Coal Co., incorporated several weeks ago with an authorized capital of $50,000, has taken over four mines in the vicinity of Shawnee. Two of the mines were owned by the Pine Hollow Coal Co., and the others by the Carrington Coal Co., a partnership. Charles McMillan of Shawnee is at the head of the company.

The Neff Coal Co. has been chartered with a capital of $50,000 to operate a mine in the eastern Ohio district. Incorporators are E. McFarland, C. Neff, H. A. Neff, A. T. Neff and H. B. Neff.

Papers have been filed increasing the authorized capital of the **Ohio & Kentucky Fuel Co.**, from $50,000 to $100,000.

The mine of the **Hisylvania Coal Co.**, of Glouster, which was flooded several months ago by water breaking through from another working, is being pumped out. At first a pump was installed to throw 6,500 gallons per minute and later a second pump was added. The level has been reduced by about 18 inches and it is believed the mine will be ready for operation about Feb. 1 Special pumps had to be secured as the water was heavily charged with sulphur and thus metal parts soon gave way.

Assistant U. S. Attorney William Ford has arranged to confer with District Attorney Clark at Cincinnati soon over the question of a **grand jury investigation in the southern Ohio field.** It is announced that a number of questions arising from the production and marketing of coal in that field will be presented to the U. S. Grand Jury in December. Special agents of the Department of Justice have made investigations in Ohio and the results will be placed before the grand jury. The next term of court convenes Dec. 7.

The Philadelphia & Cleveland Coal Co., of Cleveland and Columbus, formally took over its storage plant near Groveport, Dec. 1. This plant, which is designed to store about $100,000 tons of coal, has been completed under adverse circumstances, one of which was a strike of electricians. The plant is near the Walnut Creek power plant of the Columbus Ry., Power & Light Co., and is especially designed to take care of the fuel requirements of that concern. Storing of coal at the plant will start at once. Overhead tracks, unloading machinery and other special equipment have been installed.

Three barges containing 1,500 tons of coal, which were part of a fleet of 125 barges, en route to Cincinnati from Point Pleasant, West Virginia, were sunk in the Ohio River at Dam 35, below New Richmond, while in tow of the towboat Katherine Davis. The barges sank when they struck a sand bar in the river, but officials of **Island Creek Coal Co.** at Cincinnati, consignees, expressed the belief that most of the coal would be salvaged. The coal fleet save for the three barges which were sunk arrived in Cincinnati bringing 75,000 tons of soft coal which dealers say is about a ten days' supply of fuel for Cincinnati consumers.

A number of operating companies have been organized in various parts of Ohio recently. Among the number are: The Cadiz-Fairmont Coal Co., Cadiz, capital, $100,000; incorporators, P. Johns, D. W. Salway, L. N. Salway, C. W. Pettey and M. Robinson. The Universal Fuel Co., Nelsonville, capital, $100,000; incorporators, D. N. Postlewaite, J. W. Bricker, R. C. Martin, R. Hade and F. Hauck. The Northwestern Coal Co., Columbus, capital, $50,000; incorporators, C. F. Hively, J. T. Ward, F. E. Callahan, C. R. Fishbaugh and E. M. Petty. The Marcoll Coal Co., Bridgeport, capital, $70,000; incorporators, J. C. Heinlein, D. H. James, J. A. Heinlein, J. E. Fox and F. T. Spriggs. The Cassel Coal Co., Cleveland, capital, $75,000; incorporators, A. F. Baier, D. O. Sawyer, T. G. Brooks, G. F. Frank and E. M. Lewis. The Comerstown Clay & Coal Co., New Comerstown, capital, $150,000; incorporators, J. Murray, H. D. Cusick, S. O. Hughes, W. A. McIntyre and B. F. Bell.

Work on the new mine being developed at Crooksville, near the Tropic mine, by the **New York Coal Co.** is being held up and will not be pushed until spring. A shaft is being sunk to tap a large acreage. It is planned to start work as soon as the weather will permit in the spring

Papers have been filed reducing the authorized capital of the **Derby Coal & Coke Co.**, Columbus, from $100,000 to $25,000.

James Williamson of Columbus will soon open a new mine on the Chapman coal property, located near New Lexington.

PENNSYLVANIA

The Wilbur Coal Mining Co., Johnstown, has contracted with the Roberts & Schaefer Co., Chicago, for a Marcus Screen and Loading Equipment for their No. 6 Mine. Construction work is now progressing and the installation will be in operation within a short time.

The Moshannon Coal Mining Co. of Osceola Mills, Pa., has contracted with Roberts & Schaefer Co. of Chicago, for the installation of additional conveying equipment to be used in connection with their No. 11 Tipple.

Two thousand six hundred acres of coal lands in the Scotch Valley, near Hazleton, formerly owned by Charles McCaffrey, have been disposed of to an organization in New York. It is understood the new owners are planning for the development of the tract.

The fire on Nov. 15, at the mine of the **Uniontown-Connellsville Coal Co.**, Brownsville, caused a minimum loss of $1,000,000 and forced over 200 operatives out of work. The cause has not been determined.

The Ridgeview Coal Co., Bolivar, will defer the erection of its proposed new housing development until early in the coming year. Plans have been completed for the erection of an initial unit of 15 two-story houses for miners' use. J K. Johnston is in charge.

The Federal Foundry Supply Co., North Charleroi, Pennsylvania, will build a new coal crusher in connection with its proposed local plant on property recently acquired at North Charleroi.

The Philadelphia & Reading Rd. Co., Philadelphia, will build a new coal pocket at Tulip and Somerset Streets to cost about $12,000.

The East Brady Coal Co. is opening an additional mine on its property at the mouth of McGee hollow in Madison township, Clarion County, and building tipple and trackage to accommodate the output.

The J. H. Hillman interests, Pittsburgh, are increasing their coal holdings in Greene County. The interests have just acquired a tract of 288 acres just outside Waynesburg from the Ezra Sayers estate. The Hillmans bought approximately 1,000 acres in that section some six month ago

T. P. Burns has started the installation of an extensive coal plant on Pergum Hill, near Nant-y-Glo, Cambria County, where he has located a rich seam. The mine is expected to be one of the biggest producers in the Nant-y-Glo field.

TENNESSEE

Attorneys for the **Pleasant Valley Coal Co.** and the Guaranty Trust Company, requested the court to dismiss the appeal of Truman A Ketchum from decision of the Circuit Court of Appeals, 8th circuit, wherein Ketchum lost his claim to title to 160 acres of coal land in Utah. The coal company contends the decision of the Court of Appeals is final and that the Supreme Court is without jurisdiction to review the case.

VIRGINIA

The Tomb Coal Co., organized with a capital of $25,000, has acquired 80 acres of coal property at Raven and arrangements are being made for its development with a daily capacity of about 70 tons. W. J. Tiller is construction engineer.

WASHINGTON

A large force of men is now prospecting and opening veins on the 120 acres of coal land on the north fork of the Newaukum about 12 miles east of Chehalis which the **Balcuna Coal & Coke Co.** of Raymond has purchased through the **Big Four Land Co.** One vein is a 15-ft vein which lies near the surface. There is said to be a large quantity of coal in this section of a sub-bituminous grade which the owners and promoters claim is the best of its kind discovered locally, and which can be mixed at a low expense.

In announcing the placing on the market of a semi-anthracite product, the **Carbonado Coal Sales Agency**, Seattle, declares that it has found that its mines are unique in the history of the country, as they comprise the only mining property in the United States which produces two distinct kinds of coal, bituminous and semi-anthracite.

Dr Bailey Willis, Stanford University geologist, recently completed a survey of the Carbonado mines, and declared the quantity and quality of the deposits unusual.

WEST VIRGINIA

The Carter Coal Co. of Coalwood will proceed at once at the Olga Mine with the installation of a 4-track steel tipple which will be complete with Marcus screens and shaker loading booms.

The Buffalo-Eagle Colliery Co. of Braeholm, Logan County, is building a power house of 40 x 120 ft. which it expects to have completed by February. The power house will be equipped with 2,500 kw. G E. Turbo units, and 2,500 hp. battleship boilers of high efficiency.

The Matta May Coal Co., Williamson, is planning for the rebuilding of its drum-house, recently destroyed by fire, caused by an explosion.

The Eagle Coal Co., Eagle, is planning for the development and operation of property at Montgomery, recently acquired for a consideration of about $40,000.

The Raleo Coal Co., Beckley, recently organized, is planning for the erection of a coal tipple at its local properties. The company has a tract of over eighty acres of land and plans for extensive operations. M. B. Hoffman is president and general manager.

The Climax Coal & Lumber Co., Buckhannon, is planning for the installation of machinery for the development and operation of its local coal properties. The equipment will include a number of mining cars.

Windsor Coal Co., Beach Bottom has arranged for the immediate erection of a two-story machine shop, 52 x 142 ft., to cost about $50,000.

The Carbon Fuel Co., Carbon, is planning for the rebuilding of its head-house, recently destroyed by fire with loss estimated at about $75,000, including equipment.

The Porters Block Coal Co., Porters Creek, recently organized with a capital of $50,000, is planning for the erection of a new tipple at its properties in this district. A number of mechanical buildings will also be erected, including pump house, fan room, and general machinery department. The company has a tract of about 600 acres of land, and will develop an initial monthly output of about 100 tons. At a later date, this capacity will be doubled. Headquarters have been established at Huntington, W. Va.; David Metheny is president, and W. W. Smith, secretary.

The Main Island Creek Coal Co., Omar, which owns over 30,000 acres of coal land in the famous Logan Field of West Virginia has just completed twenty new houses for its miners at Stirrat.

Memos Kester, one of the Greek miners of the Company, earned over $308.00 in two weeks time a short while ago, loading coal in Mine No. 4.

ALBERTA

It is estimated by the Government mines branch that **Alberta's coal production** for 1920 will be 30 per cent in excess of last year's. A total output of over 6,500,000 tons is expected, as compared with 5,000,000 tons in 1910

NOVIA SCOTIA

The output of the mines of the Dominion Coal Co. for the month of October amounted to 272,283 tons as against 263,809 tons for the month of September, and 279,964 tons for the month of October, 1919.

Association Activities

Harlan Coal Operators' Association

Through discussion of the car shortage, steps to better existing conditions in the Harlan field and the election of officers for the coming year were the events of a meeting of the association, held in November.

Officers elected were: president R. C. Tway, president of the R. C. Tway Coal Co; vice president, B. W. Whitfield, head of the Whitfield interests, and secretary, E. R. Clayton. The board of directors named during the meeting is composed of R. W. Creech, S. V. Preston, W. A. Ellison, E. Guthrie, P. E. Bennett, G. H. Marting and J. C. Stras.

Traffic News

The appeal of the Republic Iron & Steel Co. from the decision of the Alabama Supreme Court to the U. S. Supreme Court of the former's decree validating the iron ore and coal tonnage tax has been withdrawn. The Republic company made a test case of the legislative act of 1919 imposing this tax on iron ore and coal mined in the State, and the Alabama Supreme Court sustained the lower court, holding that the tax was in the nature of a privilege or franchise levy and therefore did not constitute double taxation as set out by the plaintiff. It was stated at the time this tax was incorporated in the general revenue law that it was a measure for temporary relief for the State treasury, and its collection will probably be discontinued with the passing of conditions which caused its enactment.

The I. C. C. has denied, effective March 1 next, **the application of the Illinois Central and Yazoo & Mississippi Valley R.R.** for authority to continue rates on bituminous coal, bituminous coal briquettes and anthracite coal from and to points in Alabama, Arkansas, Illinois, Indiana and other contiguous States, without observing the long and short haul provision, on the ground that sufficient justification was not shown.

C. F. Giles, of the L. & N. R.R. at Louisville, has announced that orders for 2,000 steel gondolas have been placed on deliveries will start Jan. 1, at the rate of 50 cars a day The total cost will be over $5,000,000.

The Illinois Central RR. has announced that it received 1,000 new cars prior to Nov. 1, and that 1,150 are undr construction.

L. & N. R.R. Development—In order to facilitate coal shipments from the rapidly developing Harlan County field, the Louisville & Nashville will make $2,000,000 improvements at Baxter, in the southern section of Harlan County. This will consist of a roundhouse, a coaling bin and thirty-five or forty miles of additional side tracks. It is expected that this work will be launched soon after the first of the year

Alleging that orders of the special coal and food commissioner of Indiana for the delivery of coal by the **J. K. Dering Co.** to dealers in certain Indiana cities constituted an interference with the company's business, the company has filed suit in Circuit Court of Vigo County, Indiana, asking that the commissioner's order be declared void and set aside. The Dering company is an Illinois company, but it owns two mines in Indiana, the complaint sets out. The company says it had contracts with dealers and utilities inside and outside the state for the purchase of the coal produced at these two mines up until March 31, 1921, and these contracts called for all the coal it would be possible to produce in the two mines in that period. The company has contracted to deliver 372,312 tons of coal to points outside the state and 105,725 to points within the state, it is alleged.

The Interstate Commerce Commission has suspended until March 28 next the operation of schedules on the Louisville & Nashville R.R. which provide for a uniform increase of 20c. per net ton in the rates on coal from points on the Cumberland R.R. to points on the L. & N. in Alabama, Georgia, Illinois, Indiana, Kentucky, North Carolina, Ohio, Tennessee and Virginia, and on connecting lines in Kentucky and Tennessee.

Personals

E. Kelly Dowocy, former manager of the coal department of P. Nicoll & Co., has been appointed general manager of sales by Dexter & Carpenter, Inc.

Fred W. Virgien has resigned his position with Whitney & Kemmerer to become assistant manager of the New York office of the Producers Fuel Co.

Walter S. Morgan, of the Rutledge & Taylor Coal Co., who has heretofore been salesman out of the St. Louis office of the company, has recently been transferred to the Chicago offices of the company.

Richard H. Williams has been re-elected a Class B director of the Federal Reserve Bank of New York, for a term of three years beginning on Jan. 1. Mr. Williams is senior partner of William & Peters, wholesale coal dealers at No. 1 Broadway. He is a director and member of the executive committee of the Equitable Life Assurance Society, a director and member of the finance committee of the Atlantic Mutual Insurance Company, and a director of a number of other corporations.

H. I. Smith, a coal mining engineer formerly with the Bureau of Mines, has returned to the service of that bureau after having served in Serbia as a member of the American Commission to that country. It is probable that Mr. Smith will be sent to Denver as an inspector of coal land leases.

E. C. Pratt and brother, **B. A. Pratt**, of the Republic Coal Co., Minneapolis, have secured a tract of land in Cass County, Texas, which they propose to develop for iron ore.

The lately organized Maxim Coal and Coke Corporation of Buffalo has elected the following officers: **L. P. Zimmerman**, president; **F. A. McCarthy**, vice-president; **D. J. McCarthy**, secretary and treasurer. The active members were formerly connected with the North American Coal & Coke Corporation.

A. F. Harper, formerly Mining Engineer with Sloss-Sheffield Steel & Iron Co., Birmingham, Ala., has been appointed Superintendent of the Ruffner Ore Mines Division of the same company at Irondale, Ala.

Miss Aoifa R. French has been appointed comptometer operator in the coal section of the division of mineral resources, Geological Survey. She was formerly with the Treasury Department and spent nearly two years overseas with the A. E. F.

Ray S. Liozee, for over twenty years a member of the First Bank & Trust Co., of Duquoin, Ill., has announced his resignation from that institution to become connected with the Jewel Coal & Mining Co., of St. Louis, in its Duquoin offices.

Arthur Neale of the Pittsburg Coal Co., operating in Illinois now owned by the Illinois Coal & Coke Co., has left for Pittsburg, Pa., where he will be assistant general manager of the Pittsburg Coal Co.

Fritz J. Frank, vice president of the Iron Age Publishing Co., has been elected president of that company, following the resignation of William M. Taylor, who has been president and general manager for more than ten years.

A. K. Morris who has recently assumed the duties of Vice-President of the Pennsylvania Coal Co., having resigned as coal traffic manager of the Erie Railroad Co., was connected with the local office of the Federal Fuel Administration during the war. Mr. Morris will make his headquarters at Dunmore, Pa.

The space occupied by W. A. Marshall & Co. on the 8th floor of 25 Beaver St., New York City, has been increased by the addition of two large rooms. The export department, in charge of **F. J. Kerner**, will occupy the additional space. **Clarence W. White**, who was formerly connected with Madeira, Hill & Co., at 113 Liberty street, is now a member of the bituminous Tidewater staff of Marshall & Co.

George W. Conners, S. L. Yerkes and **W. C. Adams** have been appointed a committee of the Alabama coal operators to raise funds to defray a substantial portion of the $37,500 required for the purchase of the site of the $400,000 coal terminal at Mobile.

P. C. Sullivan has been appointed Fairmont representative of the Equitable Fuel Co. of Baltimore.

Gordon B. Late has been named as the Fairmont representative of the Seaboard Fuel Corporation of Philadelphia.

W. E. Guller, formerly chief engineer for the Shoal Creek Coal Co. at Panama, Ill., has accepted a position with the Donk Bros. Coal & Coke Co. as chief engineer and assistant general superintendent. Mr. Guller will make his headquarters in Edwardsville, Ill.

H. S. Drake, formerly with the Clarkson Coal Mining Co., Cleveland, Ohio, has joined John Mahony & Co., Certified Public Accountants, of Illinois, as manager of their Des Moines office in charge of business in Iowa.

Industrial News

Nashville, Tenn.—The Nashville Industrial Corporation, composed of business men of Nashville, have purchased from the U. S. Government the "Old Hickory" Powder Plant at Jacksonville, located 12 miles east of Nashville, on the navigable Cumberland river. The purpose of the Nashville people is to industrially develop this immense war undertaking into a large manufacturing center, having available immense housing and manufacuring buildings and facilities.

Toledo, Ohio—The Central West Coal & Lumber Co. of Columbus has opened a branch office at 730 Nicholas Building, with A. B. Wilson in charge as manager.

New York, N. Y.—The Central Pocahontas Coal Co., has removed its main office to 32 Broadway.

New York, N. Y.—The West Penn Fuel Co., Inc., announces the opening of a New York office, Suite 810, No. 150 Nassau St., district manager, Frank W. Casler.

Coming Meetings

American Institute of Mining and Metallurgical Engineers' annual meeting will be held in New York, Feb. 14 to 17, 1921. Secretary, Bradley Stoughton, 29 West 39th St., New York City.

The Wholesale Coal Trade Association of New York, Inc., will hold its annual meeting in New York City, Jan. 18, 1921. Secretary, Charles S. Allen, 90 West Street, New York City.

American Society of Civil Engineers will hold its annual meeting Jan. 19 and 20, 1921, at its headquarters, 33 West 39th St., New York City. Acting secretary, Herbert S. Crocker, 33 West 39th St., New York

American Statistical Association will hold its annual meeting Dec. 29 and 30 at Atlantic City, N. J., with headquarters at The Chalfonte. Secretary, Robt. E. Chaddock, Columbia University, New York City.

American Economic Association's thirty-third annual meeting will be held at Atlantic City, Haddon Hall, Dec. 27-30. Coal papers will be read at the Monday evening session, starting at 8 o'clock and Tuesday morning at 9:30. Secretary, R. B. Westerfield, Yale University, New Haven, Conn.

Recent Patents

Grease Cup.—Eli W. K. Burg, Toledo, Ohio. 1,348,362. Aug. 3, 1920. Filed Dec. 12, 1917. Serial No. 206,827.

Conveyor.—W. J. Voelker, Waterloo, Iowa. 1,348,671. Aug. 3, 1920. Filed June 2, 1919. Serial No. 301,166.

Pulverized Fuel-Burning Device.—John Dickson, Vancouver, Wash., 1,349,148. Aug. 10, 1920. Filed July 28, 1917. Serial No. 183,341.

Mine Pulley or Roller.—James Boyd Anderson, Philadelphia, Pa., 1,349,183. Aug. 10, 1920. Filed Feb. 3, 1920. Serial No. 356,087.

Separator for Treatment of Coal, Clays, Ores and the Like.—John M. Draper, Bridgend, Eng., 1,351,234. Aug. 31, 1920. Filed Feb. 4, 1919. Serial No. 274,836.

Squirrel-Cage Winding Construction.—Nathan Wilkinson, Milwaukee, Wis., assignor to Allis-Chalmers Mfg. Co., Milwaukee, Wis., 1,351,270. Aug. 31, 1920. Filed Aug. 27, 1914. Serial No. 859,121.

COAL AGE

The Weekly Journal of the Coal and Coke Industries

Volume 18 NEW YORK, THURSDAY, DECEMBER 23, 1920 Number 26

Getting Down to Business

COSTS of production, quality of product and service are the interrogation marks the coal man sees where'er he turns today. From now on it is not merely a question of mining and shipping coal but of mining good coal, shipping it clean and selling it to advantage. As one of our correspondents notes, the day of the real coal man has returned, and the amateur must needs begin at the bottom and learn the business.

The return of competitive conditions augurs well for interest in association work in problems of cost accounting, in freight rates, and other matters of common interest. In the last three years there has appeared a new crop of coal men whose ability to stay in the business depends entirely upon the diligence with which they study their problems. There are times when coal is just plain dyed mud; there are times when coal is coal, but more often coal is merchandise—all of which is another way of saying that the market is sometimes excellent, sometimes indifferent and more often poor.

When the demand for coal is so strong that ordinary rules of doing business go by the board, the trade is withal profitable but fraught with political pitfalls—as this year, when the industry is threatened by politicians with some unknown form of harness because of high prices. It is to be assumed that common sense will somehow prevail at Washington this winter and that what the coal industry has next to face is not Federal intervention in the form of fixed prices but an unrestricted supply and a market that is easy—a restoration of the working of the law of supply and demand brought about by the bridging of the space between mine and furnace by ample transportation.

Making Improvements in the Off Season

FEW industries in the United States have had their activity so nearly sustained to the close of the calendar year as coal. The slump in many lines began in the late summer and had reached the bottom by the beginning of December, but bituminous coal production has not as yet suffered as it will later when all consumers are satisfied. In consequence the coal industry will close the year in satisfactory shape, with little if anything to be "written off" in inventories. It is assumed that the coal producer was not embarrassed in meeting his Federal taxes on Dec. 15, but next March, when the first installment of 1920 taxes fall due, he may be in a somewhat different condition, unless he has laid by a surplus from this year's earnings.

It is generally recognized as good business to spend money in off periods of industrial activity for development and works of improvement. Expansion of the capacity of bituminous coal mines in 1920 was great but it was largely gained by the opening of numerous small high-cost properties. Operations of this type cannot exist when prices approach the cost of production of the larger or better-equipped properties, and in fact are today rapidly going out of business because they have ceased to be bonanzas.

But the average production of 530,000,000 tons of bituminous coal for the last five years and 550,000,000 tons this year cannot have been accomplished without exhausting many coal-mining properties and greatly depreciating the equipment in the remaining operations. No less than 200 commercial mines must be opened each year to maintain output at its present figure. Despite the present dull outlook in industrial and railroad coal business, these new mines must be opened and developed during the coming year.

As an industry deserving the consideration of financiers coal has made notable progress since 1914, evidence of which is to be had from many quarters. The next six months, no matter what the spot price of coal, will witness steady development of old and new mines. It is good business to use any idle time offered by lack of orders for coal in perfecting the machine for the next spurt. Trained and desirable labor can thus be held and given at least earnings sufficient for existence. It is fortunate that the coal industry is in position to finance such a period of dullness as is in prospect and to be able to invest for future use a part of the earnings of this year.

The Calder Report

STRIPPED of repetitions and inconsequentials as well as of pure diatribe, the Calder report may be summarized as a conclusion that "the private interests now in control of the production and distribution of coal, in spite of efforts by some, are actually unable to prevent a continuance or a repetition of the present deplorable situation and that it is the duty of the government to take such reasonable and practical steps as it may to remedy the evil." Turned aside from its legitimate field of investigation into the evils of the building industry by the alluring headline value of attacks on high prices for coal, this committee has attempted to tell Congress that something is grievously wrong with the coal industry, without itself seriously studying the industry.

In the first place the committee takes no cognizance of the fact that the "present deplorable situation" has been already largely cured; that prices, particularly of bituminous coal, are again low; that the comparatively small percentage of producers of anthracite who were collecting exorbitant premiums on their small outputs have been compelled by the law of supply and demand to lower prices; that no one has suffered from cold because of lack of coal, and that the country is well stocked and is fast losing interest in scare-head stories about the "coal barons."

The admission that the men in the industry "are actually unable to prevent a continuance or repetition" of the conditions the Senator deplores likewise is an admission—not intentional, of course—that the coal men were not responsible for any of those conditions.

Refusing to accept the fundamental fact that the high prices of bituminous coal of last summer were effects and not causes, and that the cause was lack of transportation, the report of the Senate Reconstruction Committee attacks the granting of priority orders to coal by the Interstate Commerce Commission and charges that profiteering was the result of such orders. Not a word is said about increasing the transportation facilities of the country or recognition of the fact, as shown by evidence presented to the committee, that the priority orders simply permitted coal to have its fair share of transportation. Nor does the report distinguish in any manner between anthracite and bituminous coal, the conditions surrounding which, as regards production, distribution and cost, are as different as night from day.

We fail to find in the report of the committee reference to the real cause of the high prices of anthracite—loss of production through labor strikes—nor does the remedy proposed by the Senators make provision for preventing losses to the public from this cause.

After all the fireworks Senator Calder and his assistant, F. T. Miller, have let off during the last summer and autumn they finally conclude not that there be Federal regulation or control, but that all producers, shippers and handlers of coal be required by Federal statute to file reports of all their business transactions for "possible use by the Department of Justice and other governmental agencies" in eliminating "prevailing evils as to irregularity of deliveries, inferiority of quality, profiteering in prices, and undue monopoly of transportation." Federal licensing is suggested as an extreme remedy.

With the arraignment of the looseness with which coal contracts are held, we are more sympathetic. In large measure operators and shippers are warranted in protecting themselves in their contracts from loss of production through poor car supply, but entirely too many shippers during the season just past found too many ways to dodge their obligations, when it was to their gain, to enable the industry as a whole to uphold as perfect or even as the best possible form the present practice of doing business. But the Calder committee makes no mention of correcting this evil by having the government—whose "inherent responsibility" is proclaimed in protecting the people from unfair prices and broken contracts—insure an ever-present car supply for the mines and thus remove the only joker in the coal contract.

The Senate Committee on Reconstruction and Building having spent so much of its valuable time and our money on coal, it is hoped that some work may yet be done on the question of profiteers and graft in the building trades. However, a committee as prejudiced against the coal producers as this one may well be suspected of being as prejudiced in favor of the producers of buildings. If nothing more constructive for the building industry can be suggested than has been presented for coal, this committee may well be discharged.

Full Day's Runs

PERHAPS no greater source of gratification to a mine worker can be given than the assurance that any promise made of a full-day's run will be kept by the management. Hitherto there always has been a doubt of the truth of the promise made by an executive when he displayed the placard "Work tomorrow at Mine 16" or some like notice. This doubt always remained unless a string of empty cars—enough to permit of a day's run—was seen above the tipple.

Too often there was nothing but the promise of the railroad to supply the cars, and when the next morning came, the cars were not in sight, and the operator's representative was compelled to keep track of the slow progress of the train which was to bring him the means of operating his mine. A derailment, the pulling of a brake rigging, a long wait at a passing point, a heavy fall of snow or a slide often delayed the railroad train, and nothing remained finally but to close the mine for that day. Sometimes the incoming locomotive failed to bring to the local switching engine the promised number of cars and someone went short or all the mines on the branch failed to receive the quota promised.

In other cases the mine ran, but the quota was unequal to a full-day's run, or again some cars might contain frozen manure, ashes, road material or snow, or might need repair, and a delay was caused that either kept the men idle below ground or caused all of them to start for home, discontented and disappointed.

At some mines today a sufficient storage is maintained so that when the bins are empty over the night which precedes a running day, a promise to run may be made with certainty that it will be fulfilled—cars or no cars—provided, of course, that there is a market for run-of-mine or that the coal can be run through the screens from storage. Men then do not wait to see cars above the tipple, but enter the mines to fill the storage bins. Many a mine is closed down because, owing to uncertainty as to the prospects, enough men abstain from going to work to make operation extremely unprofitable.

Moreover, with such storage, work can go on, no matter how annoying may be the delays from cars improperly cleaned or out of repair. It is not necessary to run such cars below the tipple. While they are being cleaned, the mine can be run to storage, and the same resource is available should a derailment hold up work, or screens have to be changed, or an elevator play out in the washery.

The steadiness of run is a source of profit to the operator. He gets more and better men; he is apt to get a fuller quota when he does run; he has no two-hour allowances to pay for daymen awaiting cars; his organization continues to function smoothly; he stands well with the railroad because he can always be relied on to fill promptly the cars that are delivered to him and because he never runs cars through the tipple to be shifted back into line. If cars come in late on Saturday, they can be filled readily for the Sunday crews, and Sunday often is the busy day on the main line. The provision pays dividends and creates satisfaction all around. It is cheaper to store coal in big bins than in mine cars, for the latter are, of course, the most expensive of all storage receptacles, and coal is likely to freeze in them.

At some mines only slack is stored or at least the bulk of the piles are of that class of coal. Then when cars are few the lump and nut orders can be filled and the slack stored. There are various forms of day-to-day storages. They are expensive in first cost, but they pay well in dividends and in satisfaction.

Accessibility, Convenience and Cleanliness Make This Machine Shop Efficient

Plenty of Light, an Arrangement That Precludes Lost Motion in Operation, Adequate Equipment and Neatness Continuously Maintained Render Possible the Performance of Excellent Work with Minimum Effort on the Part of the Workmen

By Dever C. Ashmead
Wilkes-Barre, Pa.

MACHINE shops at coal mines usually have such a haphazard arrangement that they do not lend themselves to description. A glance at the arrangement of the shop shown in the accompanying illustrations, however, reveals that much thought has been taken in its design. Each department is placed so that it can give the greatest degree of co-operation to the work of the others, and do it with a minimum expenditure of effort.

This machine shop is located near Hazleton, Pa., and is the property of the Cranberry Creek Coal Co. It was designed with two main purposes in view; first, the maintenance of the locomotives and, second, the upkeep of the mine cars. But, of course, any equipment which may be damaged anywhere around the mines comes to this plant for repair. At this mine 300 steel mine cars with Hyatt roller bearings are in use as well as 700 old-fashioned wooden cars. Twelve narrow-gage locomotives are used on the surface as well as four of standard gage. In the mine two 15-ton Goodman electric locomotives are employed as well as two 8½-ton machines, one of which was built by the Goodman Manufacturing Co. The coal company also employs eight 5½-ton Ironton storage-battery locomotives and one 6-ton Mancha.

Fig. 1 shows the exterior of the combined shops. The frame, including the roof trusses, is of wood. The walls proper are of Hy-rib lath covered with stucco. The roof is covered with asbestos roofing made by H. H. Robertson Co. Plenty of light is furnished by the many windows on all sides of the building. This is shown not only in the frontispiece but also in the plan of the building, Fig. 4.

Determining the Position of Departments

The interior arrangement is interesting. At one end of the building the mine cars enter, and the other end accommodates the locomotives. This keeps the two distinct types of work separate, and therefore determines the position of the machine and carpenter departments. Naturally the mine cars require more carpenter work than the locomotives. Accordingly this department is located near the point of entrance of the mine cars. The locomotives, on the other hand, require more work from the machine shop, and as a result this shop is near the end of the building that is devoted to their repair. In many instances, however, machine work must be done for the mine cars and carpenter work on the locomotives. As a result a connecting track is laid between these two departments which permits a locomotive to be sent from the machine shop to the carpenter shop and vice versa, without the necessity of leaving the building.

As the blacksmith shop has to do work for both

departments, it is properly placed between them, so that it is readily accessible to either. This permits the moving of parts a minimum distance, reducing the number of unnecessary steps that otherwise would have to be taken were this department located elsewhere.

One subdivision in the car shop is of interest. As a number of mine cars are built of steel, the car-repair shop is divided into two sections, and the repair work on the steel cars is done in the portion of the car-repair department most remote from the mine-car entrance. This places this type of car as near as possible to the machine and blacksmith shops. The locations of all of these departments are shown on the plan of the building, Fig. 4.

FIG. 2.

Carpenter Shop

In the right background may be seen a portion of the blacksmith shop, showing how closely these departments come together. Such compactness lends itself to ease of operation and consequent efficiency.

Needless Travel by Men Is Eliminated

To take up the details of the various departments: In the north end of the building, to the left as one enters, is the electrical shop. As most of the electrical work on the locomotives is done underground, this shop is located nearest to the slope, with the result that the distance the men have to travel back and forth to their work is reduced as much as possible. Of course, all the armature winding is done in the shop itself and not below ground. Besides this, this department maintains all the electrical equipment at the plant. On the occasion of my visit, this shop had not yet moved into the main building, but at the present time it is doubtless in the quarters prepared for it.

Immediately to the rear of the electrical department is the carpenter shop shown in Fig. 2. The equipment consists of the following: One Fay Eagan hub mortiser and drill, one Oliver universal saw and one 48-in. grindstone. Power is furnished by a 40-hp. Fairbanks-Morse motor.

To the right of the electrical shop as one enters the building are the repair tracks for the mine cars. As will be seen in the plan, large pits are provided so that men can, when necessary, work underneath the cars. A traveling crane is so arranged that the lifting of heavy parts by hand is reduced to a minimum. These repair tracks extend past the electrical shop and to the end of the carpenter shop, where the space allotted to the repair of steel mine cars is located. As the blacksmith department has to do much work for these cars, the section devoted to their repair is made readily accessible to the blacksmiths, who are located on the left-hand side of the building immediately to the rear of the carpenter shop. In the steel-car shop, as it might be called, a riveting forge has been installed, so that it is unnecessary to heat the rivets in the blacksmith shop.

FIG. 1

Interior of Blacksmith Shop

At the right may be seen the steam hammer. Such hammers are by no means as common in mine repair shops as is desirable. They may be made to do much of the medium to heavy forging.

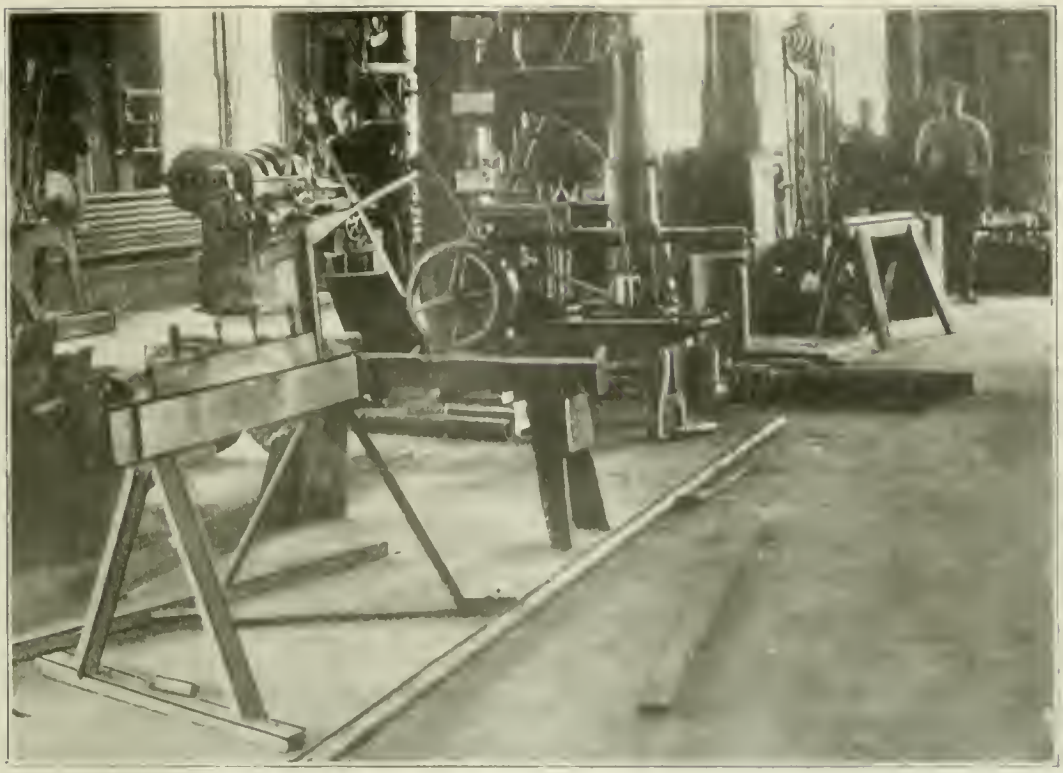
The blacksmith shop has four large forges, one placed at each corner of the department. Located conveniently, in approximately the middle of the shop, is an 800-lb. Sellers steam hammer. Fig. 1 shows this hammer as well as two of the forges. In Fig. 2, to the extreme right, at the rear, can be seen the same two forges, showing how close the carpenter shop adjoins that provided for the blacksmiths.

Immediately to the rear of the blacksmith shop is the machine shop, the interior of which is shown in Fig. 3. The equipment of this department is excellent, capable of handling almost any work that is required about the mine. The following is a list of the machinery installed in this shop: A 16-in. Pond lathe (old), a 26-in. Maine electric lathe, a 26-in. W. F. & J. Barnes post drill, a 100-ton Watson-Stillman portable wheel press, a 48-in. radial drill, a double 18-in. emery grinder, a 1½-in. National Machine Co. bolt machine, an 18-in. Atkins Kivit Kut power saw, a No. 9 and a No. 6 Victor pipe machine, cutting threads on pipe from ¼ to 8 in. in diameter, a 26-in. shaper, a punch and shears, and an Ox-Weld welding and cutting outfit. The large radial

FIG. 3

Machine Shop

Equipment of this department is such that few jobs coming to the shop are beyond its capabilities. An autogenous welding outfit is part of the equipment.



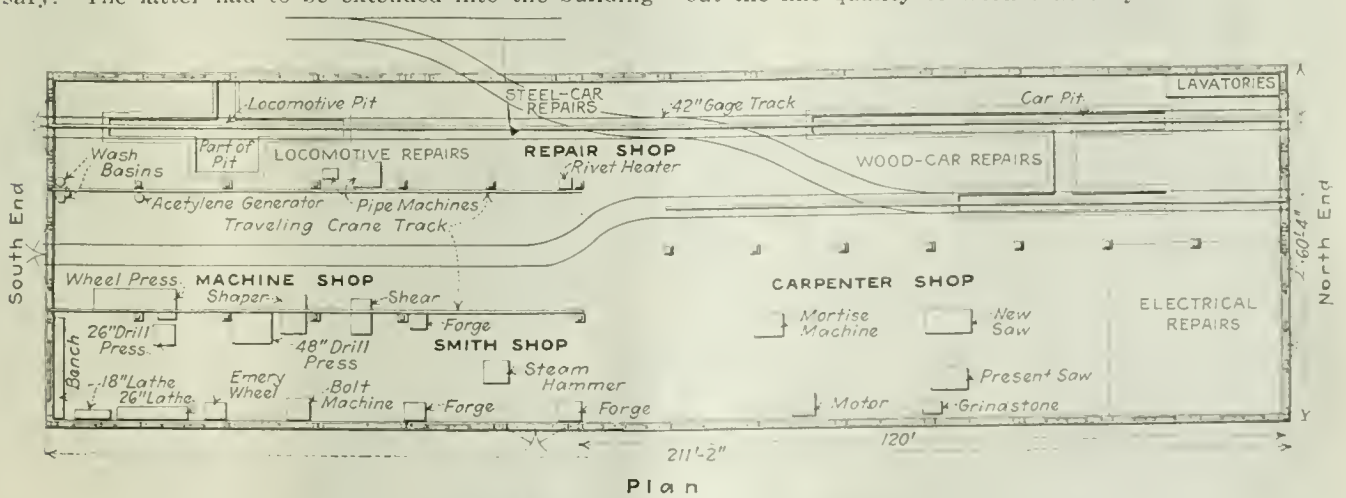
drill has a pit beside it, so that long work can be handled. Acetylene for welding and cutting is made as required in a generator having a capacity of 50 cu.ft.

Immediately across the building from the machine shop is the locomotive-repair department. Here a large pit has been built under the track, so that the men can have plenty of room while working under a locomotive. As will be seen from Fig. 3, all the machines that require a large amount of light in their operation are placed near windows. This permits the men to do the best work possible. A traveling crane operated by hand spans the central bay and may be traversed the full length of the machine shop, permitting the handling of heavy equipment with minimum manual labor.

Several changes have been made from the original design. At first it was considered desirable to place narrow-gage industrial tracks throughout the building. This plan was abandoned, and the mine-car tracks have been run wherever they were believed to be necessary. The latter had to be extended into the building regardless of the use of industrial tracks, and the omission of the narrow-gage roadways prevented an unnecessary duplication.

It will be noted in the plan of the building that the track arrangement is now made so that any one of the departments is readily accessible from any other. Lavatories are placed at one end of the building, while at the other end a washroom has been installed. Looking at these interior illustrations of the different departments, it will be noted how exceptionally clean the floors are kept. These pictures were made at a time when the foremen were not expecting or anticipating that photos would be taken, so that the condition shown is not exceptional.

With plenty of light, a clean and attractive place to work in, departments so arranged that the men do not have to take unnecessary steps in the prosecution of their tasks and with the excellent equipment furnished, it is no wonder that the men here employed can turn out the fine quality of work that they do.



Plan

FIG. 4. SHOP ARRANGED SO AS TO SAVE UNNECESSARY STEPS

Shops at coal mines are side issues and in consequence they do not get the attention they deserve. Machines should be put as near as possible to the work they have to perform so as to shorten the time consumed in completing the work.

Why America's Export Coal Business Should Be Built Up—II

Overseas Coal Trade's Share in Great Britain's Maritime Success Cited in Emphasizing the Importance of Foreign Commerce in Coal —Fleet of Colliers Called Backbone of British Shipping Industry

By Erich W. Zimmermann, Ph.D.*

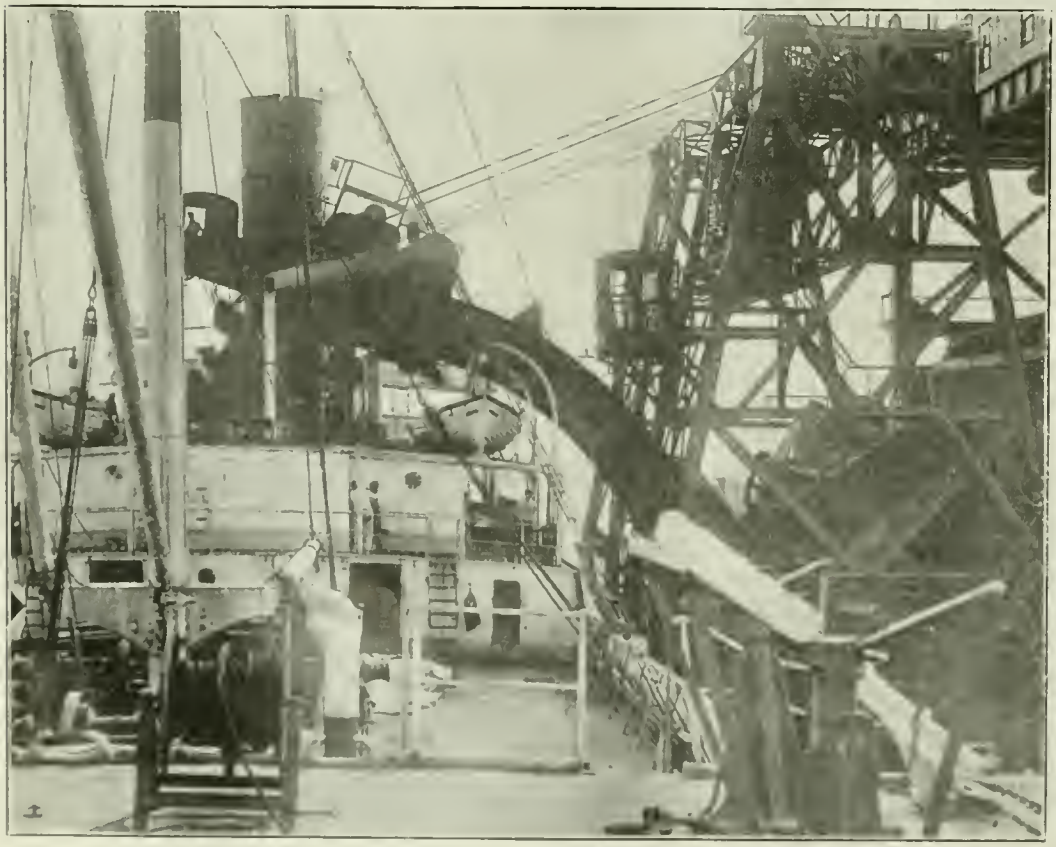
DEFENSE of coal exports against certain charges was contained in the preceding part of this article. We have shown that the exportation of coal is not as bad as many try to make us believe. But to say that coal exports are not bad is to stop half way. The full truth is that coal exports are good. A strong coal export trade is a valuable asset for any maritime nation, but particularly for a country which is just about to regain a footing in the keen rivalry for ocean shipping.

It is this connection existing between coal exports and maritime success which makes a careful analysis of our position in the international coal trade of the world so important at this particular juncture of the country's history when we hope to regain our place on the seas, lost when the sun set upon the supremacy of the clipper ship. As a nation we are not yet "ship-minded." We have to learn a great deal, and particularly in trying to form an opinion and to pass judgment upon the merits and demerits of as complex a problem as that offered by coal exports we shall do well to study carefully the experiences of other nations whose lot it was to antedate us in the matter of coal exportation. Among these nations Great Britain is in a class by herself. We therefore ought to familiarize ourselves with the views which enlightened Britishers have formed concerning coal exports—views based upon decades of experience—and then see to what extent we can apply to our own situation the lesson which they have to teach. Of course, it is taken for granted that we cannot slavishly imitate—apply without modification. Never is the case of one nation exactly the same as that of another.

We begin our discussion with several statements made by British thinkers on the subject of coal exports:

"The fleet of colliers is the backbone of England's shipping industry; the remaining branches of our seaborne commerce are but the offshoots of the coal trade. Our entire merchant marine trading with countries east of us, such as Norway, Russia, France, etc., and to a lesser degree the vessels going to the West Indies, are but a part of our coal fleet, which they leave for a voyage or two during the year when market conditions abroad or freight rates warrant their doing so. The coal trade is indeed the refuge and mother of our shipping industry."

*Professor of Commerce, the James Milliken University, Decatur, Ill.



Coal Loading at Charleston

A close-up of coal-loading machinery in action on the Charleston waterfront. The hoist is swinging over one of the hatches of a ship preparatory to filling the hold with coal for export. The machinery picks up railway cars and dumps them into the chute as easily and as quickly as you would pick up a hand scuttle and empty its contents into an open grate.

Photo by Irving Galloway.

This was written in 1699, or 221 years ago. We found it in a pamphlet entitled "The Mischief of the Five-Shilling Tax Upon Coals," which we unearthed from among the treasures of the library of the British Museum. We see that the question of the desirability of coal exports is an old one. About a hundred years later Adam Smith in his famous treatise "The Wealth of the Nations" argued against hindering coal exports, as he considered it unwise to "restrain the export of the instruments of trade."

But we live in the twentieth century and are more concerned with what people think today. During the war the far-seeing British Board of Trade, the organization which corresponds to our Department of Commerce, appointed a committee to consider the position of the coal trade after the war. The report came out in 1918. It begins with the following "essential preliminary consideration":

"The report is drawn up on the assumption that it is essential in the national interest that the export coal trade, which before the war amounted to about one-fourth of the entire output, should not only be maintained but that every effort should be made to increase it.

"If the export of coal were stopped, or even materially reduced, this would result in the throwing out of employment of a vast and varied body of workers and the loss of a very large amount of wealth to the country now distributed in wages and in the maintenance of industry. It would have a serious effect on the shipping tonnage carrying on the overseas trade from our ports and would raise the level of homeward freights and increase materially the cost to the country of foodstuffs and raw materials. It would increase the cost of producing the coal required by every industry and householder in the country. It would lead to serious depreciation of railway and dock property, and might even cause the ruin of some of the companies carrying on these undertakings.

British Planned to Increase Coal Trade

"Such considerations appear to the committee to point conclusively to the necessity for a strong policy being followed in developing the export coal trade as vital to the economic interests of the nation. Upon this aspect of the subject the committee endorse the view expressed in the report issued by the Royal Commission on Coal Supplies in 1905 in the following terms:

"'The witnesses generally were of opinion that the maintenance of a large coal export trade is of supreme importance to the country and essential to the prosperity of the coal-producing districts. It is said that the larger output rendered possible by the export trade enables the collieries to be worked regularly and to the fullest capacity, and that the general and fixed charges being spread over a larger tonnage, the average cost of working and consequently the selling price to the British consumer can be kept lower than would be the case if the collieries were worked for home consumption only. It was pointed out by some of the witnesses that coal is so essential an element of outward cargoes that any diminution of our coal export must cause a rise in the import freights on goods, etc. The evidence shows that a large quantity of the coal exported to foreign countries is destined for the use of British ships coaling abroad.'"

But after all, that report was written by men more or less directly interested in the exportation of coal. So the skeptic might be apt to discount a great deal of what they have to say as partial and selfish propaganda. So we turn to another report written by a different committee, also appointed by the Board of Trade. This committee was to consider the position of the shipping and shipbuilding industries after the war. Here we read:

"In the period up to the outbreak of the war we were the ocean carriers of the world. Our carrying trade was dependent on three main factors:—

"(a) The strong industrial position of the United Kingdom itself, based on free access to markets of the world for foodstuffs and raw materials.

"(b) A worldwide empire with well-distributed coaling stations and ports of call.

"(c) A large coal-export trade which provided ships with outward freight which otherwise would have been lacking."

The last factor is all coal; the second one is partly coal and, as we shall see later on, the first factor has a good deal more to do with coal exports than appears at first sight. Coal is indeed the key to an understanding of the carrying trade.

American Authorities Favor British Plan

Perhaps even British shipping men are prejudiced in favor of coal exports. So we turn to American students of the shipping situation. In his latest annual report our Commissioner of Navigation makes this statement: "British trade and shipping for years were developed, looking only at the material side of it, on the production of an excess of coal for export beyond domestic demands." Our Shipping Board in a valuable publication entitled "Steamship Fuel Stations" voices similar views. The National Bank of Commerce in its Commerce Monthly (Vol. 1, No. 7) said: "Coal is Great Britain's greatest natural resource . . . Upon the ability to export coal depends Great Britain's ability to import the raw materials necessary for the carrying on of her great industrial life."

Enough has been said to show what men entitled to speak as authorities think of the economic significance which coal exports have for Great Britain. Let us now study the facts and see to what extent the lesson of Great Britain may be applied to our own situation.

In the first place, we shall try to explain why, generally speaking, coal is a most desirable vessel cargo. We content ourselves here with a curt enumeration of the various factors which account for this desirability:

(1) The general usefulness of coal, which assures a wide market.

(2) The relative scarcity of coal—the number of coal-using countries exceeds by far the number of coal-producing countries.

(3) The load factor of coal, which allows an almost ideal utilization of cargo space.

(4) The relative ease with which coal may be loaded into the holds of tramps, gravity doing 90 per cent of the work.

(5) The steadiness of the coal trade, which in contrast to the trade in agricultural products is hardly, if at all, affected by seasonal fluctuations.

(6) The usefulness of coal as a ballast cargo, which, however, was more important before the construction of double-bottom vessels than it is now.

These factors are capable of general application. They hold good for American shipping with equal force as for British, Norwegian or any other. But besides these general characteristics of coal as a commodity there are special circumstances peculiar only to the British

situation which account for the fact that England's lesson cannot, without modification, be applied to our own case.

There is, most important of all, the general character of the trade of the United Kingdom. We frequently meet with the erroneous idea that England's trade is largely in the nature of an exchange of manufactured products for raw materials and foodstuffs. That is only a half truth. It would be nearer to the facts to say that Great Britain pays for its imports of raw materials and foodstuffs with the products of her cotton mills and the services which her bankers, insurance companies and shipping concerns render to foreign countries. The British Board of Trade in a report recently published estimates the net earnings of British shipping for the current year at approximately $2,200,000,000, a goodly portion of which amount was undoubtedly earned by carrying other countries' goods. But that refers to the financial side of the trade balance only.

How Coal and Finished Products Travel

Many people believe that the ships which carry the raw materials and foodstuffs to the ports of the United Kingdom also carry the finished products of the mills. But that is a serious misconception. Roughly speaking, the balance of British commerce, so far as weight is concerned, is raw materials and foodstuffs vs. coal. These goods are generally carried in tramps, while the finished products travel in the company of passengers or on freight liners. A few figures will prove the case:

	Estimated Imports into United Kingdom in Gross Tons	Exports of Coal from United Kingdom in Gross Tons
1913	54,500,000	73,400,000
1914	46,400,000	59,000,000
1915	45,500,000	43,500,000
1916	41,400,000	38,400,000
1917	34,000,000	35,000,000
1918	35,200,000	31,800,000
1919	39,000,000	35,200,000

It appears that the weight of the coal exports alone would have sufficed, in several of the years enumerated here, to balance the weight of the imports. Of course, things do not come out as nicely in reality as they appear on paper. Much coal is exported by ships which do not bring back any commodities at all. At least that was the case in the days before the war, when whole fleets of special colliers equipped with rapid loading and unloading machinery used to ply between the Bristol Channel ports, the Humber ports and particularly the Tyne ports and Rotterdam, Hamburg, Havre and other important shipping points on the Continent. These ships relied upon the rapid turn-around for their profits and were operated much like ferries or like most of the tank steamers.

Still other ships would take coal to lonesome islands, important, because of their strategic position astraddle important sea lanes, as coaling stations but non-productive as far as outward cargoes are concerned. Those ships also would either have to return empty or else—and that undoubtedly is the rule rather than the exception—seek a homeward cargo in some more or less distant market. But islands are not the only places necessitating "triangular" voyages. Take the case of a ship carrying coal to Gibraltar and going on to Bilbao for a cargo of ore, or again a vessel loading coal for Port Said and bringing home grain from Black Sea ports. But still there are many cases where even this arrangement cannot be made.

Many raw materials and foodstuffs come from sources where coal is not needed or is supplied from nearer coal fields. Moreover, in many cases British coal is carried out by vessels of other than British registry and frequently they carry goods back not to England but to Continental or Scandinavian ports. So on the one hand Great Britain has enjoyed the advantages which go with a large entrance of foreign shipping and, on the other hand, Northwestern Europe has shared in the benefits which transportation of coal brings to shipping.

Naturally when, owing to slackening production, coal exports had to be curtailed, the foreign ships were the first to suffer. England thus possesses a kind of shock absorber which protects her own shipping from all but the very worst shocks befalling the coal-exporting industry.

We have frequently referred to the benefits which coal exports bring to industry and shipping. Let us examine them more closely. In a recent magazine we read the following: "The effects of the curtailment of coal exports were felt as early as June, 1920, when Scotland and the North of England could not get enough pig iron from overseas because they were no longer able to supply the inward ore ships with outward freights of coal." Insufficient pig iron came in because not enough coal went out. This is just one example. It could be multiplied almost indefinitely.

It would be difficult to exaggerate the importance of coal exports for the shipping and manufacturing industries of the United Kingdom. Without coal exports the great bulk of the shipping bound for British ports and for Northwestern Europe in general, bringing wheat, cotton, timber, wool, etc., would be compelled to clear without cargo, and in ballast. That would mean that no outward freight would be earned in the majority of instances and consequently a very much heavier freight would have to be charged on articles of import, which would thereby be heavily increased in price to the consumer. These articles, as we have seen, are divided into two main groups: Foodstuffs and raw materials. Both have a vital bearing upon the industrial prowess of the importing country.

Foodstuffs react on wages. Ordinarily low prices for imported foodstuffs permit low wages. Labor and raw material make up the bulk of the industrial expense account. That means that coal exports, by lowering the price of both these items, are, to a large degree, responsible for the powerful position of British industries. With the growth of industries based upon imported raw material, carried on by laborers whose dinner plate is filled with the products of overseas countries, the growth of shipping goes hand in hand. Shipping is but the handmaiden of trade and trade helps industry. Unless the outward coal freight had lowered the freight on imported grain and other staple commodities it is doubtful whether the process of industrialization of the British Isles would have been as rapid as it has been. So coal is indeed the foundation of British success and coal exports have generously contributed thereto.

The succeeding article will show to what extent we may apply the British lesson to our own case.

The annual report of the Bureau of Foreign and Domestic Commerce says that Trade Commissioner J. Morgan Clements investigated mineral resources in China and submitted a report on coal. The Bureau has prepared reports on the Chilean and Argentine markets for fuel. The Russian Division has prepared reports on the Siberian petroleum shortage and substitute fuels and Polish coal resources.

Under the Microscope Coal Has Already Lost Much of Its Former Mystery—III*

On Each Spore Is a Durable Outside Shell Which, Being Distinctive, Can Be Recognized in Coal — It Enables Us to Correlate the Seam in Which It Appears — Bright Coal Is Clean, Light and Cokable; Dull Coal Is Ashy, Heavy and Less Cokable

By Reinhardt Thiessen†
Pittsburgh, Pa.

SPORE-EXINES have definite and clearly-defined characteristics, such as form, size and surface sculpturing. (Figs. 6, 7, 8 in the second installment of this article and Figs. 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10 in this installment illustrate these.) Exines of different genera and, perhaps, of different species differ in sculpturing, size, thickness of wall and form. By means of these differences they can be readily distinguished one from another.

These spore characters have been so well preserved in almost all coals that the spores of one kind of plant can be clearly distinguished from those of another. By far the greater number of the spore-exines of any given seam are found to be of the same kind. In other seams two kinds, while in still others three kinds of exines may form the main bulk. It is quite noticeable that the predominating exines of any bed always differ in some way from those of any other bed.

In a given coal seam a spore-exine will occasionally be found that differs materially from those in other seams but does not predominate; nevertheless it may form a distinguishing characteristic of the coal seam in question.

*Article entitled "Recent Developments in Microscopic Study," presented at the meeting in Pittsburgh of the Coal Mining Institute of America, Dec. 9.
†Research chemist, U. S. Bureau of Mines.

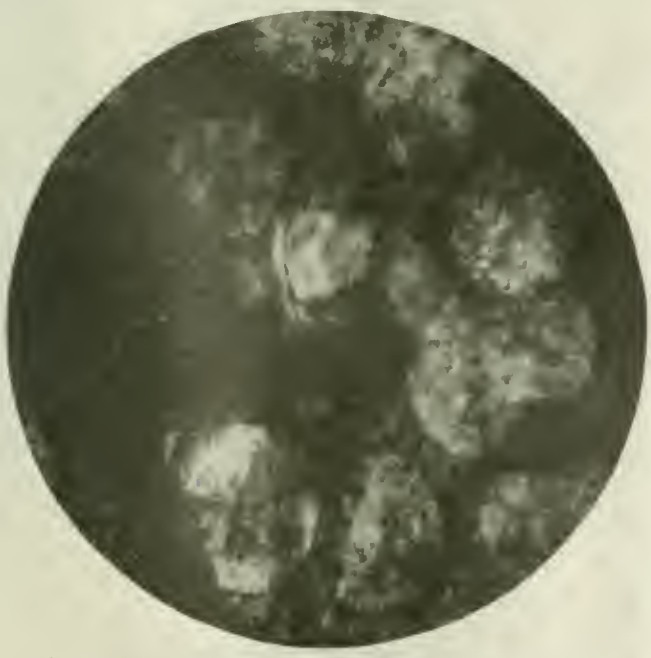


FIG. 1. SECTION OF COAL FROM UPPER FREEPORT

This section is made horizontally so as to show the spores on their broad side. The magnification is 1,000 diameters.

Although not nearly all the coal seams have been examined to ascertain the character of the spores they contain there are sufficient grounds for the broad statement that as far as they have been examined each coal seam contains one or more kinds of spore-exines that are predominant and characteristic, or if not predominant they are characteristic of the seam. By this means any one seam may be distinguished from another. To illustrate this a few examples will be given:

The Pittsburgh seam (Figs. 2, 6 and 7 in the second installment) contains a type of spore-exine that is at once predominant and characteristic, that is, a large majority of the spores are of the same kind and found in no other seam. It is a small spore, only 15 microns across the disk (Fig. 6 of the second installment) and relatively thin.

The outer surface when highly magnified has much the appearance of the outer form of a brain (Fig. 7 of the second installment). In cross-section it has a corrugated appearance, due to the sculpturing. By means of this feature the spore may be easily distinguished from all other spores. As no other coal contains this spore, the Pittsburgh seam may be readily identified by means of it.

The Upper Freeport contains a smooth and somewhat larger predominant spore (Figs. 3 and 8 in the second installment and Fig. 1 of the present installment). It also contains in small numbers a much larger, thick-walled spore sculptured with coarse ridges. This is the predominant spore in the Lower Freeport (Figs. 2, 3 and 11). The predominant smooth-walled spore of the Upper Freeport appears to become one of the minor spores of the Lower Freeport. These two coals need much more study before positive statements may be made concerning them. There is as yet no certainty as to which will be proved the predominant spore in the Upper Freeport and which will be found the more frequent in the Lower Freeport. More type samples will have to be examined before a positive declaration can be made.

Brookville Seam Has Three Odd Exines

The Brookville seam has three kinds of spore-exines, which together form the largest bulk of the spore matter (Fig. 1 in the second installment and Figs. 4, 5 and 12 in this installment). Each of these spores is so decidedly different from the others and from those of any other seam that any one of them offers a ready means of identification. At a magnification of 200 diameters the different spores may be distinguished quite readily. Their specific characters, however, are much better brought out at 1,000 diameters.

FIG. 2. THIN HORIZONTAL SECTION TAKEN FROM LOWER FREEPORT COAL SEAM

Characteristic spores at the high magnification of 1,000 diameters.

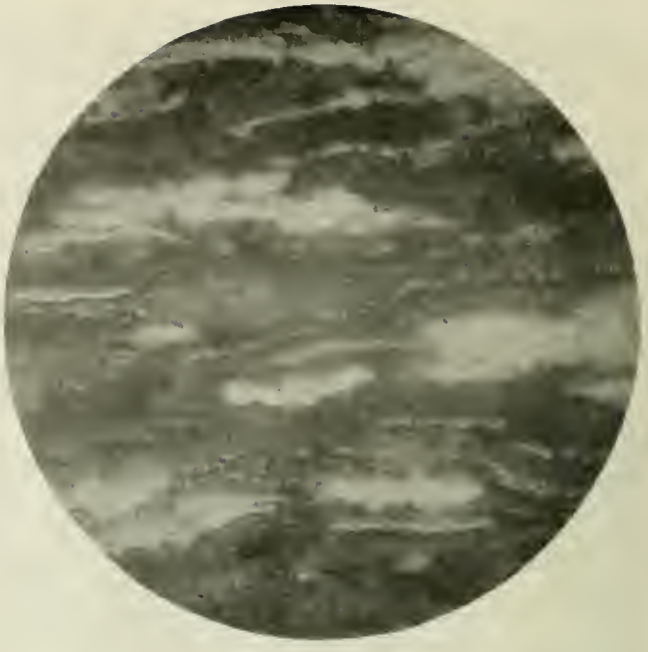


FIG. 3. VERTICAL SECTION FROM LOWER FREEPORT

Shows characteristic spore-exines on cross-section at a magnification of 1,000 diameters.

The most unusual one is a rather large exine with very peculiar processes, giving it an odd shape in cross-sections. In horizontal sections (Fig. 4) this spore-exine presents different appearances, all according to the manner in which it lies and how it was cut, yet no matter how located and how cut it always presents a somewhat similar appearance. A second type is studied with rather large echinate spines[1] (Fig. 5). It is between 45 and 60 microns, or about $\frac{1}{500}$ of an inch, in diameter. A third kind of spore-exine in horizontal section reminds one of Saturn and its rings (Fig. 12). It is a large, thin-walled exine with a thicker central part, the spore proper, surrounded by a much thinner outer zone forming a wing to the whole. The total diameter of the disks is between 80 and 90 microns or close to $\frac{1}{250}$ of an inch. A fourth spore-exine is found quite abundantly in this coal. It is relatively rather small and in many ways is similar to the single predominating exine in the Upper Freeport.

A number of other coal seams in Pennsylvania and in Kentucky, Alabama, Illinois and Iowa have been examined. Every one of them has been shown to contain spore-exines as characteristic as those shown. By this means any of the coals could be identified,

[1]Spines like those on a sea urchin.—Editor.

FIG. 4. HORIZONTAL SECTION OF COAL TAKEN FROM BROOKVILLE COAL BED

Note the peculiar processes on this spore-exine. A magnification of 1,000 diameters makes the detail of this exine quite clearly apparent.

FIG. 5. BROOKVILLE BED HAS EXINE SHAPED LIKE A MODERN SEA URCHIN

This horizontal section of the Brookville bed at a magnification of 1,000 diameters shows an exine which is apparently peculiar to that bed and so identifies it.

FIG. 6. COAL FROM THE YAGGER BED OF ALABAMA IN VERTICAL SECTION

Anthraxylon noted by letters *an* and attritus by *at*. A spore-exine, which is broad and thin-walled, with smooth surfaces, is found in this seam and thus far in no other.

some at first sight, others after more careful study. A spore, for example, in the coal from the Black Creek Bed in Alabama has such decided characteristics, both as seen in cross-section and in horizontal section, that it can easily be recognized without mistake wherever found (Figs. 6 and 13). This identical spore-exine is found in the "C," or Kellioka, bed of Kentucky. This at once raises the question whether that bed of Kentucky and the Black Creek bed of Alabama do or do not represent the same coal seam.

The predominating spore-exine of the Yagger bed in Alabama also is of such a shape and appearance that it can be distinguished readily from any other. As seen in cross-section, it is a broad, thin-walled exine

FIG. 7. SPORE-EXINE OBTAINED AT BUXTON, IOWA

Broad view of cross-section of this exine magnified 1,000-fold in all directions.

with a smooth surface. In no other coal seam have spore-exines been found resembling this one.

A bed at Buxton, Iowa, contains two spore-exines either of which is decidedly different from any other spore-exine yet found. At first sight one appears quite similar to that of the Black Creek bed in Alabama, but at close inspection and when seen on the flat side, a marked difference is shown (Figs. 7 and 8). The other is the exine of a megaspore with three large air sacks or wings (Figs. 9 and 10).

A number of other spore-exines could be shown, every one of which has characters as specific and as different from any other as those shown, but enough examples have been given to show how full of possi-

FIG. 8. CROSS-SECTION OF SPORE-EXINE IN FIG. 7 MADE IN ANOTHER PLANE

It is impossible to recognize these exines when viewed at right angles to that at which the exines were first seen.

FIG. 9. MEGASPORES IN BUXTON COAL

A broadside view. These spore-exines in the coal have each three long and delicate wings, or air sacs, but these unfortunately were broken in removing them from the coal. The reader will realize that they are megaspores, or great spores, when he learns that large as they appear in the illustration they are magnified in all directions only thirty times.

FIG. 10. CROSS-SECTION OF EXINE IN FIG. 9
This view shows one of the three wings in cross-section. Magnification is 100-fold in all directions.

bilities is this line of attack on the correlation of coal seams. In cases where one or a few exines would fail to warrant a sure correlation, more might be studied. In the correlation of rocks many different fossil plants are often required to determine a correct stratigraphic position. The same breadth of inquiry may be necessary in obtaining a proper correlation of coal seams.

High-Ash Coal Heavier Than Coal of Low Ash

It has long been recognized that a high-ash coal has a greater specific gravity than coal of low ash. This was definitely determined by Coxe in 1892 in connection with boiler tests, when specific-gravity determinations were made by float-and-sink methods to study the possibilities of clean separations. In 1910 Porter, of the Canadian Department of Mines, determined that the specific gravity of clean coal is from 1.28 to 1.37. But no true relationship between the kinds of coal was established until Lord in 1905 and 1906 carried on specific-gravity investigations on coal at the United States fuel-testing plant at St. Louis.

Lord determined the specific gravity of "picked-out clean coal" and of coal of average quality. In eighty-one pairs of samples the clean coal had a lower specific gravity than the coal from which it had been separated. Further analyses were made with respect to ash and sulphur, and in every case the tests showed a rapid increase in impurity of the coal with increase of specific gravity. The same experiments showed that the finer the coal was crushed, the more complete would be the mechanical separation of the heavy impurities from it.

Work of this kind was later extended by Nebel of the Illinois Engineering Experiment Station in 1916. Nebel made strict distinctions between "bright coal" and "dull coal," as defined by Thiessen, in 1913. The constituents now called "bright coal" and "dull coal" are now more precisely called "anthraxylon" and "attritus" (Figs. 7 and 13) respectively. In every case the specific gravity of the "dull coal" was found to be greater than that of the "bright coal" and the difference in the ash content is even more striking.

These findings are checked up by microscopic investigations. The "bright coal" is seen to be cleaner and to contain fewer mineral constituents than the "dull coal"; except in some cases where there is more finely disseminated pyritic matter in the "bright coal" than in the "dull coal."

Studies along these directions are now carried on by the Illinois Engineering Experiment Station in co-operation with the Bureau of Mines in an endeavor to separate the different kinds of coals by means of float-and-sink methods. In the laboratories at Pittsburgh experiments on float-and-sink methods are now being carried on.

It has also been determined that the "bright coal" invariably yields a better coke than the "dull coal" of the same seam. Even when the coals are "non-coking" the "bright coal" yields a fairly good coke, while the "dull coal" shows inadequate coking qualities.

In England this work has been recently taken up and experiments are being carried out to determine not only how to separate the mineral matter by the float-and-sink method, but how to separate the different constituents of coal, such as "bright" and "dull" coal itself, and to ascertain their relative coking properties. Blyth and O'Shea carried on such experiments with considerable success by means of a solution of chloroform and alcohol. But these two investigators did not differentiate closely enough between the bands of "bright coal" and "dull coal" so as to ascribe definite characteristics to each.

British Find Four Separate Kinds of Coal

Lessing, on the other hand, followed the suggestions of Stopes closely. Stopes sees four different kinds of coal, each one represented by bands; namely fusain, durain, clarain and vitrain. Fusain corresponds

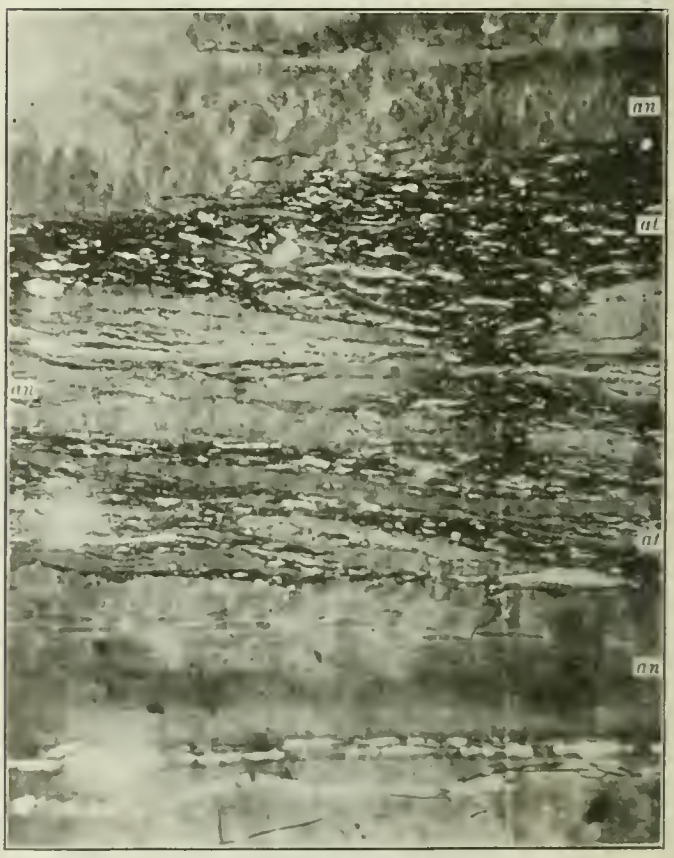


FIG. 11. VERTICAL SECTION FROM LOWER FREEPORT SEAM
Shows thin bands of anthraxylon (*an*) and attritus (*at*).

to mineral charcoal and durain to dull coal, but the bright coal is divided into two groups, clarain and vitrain. Nothing comparable to vitrain appears to be found in this country. From a large number of samples Lessing finds average ash content of fusain to be

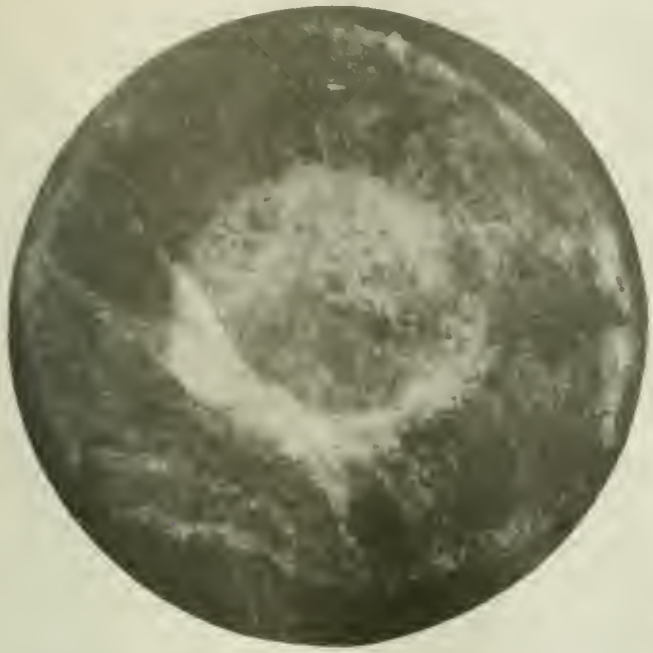


FIG. 12. HORIZONTAL SECTION, BROOKVILLE COAL

Note ring type of spore-exine. It has been magnified 1,000 times in all directions.

15.59 per cent, of durain 6.26 per cent, of clarain 1.22 per cent and of vitrain 1.11 per cent. He also finds notable differences in the coking proportion similar to those already noted.

Following up Lessing's results, Best and Findley tried to separate the best of the coals by float-and-sink methods, using various liquids of different specific gravities with a view to obtaining the best coke and

FIG. 13. SPORE OF YAGGER COAL SEAM

An isolated spore-exine from the Sipsey mine. Broadside view; magnified 1,000 times. (Some people place the Sipsey mine in the Black Creek seam.)

submitting the inferior grade to low-temperature distillation in order to obtain fuel oils and "coalite." Chloroform was found to be the most suitable liquid on account of its low surface tension. Solutions of any desired specific gravity were obtained by mixing the chloroform with different parts of alcohol. The first separation was obtained by a solution of 1.30 specific gravity. That part sinking in the solution at 1.30 specific gravity was again separated by a solution of 1.18 specific gravity.

[illegible]

Small Part of Coal Has Large Part of Ash

The authors draw the conclusion that it is possible to separate any coking slack into two or more fractions: (1) An almost ash-and-sulphur free fraction for the production of a superior coke. This fraction varies from 55 to 76 per cent of the whole sample. Its coke would yield 3 per cent of ash and well under 1 per cent of sulphur. (2) A homogeneous coaly substance suited for low-temperature distillation yielding "coalite." The weight of this fraction varies from 17 to 34 per cent of the weight of the coking slack; it would yield a coalite containing 7 to 12 per cent of ash. In addition were obtained per ton 20 to 25

FIG. 11. SECTION OF ANTHRAXYLON OR BRIGHT COAL

Shows well-preserved cell structure, including resinous matter. Magnification 155.5 diameters. Sometimes the resin is not translucent and looks black. At others it lets the light through and appears white. Mr. Thiesen finds it hard to explain this inequality and admits that it is one of the problems for the future to solve.

gallons of oil, from 11 to 15 lb. of sulphate of ammonia, and 7,000 cu.ft. of rich gas.

(3) A fraction of the whole weight of unwashed material, 20 to 26 per cent, which contains about 55 to 60 per cent of coal and from 45 to 60 per cent of dirt to be treated in a shale retort.

Should the process prove expedient, a closer definition could then be made as to what constitutes a good coking coal and what should not be used for coking. Such a process also would take care of the finely-disseminated pyrite more or less present in the anthraxylon of all coals and which, like the inherent ash, cannot be removed by any ordinary method of coal washing.

(*To Be Concluded in Next Issue*)

Advantages of River Coal and Pulverized Anthracite Canvassed by Engineers

River Coal Is a Riffle-Washed Anthracite, Some Running as Low as 15 Per Cent Ash—Perhaps 90 Per Cent of the Coal Drawn in by Suction Pipes Is Lost—Ring-Roll Machines Experience Much Trouble in Pulverizing Some Anthracites

By R. Dawson Hall

THAT active organization known as the Engineers' Club of Philadelphia never had a better attendance or a more interesting symposium than at the meeting held in the club house Dec. 3, when the subject was river coal and the use of and preparation of pulverized anthracite. With ex-president Joseph A. Steinmetz in the chair and standing room only, the meeting opened with an address by George H. Ashley, state geologist of Pennsylvania, on river-coal resources.

He stated that from the rivers, streams and overflowed flats of Pennsylvania 2,000,000 tons were taken in 1919 and possibly as much in 1920. The name "river coal," was perhaps misleading, as some of the best coal came not from rivers but from smaller streams. Hence "stream coal" would be a better name.

Of those 2,000,000 tons about 750,000 tons came from the Shamokin region and 400,000 tons were obtained from the Susquehanna near Harrisburg. The whole product from that river and its tributaries was 1,586,000 tons. In addition 120,000 tons came from the Lehigh region and 235,000 from the Schuylkill region.

River Coal is Riffle-Washed Product

This coal is gradually becoming appreciated, and it is dawning on the public that river coal is a washed product having a lower ash content than is customary with the finer sizes of anthracite. For thirty years this coal has been recovered from the river, and much of that time the selling price ran between 50 and 65c. per ton. The coal from the tributaries which were later invaded by the river-coal operators was found to be coarser, and therefore of greater value than that dredged from the rivers.

A sand pump was commonly used, the pump drawing up water and coal from the river bottom and discharging the material on a screen. The principle adopted was to regard the material which went through the screen as sand and what passed over it as coal. At places small dams were built in the streams to impound the traveling coal, so that it could be the more readily pumped. At other places clamshell dredges were used, and in the lands periodically subject to overflows the coal deposit was shoveled into railroad cars.

As to the future of the industry, Mr. Ashley quoted from the rough-and-ready reconnaissance made by C. W. Webber, of the U. S. Geological Survey. The speaker took care to say that in the sense in which "survey" is generally used Mr. Webber would not claim title to use that word for his rapid inquiry. Mr. Webber, conservative in his estimates as United States geologists invariably are, came to the conclusion that the deposits at the rate at which they were now being exhausted would last four or five or at best ten years. There were perhaps 20,000,000 tons available and perhaps there might be 25,000,000 tons.

J. P. Edwards, of the Jonathan Coal Mining Co., who spoke on "River and Creek Coal," said that the rejects from the breakers of the 350 collieries in the anthracite region probably totaled 500,000,000 tons. Much of this coal had been run into the rivers, and coal companies had been compelled to pay farmers large sums for the damages thereby done to their farms. River coal, he declared, is much better than freshly-mined coal. The Harrisburg Light & Power Co. from its inception has used some river coal and during the last four years has used it exclusively.

Mr. Edwards said that 8,900,000 tons of fine coal were used yearly from all sources. Where this came from the breakers it ran from 18 to 30 per cent ash. Where it came from the river, owing to the jigging effect of the current, the ash was found to be reduced to from 15 to 18 per cent. Whereas bituminous coal such as was used by plants along the rivers would run 14,300 B.t.u. and the anthracite rice and barley as it came from the breaker would run only about 11,000 B.t.u., the river coal of small size would be found to give 12,250 or 12,800 B.t.u.

He instanced a shipment of 7,000 tons which averaged 13 per cent ash. He gave an analysis of river coal as follows: Moisture, 3.42 per cent; volatile matter, 7.95 per cent; fixed carbon, 73.11 per cent; ash, 15.52 per cent. The thermal equivalent of this coal was 12,250 B.t.u.

Predicts Long Life for River-Coal Mining

He could not agree with Mr. Ashley as to the life of the river-coal industry. He had read in the *Philadelphia Inquirer* that a celebrated but anonymous engineer had rated the amount of coal annually washed into the streams as 7,000,000 tons. He had at the time thought the amount excessive, but a study of the probable quantity of coal thus wasted convinced him that the estimate was likely to be correct. He certainly did not believe that if the present coal winnings from streams were continued we should see the end of the river-coal industry in ten years. He believed it had a life vastly greater.

Along the Mahanoy for eight years 300,000 tons have been taken yearly, but the amount of coal in the river has increased rather than decreased. Along the Shamokin Creek he had on one occasion taken a pole and pushed it through 10 ft. of coal deposit and in consequence had engaged an engineer to sound the depths of this coal and plot its area. The engineer made soundings about 20 ft. apart across the river at 100 ft. intervals and as a result concluded that the deposit, which was 1,000 ft. long, averaged 10 ft. in depth and contained 2,000,000 tons. Consequently Mr. Edwards closed an option on the coal to be found in an eleven-mile stretch of Shamokin Creek.

At Reed Station he had established a dredging point where a 1¼-cu.yd. clamshell bucket having a 25-ft. sweep lifted the coal from the stream to a building where it was cleaned and stored in large bins. By this stationary equipment he had removed 140,000 tons of coal, taking as much as 400 tons a day. The coal was brought in by the river as the bucket removed it. There are now twenty-three plants taking coal out of the Shamokin Creek. At Gordon, on the Mahanoy Creek, a 3½-cu.yd. dragline excavator has been established by the Jonathan Coal Mining Co. which will lift 3.2 tons from the creek at a single mouthful. The dragline excavator will have a 300-ft. radius. The whole equipment will cost $100,000. This is the measure of the faith that Mr. Edwards has in the life of river-coal deposits.

He said that river coal was used by all the plants along the rivers where the coal was found, the freight rate of bituminous coal exceeding that of river coal by about 80c. In introducing the next speaker the chairman declared that the self-supplying hole at Reed Station made the "widow's cruse" of oil "look like a piker."

G. R. Delamater of the Anthracite Production Corporation sided with Mr. Edwards in prophesying a long life for the river-coal industry. He himself in earlier years had believed that the tale of it would be completely told in a few years—perhaps no more than five—but the personnel of his company had changed their views as evidence pointed to a much longer and larger future. He took issue also with those who would say that about 90 per cent of the coal in the creek was being recovered. He would rather say 2 or 3 per cent of the solids are picked up by the suction dredge, half of which goes back into the creek, but what returns to the river bed is by no means all sand. About 65 per cent of the reject in one of these plants was found to be sand; the rest was coal. But much of the material is not lifted from the river at all. With Wilfley tables and electro-static machines the whole of the coal taken out of the river could be saved. The objection to the latter device was the fact that the coal had first to be dried, but these machines, said Mr. Delamater, used little power to maintain the electro-static condition. They not only saved the coal satisfactorily but they cleaned the sand, which could then be used for concrete. The sand in the rivers contained too much coal. A little coal will spoil a concrete aggregate.

Every Year River Coal Is of Smaller Size

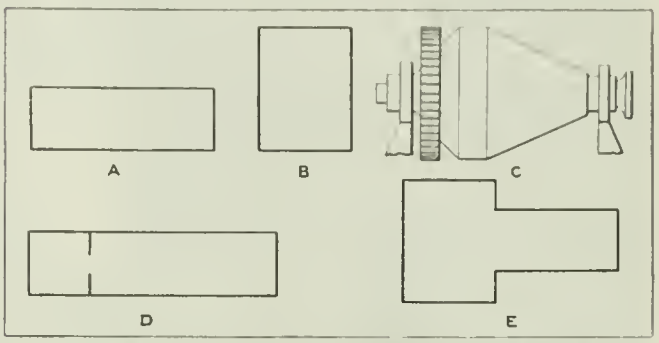
River coal, said Mr. Delamater, is getting smaller year by year, but after heavy rains larger coal is obtained, owing to the scouring effect of the floods. There is too much sand in coal from rivers, and this is objectionable, as it cuts traveling grates severely. River coal should be better prepared than in present practice.

The chairman declared himself more than pleased with the prospects of river coal and proposed that the anthracite-saturated streams be carried through the fire-boxes of boilers, using the coal for fuel and the water for steam.

W. S. Quigley, of the Quigley Furnace Co., said that he was still experimenting with the Philadelphia Rapid Transit Co.'s equipment, and he was unwilling to make any report. So far the furnaces had at no time run more than three days consecutively. There was no trouble in pulverized-coal furnaces when bituminous coal was used, but anthracite burning was still in the experimental stage.

R. M. Vail, a consulting engineer, who is making a specialty of crushing machinery, said that there were two ways of comminuting material. It might be either crushed or abraded. The tube mill is an example of the crushing type, the balls falling on the material and cracking it along its cleavage planes. The mill, of course, does in a degree abrade the coal, but its main effect is one of cracking or crushing.

The tube mill has the advantage that it takes up less floor space than the roll mill for any given capacity. By using tube mills in closed circuit the most economical crushing is obtained. The material in the tube mill working under a closed circuit is discharged before it is all ground to the required fineness. It is then



CROSS-SECTION OF DIFFERENT TUBE MILLS

A is the original tube mill, long and of small diameter; B is one provided with a greater fall; C is an exterior view of a Hardinge mill having a cylindrical center and two frusta of cones; D is a tube mill of equal diameter divided by a diaphragm, the coarse grinding being done in the first compartment; E is a tube mill of two different diameters, the fine grinding being done in the second compartment.

classified, and the oversize goes back to the mill. In this way the well-ground material does not cushion the blows of the balls, and there is no needless comminution of the undersize.

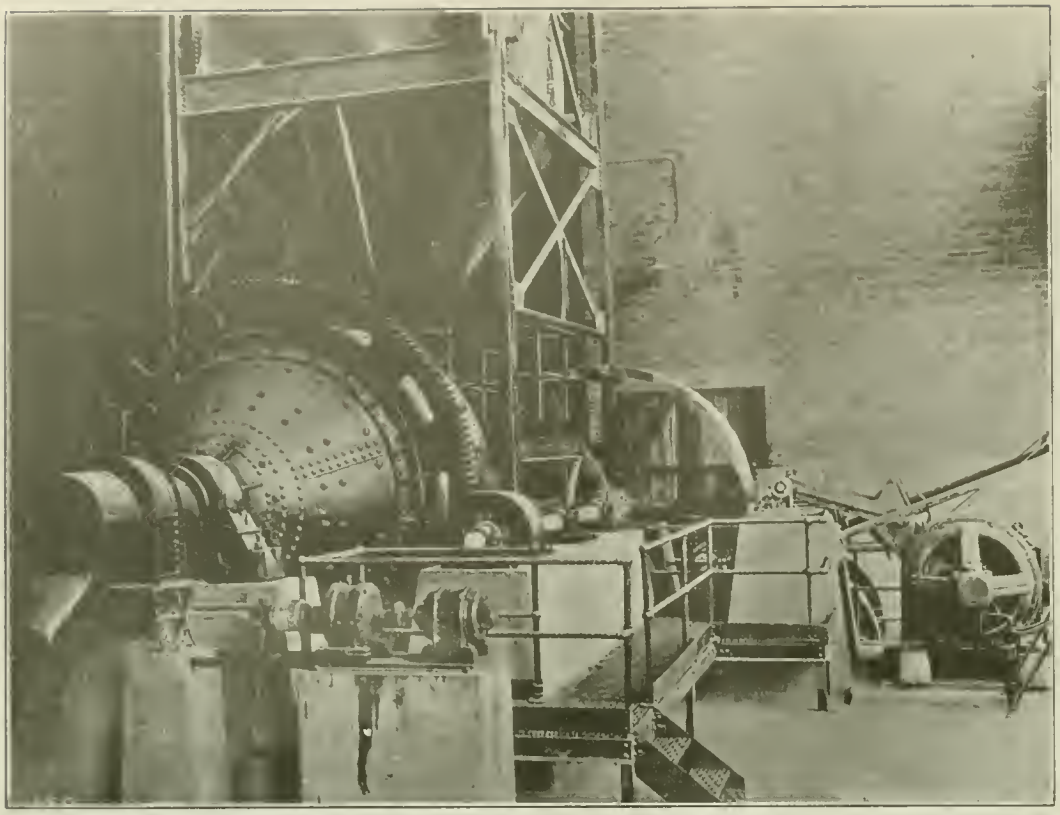
Crushing Mills Needed for Anthracite

In discussing the various types of mills Mr. Vail passed over the buhrstone and Chilean mills because these are of low capacity. The ring-roll mills, such as the well-known Fuller, Raymond and Bonnot types, give excellent satisfaction with bituminous coal. With anthracite, however, there is excessive abrasion of the mill, and until alloys are used which lessen this abrasion, the ring-roll mill will not give satisfaction with abrasive materials.

The first form of tube mill had a longitudinal section of rectangular shape, the length being much greater than the height. This length did not seem necessary and tube mills were made with the height slightly greater than the length. The Hardinge mill consists of an extremely short cylinder flanked by two frusta of cones. The illustration herewith shows the actual shape. Whether the coning assists is a matter of debate, but it is certain the mill gives good results.

E. W. Davis, who has made a most careful study of the mill, declares that the balls should be so carried up the side of the mill as to give a maximum fall for the cascading balls. The mill makes 20 to 27 revolutions per minute. There is little abrading action. The material is broken by concussion. When a ring-roll crusher gets out of repair it must be stopped. Pulling it to pieces is heavy work. Large castings have to be inserted.

With the Hardinge mill the balls can be run in with the feed while the mill is running. The maintenance of the mill at its utmost efficiency is not accompanied by



Hardinge Mill

The mill grinds the coal for the most part by crushing, the balls falling on one another in a cascade and pulverizing the material. There is some abrasion but hardly any on the mill itself. When the balls are worn they can be replaced without stopping operation. The mill can be used to pulverize either hard or soft material.

frequent shutdowns and much expense, so it seems best adapted for any material which acts in a manner similar to the rock that has to be crushed in Western mines.

Another mill having a rectangular cross-section longitudinally is sometimes used. This has a diaphragm near one end, so that the fine material may pass through the opening in the center of the diaphragm and be comminuted in the second and longer compartment. Another mill has a T cross-section. The vertical rectangle feeds into a horizontal rectangle, but the difficulty is that for a given speed there is a given radius which is more efficient in pulverization, and here are practically two mills of different radius on the same shaft with the same angular rotational speed.

Old-Fashioned Tube Mill Not Economical

Comparing the Hardinge with the rectangular tube mill, Mr. Vail said that the cement works still adhered to the mill of rectangular section. The cement mills want 80 to 85 per cent of their product to pass through a 200-mesh screen, but they also want appreciable quantities of material that will pass a 250- or a 1,000-mesh screen. So they do not care if there is some loss because of excessively fine grinding. With the pulverization of anthracite for boiler use, however, there is no desire to obtain material of unequal fineness. In fact, the aim is to get flour of uniform size throughout. So the Hardinge mill with the closed circuit seems to be the combination which meets the need.

J. R. Wyllie, of the M. A. Hanna Co., said that the Fuller and Raymond grinding machines, which had given such success in the pulverization of bituminous coal, had not proved themselves able to pulverize the harder kinds of anthracite coal without an excessive charge for repairs. He said that taking down these heavy machines when parts wore out was a job most distasteful to modern labor. The intention was to use a Hardinge mill which would give them a product 70 per cent of which would pass through a 200-mesh screen. The product should contain at least 90 per cent of such material. They expected to use a Clark rarefied dust trap and a filter system.

At Lykens there was no trouble with the Fuller mills, of which the company has four. The difficulty with river coal is that it is apt to be mixed with boiler ash, which is highly abrasive.

Action of the Baltimore & Ohio R.R. in prohibiting bunkering at its piers in Baltimore harbor is calling forth considerable protest on the part of operators, as the practicable. Facilities are available for bunkering in the stream, but as that process results in an additional cost of $1.25 per ton, many vessels go elsewhere for their coal, it is said.

The Norfolk & Western and Virginian railroads have withdrawn their request to cancel deliveries of coal by their barges in Norfolk harbor. These roads filed a tariff cancelling delivery of coal by their barges, thereby requiring certain consumers at Norfolk to get their coal at the piers. The Chamber of Commerce and twelve firms protested against the tariff, claiming that it was a discrimination since the railroads delivered coal to consumers who had sidetrack facilities. The railroads apparently were impressed with the strength of the complaint and withdrew the tariff of their own volition.

Indiana miners and officials of a minor character of the United Mine Workers of America are reported generally to concur in the statement issued recently by John L. Lewis, president of the United Mine Workers of America, to the effect that the national organization had gone on record against any reduction of wages for the mine workers. Mr. Lewis said that as far as the miners are concerned there will be no backward step, that a definite and substantial policy had been decided upon and that the men would stand behind President Lewis in his attitude. "Miners could not afford to take any reduction in wages at this time and will not do so," said Roscoe White, board member of District No. 11. "Miners are not receiving excessive wages in comparison to the costs of living; if correct comparisons are made it will be found that they are the poorest paid men in the country."

Coal Mining Institute of America Studies Present-Day Operating Problems—I*

When Is Mine Storage of Coal Justified? Should Operators Purchase Power? What Faults Are Found in Cutting Machines? Will Standardization Hinder Development?

By R. Dawson Hall
New York City

PRACTICAL problems of interest to coal men absorbed all the time occupied by the Coal Mining Institute of America at its meeting in Pittsburgh, Dec. 8 and 9. The only digression was Dr. George H. Ashley's address on "The Geology of Oil and Gas," a presentation of the subject as exact and scholarly as it was interesting. It is passed over here as not being germane to the coal industry. It was the only technical material presented to the morning session, which, though it continued late, was still wrestling with the election when the meeting closed.

At the beginning of the afternoon session Dr. Kurt C. Barth, of the Barrett Co., showed some interesting moving pictures on the preservation of timber by various degrees of coal-tar impregnation. He showed how framed timber might be protected by spraying it with coal tar, especially in those parts which are most subject to decay—the mortise and tenon. This method of preservation can be used for fence boards and posts, and the resistance of telegraph poles and fence posts to decay can be greatly increased by dipping their lower ends in a bath of coal tar. However, if the whole timber is submerged in this material or, better yet, receives two baths, one hot and one cold, still better results are obtained.

When Does Storage at Mines Pay Dividends?

With Joseph Knapper, state mine inspector, of Philipsburg, in the chair, consideration was given to Questions 1 and 2.

Question 1. To what extent is the storage of coal at the mine economically justifiable?

H. H. Stoek, dean of the college of mining of the University of Illinois, at Urbana, said that in southern Illinois many coal companies had during the last year stored some coal at the mines, one mine having a storage capacity of 700,000 tons. He wished to emphasize that the purpose of storage of coal at the point of production was not to take care of the irregularity in the demand between winter and summer; the storage facilities were merely intended for the purpose of avoiding day-to-day irregularities and to enable the mines to run one whole day instead of two halves when insufficient cars were supplied. It was not, he said, the province of the mine to store coal, and the consumer should not be led to believe so. The consumer himself should furnish the storage needed, as it was useless to store coal at the mine till the winter, for at that time cars were almost sure to be busier than in the summer months.

However, in passing it may be said that it is interesting to note that this year this condition does not exist. Car supply is now almost adequate, whereas in the summer it was not. The price is, however, likely to be such that there would be no profitable market for such coal as had been put in and out of storage and subjected to the risks of spontaneous combustion and to the inevitable degradation that accompanies the double handling. This would especially be true if the coal, as is almost inevitable, became wet and then froze in the pile, or, being wet, froze in the cars. Other discussions were furnished by Edward Steidle, R. D. Hall, James W. Paul and E. S. Moore.

Railroad Cars Arrived as Afternoon Ended

Mr. Ferguson, of the Pittsburgh Coal Co., declared that the experience of his company in the storage of slack was discouraging. A Connellsville member said that storage helped to keep mines running in accord with the promises of the mine executive. On one occasion the mine with which he was connected worked till 4 p.m. without receiving a single railroad car. Though the cars did not arrive till that hour the output for the day filled twenty-six railroad cars because of the storage facilities provided.

Another member declared that storage for one day's run helped to steady cutting, as it is possible when storage is provided to clean up the cut and give the machinemen a place to work. Following some remarks by Thomas A. Mather, of Tyrone, Joseph Knapper declared that in his district no storage for coal was at any point provided. He said, however, that in the Blossburg region the coal was not subject to spontaneous combustion and could, therefore, be stored almost indefinitely, though storage is unknown. However, there is much boney coal. A pile of this waste material had been accumulating at the mine of the Morris Run Coal Mining Co. during some fifty-five years of operation until it covered several acres. This year anthracite men cleaned and shipped it and declared that the heating value was fully half that of good coal.

Shall We Purchase Power or Make Our Own?

Question 2. What is the difference between the cost of purchased electric power and plant-produced power as evidenced by actual costs based on at least a year's operating costs?

Strange to say, no one came forward with an answer. Are we to believe that no one in these years of cost analysis has been wise and diligent enough to find what the difference between the two really is? Everyone who spoke in this discussion either professed himself unable to answer it in the terms of its submittal or gracefully sidestepped the question. One, if I recall rightly, did say he had the facts or some facts at home.

H. H. Stoek, on being asked for comment, said that

*This article presents the technical discussions which took place at Pittsburgh. The business of the meeting and the speeches at the banquet were described last week on pages 1221 and 1222 in an article entitled "Coal Mining Institute of America Holds Its Most Successful Session."

the operator should in self-defence see that he is not "hooking up" with a power company that has taken on more business than it can carry. During the war the coal plants so generally found themselves hampered by the inadequacy of the equipment of the utility companies supplying them that they had to apply for priority, which was conceded them. Mr. Stoek added that Eugene C. McAuliffe, of the Union Collieries, was introducing water-generated power into his mines in place of power generated from the coal produced at his own plant.

L. C. Ilsley, electrical engineer of the Bureau of Mines, said that only companies able to have central power plants of their own could hope to attain power costs as low as those offered by public-utility companies. Small plants, being run by men who were not primarily electrical experts, were more than likely to be run uneconomically.

Power Companies Make Too Many Commitments

Nicholas Evans, state mine inspector, of Johnstown, Pa., declared that central power plants were undertaking more commitments than they could hope to take care of. As a result, too often fans were shut down, and disastrous accidents occurred. However, even with a privately-operated plant, this same class of accident was quite as much or even more to be apprehended. Joseph Knapper and Rush N. Hosler spoke on the use of purchased power at the mines of the Morrisdale Coal Co., whose pumping problem, for a bituminous company, was unusually heavy, five tons of water having to be pumped for every ton of coal obtained.

A. B. Kiser, chief electrician of the Pittsburgh Coal Co., said that his concern was in favor of further purchases of central-station power, and was steadily increasing the number of mines thus equipped. Several others spoke in favor of it and not a single voice was raised against it. With E. S. Moore presiding three more questions were presented, beginning with:

Question 3. What is the best means of educating the miner and proving to him that his lot is not so bad after all?

Edward Steidle said that the children in mining villages should be shown the advantages the mine workers enjoyed and some of the disadvantages of work in the cities. Francis Feehan, formerly a district president of the United Mine Workers of America and a supervisor of the state workmen's compensation board, declared that in his belief nothing will better convince the mine worker that the mine is the place to work than the full dinner pail.

Mining Pays Better Than Skilled Trade

He said that most miners stayed at the work because they preferred it to all others. With less exertion they could make more than could be made even where working as skilled workmen at trades demanding such skill. Unfortunately the boys drifted away. There was no work at the mine for a boy till he was sixteen, and no school as a rule for him when he reached the age of fourteen. He is, therefore, obliged to go to other communities, and later he draws the parents away, through the affection that his mother bears him. If conditions were made more attractive around the mines the boy would be apt to stay, or, even if he went, he would be likely to come back when he reached the age limit.

The presiding officer then presented the following:

Question 4. Are accidents per ton of coal mined being reduced in proportion to the energy and money expended for safety work?

In discussing this question F. W. Cunningham said that the accidents in the state up to October of this year were lower than in any other year, and Mr. Stoek remarked that life-insurance rates for mine workers had been reduced in the last twelve years to one-half or even one-third of what they were, except in the case of firebosses. The sentimental schedules of past years are beginning to give way to scientific statistical schedules. Evidence is pointing plainly to the fact that the mine hazard has been overrated in public opinion since the time when the treasures of mines were supposed in popular fancy to be guarded by dragons and the workings peopled with wraiths.

Rush N. Hosler said that with the two reductions given in insurance, one for safety provisions and one for any favorable individual experience of the company receiving insurance, such a large premium was put on a safe mine that safety work certainly paid well all those who undertook it.

How Hot or How Cold Is a Coal Mine?

Following this discussion Mr. Moore offered:

Question 5. What is the range of temperature in a coal mine?

William Nisbet, chief mine inspector, Keystone Coal & Coke Co., declared that the temperature of a mine lies anywhere between zero and 60 deg., with the temperature at the face ranging as a rule from 50 to 55 deg. J. H. McGinnis, assistant foreman, Ford Collieries Co., declared that the temperatures of the working face depended on whether the fan was working exhausting or under pressure, for that determined in any mine the directness with which the air current reached the working places. Joseph Knapper put the temperature at the face at from 55 to 60 deg. He said that Hanley Colliery, in North Staffordshire, England, the deepest mine in that country, is 4,500 ft. deep and the temperature at the face is 80 deg. Our lower temperatures are the outcome of the shallowness of the seams being worked.

William B. Plank, who has been mining engineer in Alabama for the Bureau of Mines, said that a mine in that state which was driven 2,200 ft. on a 55 deg. pitch in iron ore had a temperature at the face of 97 deg. The humidity being extremely high, the men were able to work only two or three minutes. Mr. Smith said that in Spitzbergen the coal was found to be at a normal temperature of —4 deg., whereas in Illinois it was found to reach 80 deg. in some places. The physiological effect of such temperatures as the latter was increased where the humidities were high or the passage of the air was slow. In such cases the exhaled air seemed to remain around the workman and to cause an extremely unpleasant sticky feeling. E. S. Moore said that temperatures in the metal mines of the West sometimes reached 157 deg.

What Americanization Work Is Being Done

E. E. Bach's paper on "What Has Been Accomplished in Americanization Work in Our Pennsylvania Mining Communities During 1920" was next presented. These are a few of the facts he afforded his hearers:

Of the 140 coal-mining companies operating in Pennsylvania, 135 are engaged in some form of Americaniza-

tion effort, and two of the remainder are contemplating such work. One hundred and twenty-seven of the companies are doing Americanization work through safety and first-aid departments; sixteen through service departments; thirty-seven through employment departments; forty through welfare departments; eleven through social settlements; sixty-four through neighborhood classes for women; twenty-four through educational departments, and eight through personal activities.

Forty companies, he said, have emergency hospitals, employing seventy-four physicians and twenty-five visiting nurses; 123 companies rent houses to their employees and hold themselves responsible for the physical condition of the properties; fifteen sell houses to their employees; four advance money to them for the purchase of houses, lending them from 10 to 25 per cent of the value of the properties purchased, and allowing the purchasers favorable terms of payment; four of the companies operate building and loan associations for the exclusive benefit of their employees; five operate workmen's retirement funds, in addition to the regular workingmen's compensation allowed by law; eighty-two assist in athletics; forty-six have employees' cornet bands or orchestras; eighty-two furnish ground, seed and implements for employees' gardens; twenty-eight furnish and equip community houses, and sixty-six have community playgrounds.

Breast vs. Shortwall Machine for Entry Work

On the second day, with John I. Pratt, state mine inspector, presiding, an interesting discussion took place on

Question 6. What are the merits and demerits of modern coal-cutting machines?

W. L. McCoy said that shortwall machines were ill suited for the driving of headings, as they "hog" or cut into the rib when making their sumping cut on the one side and when dragging out on the other. Some cutters, it is true, do better work with them than others, but the tendency to destroy the integrity of the rib is everywhere apparent. The breast machine is free of this important defect. The shortwall machine also tends to drive out of line. Although the shortwall machine, because of its varied uses, is generally preferred, it must not be forgotten that it has this disadvantage in entry driving.

Thomas Lippeatt, of Indiana, declared himself opposed to the use of the breast machine even in entry driving. True, it does better work, but it is too heavy and it uses too much power. The shortwall machine is much better in tender roof, which quality of the machine is made the more fully available when the sumping cut is made on the road side of the room, where supports cannot readily in any event be placed close to the face. The weight of the breast machine is particularly objectionable where there is tender bottom. In the Indiana field the No. 6 bed is hard to cut. No 4 is easier. Machines can be used in both, but No. 5 is ill suited to undercutters and their use in that bed is attended by actual loss. It is true that thereby solid shooting is avoided and larger coal is obtained, but the 12c. differential is not sufficient to make machines pay.

Mr. Lippeatt could not see that there was any difference in safety between alternating-current machines and direct-current machines, but there is a distinct advantage in using the former where current is bought from public-service corporations, and especially where the number of machines operating is small and no part of the current has to be converted to direct current for use in electric haulage.

Mr. Knapper said that one of the dangers of modern cutting machines was the frequency with which cutting chains would run when the machine was still on the truck. Another danger arose from the jacks being dislodged by the pull on the chain from their hold on the roof. He stated that a man in his district had recently been killed when working between the machine and a jack. The jack was pulled loose from the roof, falling on the man and throwing him onto the bits of the machine.

M. D. Levin said that a clutch was provided for setting the bits in motion. They could not start unless the clutch were thrown. It was necessary to provide that the bits would start on the throwing of the clutch even when the machine was on the truck, for the workman often changed the bits when the machine was in that position and needed to set the chain in motion to make this change.

As for the loosening of the jack, this resulted from carelessness in preparing a place for it, a form of negligence against which no provision could well be made. Another member declared that the breast machine was not satisfactory to the men who had to operate it. Machine men were all of the opinion that in these modern days no man should be required to bar his machine across the face.

Mr. Evans said that when, in the mine, he had asked the foreman if the chain would occasionally start while the machine was on the truck, the foreman replied promptly that this never happened, but a workman declared that a running chain under that condition was not at all unusual. Doubtless the machines are all right as they left the factory both as regards clutches and chain guards, but they would sooner or later get out of order. In fact, he had seen chain guards lying along the entry. He had asked when they had been taken off and was assured that they had been on the machine that very morning, but he believed that inquiry might have shown that they had been removed for many days.

Training of Machinemen Would Save Lives

Machinemen need instructions as to the necessity of taking care of clutches, guards, jacks and other dangerous parts, but he was afraid that too often "green men" were given machines and were allowed to learn by fearsome experiences what dangers surround the handling of cutting machines. Some are killed before they learn what those dangers are.

Mr. Pratt then introduced for discussion:

Question 7. What is the consensus of opinion as to the standardization of all coal-mining equipment?

In discussing this question Mr. Affelder declared that it would be well if every operator standardized his cutting machinery so that he could without difficulty transfer his machines from mine to mine, could reduce his spare parts to a minimum, and cut his repair costs. He said that not only did the Hillman Coal & Coke Co., of which he is general manager, standardize its machines, but also that it had made explosion-proof machinery standard, for though it had mines which were non-gaseous, it thought it best to own no machines of a character that could not be safely transferred to its gaseous operations.

He did not believe that much progress could be made in standardization owing to the diversity of voltages, track gages and seam thicknesses. His company had one mine with 250-volt direct current, another with 550-volt, also direct-current, and one with alternating current. Mr. Hall made some remarks on standardization and the work of the American Mining Congress in this direction.

Booster Has Legitimate Place in Coal Mines

William G. Duncan's paper was not presented, not having been completed in time, owing to sickness in the family. So Thomas Chester then read his excellent paper "Some Data on Mine Fans," which he illustrated by blackboard sketches. In the discussion he declared that the accepted theory in regard to boosters disagreed with actual mine practice and that it was possible to install a force fan that would drive the air half way through the mine and arrange another exhaust fan that would lower the pressure so as to carry the air the rest of the way. The water gage would be at some point practically nil, and from that point onward negative. Fans had been constructed to give 40 in. of static pressure, and with special alloyed steels there is no reason why 100 in. could not be attained.

After lunch, with Mr. Maize presiding, discussion was reopened, the subject being:

Question 8. Should "booster" fans be allowed in coal mines?

Mr. Williams declared that booster fans were often used to circulate air within a closed circuit, drawing stale air from the mine and passing it not toward the surface but back to the inlet of the booster. He knew of one mine where, at the return to the surface, 13,000 cu.ft. of air was being delivered, yet in that same mine was a booster fan busily circulating 33,000 cu.ft. of air. Supposing that fan was receiving all the 13,000 cu.ft. from the surface—we will suppose that the intake and return were equal in volume—the booster was circulating 20,000 cu.ft. of air that had already made at least one circuit of the territory over which the booster fan operated. What likelihood was there that such a current did not contain vitiated air and even an excess of gas?

Risk That Closed Circuit Will Be Formed

Mr. Hall pointed out that if the air returned to a point not greatly distant from the point of intake it might well be drawn in again by the blades of the booster. It was necessary to watch carefully the air currents lest the booster, instead of helping ventilation, actually cut it off, causing the air to move back in a contrary direction to the intake current.

Mr. Williams, taking the floor again, stated that the inside fan, not being under adequate supervision, was apt not to be properly cared for and might stop, allowing the workings it was supposed to protect to fill with gas. Too often, he feared, the fan was put in to make allowance for defective stoppings. The booster fan must depend on the mine circuit and that circuit was too often down and was too undependable for any reliance to be placed on it. D. J. Parker declared that in one explosion the cause was undoubtedly a booster fan. A man was set to watch it, but he failed to do his duty.

E. H. Coxe, general manager of the Snowden Coal Co., remarked that the objection to the use of booster fans in a mine was that if the mine was devastated by an explosion, the booster fan would be put out of operation. George S. Rice had a limited but a good word for booster fans, saying that in the mines of the West, where coal sloped down into high mountains and soon attained an immensely heavy cover, it was impossible to sink shafts to provide efficient ventilation.

With extensive workings and no means of reaching the surface, there were only two solutions: exceptionally high water-gages or booster fans. Conditions might make it difficult to prevent air leakage, in which case booster fans were the only solution, and high water-gages were in any event undesirable and expensive. While engineers in western Pennsylvania might complacently condemn booster fans it might be found in the West that no such attitude could safely be taken.

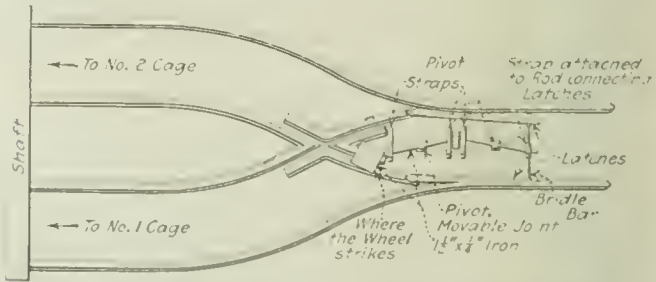
Dr. Reinhardt Thiessen's paper on "New Developments in the Microscopic Study of Coal" followed. After its presentation Dr. Thiessen, on inquiry, declared his belief that the cause of cleat was pressure resulting from the upheaval of mountains. It may well be questioned if pressure causes cleat or merely determines its direction. It is found at right angles to the line of pressure, parallel to the mountain chain. The separation of the coal or slate may result from shrinkage, and the direction of separation may be determined not so much by compression as by the gravity strains resulting from folding. The cleat in shales at any one place, it must be remembered, has often extremely diverse orientation; if it did so vary, our shales would have little self-sustaining quality. It is an interesting problem and perhaps Dr. Thiessen is right in his interpretation. It is an *obiter dictum*, however, and not a matter which has any reference to his pet subject—microscopy.

(To Be Continued in the Next Issue.)

Car-Shunting Device at Foot of Shaft

By Richard Bowen
Pittston, Pa.

An interesting home-made automatic switch-throwing device is in use at the foot of the Baltimore shaft of the Hudson Coal Co., Wilkes-Barre, Pa. This is shown in the accompanying illustration. It consists of two connected pivoted levers, one actuating the switch-



WITH THIS ARRANGEMENT TRACK SWITCH IS ALWAYS THROWN RIGHT FOR INCOMING CAR

point bridle bar, while the other carries a rectangular or diamond-shaped cam that moves from side to side under the action of the car wheels.

The arrangement is so simple as to require little explanation. The cam is supported at such a height as to move over the converging rails as they approach the frog. The straps passing over the levers are D-shaped and serve merely to constrain the motion of these parts. It is self-evident from the drawing that cars will be shunted automatically, first to one and then to the other cage.

Problems of Operating Men

Edited by James T. Beard

Will a Lighted Cigarette Ignite Gas?

The Universal Verdict of Miners Acquainted with Gas Is Against the Taking of Cigarettes Into a Mine Generating Gas, as Manifested by the Host of Letters Received. For the Most Part, the Argument Steps Aside from the Original Question

RESPONDING to the question asked by a Pennsylvania miner as to whether ignition of firedamp can take place from the glowing end of a lighted cigarette, *Coal Age*, Nov. 11, p. 1005, and the invitation of the editor for readers to express their opinions, I am pleased to offer the following as expressing my view:

It seems the miner had listened to an argument between a mine foreman and a fireboss in regard to a lighted cigarette causing an explosion of gas. The foreman claimed that this was possible while the fireboss disagreed with him, saying he believed the gas could not be fired by a glowing cigarette if no flame was present.

As a matter of fact I do not believe that the fireboss would have been willing to put his claim to the test in a mine containing firedamp. Men who have studied the nature of gas and observed its behavior in the mine do not carry cigarettes and matches with them into a gassy mine.

Arguments Based on Opinions

It is true we have been taught that the several inflammable gases found in mines ignite at temperatures ranging from 500 to 1,000 deg. F., while the temperature of the glowing end of a cigarette may not exceed 400 or 500 deg F. At the same time few men would care to take the chances of trying the experiment.

Like my friend, the miner, I have listened to many an argument on this and other matters relating to the mines, but a little questioning has quickly shown that the actual tests have never been made and the arguments are merely based on opinions.

But, putting arguments aside, let me ask, "What is to be gained by raising such a question when practical, responsible mining men all agree that cigarettes, matches or other means of fire have no business in a gassy mine? Would we favor amending our mining laws if it was proved that the fireboss was right and gas cannot be ignited by a cigarette?

In my opinion neither the Mine Inspection Departments of the states nor local mine officials are bothering their heads about such a matter. If gas accumulates in a mine remove it by causing a good air current to sweep the face, but never run a chance with a lighted cigarette.

It is reported that gas was ignited in a mine in Washington by a spark from a pick striking a sulphur ball; but I have yet to hear of such a thing in Colorado. An explosion did occur one Sunday, however, in a mine in the southern part of our state when no one was in the mine. It was claimed then that an accumulation of gas was ignited by sparks caused by a fall of rock on other rock, although I advanced the theory that electric wires caused the ignition of the gas.

Farr, Col. ROBERT A. MARSHALL.

ANOTHER LETTER

HAVING read the inquiry of a miner regarding the possibility of a smoldering cigarette igniting gas in a mine, *Coal Age*, Nov. 11, p. 1005, I feel that there are many men working in our mines who would not fear to smoke in a mine generating gas could they manage to do so without being caught in the act.

For this reason it seems to me proper that the question should be investigated thoroughly by our Bureau of Mines and experiments made to prove or disprove the contention expressed in the reply to this inquiry; namely, that the ignition of firedamp requires a higher temperature and greater intensity than is possible in the smoldering embers of a cigarette.

Belief That a Lighted Cigarette Will Not Ignite Gas

It seems unreasonable for one without a technical knowledge and training to attempt to set up his opinion against that expressed by those who have studied the subject. On the other hand, a statement of this kind must have a tendency to accelerate the near approach to danger due to smoking in mines. With many others, I see grave danger in the idea becoming prevalent that smoking cigarettes in a gassy mine is not dangerous. By experiment I have found it quite easy to ignite a carbide lamp with a lighted cigarette.

Some time ago while firebossing in a gassy mine that was electrically equipped the power suddenly failed and ventilation ceased. I at once ordered all lights extinguished at the face and withdrew the men to the bottom to await the restoration of power. Some of the men fell to smoking and laughed when I remonstrated with them, saying the gas could not reach them where they were.

Danger When Fan Is Started

The danger I foresaw was the possibility of a large increase of gas when the power was again turned on and the fan started. It would have been far wiser for me to have taken them all up the manway and not allowed them to return till the mine had been examined after the power was restored. Fortunately the cessation of power was but of short duration and the men met no trouble on returning to their places.

The suggestion made by "Safety Inspector," Sept. 16, p. 593, in regard to providing steam to take the place of electric power when the latter fails, is a good one and should meet with general approval. It even seems to me that this is a point that should be covered by the mining laws of every state.

Linton, Ind. W. H. LUXTON.

A THIRD LETTER

TO MY MIND, the question asked by "Miner" and answered in *Coal Age*, Nov. 11, p. 1005, regarding the firing of a body of gas by a lighted cigarette is too simple a proposition to admit of discussion; and I was surprised that, after answering the question and warning the smoker that "cigarettes, lighted or otherwise, should never be permitted in a gassy mine," the editor asked for the opinions of others on the question submitted.

Certainly, however positive one may be that a lighted cigarette could not or would not set off gas, no man would be foolhardy enough to try the experiment in the mine. I firmly believe that a lighted cigarette in the mouth of a smoker would touch off any accumulated gas with which it might come in contact in the mine.

My thought goes back to the beginning of time when Adam and Eve, driven from the Garden, had to cook their first meal and, perhaps, started their fire by the heat generated by rubbing together two smooth sticks.

The miner today swinging his pick to break the fallen coal draws a spark when the pointed steel glances on a sulphur ball embedded in the coal. As stated by the editor the heat of the spark is sufficient to fire any gas that perchance is present.

The smoker daring enough to smoke in a gassy mine may take the precaution to withdraw to an air-course to light up and return to his place smoking; but will anyone deny that there is always the possibility of the glowing end of the cigarette projecting a tiny blaze under the strong suction or puffing action of the smoker, or generating sufficient heat to ignite gas if present? "Play safe" is my motto.

JAMES A. HENNIGAN.

Pittston, Pa.

A FOURTH LETTER

THE question raised by a miner from Mt. Carmel, Pa., in regard to a lighted cigarette setting off gas, reminds me of an amusing incident in my own career when mining coal in Great Britain. In that country, men are fined and discharged from the colliery if cigarettes, pipes or matches are found in their possession while in the mine.

But before narrating the incident I want to say that it pays to play safe. I would rather believe that the glowing end of a cirgarette, or a smoldering pipe would ignite gas and feel safe in that belief, than to rest my faith in the theory that ignition of gas from such a source is impossible, however well the fact may seem to be demonstrated. No investigation made by the Bureau of Mines or any other authority could induce me to walk into a body of gas with a lighted cigarette or pipe in my mouth.

CIGARETTES OR PIPES DANGEROUS AS NAKED LIGHTS

Referring to the dispute between the foreman and the fireboss mentioned in this inquiry, my inclination is to side with the foreman in his contention that a lighted cigarette *will* ignite gas. It is my belief that we should look upon a lighted cigarette or pipe as we would upon a naked light. Many a serious fire or explosion of gas has been caused by lighting a cigarette or pipe and throwing the match down among some combustible material, if, perchance, the flame of the match failed to ignite the gas present.

Let it not be thought that I am speaking now because of a prejudice against the use of tobacco. No one is more fond of the weed than I am myself. The idea I wish to convey is that pipes, cigarettes, matches and other means of fire are no more safe in a gassy mine than frozen dynamite placed in a stove oven to thaw. For my part, I cannot conceive of a man wanting to smoke while engaged in the work of removing gas, though I confess men will often do strange things that are hard to understand.

But my interest in this question has almost made me forget the incident I started to narrate, which is as follows: On my way home from the mine one night, I purchased a package of cigarettes and, lighting one, put the remainder in my vest pocket. The following morning, my fellow boarder put on my vest by mistake in place of his own. Arriving at the mine he found the men lined up to be searched for matches and tobacco, which was the custom about twice a week.

Not being a smoker himself and having no suspicion that he wore another man's vest, my friend submitted cheerfully to being searched. It can well be imagined what his feelings were when the cirgarettes were drawn from his pocket, as he was a most careful and law-abiding citizen and miner. It was with much difficulty that a satisfactory explanation was made regarding the matter.

COAL SEAM BURNS FORTY YEARS

Another incident, hardly less amusing, occurred when a fire that was consuming a seam of coal on the east side of this valley, near Wilkes-Barre, Pa., broke out on the surface. For more than forty years the fire had been in progress in an old abandoned mine and, although the mine and all openings thereto had been carefully sealed, the fire continued to eat its way through and make its appearance at different times and places on the surface.

About six months ago a fireboss discovered that the fire had broken through into the live workings of the mine where he was employed. He reported the fact at once to the superintendent, who is an old experienced miner. A little later the fire broke through to the surface and the superintendent with several firebosses and others went to the place to see what could be done in the way of closing the break and smothering the fire.

So accustomed had this old-time miner been to excluding all naked lights and fire when removing gas in mines and handling fires on the inside, that he quite forgot himself for the moment and would allow no one to smoke around the place there on the surface, notwithstanding the fact that the flames were even then leaping three or four feet into the air.

Plains, Pa. RICHARD BOWEN.

A FIFTH LETTER

THE question of whether a lighted cigarette will set off gas in a mine is to me a foolish one. It reminds me of a child striking a percussion cap to hear it pop and being badly hurt by the explosion. It often happens that our curiosity overrides our better judgment and we are tempted to put such a question as this to the practical test with probably fatal results.

The curiosity of mine officials or their ignorance, it little matters which, has frequently caused the loss of many lives. Numerous mine disasters can be traced to the foolish acts of officials, and it would not be strange to me if it transpired that the fireboss mentioned in this inquiry had never witnessed a great mine disaster. Had he known its terrors, he would not have debated this question with his foreman, but have given himself to devising ways and means of eliminating explosions, instead of seeking to ascertain to what extent one could take chances.

While it may be true that, under certain conditions, gas may not ignite, why should any one desire to take the chance. It is well known that gas is highly inflammable and capable of great destruction. Our leading mining text books draw attention to the fact that a firedamp mixture is made more easily ignitible when coal dust or olefiant gas are present, and its explosive force is greatly increased.

Again, when gas issues fresh from a feeder and is not diluted with air it is what the miners call "sharp." In that condition, the gas agitates the lamp flame and obstructs the formation of a cap, which is always difficult to observe when the gas is sharp. These variations in the condition of gas in mines render the possibility of its ignition quite uncertain and make it more than ever important to take no chances.

Mention has been made regarding the possible ignition of gas by a spark. In this connection, many will recall the Bellevue mine disaster, in Canada (Dec. 9, 1910), and remember that the conclusion of the commission that investigated the cause of the explosion was that the ignition was due to sparks caused by a heavy fall of rock striking other rock. The correctness of this conclusion was fully demonstrated when it was shown that rock of that particular character would strike sparks in falling.

My opinion is that we should take all possible care and use every precaution in maintaining a wide margin of safety when dealing with gas in the mine.

New Castle, Col. V. FRODSHAM.

[These and other letters have stepped aside from discussing the question asked, and devoted themselves to expanding on the generally acknowledged danger of smoking or carrying matches into a mine generating gas. As we have previously stated, "Cigarettes, lighted or otherwise, should never be permitted in a gassy mine," Nov. 11, p. 1005. Except under peculiarly favoring conditions, it may be impossible to ignite pure methane mixed with air by the glow of a cigarette and yet smoking in gas is dangerous.

WHY THE QUESTION IS IMPORTANT

One writer, however, probably puts into words the thought that fills the minds of many others; namely, Why ask such a question if it is not to be answered with the assurance that ignition of firedamp by the glowing end of a cigarette is not only possible but probable if the gas is present?

The answer to this suggestion is: Accurate knowledge of how ignition of firedamp mixtures may take place is necessary to the correct determination of a disaster of that nature. It may be possible by a vigorous puffing to increase the temperature of the glowing end of a cigarette perhaps several hundred degrees and possibly (?) cause it to inflame.

One writer states he found no difficulty in igniting a carbide (acetylene) lamp with a lighted cigarette.* The temperature of ignition of acetylene gas is 900 deg. F., while that of pure methane is 1,200 deg. F., but the volume and intensity of the igniting flame are important factors in the latter instance.

We hope that the Bureau of Mines will investigate the question by performing the necessary experiments to determine the facts. We have often tried to ignite the illuminating gas flowing from an open jet after the match has gone out leaving only the glowing end but no flame. Although the charred match glowed more and more brightly in the gas, ignition failed in every case.—Editor.]

*The Dewar Mfg. Co., Lamps, 34 Thirty-fifth St., Brooklyn, N. Y., are authority for the statement that the carbide lamp can be ignited with a cigarette only after clearing the lighted end well and drawing hard on the cigarette for about 45 seconds.

Tact vs. Discipline

The use of tact in dealing with miners is always commendable but, as with everything else, there are exceptions to the general rule and the use of tact cannot be recommended when it means the sacrifice of discipline.

EXPLAINING his previous statement advocating the use of drillings for tamping a charge of dynamite, Benjamin Deeble states, *Coal Age*, Oct. 28, p. 905, that he referred then to blasting rock only, which he says is implied by the use of dynamite.

Admitting that to be the case, still it is never safe to tamp a hole with gritty material. If the rock drillings are fine they may serve well for the purpose but if gritty there is danger of injuring the fuse when tamping the hole. At least 2 in. of clay or other plastic material must first be inserted on top of a dynamite charge for its protection.

In the same letter Mr. Deeble cites an instance where a fireboss used tact in dealing with a miner who had failed to set a post under a rock that he (the fireboss) had marked as unsafe when making his rounds. Returning to the place later he found the man engaged in loading his coal and the post not set as the fellow had been notified to do before proceeding with other work.

Allowing that the fireboss, in this instance, gained his point by his tactful remonstrance with the man for not having followed his instructions, let us consider for a moment what might have resulted by the man's failure to obey the orders given him. Suppose that the fireboss, on returning to the place, had found the man beneath tons of fallen slate. Does not such a possibility urge the use of discipline in every case of willful disobedience of instructions. There are times when tact should be used but never at the sacrifice of discipline.

An instance comes to my mind regarding a foreigner who was blessed with a jawbreaking name spelled in twenty-seven letters. For convenience, the superintendent gave him the name of "Mickey." One day the superintendent was inspecting the mine with the foreman. On coming to Mickey's place, they found that the poor fellow had neglected to set a post as instructed. I can see that foreman now as he grabbed a post and made a rush for poor Mickey. The fellow was terrorized and it is needless to say he never again forgot to set his post.

In the same district and about the same time, this foreman found a foreign miner who had broken the glass of his safety lamp and was still at work. It was not a time then to use tact and, blowing out the light, the foreman fairly drove the miner from the mine. It is quite probable that fellow was equally impressed with the seriousness of his neglect as was poor Mickey.

The long list of "don'ts" given at the close of Mr. Deeble's letter, though good as far as it goes, would be more complete if continued. However, I have more faith in emphasizing things that should be done, yes, *must* be done, than in telling a man what he must not do. I believe in the practical lessons taught by moving picture lectures showing the right and the wrong way of working in the mine. The miner's family, including his wife and children, see and talk about those things at home, which has its effect in a wonderful way.

McKeesport, Pa. ANDREW O. BAIN.

Inquiries Of General Interest

Heating Value of Coal Calculated

An assumed relation between the fixed carbon and the volatile matter in coal is suggested as a basis for computing the heating value of the coal.

WILL *Coal Age* kindly show by an actual example, the methods of determining the heating value (B.t.u.) of a coal giving the following analysis: Moisture, 1.50 per cent; fixed carbon, 59.50 per cent; volatile matter, 34.37 per cent; ash, 4.63 per cent; sulphur, 1.45 per cent? MINE FOREMAN.

———, Ala.

This being a proximate analysis, it is necessary to employ the method suggested by William Kent, which assumes that there is a fairly fixed relation existing between the fixed carbon and the volatile matter contained in coal having more than 60 per cent of fixed carbon. Applied to this class of coal, the method suggested gives results within 2 per cent of the actual heating value of the coal as determined by the calorimeter.

Coals having less than 60 per cent of fixed carbon are liable to exhibit an error of 4 per cent when the heating value is calculated by this method. The reason for this is that coals low in fixed carbon and high in volatile matter usually show a considerable variation in the percentage of oxygen in the volatile matter and the method is therefore less accurate as applied to such coals.

The first step in the calculation is to find the percentage of fixed carbon per pound of combustible. By the analysis given, the total percentage of combustible matter in the coal is 59.50 + 34.37 = 93.87 per cent, and the percentage of fixed carbon per pound of combustible is, therefore, (59.50 × 100 ÷ 93.87 = 63.38 per cent. The percentage of fixed carbon being greater than 60 per cent classes this coal as one to which the Kent method can be applied with an error less than 2 per cent in calculating its heating value.

Referring to the following table giving the heating value of coal per pound of combustible (Kent, 8th edition, p. 791), the heating value of a coal containing 63 per cent of fixed carbon is 15,120 B.t.u. For 68 per cent of fixed carbon, the heating value is 15,480 B.t.u. By interpolation, the heating value corresponding to 63.38 per cent of fixed carbon is found to be 15,147 B.t.u.

APPROXIMATE HEATING VALUES OF COAL

Per Cent of Fixed Carbon in Coal Ash-and-Moisture Free	Heating Value (B.t.u.) per Pound of Combustible
100	14,580
97	14,940
94	15,210
90	15,480
87	15,660
80	15,840
72	15,660
68	15,480
63	15,120
60	14,760
57	14,220
55	13,860
53	13,320
51	12,420

Finally, the total combustible matter in this coal being 93.87 per cent, the heating value per pound of coal, is 15,147 × 0.9387 = 14,218 B.t.u.

Oxygen in Air Replenished

The oxygen content of the atmosphere is everywhere practically uniform, that element being continually replenished as rapidly as it is consumed.

WHY is it that the proportion of oxygen in the air surrounding the earth remains constant when we know that there is such large quantities of this gas consumed in various ways, through the burning of carbonaceous matter and the oxidation of different materials? We are taught that all forms of combustion taking place in the air are accomplished with a correspond-

ing loss of oxygen, which is converted into carbon dioxide. How then is this loss of oxygen compensated; or do we understand that the amount of oxygen in the Universe is gradually becoming less and less with the advance of time?

New Kensington, Pa. STUDENT.

Innumerable tests have demonstrated the fact that the composition of free air is practically uniform at all points on the surface of the earth and to a considerable height above the surface. Taking the nebulous hypothesis of the formation of the earth as correct, the solid crust of the earth at one time existed as a gaseous medium of ever increasing density; and it is estimated that nearly 50 per cent of the weight of this crust is oxygen, while 23 per cent of the weight of the remaining atmosphere is the same element.

It is not known in how many ways, through manifold natural agencies, the oxygen contained in the earth's crust is finding its way back into the atmosphere. Science has discovered, however, that while large quantities of oxygen are being continually consumed, Nature has made ample provision for replenishing the supply. One of these avenues is through the agency of plant life. In the growth of plants there is a continuous cycle, which is briefly described as follows:

All vegetation absorbs carbon dioxide from the atmosphere. Moisture is absorbed both from the air and from the ground. In the growth of the plant, the carbon of the carbon dioxide and the hydrogen of the water unite to form carbohydrates and the oxygen is set free and passes into the atmosphere.

The atmosphere surrounding the earth is one great aërial sea, which is being constantly agitated and uniformly mixed by the agency of winds and currents that are maintained through convection due to the ever-varying temperature of the air. These agencies are sufficient to explain the uniformity of composition of the atmosphere surrounding the earth.

Examination Questions Answered

Examination for Mine Foremen, Eleventh Anthracite District

(Selected Questions)

QUESTION—*Name and describe some of the important differences between the Davy, the Clanny and the Wolf safety lamps.*

ANSWER—In the Davy lamp the oil vessel is surmounted by a gauze chimney 1½ in. in diameter and from 4 to 6 in. in height, the top of the chimney being protected by a gauze cap that fits over the top of the main gauze. In the Clanny lamp, the flame is surrounded by a glass cylinder 2¾ in. in diameter and the same height, which is surmounted by a conical gauze chimney 4 in. in height and protected at the top with a gauze cap like the Davy.

The air enters the Davy lamp through the lower portion of the gauze at a point on a level with the flame of the lamp, which makes the circulation within the chimney wholly ascensional. In the Clanny lamp the air enters the lamp just above the glass chimney and must descend to the flame, which causes two conflicting currents in the combustion chamber within the glass cylinder and gives this lamp a tendency to smoke.

The Wolf lamp, like the Clanny has a glass cylinder surrounding the flame and surmounted by a conical gauze, which is generally protected by a steel bonnet of a particular design, being corrugated and having tangential openings for the escape of the burned air and gases. In this lamp, the air enters the combustion chamber at a point below the flame, through gauze-protected openings, which makes the circulation wholly ascensional and improves the illuminating power of the lamp. The Wolf lamp burns benzine or benzine naphtha, which is highly volatile and gives a brighter flame, besides being more sensitive to gas. On this account, the lamp is easily extinguished in gas and is equipped with an igniter for the purpose of relighting the wick at such times. Owing to the extreme volatile nature of the oil burned, the Wolf lamp gives a fuel cap that is often mistaken for a gas cap when no gas is present. For the same percentage of gas in the air, the Wolf lamp gives higher flame caps than lamps burning sperm or cottonseed oil. The oil vessel of this lamp is of solid pressed steel and filled with cotton to absorb the volatile oil and make it less explosive.

QUESTION—*What dangers may arise from the improper assembling of a safety lamp?*

ANSWER—When a lamp is improperly assembled, the parts do not fit tightly together, which permits the gas-charged air burning within the lamp to pass the flame to the outside air and renders the lamp unsafe for work in gas. A lamp is improperly assembled when any part is omitted or when each part has not been carefully examined to see that it is in perfect condition and clean.

QUESTION—*A slope measures 4.6 in. in length on the mine map; the tidal elevation at the top is + 780 ft., and at the bottom + 530 ft.; what is the length and grade of the slope?*

ANSWER—The Anthracite Mine Law (Art. 3, Sec. 1) requires the mine map to be drawn to a scale of 100 ft. to the inch. Assuming this has been done, a measurement of 4.6 in. on the map corresponds to a horizontal distance, in the mine, of $4.6 \times 100 = 460$ ft. The vertical height of the top of the slope above the bottom is $780 - 530 = 250$ ft. The length of the slope is $\sqrt{460^2 + 250^2} = 523.5$ ft.

The slope has an inclination of 28° 31½'. For example, calling the angle of inclination of the slope a, we have $\tan a = 250 \div 460 = 0.5435$; and the angle corresponding to this natural tangent is 28° 31½'.

The grade of the slope may be given as a rise of 250 ft. in 460 ft. horizontal distance, or a rise of $250 \div 4.6 = 54.35$ ft. per hundred feet horizontal distance; or $250 \div 5.235 = 47\frac{3}{4}$ ft. per hundred feet pitch distance. The former corresponds to a grade of 54.35 per cent of horizontal distance and the latter to 47.75 per cent of pitch distance.

QUESTION—*What precautions would you suggest to guard the employees in a mine from possible accidents due to the use of electricity?*

ANSWER—All electrical installations in and around a mine should be made by a competent mine electrician who is thoroughly familiar with underground conditions. All conductors will then be properly secured to the mine timbers or otherwise supported in a safe manner in the rib or roof of the entry.

Conductors must be carried on the opposite side of any entry used as a travelingway by the men; but, as far as practicable, all live wires must be kept off of travelingways and roads that men are obliged to use in going to and from their work. Wherever men are obliged to cross a trolley road, or come near to live wires, the wires must be thoroughly protected so as to prevent accidental contact of men or animals.

At all points, live wires must be properly insulated to prevent the accidental grounding of the current. It is necessary to use extra precaution in the timbering of all roads and passageways where electric wires are installed, in order to avoid the dangers due to a fall of roof tearing down the wires.

In addition to the precautions relating to the installation of electric wires in a mine, all employees should be instructed to observe the danger signals that must be posted at all points where men must work or come near to live wires. Workmen must be warned not to carry their tools or other supplies on their shoulders when in the mine. Strict rules and regulations must be made and enforced by suitable penalties to prevent any tampering with electric wires or other appliances. Electricity should not be installed in mines generating gas. Where the coal is mined by machines, extra care must be used to prevent the grounding of parts of the machine that might cause accident to the men in charge. The fine cuttings (bug dust) produced by the machine should be loaded out and not left to accumulate at the face.

May Move Tenters to Healthful Quarters

FEARING that an epidemic might break out in the tent colonies of the striking coal mine workers in Mingo County, West Virginia, Governor Cornwell on Dec. 11 instructed the State Health Department to send experts to investigate health conditions. It has been suggested that the tenters should be moved to Williamson or some other town in Mingo County, where they could be made more comfortable and their condition improved from a sanitary standpoint. It is understood that evictions are proposed on the Kentucky side of Tug River, and that the union proposes to place the families thus displaced in the West Virginia tent settlements, thus adding to the congestion and increasing the danger of a spread of disease. Disputes have arisen between the mine unions and the operators over the possession of the land occupied by the Burnwell tent colony in West Virginia. The military believe this matter one of civil interest and will take no action in the matter.

National Coal Association Economist

BECAUSE of the attention expected to be given the coal industry at the present session of Congress, particular importance attaches to the position of economist for the National Coal Association. This work just has been taken over by Allen H. Willett, for many years instructor in the Carnegie Institute of Technology, Pittsburgh.

After his graduation from Brown University he became an instructor in economics there, a position he held from 1901 to 1905. In the latter year, on the opening of the Carnegie Institute of Technology, he accepted an invitation to take charge of the department of economics in that institution. In 1908 he organized the department of commercial engineering at the Carnegie Institute, which he directed until 1917, when he left to take up war work. He served for a time as assistant food administrator for Allegheny County, Pennsylvania.

In 1918 Mr. Willett went to Washington at the request of the War Labor Board to make the investigation of wages and hours of labor. The result of this work is discussed in a preliminary report which was published by the Department of Labor as its bulletin No. 265. The investigation was cut short by failure of the last Congress to provide an appropriation for its continuance. As a result several of the reports which had been prepared still are awaiting publication.

ALLEN H. WILLETT
Head of Bureau of Economics, National Coal Association.

Anthracite Production, April to November

PRODUCTION of anthracite in recent years is summarized in a table issued by the Geological Survey, printed below. The figures for 1919 are revised for the last time to agree with the results of the Survey's mine canvass for that year. The error in the original estimates was found to be 2 per cent. The figures for 1920 also are revised on the basis of statistics of monthly shipments received from the Anthracite Bureau of Information.

It will be seen that up to Sept. 1, when the anthracite strike began, the present coal year was ahead of all the preceding six years except 1917 and 1918, which hold the record. The loss of tonnage on account of the strike and the succession of holidays which marked November have brought it about that the cumulative production up to Nov. 30 (59,633,000 net tons) was less than that in any of the years shown except 1916. Compared with 1919 the present year shows a decrease of 2,259,000 net tons.

COMPARATIVE PRODUCTION OF ANTHRACITE, FIRST FIVE AND EIGHT MONTHS OF COAL YEAR *
(In Net Tons)

Coal Year Beginning	Production to Aug. 31	Production to Nov. 30
April 1, 1913	38,150,000	61,601,000
April 1, 1914	39,017,000	64,026,000
April 1, 1915	37,541,000	62,239,000
April 1, 1916	34,678,000	57,304,000
April 1, 1917	43,000,000	68,866,000
April 1, 1918	44,338,000	67,284,000
April 1, 1919	37,883,000	61,892,000
April 1, 1920	39,212,000	59,633,000

* Includes mine fuel and sales to local trade.

Such data as are available to the Geological Survey indicate that the distribution of the tonnage produced has not departed greatly from normal, as established by past experience. Receipts at Duluth-Superior to the end of November were 1,594,000 net tons as against 1,730,000 for the season of 1919. Similarly, shipments to Canada for the first seven months of the coal year are reported as 3,023,000 net tons, about the same proportion of the total output as has been sent to Canada in other years.

COMPARATIVE IMPORTS OF PENNSYLVANIA ANTHRACITE INTO CANADA, FIRST SEVEN MONTHS OF COAL YEAR
(Net tons, all sizes)

Coal year beginning	Imports into Canada to Oct. 31	Per Cent of Pennsylvania Production
April 1, 1914	3,158,000	5.6
April 1, 1915	2,696,000	5.0
April 1, 1916	2,843,000	5.7
April 1, 1917	3,546,000	5.9
April 1, 1918	3,063,000	5.1
April 1, 1919	3,238,000	6.0
April 1, 1920	3,023,000	5.8

WHEN, ON DEC. 9, eighteen men employed in the Barnum Colliery, Pittston, Pa., refused to join the "new" or insurgent union, a button strike took place. These eighteen were members of the United Mine Workers of America. This button strike violated a provision of the agreement with the Pennsylvania Coal Co. to the effect that no colliery should go on strike unless the general grievance committee, which consists of seven men from each of the collieries, has taken up the matter. Mr. Joyce, who is the accepted mediator for the insurgents, managed to get the men back to work.

Would Prohibit Coal Exports Until Home Needs Have Been Satisfied

A BILL which has been introduced in the House of Representatives by Representative McLane, of Pennsylvania, would, if passed, forbid the sale of coal for export until the needs of American householders have been cared for. In addition, the bill empowers the Interstate Commerce Commission to fix the price of coal and to establish rules for regulating the production, sale, shipment, distribution, apportionment and storage of coal.

It is a foregone conclusion that the bill could not be passed and will not receive serious consideration by the Committee on Interstate and Foreign Commerce, to which it was referred.

Representative McLane is a native of Ireland. He was elected to Congress from the Scranton district. In his autobiography he describes himself as a locomotive engineer by occupation and states that he worked in the coal mines of Scranton for ten years.

Loomis Says Lehigh Valley Conformed to Ruling in Lackawanna Case

REFERRING to the decision of the Supreme Court ordering segregation of the coal from the rail properties of the Lehigh Valley Railroad Co., E. E. Loomis, president of the company, declared Dec. 8 that the Lehigh Valley's house is in order.

He stated that when in February, 1917, he went to the Lehigh Valley from the Lackawanna Railroad Co. he had fresh in mind the provisions outlined by the Supreme Court in the Lackawanna case. He said he put those provisions into effect in the Lehigh Valley's management, and since that time has conformed strictly to those rulings in the management of the Lehigh Valley's coal and rail properties.

Mr. Loomis recalled the fact that the suit was instituted six years ago by the government and that in the time that it has been dragging through the courts radical changes have taken place in business. He said that attorneys had not been able to bring those facts to the attention of the court because of the fact that they are developments which have taken place subsequent to the filing of the suit.

Officials of the Lehigh Valley say that they have as yet no plan for getting its coal properties to its stockholders. Indebtedness of those companies, stock and bonds of which are owned by the Lehigh Valley, are comparatively small, amounting altogether to approximately $24,000,000 of stocks and bonds. Mr. Loomis estimated that coal ore in the properties owned by the coal subsidiaries was between 800,000 and 1,000,000 tons. Most of those properties were acquired by the railroad prior to 1875, and its officials say that every one of them was owned by the company prior to the enactment of the Sherman Act.

Loss in Mingo County Five Million Dollars

IT IS estimated by officials of the Williamson Operators Association that the total loss in production in the Williamson field between July 1 and Dec. 1 was 1,020,000 tons. Estimating the selling price per ton of coal in the period mentioned as $5 per ton, which is considered a conservative figure, the loss in production is valued at $5,100,000.

As showing the heavy losses sustained by the miners during the duration of the strike, only 139 men out of a possible 5,000 were working the greater part of July, but on Dec. 3, in the whole Williamson field 4,700 men were at work. It is estimated that the average day's labor would net a miner $6, and on that basis the loss to the miners involved in the strike during July alone was well over a million dollars. Although miners have been returning to work from time to time it is estimated that the total loss during the duration of the strike has been in the neighborhood of $3,000,000. Miners assert that there are still 2,700 men on strike, but that is disputed by the operators. If the number as given by the miners is correct it means a daily loss in wages at the present time of $16,000. It is asserted by the mine workers that the sum of $32,000 a week is being expended for the maintenance of the miners.

Production figures given by the Williamson Operators Association show a total production in the strike zone of 135,000 tons for November, or an increase of nearly 25,000 tons over October. It also is stated that nearly 1,800 men are now at work, that being an increase of 374 over October.

On Dec. 1 all but eight of the forty-eight mines closed down were in operation and between Dec. 1 and Dec. 10 additional mines resumed work.

Erie Mine Workers Still Talk Strike

TROUBLE continues at the Pennsylvania Coal Co.'s mines. The men demanded at one time that three company superintendents be dismissed or they would strike. It was later announced that Superintendent Weichel of No. 14 colliery had been given an indefinite "leave of absence" by the management of the company. At a meeting held Dec. 2 the men decided not to strike owing to the removal of Mr. Weichel and because the charges against Thomas Brown and William Johnson, the other superintendents, were not sustained. But they then demanded the discharge of General Superintendent William P. Jennings, alleging that he had interfered in union affairs. The company management has undertaken to discharge any of its superintendents if it can be proved that they have been intimidating laborers and discriminating against union men.

Five subcontractors who were discharged when the strike ended are alleged to have been given places in the mine where large wages could be made. Feeling is strong at the Butler Colliery against sixteen "hustlers" who under the subcontract system used to speed up production. These men are now alleged to be hindering the miners in producing coal.

Dead Work Still Rises to Trouble Scale Makers in Northern West Virginia

OPERATORS and miners of northern West Virginia are still at work on a "dead-work" scale embracing the mine territory in twelve and a half counties in northern West Virginia, another meeting of the joint scale committee of operators and miners on "dead work" having been held at Fairmont on Monday, Nov. 29. The joint scale committee was in session two days, but reached no decision even after the sub-committee made its report to the committee as a whole. There are so many things to be taken into consideration in making up a "dead-work" scale with a view to preventing future disputes that it will require some time yet to work out a complete scale. It is not believed in fact that such a scale will be ready for submission much before the first of the year, even if it can even be settled then.

COAL SHIPPERS, PRESENT and prospective, through the port of Charleston, S. C., are actively considering the organization of a tidewater coal exchange similar in character and extent to those now in operation at the ports of Baltimore, Philadelphia, New York and Hampton Roads. Dr. Henry M. Payne of Andrade-Eyre Inc., who is a director in the Tidewater Coal Exchange of New York, has been asked to assist in organizing the Charleston exchange. A meeting of those interested will be called at an early date to confer with officials of the Southern Ry. for the purpose of organizing this new exchange at Charleston. All coal companies, operators, or transshippers who are interested are requested to advise H. M. Payne, whose address is 80 Broadway, New York City, at once.

CHARLES H. BATLEY, chief representative of the international union of United Mine Workers of America in subdistrict No. 4, district 17, has issued a notice to the union men in the northern West Virginia field condemning the closing down of mines by abstention from work for funerals and assuring them that if the practice continues the penalty clause will be put in effect. He suggests in this communication that the men work and pay a dollar per man to the bereaved family.

Cushing Charges Unfair Treatment of Coal Industry by Calder Committee

COMMENTING on the report of the Calder Committee on Reconstruction submitted to the U. S. Senate Tuesday, Dec. 14, George H. Cushing, managing director of the American Wholesale Coal Association, wrote the following letter, dated Dec. 14, to Senator Calder:

"May I, without offense, take some slight exceptions to your report just filed with the Senate. I do so because I fear that you have been led to believe that the building industry was surrounded by difficulties which by some process coal avoided. This impression, if it exists, should be corrected.

"Before going into that matter, however, I want to digress long enough to assure you that I am not to be listed among the severe critics of your committee. That is, you told me that Mr. Miller was directing your investigations. When not working with you he is the editor of a newspaper devoted to the building industry. I see nothing wrong in your seeking his help nor in his serving your committee. If I allowed myself any feeling on the subject it would be one of regret that you had not employed an editor of a coal-trade paper to conduct the coal investigation. He might have written a more sympathetic report. However, I am not on that score a critic of the work of your committee.

Testified in Favor of Equal Treatment

"Especially I am furthest from criticizing your committee because it said that the Interstate Commerce Commission should regulate transportation and not industry. Indeed, when the building-material people went before the commission on July 8 and 9 to plead for equal treatment with coal in the matter of car supply, I gave testimony in their behalf. I said that the coal trade could produce the needed coal even if the building-material people were allowed to have cars in their proper season.

"Where I feel that your report falls short of doing simple justice to coal is in the following particulars:

"(1) The dislocations in business have been general and worldwide. They have not been confined to the housing program of the United States. The same difficulties which the building industry faced have encompassed the coal trade. A little more emphasis upon this fact and a little less of sweeping condemnation of the coal trade might have made your report more fair.

"(2) We all have, of recent years, been insisting upon a new and rather high standard of business morality, this being insisted upon especially during the war, but of late there has been, due to superior temptations, a general and lamentable lapse from even ordinary business morality. A little more emphasis upon that important fact—recognition, perhaps, that our public standards had outrun the capacity and practice of private individuals and recognition that this hiatus was not peculiar to coal—would have made your report seem somewhat more fair to coal.

Unusual Practices Condemned as Universal

" (3) The practices about which you complain were in no sense general within the coal trade. However, your condemnations are sweeping. They are not modified by any statement which would indicate that there is possible any discrimination between the coal trade as a whole and the worst offenders in it. On the contrary, when your report speaks of the vicious practices in the building trade it carefully localizes that immorality. If the same care had been taken to localize the bad practices in the coal trade, the effect would have been, it seems to me, to give your report a tone of greater fairness.

" (4) The facts are that the coal trade practices of which you complain amounted merely to a market explosion. This was the direct result of many things but principally it sprang from the removal of restrictions which had been extremely severe. And this explosion operated only through six months. This is a far shorter period than is covered by the charging of high prices in any other industry. Also, the fact is that the coal industry, through a long and eventful history, has never been guilty of any similar offense. On the contrary, it has been underpaid through 113 years rather than overpaid. I see no sympathetic note in your report on this account. I see no recognition of the great part coal has played in building up this country's industry. I see no recognition of its ready compliance with governmental demands whenever and wherever expressed. I see no recognition in your report of the repeated and strenuous efforts of the coal trade during last summer to police its own actions. Instead, I read only your unqualified censure. I think this breathes a spirit which might, if I may be allowed to suggest it, be more fair.

" (5) The facts are that the coal trade was striving to satisfy the home demand for coal and at the same time to build up an export trade that our foreign commerce might have a foundation of coal upon which to invite other business. This attempt to add a new department to our normal trade in coal naturally brought about a temporary dislocation in our domestic business. I believe your report could, without damage to its purpose, have recognized this fact.

" (6) In your recommendations—which in the main are excellent—you propose that sort of a study of the coal trade which has a tendency to put it perpetually under suspicion. At the same time you propose a bureau to encourage—and not criticize—the building trade. I personally believe that your report would have had a tone of greater fairness if these contrasting recommendations had been omitted.

"While I believe that these features of your partial report are unfortunate, I do not want it understood that I am in any sense hostile to what you are trying to do. I am writing this in the hope that when you make your full and final report the unfortunate impression left by this partial report may be removed. In the meanwhile, if there is anything that I or the members of this association can do to give you, in any reasonable detail, the facts about coal, please feel free to call upon me or them."

Government Regulation of Coal an Economic Mistake, Says Congressman Sanders

WHEN the Mayor of Brockton, Mass., wrote Representative Sanders, of Indiana, urging a law to fix the price of coal and to regulate its sale, the Indiana Congressman countered with a statement to the effect that, although Massachusetts shoes have increased more than 100 per cent in price in his state, he is not advocating government regulation of the price of shoes. Price regulation, he says, "is a short-sighted policy—a sad economic mistake." Representative Sanders' letter, in part, is as follows:

During the war the price of coal was fixed by a fuel administration created by the President to take over the price fixing and regulating functions under the Lever Act. The proposal to revive the price-fixing policy in regard to coal is the first serious proposal to carry our war powers and our war policies on into the period of peace.

I think there is considerable doubt as to the constitutional power of Congress in times of peace to fix the price of coal. While war powers do not necessarily end with the war, yet the power used must bear some reasonable relation to war. A general price-fixing law relating to coal is not a regulation of commerce within the meaning of the commerce clause of the constitution. . . .

Your shoe dealers and shoe manufacturers have shoes, more than they need personally. The people in the coal-producing regions have more coal than they need personally. Now it is proposed not to permit them to trade on an equality, one pair of shoes for one ton of coal, if the prevailing prices are equal—neither is it proposed to let a governmental body fix the terms upon which the trade shall be made—that is, to fix the price of the pair of shoes and the price of coal. But it is proposed to determine the value of the coal by an arbitrary method and then when the price is lowered to make the coal regions furnish

for two tons of coal for the pair of shoes, or three tons for two pairs, as the case may be.

Supply and demand is the only law that will ever truly regulate a price to be paid for commodities which are not the subject of monopoly. This law is as old as the practice of barter and trade and as unchangeable as the fixed stars. Any meddling with the law of supply and demand, except as a temporary expedient in extreme and unprecedented situations, serves a harmful rather than a helpful purpose. The reason is apparent. When a commodity is scarce it is very necessary to increase its production. In this country, as in every civilized country, the spur for production is the desire for profit.

Close observers know the history of coal production. An unprecedented demand occurred during the war for coal. Coal for factories, running night and day; coal for locomotives consuming coal as never before in the war's transportation; coal for ships, coal for export, an unprecedented demand upon every hand. The price began to go up. Coal was not a commodity of which quantity production awaited the mere order. It is found in beds. It must be drilled for and discovered. When found expensive shafts requiring considerable time for sinking and expensive machinery were a necessary antecedent to its production. Only a few men could work in opening the mine until entries were slowly driven, allowing others to be employed. Cars for the transportation of coal were not available in sufficient numbers. Thus were presented the practical difficulties in the way of laying down the coal in the yards where and when it was demanded.

Efforts to Lower Price Curtailed Production

The Fuel Administration tried in many ways to increase production, for that was the crying demand, but as prices went up in response to the demand the administration bent its efforts toward beating down the price, apparently without realizing that this was decidedly the most effective method of curtailing production. The prices were fixed, however, so that in most cases a fairly liberal profit could be made. All the bulletins, all the appeals for patriotic haste in the coal mines, all schemes for economy and saving in operation amounted to a mere drop in the bucket of increased production. The rest of the bucket was the opportunity for profit on investment. Because of this opportunity, wagon mines were opened, strip mines were worked, abandoned mines were rejuvenated, low veins were operated, and coal began to roll into the market.

If more liberal prices had been permitted the production would have shown a correspondingly liberal increase. However, the great demand was not allowed its full sway in influencing production, for an arbitrary rule supplanted it. Otherwise there would have been heavier investments in new mines and greater production. The new capital found its way into more profitable channels unhampered by arbitrary price fixing. Increased production would have driven the price down. We are now suffering from high prices—too high; in many cases exorbitant—but if the flow of capital into coal production is permitted, investors vying with each other in their anxiety to make money will bring the prices down. That is the only possible method by which you can have abundant production and reasonable prices.

Reasonable Prices Spell Doom of Wagon Mines

The price, if fixed, must of necessity be uniform in any given section of the country. If fixed so that the heavy producing mines make merely a reasonable profit, the wagon mines and other mines which are unable to produce coal at such price must of necessity immediately shut down. . . .

According to your figures the retail price of coal in Massachusetts is 100 per cent greater than before the war. The retail price of Massachusetts shoes has increased more than 100 per cent in Indiana. However, I am just as much opposed to governmental regulation of the price of shoes as I am the price of coal. It is a short-sighted policy—a sad economic mistake. People of the country are weary of governmental regulation, of paternalistic legislation, of socialistic management. The government should once more deal with governmental functions. Let private initiative and enterprise, individual skill and industry have an opportunity and in the natural laws of competition and the normal laws of supply and demand you will get relief more rapidly and more equitably.

Justice Siddons of the District of Columbia Supreme Court has rendered judgment in favor of Philip M. Riefkin, of Washington, for $67,500 against the Du Pont de Nemours Co., of Delaware, for services during the war in purchasing coal. The verdict is subject to a ruling to be made by the Court on the law point of the right to recover on an alleged contract for permanent employment. Riefkin had sued for $473,750, as commission on the basis of so much per ton of coal he obtained for the company.

M. E. Rhodes Chosen Chairman of House Committee on Mines and Mining

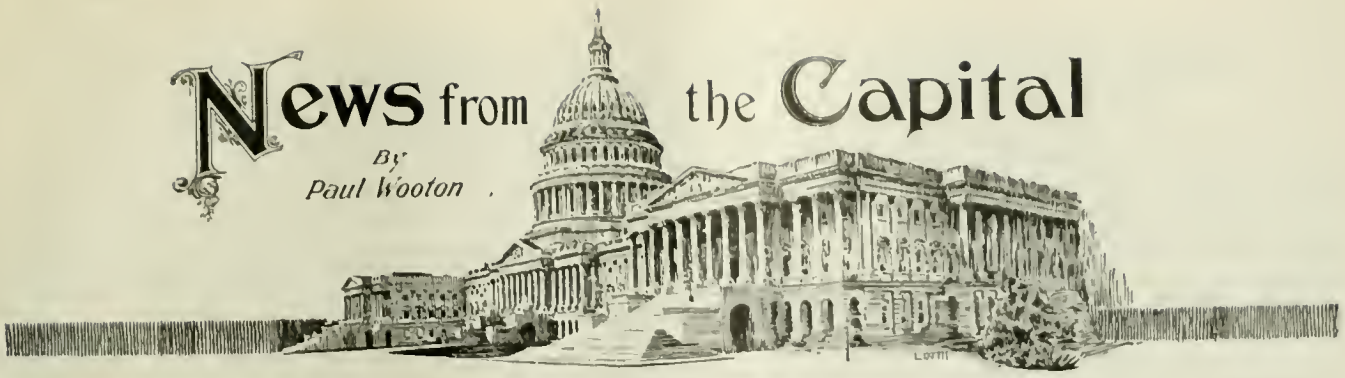
MARION E. RHODES, who just has been chosen to be chairman of the Committee on Mines and Mining of the House of Representatives, to succeed the late Representative Mahlon M. Garland, is a lawyer. His education was obtained in Mayfield Smith Academy, Cape Girardeau;

Photo by Harris & Ewing.

MARION E. RHODES
Representative from Missouri

State Normal, Missouri State University, and Stanberry College. He was admitted to the bar in 1896 and took up his residence at Potosi, Mo., and has since resided there. He was elected to represent that district in Congress in 1905 and 1906 and was again sent to Congress early in 1919 and recently was re-elected. Since March 4, 1919, he has been a member of the Committee on Mines and Mining.

The Interstate Commerce Commission estimates the number of bituminous coal mines in the country as 10,634, or about 3,000 more than prior to the war. Of these, 5,888, or 55 per cent, produce less than 10,000 tons each per year, the aggregate being 10,449,000 tons, or less than 2 per cent of the total output. To the extent that the limited railroad equipment (which has by no means kept pace with the increase in the number of mines) is distributed among these 5,888 operations, it is reduced to the 4,746 real mines which produce more than 98 per cent of the total tonnage.



Like a Don Quixote F. T. Miller Raids Office of National Coal Association

SWINGING the "axe at the open door," Franklin T. Miller, guiding genius of the Calder committee, armed with a subpoena from the Sergeant-at-Arms of the Senate and figuratively accompanied by a brass band, "raided" the offices of the National Coal Association in Washington, Saturday, Dec. 18.

Since last August, when Colonel Wentz, president of the association, first appeared before the Calder committee in New York, the Senate committee has had a standing invitation to examine all the records of the National Coal Association and to investigate to its hearts' content. In a recent letter to Governor Bernquist of Minnesota, Mr. Morrow, vice-president of the association, said "The whole record of the association is open to the Calder committee or any other proper agency that desires to know the the facts.".

Notwithstanding these assurances of evident willingness to co-operate in any investigation, Mr. Miller, acting for Senator Calder, makes a pretence of meeting resistance by entering with a subpoena, and with clerks and accountants spent Saturday afternoon and evening and Sunday, Dec. 18 and 19, in going over the records of the association.

In Washington the procedure of F. T. Miller is likened to that of a guest, who, invited to occupy the apartment of a friend, refuses the proffered key and chops open the door. Officials of the association say they have no secrets and have no objection to the examination of their records.

J. D. A. MORROW made the following statement in Washington, on Dec. 20:

"The National Coal Association has been at all times since its organization ready to co-operate with any agency of the Government. All its records were immediately placed at the disposal of the committee on Saturday without resort to any compulsion, in accordance with the offer made the Calder committee last summer by Colonel Wentz, president of the association.

"Newspaper statements that there might be found evidence of price-fixing or other illegal activities on the part of the association are unwarranted. It is well known that by charter limitation the association is prohibited from having anything to do with the prices at which its members sell their coal. Coal companies are members only on condition that the association observe this charter limitation strictly. It has always observed this limitation with entire faithfulness.

"We are really gratified at the opportunity now presented to convince the committee of the entire propriety of the association's activities and to present information which we have all along expected to give in public hearings before the committee."

Hearings were begun by the committee on Tuesday, Dec. 21, with Mr. Morrow as the initial witness. David L. Wing, formerly coal economist of the Federal Trade Commission, has been retained by the committee and the Federal Trade Commission has transferred Mr. Durand, an economist on its staff, as special assistant to Senator Calder.

The authority of the committee to enter the offices of the coal association has been questioned but, it is reported, Mr. Miller says possession is nine points of the law and he has the records.

TO CARRY into effect the suggestions made in the report of his Committee on Reconstruction, Senator Calder prepared certain legislation which he expects to introduce during the current week. In connection with the introduction of the bills he proposes to address the Senate on coal and certain other features of the committee's report. Mr. Calder is withholding the text of the bills until their introduction. There is considerable speculation as to the committee to which the Calder bills will be referred. It is not improbable that they will have to be referred to the Committee on Interstate Commerce. This would place the bills in the hands of Senator Frelinghuysen, chairman of that committee's subcommittee dealing with coal. It is Senator Frelinghuysen's opinion that the coal situation already is covered by legislation which has been proposed by his sub-committee.

AS SENATOR GAY of Louisiana has been called away from Washington, it is probable that the minority report which he will make in connection with the recommendations in regard to coal on the part of the Calder Committee on Reconstruction and Production will be somewhat delayed. It probably will be submitted within ten days or two weeks.

PASSAGE BY THE HOUSE OF REPRESENTATIVES of a bill providing for the temporary suspension of immigration has led the National Coal Association to appoint a special committee to make an intensive investigation of the immigration situation and to report to the association at a meeting to be held in New York Jan. 5. The committee consists of C. E. Backus, T. H. Watkins and Julian B. Huff. The House Committee on Immigration strongly urged the legislation, after a visit to Ellis Island, principally on the ground that a great majority of the incoming aliens are undesirable. For the most part they are of a class which would make their residence in the larger cities.

Advocate of Government Ownership of Coal Mines Asks Survey

A SURVEY of coal mines to ascertain their value, including their machinery and equipment, looking to government ownership, is proposed by Representative Lampert, of Wisconsin, in a resolution introduced in the House. Mr. Lampert proposes that the Federal Trade Commission shall conduct this survey and seeks an appropriation of $50,000 therefor.

The resolution reads:

Whereas it appears that the present high price of coal is due to monopolistic control, and that labor troubles, shortage of cars, and high prices have seriously impaired the lives and health of our citizens; and

Whereas a commodity so vitally important to the welfare of the people should not be the subject of monopoly; and

Whereas an adequate supply and equitable distribution can only be secured by Government ownership; therefore be it

Resolved, that the Federal Trade Commission is hereby directed to make a survey of all coal-bearing lands in the United States and its possessions, to ascertain the present value of all coal lands and coal mines, including the machinery and other equipment used in mining such coal, and to report to the House at as early a date as practicable, and not later than Dec. 1, 1921.

The concluding section of the resolution carries the $50,000 appropriation. The resolution was referred to the Committee on Interstate and Foreign Commerce.

House Passes a Bill to Repeal Lever Law Despite Judiciary Committee Opposition

ALTHOUGH the House Committee on Judiciary was opposed to repealing the Lever Food and Fuel Control law, a coterie of members who were aggrieved because the government had invoked the Lever law against the striking coal miners a year ago, forced through the House a bill for the repeal of the law on Dec. 13. The bill now goes to the Senate for consideration.

When the bill was called up Representative Huddleston, of Alabama, urged that the bill, which proposed to repeal war measures except the Lever law, should be amended to provide for the repeal of the fuel law. He declared it was the most onerous and oppressive of all war laws. "The government stopped price regulation under it but continued action against the striking miners," he declared. He asserted that the law permitted the Department of Justice to intervene in any strike connected with the transportation or production of fuel.

Representative Blanton of Texas, said Congress acted wisely in leaving the Lever law on the statute books for the protection of the people. He declared that the coal miners had nothing to complain about, as some of them were receiving from $350 to $400 and even $500 a month for an 8-hour day. He charged that the miners waited until winter to strike, when they knew the people must have coal. He was willing to allow the law to remain.

Representative Bland, of Indiana, wanted to know Representative Blanton's authority for saying that coal miners received such high wages. Representative Blanton quoted from a speech of Representative Woods, of Virginia, as to wages earned by miners of the Borderland (W. Va.) Coal Corporation, showing that forty-three miners in 1918 and 1919 received gross monthly wages running from $253.60 to $547.82.

Mr. Bland offered an amendment to repeal the Lever law.

Representative Jones, of Texas, asked what was the object in retaining the Lever law. Representative Gard, of Ohio, said he personally did not believe in retaining the Lever law, but it had been thought it should be retained to check profiteering. Representative Sabath, of Illinois, also asked "Why exclude the Lever law from the repeal of war laws?"

Representative Volstead, of Minneapolis, chairman of the Judiciary Committee, which recommended repeal of war laws, except the Lever Act, said the Lever Act contains provisions respecting profiteering which are broader and more comprehensive than anything Congress could pass under its peace-time powers, and the committee thought it ought to remain in force, especially during this time when there has been so much complaint about profiteering, and profiteering certainly does exist to a very great extent, he added.

Representative Huddleston entered the debate again, saying he was for repeal of the Lever law, especially section 4. He charged that he had been induced to vote for the law by "false pretenses and false promises," and that a pledge of national faith was grossly violated by the Department of Justice in invoking the law against the striking miners when it had been promised that the law would not be applied to workers who combined to quit work in order to better their conditions.

Representative McLaughlin, of Michigan, said the Lever law should remain in force. He said section 5 of the law had checked profiteering and that the licensing system thereunder should have been continued. Representative Bland, of Indiana, came back into the debate, declaring the Lever law should be repealed because of the government's action against the miners. Representative Goodykoontz, of West Virginia, said the law should be repealed because the miners do not obey it. Representative Blanton, of Texas, returned to the discussion, favoring retention of the law. Representative Bland moved to repeal the Lever law and his motion was adopted by a vote of 180 to 135.

Bureau of Internal Revenue Makes Ruling On Distribution from Reserves

AN OFFICE decision has been made by the Bureau of Internal Revenue to the effect that the surplus and undivided profits referred to in article 1549 of regulation 45 means the earnings and profits accumulated since Feb. 28, 1913, and on hand at the date on which the dividend is paid. Distribution in excess of such undistributed earnings and profits represents a return of capital to the stockholder, and if the amount of such return of capital is in excess of the cost to the shareholder of his stock or its fair market value March 1, 1913 (if acquired prior to that date), the amount of the excess represents taxable income subject to both the normal tax and the surtax for the year of its receipt.

In case of the liquidation of the corporation, or the sale by a stockholder of his stock upon which he has had a certain return of capital, the amount so returned to him must be added to the amount received in liquidation, or to the selling price, as the case may be, for the purpose of determining the gain or loss arising from the transaction. If, prior to the liquidation of the corporation or the sale of stock, the shareholder has received a return of capital equal in amount to the cost of his stock or its fair market value March 1, 1913, the entire amount received by him represents taxable income subject to normal tax and surtax for the year in which received.

Shipping Board Also Had Fuel Problem

"ONE of the great problems of the past year has been that of fuel," says the Shipping Board in its annual report to Congress. "Bunker coals have been scarce at certain ports and local agents have in some instances despaired of procuring them."

Reviewing the work of the division of operations of the Emergency Fleet Corporation, the Board says that from twelve to fourteen sea-going tugs from time to time are towing barges in the New England coal trade between Hampton Roads and Eastern ports.

During the year the shortage of coal in New England has made it imperative, the Board says, that as much as could be handled be assigned to the trade. Consequently all types of vessels have been used in the trade without particular reference to type, as spot tonnage was needed and what was available at the moment had to be used.

The Board says the following types of vessels were used in the New England coal trade during the year: seventeen wood steamers, four concrete steamers, forty-three new "Lake built" steamers, six purchased or converted lakers, five West or 88-ton type, five new steel cargo tonnage under 7,000 deadweight tons, twenty-one new steel cargo tonnage over 7,000 deadweight tons.

J. D. A. Morrow Calls Judge McGee's Report Inaccurate, Unfair and Misleading

IN an open letter to Governor J. A. A. Burnquist of Minnesota, under date of Dec. 18, J. D. A. Morrow, vice-president of the National Coal Association, denounces what he characterizes as flagrant misrepresentations embraced in an attack upon the bituminous coal industry by former Judge John F. McGee, former State Fuel Administrator of Minnesota, in a recent communication by the latter to the U. S. Senate Committee on Reconstruction and Reproduction. The letter reads as follows:

"I notice from copies of the Minneapolis papers of Dec. 12, which have just reached me, that at your suggestion Judge J. F. McGee has made public a so-called report to the Calder committee of the U. S. Senate. The printed extracts from this 'report' are so inaccurate, so unfair and so misleading as to require an immediate answer. Colonel D. B. Wentz, president of the National Coal Association, is absent in the Southern mountains, but I am familiar with the circumstances which Judge McGee discusses and am replying on behalf of Colonel Wentz, the National Coal Association and the coal producers whom Judge McGee maligns. Since his report has been made public, I am taking a like liberty with this letter.

"You say that the people of your state 'are entitled to know just what happened in Washington and in the Lake Erie coal fields during the present season.' I agree that they ought to know the facts, but I want you and them clearly to understand that they are not getting the facts from Judge McGee's 'report.'

Judge's Viewpoint an Important Matter

"In this connection it will clarify the situation if Judge McGee will explain whether he was interested in this season's coal supply for the Northwest merely as a public official or as the paid representative of certain coal consumers of the Northwest and whether throughout this matter he has occupied the position of a distinterested public official, or whether, in order to earn a fee, he has acted rather as a purchasing agent trying to obtain coal for his principals without regard to the needs of other coal consumers in other parts of the United States.

"I note the charges of bad faith against the railroads. Doubtless they will treat these charges as they deserve. Let me say that I personally know that Daniel Willard and the presidents of other Lake coal-carrying roads spent days of the hardest kind of work, in the full and frank recognition of their responsibility, trying to move all the coal to the Northwest and elsewhere which was needed in the public welfare. It is largely due to their efforts that your people are warm today.

"Judge McGee is quoted as saying 'the full supply of coal for the Northwest had been contracted for at $3.50 a ton.' That is not true. The list of 'contracts' to which he refers included mere promises to ship certain tonnages to the Northwest, provided other prior claims and obligations upon the producing companies left such tonnages available for Northwestern shipment.

"Moreover, all of these contracts were conditional engagements. No sensible Minnesota farmer would think of making a hard and fast contract in April to ship 5,000 bushels of No. 2 Red Northern wheat to a Minneapolis mill on a given day in September at a price fixed in April, because he knows perfectly well that his ability to grow that wheat is dependent upon wind, weather and crop conditions, and that after it is harvested his ability to make shipment to Minneapolis on a given day is dependent upon whether the railroad companies place cars at his siding to ship the grain.

"Similarly, coal production is subject to fires, floods and strikes among the miners, and shipments from the mine are dependent upon railroad cars being placed to move the coal. Every coal producer, in making his contracts, always provides that he will ship whatever tonnage is named in the contract, provided that 'fires, floods, strikes and railroad conditions do not prevent.' Every one of those Lake contracts to which the judge refers was subject to these customary provisos affecting the shipment of the coal. Thus the impression that the Northwest last spring bought 13,514,200 tons of coal at $3.50 per ton, without any 'ifs, ands or buts,' is grossly misleading.

"Furthermore, nearly all the coal producers having Northwestern coal contracts also had contracts with other customers. In order to insure fair treatment it is customary for the producer to agree that if fires, floods, strikes or lack of cars prevent him from shipping the normal output of his mine, then he will distribute what he does produce proportionately on all these contracts so that the loss in shipments will fall equally and fairly upon all his customers. The producers, therefore, by these very contracts which the judge cites, were prevented last spring from preferring shipments to the Lake over their other contract customers.

Charges Unsupported by Company Names

"The judge gives the impression that all these contracts were evaded, disregarded, repudiated and abrogated, saying that 'the only talk I heard at Cleveland was of high-priced coal ranging from $7 to $12 per ton.' To borrow from the judge's language, this impression is 'villainously' false. So far as I know, the judge gives no evidence to support his broad assertions about abrogation of contracts by coal producers. Let him present the names of the companies involved, if he knows any.

"The official published reports of the U. S. Geological Survey show that the mines of southern Ohio from April to July lost from 75,000 to 200,000 tons of coal production weekly because cars were not at the mines in which to ship the coal. The eastern Ohio mines lost from 100,000 to 300,000 tons weekly in the same period and for the same reason. In the Pittsburgh district these losses ranged from 200,000 to 500,000 tons per week, and in the West Virginia fields from 200,000 to 350,000 tons per week. The producers in these important Lake coal districts were obliged to reduce their shipments on all these contracts proportionately, as already explained. Of course, they were unable to ship the tonnages which the Northwest wanted them to ship under their Lake contracts because cars had not been available to ship the coal. But in making these reduced shipments proportionately among all their contract customers the producers were carrying out their contracts literally and faithfully.

Writes Contemptuously of Insinuations

"It also is insinuated that contracts between the coal producers and consumers in other sections of the country were abrogated indirectly through the Interstate Commerce Commission Service Order No. 10 in order that these producers might thereby ship high-priced open market coal to Lake Erie ports as a means of 'looting' and 'robbing' the Northwest. These insinuations are beneath contempt. Because of the demoralized railroad conditions, already referred to, resulting from the outlaw switchmen's strike and two years of Government control and operation of the railroads, the coal-mine operators having contracts to ship to the Lakes had lost so much production and had got so far behind on their shipments on the Northwestern contracts that the dock companies had to buy great quantities of coal in the market from other producers to supply the Northwest.

"Moreover, these other producers had to be prevented from selling this coal elsewhere in order to absolutely insure a supply for the Northwest. Order No. 10 had that effect but it did not abrogate a single contract for Northwestern shipments nor relieve a single coal operator in the slightest degree from any obligation to ship under such contracts. This was clearly understood by the coal operators, the rail-

way executives, the Interstate Commerce Commission and Judge McGee at the time the proposed order was discussed before the representatives of the Interstate Commerce Commission prior to its issuance.

"The judge says that the National Coal Association refused to agree to a special assignment of cars to the mines having contracts or orders for Lake shipments as a relief plan. He is right. However, he does not explain to you why the National Coal Association refused, and you ought to know. An illustration will make it clear. Having in mind the needs of all your consumers in the Northwest, could you agree to a plan under which the mines having contracts to furnish, say, Judge McGee's clients with coal, should receive a full supply of cars daily, taking the cars needed for this purpose away from the mines having contracts to supply your other Minnesota consumers so that the mines serving the judge's clients would be operated six days a week, and the mines serving other coal consumers of your state would be operated two or three days a week? That illustrates the working of the assigned-car plan. Moreover, the coal miners in two important Lake coal-producing districts were threatening to go on strike if an assigned-car plan was adopted, because of the resultant discrimination in working time between the mines with such special car supply and the other mines. The judge may have been willing to risk such a disturbance of coal production, but the Interstate Commerce Commission, the railway executives and the coal operators would not take any chance of coal strikes when the Northwest was as short of coal as it was last July.

"Another charge is that the National Coal Association defeated a proposal to require those operators having Lake contracts to ship the full quantity on these contracts. It is intimated that if this plan had been adopted the Northwest would have obtained all of its coal on those low-priced 'contracts,' already referred to, and that the refusal to adopt such a plan was a nefarious scheme to permit the 'looting' and 'plundering' of the Northwest. Again the judge is ignorant of the facts.

How Unfair Distribution Was Avoided

"Precisely this plan advocated by the judge was discussed by railway and coal men, and a proposed plan in this form was submitted to eminent attorneys. They said: 'Here is the A.B.C. Coal Co. producing 100 cars of coal a day. It has contracts with a Northwestern dock company, with a big steel company and big city electric light plant. Under these contracts it is obligated to ship 50 cars a day to the dock company, 30 to the steel company and 20 to the electric light company. That coal company is now receiving from the railroads 60 cars a day for shipment of its coal. Under your proposed order it must ship 50 of those 60 cars to the dock company, leaving only 10 cars to be divided between the steel company and the electric light plant. Neither of those customers can possibly get along on 5 or even 10 cars a day. Their contracts are equally good in any court with the contract of the dock company. If such an order as you propose is issued by the Interstate Commerce Commission, that electric light company or that steel company can go into court, get an injunction on this showing and tie up your whole Northwestern coal supply indefinitely in the courts.'

"That settled the matter with the practical railway and coal men. They were not looking for lawsuits and injunctions, but for means of getting coal to the Northwest. The attorneys advised that the only order of the Interstate Commerce Commission which would have a chance in court would be an order of the kind which was finally issued as Service Order No. 10.

"Now a word as to prices. As already explained, it was necessary to make up the deficit in the Northwestern supply by purchases in the open market. The judge gives the impression that Service Order No. 10 compelled the Northwest to pay more for its open-market coal than similar coal cost other buyers. This is flagrantly false. In fact, as the judge well knows, the Interstate Commerce Commission, the railways and the National Coal Association were attacked because everybody knew that the Northwest could buy its coal under Service Order No. 10 cheaper than other consumers could buy similar coal in the open market. The judge himself knows that the Public Service Commission of Ohio bitterly assailed Order No. 10 on precisely this ground, asserting that it permitted the people of Minnesota, the Dakotas and Wisconsin to buy Ohio coal at cheaper prices than Ohio people could buy at. This was due to the fact that mine operators were compelled by the order to ship a certain amount of coal to Lake Erie ports every day, and were notified that if they failed to ship this coal or failed to sell it promptly upon arrival, cars would be withdrawn from their mines and they would be prevented from shipping any coal anywhere to anybody. Under these circumstances the order in question, instead of increasing the coal bill of the Northwest, actually reduced it.

"To complete the unfairness of his statements, the judge demands an investigation, thus giving the impression that the National Coal Association has endeavored to conceal its actions in respect to relief for the Northwest and other parts of the country. On the contrary, throughout this entire matter the National Coal Association has made every effort to have all its actions, and the reasons for them, clearly understood by government officials and the public. The whole record of the association is open to Senator Calder's committee or any other proper agency that desires to know the facts."

Contradictory Report of Judge McGee Blames Operators for High Prices in Northwest

JUDGE McGEE, former Fuel Commissioner for Minnesota, has submitted a report to the Calder Committee on Reconstruction and Production of the Senate, in which he attacks the National Coal Association as being responsible for the high prices of coal in the Northwest, and asking for opening of the books of the producing companies to determine their costs. The Judge suspects that the coal association deliberately turned down the Gutheim plan for handling the emergency situation as to the Northwest because the plan which was adopted was susceptible of developing the situation which worked out—excessive prices in the open market. These he thinks the dock companies had to pay or have their priority order cancelled. Yet the Judge admits that the big difficulty was transportation, which hardly could be said to be under the control of the National Association.

The announcement by the Calder committee, published during the week, is along the line of the report made to that committee by Judge McGee. The coal trade in the Northwest is inclined to view any statement from the Judge with irritation or indifference, because of his propensity to take the attitude that being in the coal business was equivalent to being a crook, and because such outbursts are something of an old story. He apparently sees no inconsistency in his complaints that the dock companies were held up to an extortionate price when aligned with his own insistence that the dock companies pay the prices he now complains of to get the coal. A few short months ago he was uttering ferocious anathemas against those who would not buy coal at any price to get it forwarded, declaring that unless it was done the Northwest would freeze during the winter. It is true that there was no serious need of coal or there would be compulsion to ship emergency stocks all-rail, regardless of the cost, and only the extraordinarily mild fall and winter averted trouble. It is somewhat doubtful, however, if the all-rail prices would have been materially higher than the emergency prices which he urged then and now criticises.

Production of coal at 193 mines in Indiana during the week ended Dec. 11 is reported as 646,779 net tons, as compared with 694,622 tons at 192 mines the week preceding. These mines operated 73.41 per cent of the full time, with car shortage responsible for 13.16 per cent of time lost. Of the remaining causes of lost time mine disability was responsible for 10.56 per cent and labor trouble for 2.25 per cent.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

MANY of the special circumstances which added tremendous difficulties to the conduct of business affairs during the past year are in progress of betterment. With these factors corrected, in the opinion of Roger H. Williams, vice-president of the National Bank of Commerce in New York, we look forward to 1921 with a high degree of confidence. The progress of improvement is not so great and rapid that we can now predict a year of unusual business activity and prosperity, but it seems safe to expect that in 1921 the conduct of business enterprise should be far easier than it has been this year and that the general average of success should be good.

"In addition to credit improvement," he continued, "we see considerable progress being made in the readjustment of inflated values to new price levels. We may feel confident that in many of our important commodities the worst is over in respect to the drop in price. Fluctuations in these commodities hereafter should be within narrower limits and therefore susceptible of more accurate business calculations.

"The drop in prices did not become operative in all lines at the same time nor did it develop everywhere at the same rate, and therefore we must expect this phase of the situation to run through a succession of stages before ultimate stability is reached. Because of the close interrelations existing among market conditions affecting all lines of trade, we cannot expect complete stability for the whole businss structure while there remain substantial parts of it still in a state of unsettlement."

Commenting on the question whether public recession in buying should be considered a factor of business betterment Mr. Williams said: "As long as recession in buying represented lessened extravagance and served to take the edge off price speculation and to relieve the strain on credit, it was a salutary business movement—a desirable corrective. But when it swings so far as to paralyze legitimate business and disorganize the orderly flow of trade, it becomes an adverse factor, in itself calling for correction.

"The answer as to when the public will again begin to buy and merchandise will resume a normal movement, may be found in any or all of the foregoing aspects of human behavior, but these aspects cannot be reduced to definite data, so that the question of when the public will resume buying must remain the great uncertain element in our present business outlook."

Truck and Wagon Plants Reopen At Pontiac, Mich.

The General Motors truck plant at Pontiac, Mich., has resumed operations after a period of four weeks' idleness. About half the workers are re-employed on a production schedule calling for 400 machines for the balance of this month. According to W. L. Day, manager, normal operation may be expected early in the new year. After being suspended since the middle of October, operations in the Milburn Wagon Co. body factory at Toledo, Ohio, were resumed Dec. 13, when the plant began work on an order for several million dollars' worth of automobile bodies for the General Motors Co.

Rubber Shoe Firm Curtails

The Boston Rubber Shoe Co. of Malden and Melrose, Mass., discontinued bootmaking beginning Dec. 18. Some of the older hands have been given other positions, it is said. The Malden Knitting Mills plant has just shut down indefinitely, being overstocked with goods.

Carpet Mill Resumes; Force Cut

Resumption of operations was made Dec. 13 by the plant of the Hodges Fiber Carpet Co., Indian Orchard, Mass., which had been closed since Nov. 9, when 350 members of the Textile Workers' Union refused to accept a 15-per cent wage reduction, which the management stated was the only way the plant could be kept running. Considerably less than the full working force of the company has returned to work. It is said that under the old scale the men were receiving between $35 and $40 per week and the women between $22 and $24 weekly.

Steel Mills Close; More May Follow

Plants of the Wheeling Steel Corporation throughout the Wheeling (W. Va.) district have been operating at less than half capacity since Monday, Dec. 13. Price reductions have brought no new business, officials of the corporation said. The situation has been termed a "consumers' strike." On Dec. 16 a wage cut from 46 to 38c. an hour for all laborers, effective at once, was announced by four Ohio Valley plants of the corporation. Notice also was given of abolishment of extra pay for overtime. The cut is said to amount to $1.98 per day for some workers. The Eastern Steel Co. mills closed Dec. 11 for an indefinite period, about 1,000 men being affected. Heads of independent steel plants at Youngstown, Ohio, indicated Dec. 16 that the mills would be practically idle from the end of the week until the first of the year, owing to lack of orders. The contemplated suspension would affect about 20,000 workers.

Bridgeport Plants Close; 5,500 Idle

Three factories in Bridgeport, Conn., employing in all 5,500 persons have closed temporarily. The Remington Arms-Union Metallic Cartridge Co. closed Dec. 16 until after New Year's, the Singer Sewing Machine Co. closed the same day until Jan. 15, and the Bassick Co., metal workers, is closed until after New Year's.

Singer Plant Closed Temporarily

The main plant of the Singer Sewing Machine Co., at Elizabeth, N. J., closed Dec. 22, and will not reopen until Jan. 5. Prior to the war the company closed its plant twice a year to take inventories, the length of the shutdowns being ten days to two weeks, but during the war the factory never closed for more than two days during the holiday period. About 8,000 persons are employed at the plant.

Foreign Markets and Export News

British Coal Exports Greatly Reduced

British customs statistics, according to Consul C. E. Asbury, Cardiff, Wales, give the following figures with regard to the quantities and values of coal exported from the United Kingdom during the month of October in the years 1913 and 1920. It is a remarkable fact that although the quantity exported in 1920 is only slightly more than 20 per cent of that of 1913, the value is considerably higher.

The quantities are stated in long tons and values in British sterling:

To	Quantity		Value	
	1913 Tons	1920 Tons	1913	1920
Russia	756,112	8,008	£544,791	£34,075
Sweden	503,863	50,802	336,257	273,258
Norway	200,079	46,364	122,874	257,213
Denmark	281,369	68,235	185,511	375,217
Germany	835,839	.....	504,802	.....
Netherlands	167,299	11,181	105,065	32,959
Belgium	181,591	30,899	104,320	139,854
France	1,077,519	745,608	699,816	2,858,317
Portugal	88,192	25,379	65,466	124,248
Azores and Madeira	6,566	.....	5,532	.....
Spain	261,776	30,794	181,590	143,508
Canary Islands	67,195	12,412	49,367	64,691
Italy	910,513	171,837	652,921	802,657
Austria-Hungary	103,433	1,401	72,520	6,034
Greece	84,033	4,987	64,966	29,773
Algeria	108,422	17,259	72,102	79,094
French West Africa	7,690	8	6,830	52
Chile	35,310	112	29,244	661
Brazil	147,943	.....	131,500	.....
Uruguay	33,612	2,835	27,180	14,395
Argentina	297,148	11,043	248,208	58,704
Channel Islands	14,726	8,410	10,909	18,707
Gibraltar	25,311	49,069	18,095	256,389
Malta	42,068	19,528	30,065	73,814
Egypt	229,100	51,619	169,078	236,261
Aden and dependencies	20,881	5,529	18,065	20,733
British Indin	14,216	.....	12,232	.....
Ceylon	23,764	.....	20,600	.....
Other countries	203,005	38,708	165,918	180,061
Total of:				
Anthracite	281,443	151,948	233,702	582,897
Steam	4,952,643	1,058,047	3,468,633	4,705,545
Gas	1,026,497	164,119	653,604	645,631
Household	159,373	3,878	106,186	11,099
Other sorts	319,517	39,506	203,120	163,325
Total	6,739,473	1,417,498	4,665,245	6,108,497

Entente Receipts of German Coal Are Improving

The Economic Review, London, gives the following quantities of coal delivered by Germany to the Entente in accordance with the Spa agreement:

"August.—The quantity stipulated, with the exception of 27,900 tons, by which the 90,000 tons to be delivered to Italy by Upper Silesia fell short, owing to the disturbances in that province during the second half of August, when the Italian trucks which were to carry away this coal could not reach the mines.

"September.—From the Western districts only 1,887,000 tons instead of 1,910,000 tons were delivered. In Upper Silesia, where the German Coal Commissioner has no influence on the deliveries, the 90,000 tons due to Italy again fell short by 16,000 tons. Germany has expressly pointed out that she is not responsible for these Upper Silesia arrears. The Entente Powers have not as yet agreed to Germany's proposal to send the coal destined for Italy by water via Stettin.

"October.—Deliveries again became normal. During the first ten days 620,000 tons were delivered from the Western districts. Every effort was made to deliver from the Ruhr district, Aix-la-Chapelle and the Cologne lignite district the full amount for which Germany is responsible, in addition to the small September arrears.

"The difficulties of delivery are still extraordinarily great, since the output conditions were far less favorable in October than in September, owing to the smaller number of working days in the various months and to the larger consumption of coal by the mines themselves. Then, too the railways consumed more."

Tidewater Coal Exchange Asks for Mine Reports

The Tidewater Coal Exchange, Inc., Grand Central Palace, New York City, now has with a printer the proof of a classification of mines in which it hopes to include all mines now shipping, or which expect to ship, their coal to the exchange for the account of its members.

J. W. Howe, commissioner, announces that the exchange will not, however, include in this classification any mine from whose operator it has not received direct request to classify, and this request must be made on a form provided by the exchange.

Mr. Howe advises that requests must be received not later than Monday, Dec. 27, 1920, as the classification will become effective Jan. 10, 1921, after which the new exchange will discontinue the use of the classifications of the old exchange, and coal shipped to the new exchange from mines not included in this new classification will be rejected at the piers, and the railroads will be requested to embargo further shipments from such unclassified mines to the exchange for the account of its members. Rule 29 requires members to have all coal shipped to them at tidewater consigned to the exchange for their account, hence under this rule members of the exchange are unable to receive at Tidewater coal from unclassified mines.

Export Revival Expected in January

While there is no demand for export coal and that branch of the trade faces a serious situation, coal men profess to see a ray of sunshine breaking through the clouds of non-activity. According to C. Andrade, Jr., president of the Wholesale Coal Trade Association, Europe has realized that she has a large supply of coal and refuses to bid until she uses up the excess supply. The demand is expected to show life in January. Prices at that time will be very near normal, as a result of the eased situation in this country, but the demand should be brisk.

"Europe became overstocked," says Mr. Andrade, "because of the panicky buying which was experienced just after the outlaw switchmen strike, which caused a cessation of export shipments. European buyers, with shipments reduced, made commitments for three times as much coal as could be normally used, on the assumption that only a third of the contracts would be filled. Instead when the market eased and coal tumbled, large supplies were sent abroad and the excess coal accumulated. Then Europe quit buying.

"Export coal will not exceed four per cent of the total production of the country during the fiscal year ending March 31, 1921, in my opinion."

THE HOME SITUATION in regard to bituminous coal has improved to such an extent within the last few weeks that the Canadian Railway Commission has decided to partially remove the embargo on exports of bituminous coal from Canada. Shipments under individual license from the Maritime Provinces will now be allowed. The production of bituminous coal in all mining areas of the Dominion has shown a great increase during the recent weeks.

CARDIFF REPORTS SALES of the best large steamer coal at £4 15s @ £5 and the best smalls at £4. It is stated that the Swedish naval administration has postponed contracting owing to the high prices asked for British coal, which, it is insisted, are much above American offerings.

Japanese Market Is Inactive; Fushun Has Good Export Possibilities; Kaiping Deliveries Are Better

In their market report of Oct. 21, issued at Shanghai, Wheelock & Co. advise that the Japanese coal market has been very inactive. Preparations are being made to commence negotiations for next year's supplies and until these mature further price indications are impossible. In the meantime the unexpected sudden fall in exchange is bound to have a serious effect on prices.

The Fushun market continues fairly active, with a large export business in prospect, as normal output from the mines is now assured.

Kaiping deliveries from the north are becoming more regular again, which has allowed movement under contract to be maintained and stocks have recovered.

Coal prices are quoted in the report as follows:

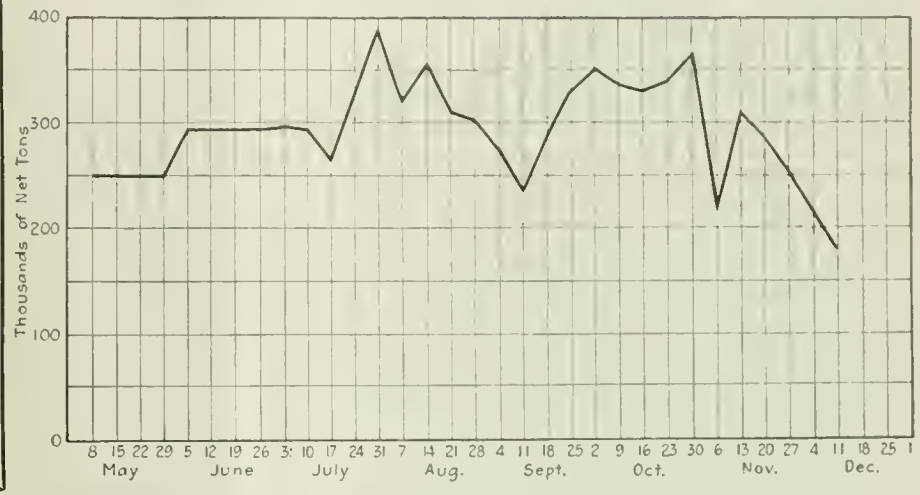
Japan Coal:			
Miike lump..	Contracted for		
Miike small..			
Miike dust. ..			
Kishima lump.	Tls. 15 00	per ton ex wharf	
Shakano lump.	Tls. 13 00	per ton ex wharf	
Arate lump.....	Tls. 12 00	per ton ex wharf	
Shimo amada Kirigomi	Tls. 11 00	per ton ex wharf	
Shinshakano Kirigomi	Tls. 11 00	per ton ex wharf	
Yoshin tani No. 1 lump	Tls. 12 00	per ton ex wharf	
Yoshinotani No. 2 lump	Tls. 10 00	per ton ex wharf	
Ochi lump.....	Tls. 12 00	per ton ex wharf	
Kaiping Coal.			
No. 2 lump....	Tls. 13 50	per ton ex wharf	
Washed nuts..	Tls. 13 50	per ton ex wharf	
Washed slack	Tls. 10 50	per ton ex wharf	
No. 1 slack....	Tls. 9 00	per ton ex wharf	
No. 2 slack....	Tls. 8 50	per ton ex wharf	
Fushun Coal			
Dust.....	Tls. 10.00	per ton ex wharf	
Dust Kirigomi	Contracted for		
Dust lump.....	No stock		

Export Dumpings by Ports

(NET TONS)

	Week Ended Dec. 12	Nov. 28
Philadelphia	56,000	62,000
Baltimore...	78,000	69,000
Norfolk.....	233,000	257,000
Charleston..	7,000	11,000
Total.....	374,000	399,000

Export Coal Dumped at Hampton Roads



Central Pennsylvania Miners Cast Vote

An election of officers for District No. 2, United Mine Workers of America, was held on Tuesday, Dec. 14. It was stated at headquarters that the result would be announced on Dec. 25. The following were the candidates receiving votes: For president, John Brophy, the present incumbent, and James Freeley of Dunlo; for vice-president, James Marke, the present incumbent; Dominic Giolitti of Nanty-Glo and John McCrory of Flinton. There are four candidates for national board member to take the place of William Donaldson, deceased. They are John Ghizzoni of Wishaw, Joseph Poggiani of Crenshaw, William McCune of Arcadia and T. P. Dolan of Rossiter. Richard Gilbert has no opposition for secretary-treasurer. Herman Carletti has no opposition for district board member of Territory 5 and John Yusko is unopposed for district organizer.

Efforts to Effect a Working Agreement in Mingo County Unavailing

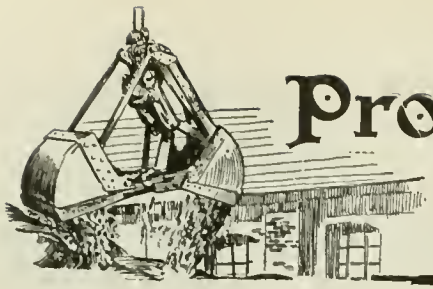
EARLY in December attempts were made by the mine workers in the Mingo (W. Va.) field to arrange with Governor Cornwell of West Virginia and Governor Morrow of Kentucky for a settlement through their endeavor of the dispute between the striking miners and the coal operators, but the efforts made did not materialize into anything more than mere propaganda. Early in the strike Federal mediators were in the Williamson field attempting to have the operators and miners adjust their differences, but there was no basis upon which the operators and miners could be brought together, the difference between the contending parties being the acceptance by the operators of the "closed shop," which was something to which the operators would not agree.

On Dec. 15 it was asserted by the Williamson Operators' Association that all but five of the eighty-eight mines in the Mingo (W. Va.) field which had been closed down by the strike were already in operation, and that production was 87 per cent of normal. It was further stated that the few remaining mines would be opened as soon as mine forces could be recruited. During the second week of the month the operators asserted that fully 200 men were brought into the field and that additional men would be added during the remainder of the month. Miners are allowed to picket incoming trains, and in a number of instances men working in the field were induced to go to union fields. Nevertheless, the operators were able to prove that they had been obtaining new men by pointing to the number of mines in operation. The companies offer work to all their former workmen who are not members of the union.

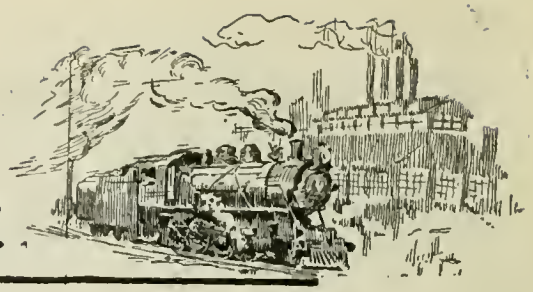
A JOINT CONFERENCE OF anthracite mine workers and operators will be held in Philadelphia today, at which time it is expected that the employers will make final answer to the demands of the mine workers, who want an increase in wages that will make their day rates more closely comparable with those of the bituminous mine workers, whose wage has been based on discontinuous work.

ARRIVAL OF AMERICAN COAL in France during November totaled 845,000 tons, according to figures just made available. Of English coal the arrivals were 895,000 tons.

EACH OF THE TIDEWATER coal carriers has under consideration the enlargement of its facilities for accommodating an increased export coal business. Early in the spring it is expected that extensive additional facilities will be installed. As the equipment at the export piers has been used at the maximum of its capacity for many months, it is believed that a general overhauling and improvement of existing facilities also will be undertaken.



Production and the Market



Weekly Review

RECORD production of bituminous coal is being maintained despite the lack of demand for spot coal. The prices bid on coal for immediate delivery continue to drop and although production in the week of Dec. 11 set a new maximum for the year, with 12,865,000 net tons, it is generally conceded that this, together with the high records of the two weeks preceding and a good production in the week of Dec. 18, represents a pre-holiday spurt.

Since the middle of April, when the production of bituminous coal hit the low point for the year, the general tendency has been upward and since the first week in October, or for the past eleven weeks, the average rate of production has been nearly 12,500,000 tons per week. Production to date is now in excess of that obtained in the corresponding period of 1917, and without question is now sufficient to satisfy all demands, both for consumption and storage, after export needs have been met. With but two weeks to go it is evident that the total production of bituminous coal in 1920 will more than exceed 550,000,000 tons, and thus be second only to the war year 1918, when the output was 579,000,000 tons.

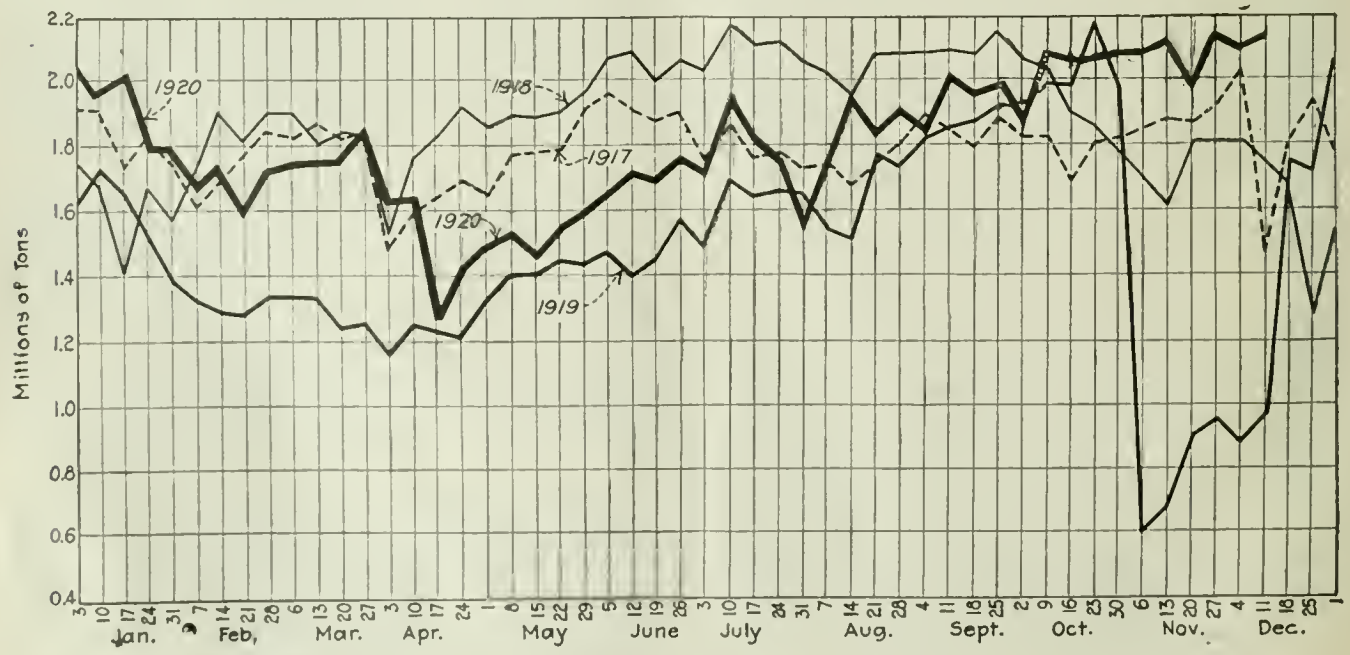
The pressure being exerted by producers and shippers to maintain production is meeting a general reaction on the part of the buyers. With practically no demand for free coal, shippers are crowding deliveries on contracts on which they fell in arrears last summer and autumn. For several weeks, as shipments on foreign account at Hampton Roads and Baltimore have fallen off, the movement to New England has increased. Wholesalers in New England under contract to take coal from the southern fields now find themselves embarrassed by a flood of coal for which they find little demand among their customers in New England. The docks of these wholesalers in New England ports are crowded to capacity, and it is evident that New England coastwise movement must rapidly taper off.

New England Well Stocked

All-rail deliveries to New England decreased from 5,211 cars the week of Dec. 4 to 3,651 cars in the week of Dec. 11, a drop of 1,560 cars, or nearly 30 per cent. It is now estimated that the receipts of bituminous coal in New England by tide and rail for 1920 will be approximately 22,000,000 tons, or about 1,500,000 tons less than in 1917, 5,000,000 less than in 1918, but 2,000,000 more than in 1919. In view of the general industrial inactivity in this section and the mild winter, it appears that New England not only has an ample stock for this time of the year but probably will have a surplus on hand next spring.

Consumers who do not need coal because their plants are down; buyers who had purchased coal speculating on a continuance of the high spot market and others who see in the present declining market opportunity to obtain supplies at prices below their outstanding contracts are crowding the shippers for release from their obligations to purchase. The high-volatile fields in both northern and southern West Virginia and the eastern Kentucky fields have been seriously affected from this cause within the last few days. There is, however,

Daily Average Production of Bituminous Coal*



*From weekly report of Geological Survey.

nothing unusual in this development because contracts for coal are recognized as particularly vulnerable.

BITUMINOUS

Production again reached record figures for the week ended Dec. 11, when the output was estimated at 12,865,000 net tons, according to the Geological Survey, an increase of 33,000 tons over the revised figures for the preceding week, which up to that time had been the record since the last pre-strike week in October, 1919. The present rate of production is far above that in the corresponding period in any of the preceding three years, and is the more remarkable with the withdrawal of priority in the use of open-top cars for the loading of coal. Loadings on Monday, Dec. 13, were very heavy, amounting to 45,144 cars, although this declined sharply on Tuesday. Cumulative production now stands at 525,403,000 net tons. The year is within thirty-one million tons of 1918, but is now ahead of 1917, a year when requirements were large and production about equalled consumption.

Car shortage losses have almost disappeared and in many sections empties are being held over each day. The aggregate production is not suffering much from continued poor placements on the B. & O. and C. & O. systems in the Northern and Middle Appalachian regions. Supply for the eastern Ohio (No. 8) District improved slightly during the week, being estimated at 70 per cent of capacity. Railroads are receiving requests, through the American Railway Association, to load or send defective equipment to the owning roads in order that extensive repair programs may be carried out during the period of industrial contraction.

Labor is paying earnest attention to the work in hand and there are only scattered reports of production losses from unsettled labor conditions. In some localities the market depression is causing operators to do away with the bonuses and extra time that had been paid to the men as an inducement for full working capacity.

Prices Continue to Decline

Spot-market quotations showed a lower range for the week ended Dec. 11. Steam demand was extremely light and for the most part confined to small lots for immediate requirements only. Consumers are using heavy stocks accumulated during the buying panic and are not providing for the future, in the face of the continued industrial slump. The domestic market was also extremely quiet, due to the mild weather. Export movement was largely on contract and what little new business was closed went at new low figures. There apparently can be no permanent improvement until the basic condition of things is straightened out properly. The cost of production of raw materials and manufactured articles is practically unchanged and the only reason for reduction of coal prices is an artificial one, affecting the profits and extending into losses for the producers. Many efforts to move coal by consignment are resulting in forced low sales to avoid demurrage.

The following table shows the trend in the spot steam market (mine run basis, net tons, f.o.b. mines):

	Nov. 1919*	May 1920	Aug. 5 1920	Dec. 9 1920	Dec. 16 1920	Dec. 23 1920†
Pittsburgh steam	$2 30	$4 00	$10 00	$4 00	$3 75	*$3 25*
Pittsburgh screened gas	2 30	4 50	12 00	4 75	4 50	*3 75*
Hocking	2 50	4 75	9 00	4 25	3 75	*3 00*
Franklin, Ill	2 35	3 75	6 50	5 00	4 00	*3 50*
Indiana 4th vein	2 35	3 40	7 50	4 00	3 25	3 25
Eastern Ohio, No. 8	2 35	4 50	10 50	4 50	4 00	*3 50*
Fairmont	2 50	6 75	13 50	4 25	3 75	*3 00*
Kanawha	2 60	6 75	14 00	4 50	4 50	*3 50*
S. E. Kentucky	3 00	6 00	10 50	5 25	4 75	*4 00*
Western Kentucky	2 35	3 50	5 25	4 25	4 00	*3 75*
Clearfield	2 95	6 25	12 00	4 75	4 75	*3 75*
Cambria and Somerset	2 95	6 75	13 50	6 00	6 00	*4 75*
New River	2 70	6 50	14 00	5 25	5 00	5 00
Pocahontas	2 35					

*Government prices.
†Advance over the previous week shown in **heavy type**, declines in *italics*.

Cancellations are numerous. Contract customers are cutting down their requirements or are cancelling their agreements outright. There is no market for off-grades and it is only a question of time until good coals will be in the same class. Numerous operations have been closed, some over the holiday season and others to await a market that will permit them to run without a loss.

Estimates of Production

From the Weekly Report of the Geological Survey

BITUMINOUS COAL

Total bituminous, including coal coked

	1920 Week	1920 Calendar Year to Date	1919 *a* Week	1919 *a* Calendar Year to Date
Nov. 27*b*	11,488,000	499,706,000	5,334,000	420,046,000
Daily average *c*	2,188,000	1,782,000	956,000	1,492,000
Dec. 4*b*	12,832,000	512,538,000	5,245,000	425,291,000
Daily average	2,139,000	1,789,000	874,000	1,480,000
Dec. 11*d*	12,865,000	525,403,000	5,800,000	431,091,000
Daily average	2,144,000	1,799,000	967,000	1,469,000

(*a*) Less one day's production during New Year's week to equalize number of days covered for the two years. (*b*) Revised from last report. (*c*) Counting Thanksgiving Day as 0.25 of a working day. (*d*) Subject to revision.

ANTHRACITE

	1920 Week	1920 Coal Year to Date	1919 *a* Week	1919 *a* Coal Year, to Date
Nov. 27	1,692,000	58,973,000*b*	1,759,000	61,460,000*b*
Dec. 4	2,051,000	61,024,000*b*	2,014,000	63,474,000*b*
Dec. 11	1,915,000	62,939,000*b*	2,120,000	65,594,000*b*

(*a*) Less 2 days' production during first week of April, to equalize number of working days covered for the 2 years. (*b*) Revised to agree with Weekly Report No. 178, pages 2 and 7.

BEEHIVE COKE

United States Total

Week Ended Dec. 11*c* 1920	Dec. 4*b* 1920	Dec. 13 1919	1920 to Date	1919*a* to Date
374,000	375,000	361,000	19,941,000	18,640,000

(*a*) Less one day's production during New Year's week to equalize number of days covered for the two years. (*b*) Revised from last report. (*c*) Subject to revision.

Movement to Tide continued at a little over a million tons for the week ended Dec. 12, or at the rate of 4,445,000 tons per month. Exports continued to decline and coastwise movement to increase as shown in the following table:

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Total
Coastwise to New England	70,000	19,000	23,000	114,000		226,000
Exports	.....	56,000	78,000	233,000	7,000	374,000
Bunker	99,000	15,000	13,000	55,000		182,000
Inside Capes	.....	51,000	26,000	3,000		80,000
Other tonnage	178,000	.....	.....	.....	.....	178,000
Totals	347,000	141,000	140,000	405,000	7,000	1,040,000

Cumulative Lake movement for the season totaled 23,667,000 net tons, of which 22,408,000 tons were cargo and 1,259,000 tons vessel fuel. This is less than the record of any of the four preceding years except 1919, which it exceeds by 766,000 tons. Northwest coal stocks are reported adequate for the season in view of curtailed steam consumption and the domestic saving effected by the prolonged mild weather.

ANTHRACITE

Production declined somewhat during the week ended Dec. 11, being placed at 1,915,000 net tons by the Geological Survey, a decrease when compared with the preceding week of 136,000 tons. Cumulative production for the coal year is over two and one-half million tons behind 1919. Steam sizes are becoming hard to move and independent quotations have been forced down to company figures. Some recession in independent domestic quotations is noted.

COKE

Beehive coke production during the week ended Dec. 11 is estimated by the Geological Survey at 374,000 tons, being practically the same as that of the preceding week. Many operations are closing down with the slack demand. Some contracts for the first half year of 1921 were made on furnace coke at a ratio of 5 to 1 with a minimum invoice price of $5.80 per net ton f.o.b. ovens. Spot coke prices declined further, furnace being quoted $5.50@$6 and foundry $7@$7.50.

Reports From the Market Centers

New England

BOSTON

Prices Still Lower — Market Cargoes and Rejected Coal a Feature — Dull Business at All Tidewater Piers—Railroads Reduce Motive Power — Quotations Show Wide Range — Anthracite Situation Saved Only by Weather.

Bituminous—Ordinary grades from central Pennsylvania have dropped to less than $3, and the output of certain mines that are pressed to move coal does not rise more than 50c. above that mark. In addition to a certain amount of railroad fuel that has been rejected there have been numerous cases where coal has been shipped in excess of contract or purchase. The prices on such forced sales have dropped to new low levels. There is no evidence of any buying interest and in industrial circles there is such an air of gloom that nobody looks for any buying for several weeks to come.

To add to the depressing effect of rail coal seeking an outlet there have also come to light several cargoes from Hampton Roads that are frankly coming forward on the market. Doubtless they will be disposed of at some dumping ground, although one of the Boston utilities is in the market for prompt coal. The chances are, however, that this kind of buying will be narrowed to purchases at the piers for certain designated bottoms that are already under charter. Quotations on Pocahontas and New River, Pool 1, have been made at less than $11 alongside Providence, Boston, or Portland. Any such price must be tentative, for no buyers with any grasp of the situation would pay such a price.

The off-shore market is fading fast. Agencies who were so confident of strong export demand and provided no coastwise business are now besieging corporation buyers in this territory. Even those who have contracts are stuffing their customers with all the traffic will bear, especially now that they, too, are finding so little comfort in the overseas market. Bunker coal has been purchased at less than $8 f.o.b. Norfolk and there are bound to be further reductions.

Conditions at Tidewater reflect the dullness of trade. There are odd lots at all terminals which shippers are harrying the trade to buy, but responses are few and far between. Heavy demurrage charges are accruing and yet the longer the coal is held the lower goes the prices.

It is notable that railroad movement is slowing up. Shipments all-rail that were coming through to New England points in less than 6 days are now taking 12 and 15 days. The roads explain this by saying that because of light business they have been obliged to lay off locomotives and crews. So far as steam grades are concerned this is of course working no hardship and it is only natural that carriers should protect themselves as best they can. Coal in transit is still being seized in certain districts, but usually by originating roads in sections where only small reserves are ordinarily carried.

Current quotations on bituminous at wholesale range about as follows:

	Clearfield	Cambrias and Somersets
F.o.b. mines, per net ton	$2 75@4 15	$3 60@5 75
F.o.b. Philadelphia, per gross ton	5.74@7.25	6.80@9 20
F.o.b. New York, per gross ton	6.10@7 70	7.25@9.65

Anthracite—At this writing stocks in the hands of retail dealers is probably less than at any time in recent years. The situation would be exceedingly serious were it not for the wonderfully mild weather. Usually the rivers in Maine are closed to navigation soon after Dec. 1, but the weather is still mild and the ports are receiving coal. Water shipments are very light and rail movement has increased but little.

Tidewater—East

BALTIMORE

Saggy Market in Evidence — Demand for Home and Export Coal Light — Ample Reserves of Soft Coal—Anthracite Receipts Good and Danger of Famine Is Over.

Bituminous—A sagging market in every phase is before the coal trade just at present. The call for coal on export, while showing up a bit better as indicated in the chartering, is still very weak, and domestic demand is far below the standard looked forward to for December. The approach of the holidays means still further cut in consumption, which will in some measure, of course, be offset by the shut-down of mining at Christmas and New Years.

Prices are over a rather wide range, but generally low, with considerable discrimination being shown by consumers as to classes of fuel. The day of "anything black" passing for coal is over, for the time being at least. The Tide prices on the various pools of gas coals are typical, as follow, f.o.b. piers, Baltimore: Pool 37, $5.75@$8; Pool 38, $7.50@$7.75; Pool 60, $7.50@$7.75; Pool 61, $7@$7.25; Pool 30, $7.75@$8; Pool 31, $7.25, and Pool 34, $6@$6.25. Steam coals at the mines are also offering over a range of 50c. on the same grades at times. Pool 9 is worth pretty consistently $5 f.o.b. mines per net ton, while Pool 10 is bringing an average of about $4.50; Pool 11, $4@$4.25, and Pool 18, $3.50.

Export loadings in December will fall far short of those of previous months. For the first half of the month the loading was around 130,000 tons cargo and 12,000 tons bunker coal for the same ships.

Anthracite—The hard coal situation continues to improve, larger movement and moderate weather combining to get the trade in good condition. Receipts so far this month indicate that the total income of coal for the month will run over 60,000 tons. While an average run like this does not cover all the half filled orders here it keeps all thought of a coal famine out of the air, as the coal men are able to apportion deliveries in order to keep all satisfied.

There is still considerable talk in the trade as to the effect of the recent increase of rentals of yards by the railroad interests and as to whether this should bring a higher selling rate at once. The general opinion seems to be, however, that despite the cut-off of the old margin of profit by the new increase in overhead, the present is not an opportune time to raise retail prices.

PHILADELPHIA

Moderate Anthracite Shipments Are Ample for Present Weather — Price Increases — Steam Sizes Lag—Bituminous Very Quiet—Prices Near Bottom —Some Quiet Contracting.

Anthracite—The expected rush of family sizes has not materialized, but even at that the city is not suffering for coal. Larger shippers are regulating their tonnage according to the weather and should conditions demand it heavy deliveries could and would be quickly made to local retailers. Coal men also admit that they do not have anything like the number of orders on their books that they did a month or two ago. The heavy amount in the cellars, and the weather has toned the trade down to almost routine.

Territory in the eastern end of the state just outside has been almost swept clean of coal for the past six weeks, and the strongest kind of complaints have been entered. One of the large companies has just commenced to relieve this section and for the next week or so they will turn almost their entire production for distribution along the line of the P. & R.

One of the biggest anthracite producers continues to adjust prices upward. This time it is a 15c. increase in the mine prices of broken and pea, broken going to $7.75 and pea to $6.40, effective Dec. 13. All the prices of this company continue to be quoted subject to change without notice.

The steam sizes are a source of trouble to most all shippers now. The independents were first to feel the softening, but now even the big companies

are finding it difficult to move buckwheat promptly.

Bituminous—The market is particularly flat at this time and cancellations are coming in right and left. The gas coals are particularly hard hit, due to the cessation of work in many mills of the iron trade. In eastern Pennsylvania out of 40 blast furnaces only 19 are now in operation. Many other industries are taking advantage of the coming holidays to close down until after the new year. Numbers of mines are shutting down, rather than cut prices any lower.

Pool 9 quotations are $4.75@$5, Pools 4 and 10, $4@$4.50, Pool 11, $3.50@$3.75, while quotations are rarely heard on Pool 18. The Fairmont coals, particularly Pool 34, are quoted $3.25 for mine run, with screened 25c. higher and slack 25c. lower. The only buyers in the market are the lightest consumers and even they are only taking in enough to tide them along.

Prices are fast approaching cost of production and rather than take a loss some producers are curtailing the output. Some of the really wise consumers are beginning to appreciate that prices are close to bottom and are pressing inquiries as to contract figures. Agreements are quietly being made on standard steam grades close to $4.50 net ton at mines, and frequently at less on some good coals.

Business at Tide is moderate, practically being confined to the highest grades, which have an established reputation overseas. There is also a fair bunkering trade which is being handled by old, established firms.

Almost all houses are experiencing quite a bit of trouble as to collections. Firms which for years past have been quick to meet their accounts are now taking a month or more beyond maturity.

NEW YORK

Anthracite Situation Easier — Demand Is Less Urgent — Independent Coals Are Lower—All Bituminous Quotations Drop — Cancellations Are Heavy.

Anthracite — Conditions continue to improve. More coal is being received and the demand is not as urgent. Requests for coal received by the Department of Health Bureau organized during the recent shortage, are gradually becoming less and unless this city should be visited by a cold wave, all danger of an extreme shortage is believed to have passed.

With production keeping up its present pace shippers look for sufficient coal to meet all requirements within a few weeks. The question of distribution is being carefully considered with the result that shipments are being sent in all directions, each of the markets getting its pro rata.

Smaller independent operators are quoting slightly below what they did a week back. Increased tonnages combined with the easier demand have aided in a further drop from the high quotations of last month.

Quotations for the product of the smaller independents ranged $11@$12, with occasional lots below $11. Concessions were made by the larger independents where the buyer was willing to include in his order some steam sizes.

Demand for steam is slow but shippers look for a stronger market with the appearance of real winter temperatures. Buckwheat moved slowly, at prices for independent coals of $4@$4.25. The company steam sizes are easy to move inasmuch as the railroads are heavy users.

Bituminous—Increased tonnages and lessened demand resulted in a further drop in quotations. With the many cancellations because of the closing down of industries, shippers find it necessary to keep moving among the trade.

Requests to cut down contract deliveries and in many instances to withhold shipments until such time as business picks up are frequently received by operators and shippers. In many instances several cars of coal were on the road between the mine and consumer and these were thrown into the spot market.

The export demand is slow except for those shippers who are fortunate enough to have made contracts. Many purchases have been cancelled because of the high prices at which they were bought and the subsequent drop in the market.

There was a wide range of quotations for mine shipment. Pools 9 and 71 ranged $4.50@$4.75; Pool 10, $3.75@$4, with the better grades bringing as high as $4.25 along the line; Pool 11, $3@$3.50; Pool 18, $3@$3.25, and Pool 34, $3.25@$3.50.

There were many loaded boats offered but they were hard to move unless concessions were made. A stray cargo of Pool 10 was said to have been offered at $8 alongside. Quotations f.o.b. piers ranged about as follows: Pool 10, $7.25@$8; Pools 9 and 71, $7.75@$8.25, and Pool 11, $7.25@$7.50.

BUFFALO

Bituminous Still Going Down—No Improvement in Demand—Mines Getting Ready to Close—Anthracite Receipts Improve.

Bituminous—Some sensationally low offers have been made by mine owners this week, though they are as a rule a part of a plan to close down operation till there is money again in the business. If anyone can make a profit out of coal mined and sold at present prices he has come to a special understanding with his miners, and this has not generally happened.

Mining has come down practically everywhere that more than the union scale has been paid, but even that is not always enough. Thin-vein Allegheny Valley operators say they cannot pay the scale and make a profit, so that if production is kept up the coal must come from the thick-vein mines, which can produce at moderate cost.

Something of what is happening may be learned by the statement of a Buffalo operator who says that at one time he was paying as high as $3.50 a ton to the miners, but that now he is down to $1.50, which is about the union scale. Some of the smaller operations paid as high as $5.50 in order to keep their men, but they are now running at very much reduced wages or not at all.

And the end is not yet. Jobbers are sending their men out to ask for business "at your own price." It is fast becoming common for mines to accept any offer that is made.

Prices are very unsteady, but most coal is selling at $5.50 for Youghiogheny gas, $4@$4.50 for Pittsburgh and No. 8 lump, $4 for Allegheny Valley and other mine run and $3.25@$3.50 for all slack.

Anthracite—As a rule all comers are getting deliveries of two or three tons and there is no sign of distress. Shippers expect more coal right along from this time, as has been the case in former seasons. The mild weather has come to the rescue wonderfully.

At the same time, inability of the companies to meet their orders is becoming more apparent every season. It shows more than anywhere else in the big premiums obtained by independent operators, who at one time secured as high as $8 over regular prices and are getting about half that now, though only a few jobbers will handle that coal at all.

Coke — Prices have sagged much faster of late and have gone comparatively lower than bituminous coal. Demand is of course much lighter than it was. Jobbers report 72-hour Connellsville foundry at $7.50, 48-hour furnace at $6.50 and off-grades and stock at $5.50, with non-standard makes 50c.@$1 less. Domestic coke is selling slowly, as is shown by breeze going as low as 75c., with beehive larger sizes at $7.50.

Northwest

MINNEAPOLIS

All Shortage Overcome by Industrial Recession and Mild Weather—Transportation Conditons Are Good—Dock Men See Prices Well Maintained Through Winter.

When abnormally mild weather lasts into the middle of December, it is bound to reduce consumption and weaken the market. That has been the case this winter. Had there been a normal season so far, the market would have been firm and would doubtless have maintained former prices on all-rail coal.

From an assured shortage of soft coal and a scant supply of anthracite, mild weather has practically made up the deficiency. Soft coal threatened to go at a premium all winter. Now it is well demoralized in the lower grades.

Screenings have accumulated and have been going at varying prices. Mine run has softened $1@$2 a ton. Prepared sizes of the better grades of Illinois coal have nearly held their own, though they are not at all firm.

The late touch of colder weather and some snow has been a reminder that the winter is but beginning. It will not take many such days to overcome the weakness of the market. In fact there was a distinct stiffening with the start of cooler temperatures.

Railroad operation has been so satisfactory that it is about forgotten that it may not be entirely cured. Yet it is a question whether the improvement is not due more to limited traffic than to any improvement either in organization or equipment.

Coal men feel confident that the winter, with anywhere near normal weather, will generally sustain former prices. The retail trade has held off from buying as long as possible, and the minute they come into the market, their needs will be sufficient to keep prices well stable.

Some apprehension has been felt that there would be some surplus of dock coal carried over into spring at a considerable loss, for the new prices will doubtless show a decline. With a shortage from a year ago of around 2,000,000 tons, it has not seemed possible for any stock to be left over. But railroad, industrial and domestic consumption have all been cut down materially from last year. A professor of engineering at the state university estimates a saving of coal of 20@25 per cent, as a result of the mild weather. When there is added to this a further reduction resulting from less industrial consumption, it can be seen that the saving from a year ago is run up greatly.

Dock men generally claim that they have their own stocks in such shape that they will go through the winter with very little left on hand by spring. Their confidence seems to be real, for some of them have moved additional coal in the last few days, at the excessive insurance rates which obtain after the close of the official period of Lake navigation. They would hardly do this on chance, if they were not sure of where the coal would go. It is assumed that they are covered by contracts, either with railroads or large industries, for the coal which has been moved during December.

MILWAUKEE

Mild Weather and Industrial Depression Checking Demand — Hard Coal Scarce and Firmly Held—Soft Coal Liable to Drop.

Mild weather has checked the demand for domestic and industries are almost out of the market. This situation applies all over the state, and rail shipments to interior points suffer in consequence. Soft coal is in good supply and lower prices will probably result if the present depression continues. Anthracite is scarce, however, and is bound to remain high throughout the winter. There is an acute shortage of buckwheat and of screened Pocahontas.

Lake navigation is at an end. The last cargo of the season reached port on Dec. 15. It originally consisted of 10,500 tons of anthracite, but only 10,200 tons were delivered, 300 tons having been thrown into Lake Michigan to release the steamer from rocks upon which she stranded. If the present temperature is held for the balance of the month all danger of a shortage will have passed.

Unrevised figures place the total receipts by bulk freighters at 868,848 tons of anthracite and 2,375,188 tons of soft coal, a falling-off in anthracite of 116,844 tons and in soft coal of 789,900 tons in comparison with 1919. There have been no developments as yet concerning the result of the coal inquiry recently prosecuted by state officials.

Inland West

CLEVELAND

Bituminous Prices Are Cut at Eastern Ohio Mines—Demand Falls Off—Pocahontas Advances—Anthracite Is Scarce.

Bituminous — Partial or complete closing down of many industrial plants, together with continued mild weather, have combined to bring about a decided dullness in the trade which has affected not only steam coal, but domestic as well.

Mine run steam is obtainable in some cases as low as $3 at the mines as compared with $3.75@$4 a week ago. Domestic lump is also somewhat easier around $4.25, with some sales made below this figure.

Retail prices of bituminous, however, have not been reduced. With continued mild weather some reductions are probable, although a severe cold spell would perhaps cause higher quotations.

Receipts are improving with a better supply of cars, estimated at about 70 per cent. A week ago the supply was little better than 50 per cent. This situation has greatly aided production.

Most of the industrial buying now being done is to meet only immediate requirements. Comparatively little coal is held by consumers in storage. Although the railroads are doing some buying, the volume of their purchases is on the whole rather small.

In the Lake trade, the last coal carrier sailed on Dec. 11 and a good clean-up has been made at the lower ports. Only about 10,000 tons were left over. Two steamers have tied up and are holding cargoes that will be forwarded at the opening of next season. Total Lake movement is now estimated at about 22,425,000 tons of cargo.

Anthracite and Pocahontas—Receipts continue considerably below requirements. Anthracite prices are unchanged, but Pocahontas grades have advanced. Mine run is practically the only grade of Pocahontas obtainable for domestic use.

Retail prices of coal delivered in Cleveland are:

Anthracite — Egg, chestnut and stove, $15.30.

Pocahontas—Shoveled lump, $12.50; mine run, $11.30.

Domestic Bituminous — West Virginia splint, $11.75; No. 8 Pittsburgh, $9.65; cannel lump, $15.

Steam coal—No. 6 and No. 8 slack, $8.85; No. 6 and No. 8 mine run, $9; No. 8 3-in. lump, $9.

CINCINNATI

Car Supply Improves — Consumption Declines With Warm Weather — Receipts Are Adequate.

Approach of the holiday season has slackened production, although dealers say they have a sufficient amount of fuel on hand to meet all demands. Because of warm weather the demand has fallen off to a degree.

Criticism of the industry, together with a threat of drastic legislation to meet the alleged evils of profiteering, as set forth in the recent report to the United States Senate is a charge without foundation of fact, in the opinion of Cincinnati coal dealers. There has been no profiteering in coal, dealers point out, and if the experience of the government in its control of the railroads and the regulation of the coal industry during the war can be taken as an example of its control of the situation, the taking over of the mines would not improve conditions.

Although the price of coal in Cincinnati, which at present is generally quoted at $9.50 is still high, consumers in other cities have been paying $12@$14. In fact, the retail price in Cincinnati has been lower than the wholesale mine price for other cities.

Retail quotations follow:

Bituminous lump	$9.25@10.50
Mine run	8.50@ 9.25
Smokeless lump and egg	11.25
Mine run	10.00@10.50
Anthracite egg	15.00@16.25
Coke, domestic egg	14.50@15.00

COLUMBUS

Further Break in Steam Prices — Domestic Is Still in Good Demand — Car Supply Is Adequate — Demurrage Coal Goes at Low Figures.

Prices on steam grades have declined to new low levels and in certain cases extreme quotations are made. The lack of demand is attributed largely to the slowing down of industry. Steam users have succeeded in accumulating all reserve stocks of fuel desired. The only active buying source is railroads and they are also cutting down requisitions. Public utilities have large reserves.

There is a considerable amount of demurrage coal reported, much of which is sold at ridiculously low prices. Nut, pea and slack is as low as $2 at the mines, with mine run at $2.25. But the market is not quite as low as those figures and a better tone is expected if colder weather continues.

Domestic trade is still rather active. There is now no shortage in any section

and dealers are beginning to shade prices to attract business. Hocking lump retails $7.75@$8.50 and in some cases even lower with Pomeroy lump about the same. West Virginia splints are quoted $8.50@$9, although the market is weakening. Pocahontas is scarce and prices range $10.25@$11.

Production in all Ohio fields has been quite heavy. Car supply until recently has been good, although some curtailment was reported during the latter part of the week. The Southern Ohio Coal Exchange reports output for the week ended Dec. 4 at 373,833 tons out of a capacity of 624,300 tons. Of the shortage 85,538 tons was due to car supply.

Reports from the Hocking Valley field show an output of 75@80 per cent with Pomeroy Bend, Crooksville and Cambridge about the same.

Prices at the mines of the principal coals used in central Ohio are:

Hocking lump	$4 00	$5.00
Hocking mine run	2 75	3.50
Hocking screenings	2 50	3.00
Pomeroy lump	4 50	5.00
Pomeroy mine run	3 00	3.75
Pomeroy screenings	2 50	3 00
West Virginia Splints, lump	4 75	5 75
West Virginia Splints, mine run	2 75	3.75
West Virginia Splints, screenings	2 50	3.25
Kentucky, lump	5.00	5.75
Pocahontas, lump	6 00	6 75

ST. LOUIS

Domestic Business at Standstill—Steam Demand Is Very Small—Prices Nearing Bottom—Mines Idle and Demoralization Threatens with Unseasonable Weather.

The local situation is an extremely aggravating one. Continued mild weather has upset all calculations and coal is absolutely a drug on the market. Domestic business is at a standstill, and many dealers hesitate to buy at the prevailing price for fear lower figures will come that will later entail a loss.

Industrial depression is still in such shape that the steam market is in a bad way, with no prospect of any betterment in the near future. Standard screenings sell as low as $1.25, with mine run $2.15, and lump and egg $3. Two days a week is considered good working time on commercial coal. Railroad mines manage to get as many as five days. Car supply is plentiful in all fields.

In the Mt. Olive district mines have been idle on account of no market, but prices have not been cut with but one exception. The price on domestic ranges $4@$4.50, with steam going on contracts principally. A good tonnage continues to move north, but practically no Standard is moving out of the St. Louis territory at all.

In the Carterville field as well as Duquoin, over-production is beginning to make itself felt and coal that has not been offered on the open market since late last winter is now easy to secure, although no mines have been reported idle on account of no market, with one or two exceptions on steam sizes. Working time on commercial coal ranges from 3½ to 4 days a week. Railroad tonnage is good. There are no labor troubles.

Water shortage still affects some mines in Williamson County. Some anthracite is moving into St. Louis proper, but no smokeless. Retail prices as published heretofore still continue, but it is probable these will break if the mild weather continues.

INDIANAPOLIS

All Prices Declining to Levels Fixed by Commission — Steam Market Is Extremely Dull—Domestic Demand Strong —Operating Conditions Are Good.

Bituminous prices continue to soften as December production promises to break all records. The miners appear to want Christmas money and labor difficulties have been reduced to a minimum with every one working at top speed.

Indiana steam demand is off, as also is the call from other states. The demand for domestic appears to have livened, due to real winter weather. For weeks the demand from domestic consumers has been dull. Also for the first time for several months retailers have begun advertising coal for sale.

Up to the present time prices have not declined from the figures fixed by the Coal Commission, but given a demand as low as during the past week and this price will be comparatively high. Industrials are curtailing their production and some have even closed because of lack of orders. Lack of shipments has reduced the needs of the steam roads and even public utilities are not using so much. However, the lack of demand from public utilities will not be felt until these utilities have built up the customary reserve for the acute winter demand.

DETROIT

Shipments Largely Confined to Contract — Revival of Domestic Buying Expected—Anthracite Receipts Slightly Improved.

Bituminous—There is little inquiry for either steam or domestic coal. Jobbers say that few of the large industrial and manufacturing plants are taking steam coal except such stock as may be coming to them under contracts. The concerns that have reserves are drawing on them for present requirements, while those having no reserve are purchasing in quantities only sufficient to meet current needs.

It is expected that a continuance of the recent more wintry temperatures will stimulate a broader demand for domestic coal, and that the dealers who have been hanging back will ten come into the market to renew their supplies. Their present stocks are not large.

Though the supply of bituminous seems adequate for present requirements there is little free coal to be found, and practically no coal on which demurrage is accruing. Under present regulations jobbers are not encouraging shipments of speculative nature, the risk of loss being too great.

The present level of prices is about as low as can be expected until there is a reduction in cost of labor. Domestic lump from West Virginia is quoted $5.75, mine run is $3.75 and slack $3@$3.50. Hocking lump is offered at about $5.25, while mine run and slack can be had for $3.25. Smokeless is still scarce, lump being around $8 and mine run $6.50.

Anthracite—Though a slight improvement in supply is reported, shipments are still small and the movement irregular. Dealers are not able to accumulate yard stocks and are still unable to assure customers of their ability to fill orders, except as shipment arrive.

CHICAGO

Chicago Market Saturated—Mild Weather Cuts Domestic Demand—Contract Shipments Being Curtailed.

Both steam and domestic markets are poor. In the first place there is but little demand on the part of the public for coal. In the second place, the weather has been abnormally mild and in the third place, a great many operators having "No Bills" at their mines have consigned their coal to Chicago, trusting to the ability of their salesmen to handle their shipments. As a result, the Chicago trade has reached the point of saturation. The representative dealer with yards in Chicago has his bins full. The public is buying in small quantities and is not interested except to ask when prices are going to decline still further.

Those operators having contracts in Chicago, have either been shut off or have been curtailed from 25 to 50 per cent on their shipments for the simple reason that retailers are having such difficulty in moving coal.

Those who are in close touch with market conditions in and about Chicago are not looking for any improvement in either steam or domestic sizes until after the holidays. These people argue that even if we have a good cold snap the dealers and manufacturers are protected with the supply of coal on hand.

MIDWEST REVIEW

Shrinkage of All Demands — Prices Touch Bottom — Some Mines Closing Down — Domestic Stocks Are Good.

The coal market in the Middle West continues to be uniformly listless with practically no activity in steam and very little in domestic coals.

Out in the country retailers are not buying in any great quantity and the interest displayed on prepared sizes is very languid. The average dealer, early in the spring, placed contracts with Franklin County operators and these dealers are now receiving 100 per cent deliveries on their contracts. Consequently they are no longer tempted to buy poorer grade coals at any price, no matter how steep concessions may be. However, the average supply on hand in the bins of the outlying country dealer is around 300 tons. It is expected that a good cold snap will lead to a great deal of activity in the domestic market.

Steam sizes prove increasingly hard to move. All sorts of concessions are being offered by short-sighted operators and jobbers. The more far-sighted coal men are closing their mines rather than sell at a considerable loss. Salesmen report that placing steam coal is not a matter of price cutting but that of finding a manufacturer who can conveniently stock a little more coal.

Some operators have shipped a large tonnage on consignment and put it up to their sales representatives to sell the coal. As a result, certain towns have been swamped and prices have been slashed down below those obtaining before the war. On a market like the present, consigning of coal to a given town is a bad practice because it means that the coal undoubtedly will have to be sold at a great sacrifice and the news consequently spreads from one buyer to another causing great depression on the whole market. Operators who produce coal suitable for steam purposes only are considering closing their mines until after the holidays.

Now that the market is depressed, the railroads are furnishing mines with a better supply of cars than at any time during the past year. Furthermore, labor is paying increased attention to the job with the result that practically no labor difficulties have been reported.

Current prices are as follows:

Southern Illinois (Franklin, Saline and Williamson Counties):	
Prepared sizes	$3.50@$5.00
Mine run	3.00@ 3.75
Screenings	2.25@ 3.00
Central Illinois (Springfield District):	
Prepared sizes	$3.25@$4.25
Mine run	2.00@ 3.00
Screenings	1.50@ 2.25
Northern Illinois:	
Prepared sizes	$4 00@$5.00
Mine run	3.25@ 3.75
Screenings (washed)	3.00@ 3.50

Indiana (Clinton and Linton, Fourth Vein):	Outside State	Inside State
Prepared sizes	$4 00@$4 75	$3.45
Mine run	3 00@ 3.50	3.20
Screenings	2 25@ 2.75	3 00

Indiana (Knox County, Fifth Vein):	Outside State	Inside State
Prepared sizes	$3 50@$5.00	$3.25
Mine run	2.00@ 3 00	3.00
Screenings	1.50@ 2 75	2.80

Pocahontas and New River:	
Prepared sizes	$6 00@$7.25
Mine run	4 50@ 5 00
Hazard and Harlan (Southeastern Kentucky):	
Block	$6 25@$7.00

South

LOUISVILLE

Prices Break Further—Little Buying on the Declining Market—Western Kentucky Coal in Better Demand—Operators Offer to Contract.

Prices are breaking lower, and it is a hard matter to maintain the present heavy production, with no immediate demand for fuel.

Industrial concerns and public utilities are buying very lightly. Railroads are getting a little engine coal. Retailers are waiting for business to develop, as it has been one of the mildest falls on record. No one is buying except for immediate use in view of a declining market.

Jobbers are now being offered heavy tonnage, but are unable to make openings for it. Many small mines without sales organizations are having a hard time to sell at the very low prices which have to be accepted on spot markets, where it is practically a forced sale proposition.

Few contracts are being made. No advantage in a contract can be seen by the consumer, retailer or jobber, in view of the fact that contracts haven't been worth the paper they were written on in many cases during the past few months.

Prices at the mines of eastern Kentucky and West Virginia block are $5@$5.50; mine run, $4@$4.50; screenings, $2.75@$3.50. Some eastern Kentucky mine run is selling as low as $3.75. Some jobbers report that it is hard to locate much good block coal at less than $6@$7, but it is being sold every day in big lots at under $6.

There is still a fair movement of western Kentucky coal into the Louisville market, steam demand having developed which is holding nicely, while block coal with the lower freight and market costs is being sold under eastern Kentucky grades.

BIRMINGHAM

Steam Orders Confined to Small Lots—Domestic Demand Is Easier—Prices Remain Stationary — Labor Conditions Satisfactory — Some Delays from Car Shortage.

Commercial steam demand is very limited and sales are confined for the most part to small lots for stocking purposes. Railroads and utilities are taking most of the steam product, while the U. S. Steel Corporation subsidiaries and other furnace interests and coke manufacturers are stocking considerable coking coal. There is also a limited amount of bunkerage business. Altogether, production is being very well taken. The supply is sufficient to meet all needs and enable consumers to discriminate against the inferior products.

Prices have fluctuated very little, and now show evidence of stability. Quotations are as follows per net ton mines: Black Creek and Cahaba mine run $4 50 @$5.50; Carbon Hill $4@$4.50; Corona $4.50@$4.75; Big Seam $3.75@$4 25.

The domestic market is easy though there is sufficient demand to exceed the output, but as the weather continues mild retailers are not so insistent as to shipments. Daily receipts are ample to take care of current calls but no stocking is possible.

Production is being maintained above the average normal weekly output, figure for the week ended Dec. 11 being approximately 313,000 net tons, based on railroad cars loaded. Wagon mines are also producing a considerable tonnage in the aggregate. Car supply on the Frisco is good, but there has been a slight shortage on the Southern, while the L. & N. has furnished 40@50 per cent.

Southwestern

KANSAS CITY

Heavy Reserves Cut Spot Demand — Increasing Mine Idleness—Prices Are Slightly Lower.

It has been a good many years since the coal market was in so chaotic a condition and the situation today is not a recent making, but began, so far as the Southwest is concerned, early last summer. The daily press harped constantly on the shortage of coal, whereas, so far as this territory was concerned, there was no shortage, but the constant cry of "no coal" created a buyers panic, and as a result people bought right and left, paying any price that was asked and often bidding up the price. Manufacturing concerns also taking alarm bought heavily. The result is that all the storage bins and a great many of the domestic consumers are filled up and the mines will have to take idle time unless something unforeseen happens during the winter.

With the leveling down of prices during the past two weeks there has been a little steadying in the market. Domestic grades in Arkansas hold firm at $6.75; $4 for steam. Kansas domestic grades are $6; $4@$4.50 for steam. Missouri, $5.50@$6 for domestic; $3@$4.05 for steam, according to quality.

Western

DENVER

Cancellations Are Heavy—Jobbers Refuse Contract Shipments — Cars and Labor Are Plentiful.

Cancellations are heavier than for many months, and the Colorado market is the weakest it has been in years, considering the season. There is considerable feeling between some dealers and operators, and the present action of the retailers is regarded as a game of retaliation for what retailers say happened to them only four or five months ago.

Some of the smaller operators at that time ignored existing contracts with Colorado jobbers and shipped to other points where a premium was offered. The coal companies have since made new contracts with some of these concerns, and now that there is plenty of coal, the operators are facing an unprecedented string of cancelled orders at top prices which jobbers refuse to pay.

Prices remain the same, although some dealers have been on the point of cutting them for several days. Louisville lignite lump is $10.15 retail and Frederick lump $8.90, while slack is $5.30. Routt bituminous lump is $12.50 and Trinidad lump $11.50@$12, while steam is $8.05. Nut is 50c. cheaper.

News From the Coal Fields

Northern Appalachian

PITTSBURGH

Spot Prices Show Further Decline and Are Very Irregular — Production Slightly Reduced — Small Mines Out of the Running.

The market has become still more irregular. Apparently a number of sales have been made of demurrage coal, while occasionally an operator seems to have sold for some particular reason, the price being quite out of keeping with cost of production. As such offerings do not meet the total demand, light as it may be, a considerable range of prices is presented. Then there is a wide divergence again according to quality, relatively high prices being paid for byproduct and the better grades of gas coal.

Lowest price reported on a regular sale of any size is $2.50, for Panhandle steam coal, but that is not representative of the market in general, steam coal of good quality being usually held $3.25@$3.50, though there is only very limited demand at such prices. High grade gas coal brings more. As to byproduct, there is not much doing. The upper limit of the market is indicated by a sale of particularly good byproduct from the Connellsville field at a shade under $3.95, this being regarded as the top of the market even for that grade.

The Pittsburgh Coal Co. continues its maintenance of regular prices at $3.75 for slack and mine run and $4 for screened. Spot market is quotable at approximately $3.25@$3.50 for steam mine run and $3.50@$3.75 for gas (screened) and byproduct, per net ton at mine, Pittsburgh district.

Production is curtailed somewhat by many producers, particularly in the smaller interests, while the really little mines are practically out of business.

UNIONTOWN

Coal and Coke Sharply Reduced—Prices Approaching Production Cost — Sluggish Market Conditions — First-Half Contract Basis Being Made.

Both the coal and coke markets slipped another notch during the week. Furnace coke is quotable $5@$6 and steam coal at a sharply reduced figure of $2.85@$3. Neither market shows much activity and many offerings have not been taken.

In the view of a number of prominent operators, the market price is fast approaching cost of production, and curtailment of output continues. It is expected that the last two weeks of December will be the most quiet period the industry has experienced in several years. While operators and jobbers have experienced difficulty in placing tonnage already mined, consumers are evidencing an increasing reluctance to take up the offerings. In few, if any instance, is tonnage other than for immediate needs being purchased.

There is not much concern being evidenced by any operator of importance in the region regarding the present slump in the market. It is held to be the natural result of the war-time readjustment and that a low level must be reached before business can get under way upon a normal basis.

That view of the situation is given a fair illustration in the negotiations now proceeding for first-half coke contracts. One large independent coke interest this week contracted for its 1921 output upon a basis of five tons of coke to one ton of pig iron. With the latter product now at $33 coke will be delivered at $6.60. The contract however, stipulates that $5.80 shall be the minimum price for coke which will permit pig iron to drop to $29 before the ratio of five to one is affected.

EASTERN OHIO

Heavy Production of Railroad Fuel—Car Supply Improves — Extensive Transportation Repairs—Prices Still Weakening—Demand Is Sluggish.

Production for the week ended Dec. 11 was a little above that for the preceding week, or approximately 417,300 tons, this being accounted for by a slight improvement in the car supply, which averaged around 70 per cent of requirements, although supply for commercial loading was only about 50 per cent.

A substantial improvement is not looked for immediately because of more scattered consignments since close of the Lake season. Between 40 and 50 per cent of present production continues to go to railroads for fuel and it is anticipated this percentage will shortly be increased.

Railroads are receiving requests, through the American Railroad Association, to load or send defective equipment to the owning roads in order that their extensive repair programs may be carried out during this period of recession in industrial activity.

The market continues soft, prices ranging $3.75@$4.25 for lump and $3.25@$3.75 for mine run and slack. This is quite a contrast with prices of a month ago and some operators express the opinion that bottom has about been reached. Wagon mines have generally discontinued operations because of higher production costs and the low prices that now prevail.

FAIRMONT AND PANHANDLE

Poor B. & O. Service Hampers Operations—Production Not Sufficient to Cover Contract Obligations — Prices Weaken and Cancellations Are Numerous.

FAIRMONT

Production was reduced to the very minimum during the second week of December, the B. & O. placement being far below requirements. The shortage of empties was not quite so pronounced on other roads. The small output was responsible for reduced shipments to all markets. It was not possible to meet even contract obligations.

Tidewater shipments were almost negligible, not only due to car shortage but also because of absence of demand. Western shipments also dwindled even to Ohio and Michigan, where much of the output had been

Operating Conditions, Indiana Coal Mines, November, 1920

PREPARED BY JONAS WAFFLE, SECRETARY INDIANA COAL TRADE BUREAU

Railroads on Which Mines Are Located	District	No. of Mines	Tons Produced	Full Time Capacity (Tons)	Tons Lost and Causes Therefor — Total All Causes	Car Shortage	Labor Trouble	Mine Disability
Big Four	Terre Haute	6	100,937	111,709	10,772	2,087	6,894	1,791
B. & O. S. W.	Vincennes	2	36,920	41,121	4,201	778	2,231	1,192
C. & E. I.	Clinton	26	347,579	444,327	96,748	52,673	35,495	8,580
	Sullivan[1]	18	202,628	274,578	71,950	32,636	16,181	23,133
	Total	44	550,207	718,905	168,698	85,309	51,676	31,713
C. I. & W.	Dana	1	8,033	9,426	1,393		1,109	284
Cent. Ind.	Brazil	1	2,989	3,098	109		109	
C. T. H. & S. E.	Clinton	14	255,597	327,722	72,125	44,325	19,395	8,405
	Linton[2]	27	289,740	398,260	108,520	74,700	18,123	15,697
	Total	41	545,337	725,982	180,645	119,025	37,518	24,102
E. I. & T. H.	Clay City, Petersburg	13	132,847	233,898	101,051	68,221	12,488	20,342
E. & E.	Evansville	2	12,493	13,693	1,200		1,131	69
E. S. & N.	Evansville	4	23,862	35,679	11,817	3,303	4,709	3,805
Ills. Cent.	Linton	6	75,054	104,478	29,424	15,506	4,914	9,004
Monon	Linton[3]	19	210,117	336,819	126,702	60,136	18,638	47,928
P. C. C. & St. L.	Main Line[4]	20	223,346	320,626	97,280	33,295	20,932	43,053
	Vincennes[5]	20	513,156	654,499	141,343	59,931	55,753	25,659
	Total	40	736,502	975,125	238,623	93,226	76,685	68,712
Southern	Ayrshire	7	58,699	92,456	33,757	269	6,532	26,956
	Boonville[6]	7	74,650	87,821	13,171	151	11,939	1,081
	Total	14	133,349	180,277	46,928	420	18,471	28,037
Totals		193	2,568,647	3,490,210	921,563	448,011	236,573	236,979
Totals for month ending Oct. 31, 1920		198	2,542,799	3,676,751	1,133,952	790,533	155,083	188,336

[1]Includes all mines south of Terre Haute. [2]Two mines served by two railroads. [3]Four mines served by two railroads. [4]Includes all mines on St. Louis and Michigan Divisions. [5]Includes all mines on Vincennes and Division and Dugger Branch. [6]One mine served by two railroads.

going. Railroad fuel shipments alone held up fairly well. Spot business, being generally limited to Inland markets, further lowered quotations. Pool 34 ranged $3.25@$3.50 and Pool 44, $3.

NORTHERN PANHANDLE

While mines served by the Pennsylvania received a normal supply of empties, B. & O. operations averaged only about 60 per cent supply, reflecting the general car shortage throughout that system. Production for the

Much of the output went to Western markets, largely confined to contracts, as the spot demand was very light. Numerous suspensions of orders under contract by industries, particularly from steel companies, were received. No labor trouble was experienced during the week.

The spot demand was hardly noticeable and, of course, caused further price recessions. Mine run declined to $3.25, and $3.50 was quoted freely on prepared sizes. Slack was down to $3 and lower.

CONNELLSVILLE

Demurrage Coke Affects Spot Market—Coal Value Uncertain—Some Furnace Coke Contracts Made.

With an extremely light demand for spot furnace coke the market has been controlled by offerings loaded and requiring to be sold to avoid demurrage. Operators in their present mood would hardly sell coke still to be made at less than $6. Foundry coke has also declined further. Declines in the week are about $1.50 for furnace and $1 for foundry.

The furnace coke price quoted is not according to the rule operators feel should govern the market, the value of the coal when salable plus cost of coking. If, however, there is not enough coal demand to enable operators to switch from making coke to shipping coal, the coke market is likely to be in relation to net cost of production. It remains to be seen how the coal market will align itself, it being quite certain there will be enough demand for coke in the near future to furnish any direct support.

While furnacemen in general see little prospect of being able to operate, and hence are not interested in coke contracts at any price, some business has just been put through, in a case where the seller and two or three buyers were anxious to close transactions. The business involves enough coke to supply four or five medium sized furnaces and covers the first half of the new year. The general basis is a 5 to 1 ratio against basic pig iron at valley furnaces, so that on $30 pig iron the coke price would be $6. There is a limit below which coke could not go, also a stiffer ratio in case pig iron advances above a certain figure. On similar terms, about 15,000 tons has been sold for shipment from the middle of December to the end of January.

Of three prominent producers of foundry coke, one quotes on first-half contracts $10, another $9 and another $8.50, but none are effecting any sales. The spot market is quotable $5.50@$6 for furnace and $7@$7.50 for foundry.

The *Courier* reports production in the week ended Dec. 11 at 208,420 tons, a decrease of 9,480 tons.

CENTRAL PENNSYLVANIA

Price Decline Continues — Production Rate Is High — Tonnage Largely Confined to Contracts — Cancellations Increase.

Decline in coal prices, coupled with the car shortage, has somewhat handicapped larger operations in the Patton, Cambria County district, and has put an entire stop to the smaller producers who have no contract affiliations to tide them over the period of a sluggish market.

During the week ended Dec. 4, central Pennsylvania producers mined 1,250,000 tons, this being one of the largest weeks in the year. It is unlikely that this high production rate will continue, as orders are becoming scarcer, contract customers are reducing their requirements and the end of the price decline has apparently not yet been reached.

Pool 10 coal, which last week sold at $4.25@$4.50, is now quoted at $4, and other grades have dropped accordingly, with the better coals selling around $4.75. Dealers are able to get all they can handle and are selling, at retail, $7@$8. Prolonged mild weather is reducing the domestic demand considerably. The depression in other industrial lines has not yet had the effect of closing any representative mine operations. Car supply was somewhat improved during the past week.

Middle Western

DUQUOIN

Operating Conditions Are Good — All Prices Decline with Sluggish Market—Coal Sold with Difficulty.

The past week has seen a still further decline from the low levels of the preceding period. Production was high, the car supply was never better and things in general seem to operate in such a manner as to demoralize the industry. Some districts reported many "no bills" on hand and much trouble was experienced in finding purchasers for spot coal.

This district's market was very unsettled, with the demand light and prices correspondingly weak. Many plants in the cities are operating on short time or not at all and this slump in consumption is being keenly felt by mine operations. Production averaged around 80 per cent during the week, while many districts went as high as 90@95 per cent.

Prices, while rather unstable throughout the state, were lowest in the Standard field, screenings being offered as low as $1.50. In this district, screenings ranged $2.25@$3; mine run, $2.50 @$4.50, and lump, $3.25@$5.

WESTERN KENTUCKY

Demand Is Weaker for All Grades—Prices Decline—Car Supply Improves—Colder Weather Needed To Move Domestic Sizes.

With the European coal markets quiet, and the Lake movement over, along with a tremendously heavy production of coal throughout the country, it is no longer an easy matter to dispose of production, especially with industrial concerns operating on one wheel, and buying only in reduced quantities to meet immediate requirements. It is felt by some that after the Jan. 1 inventories things will pick up a little.

Many retailers now have fair stocks on hand, and without cold weather to force out such coal they are not buying on a declining market, figuring that with present excellent car supply, and abundant production, there will be no trouble in securing supplies as needed.

While mines in some sections, especially the smaller operations, with costly production conditions, have been forced to close down on the declining market, the situation in so far as western Kentucky is concerned has been very fair, and there are very few mines down. The car shortage has been aiding in holding down over-production.

Car supply on the L. & N. for the first ten days of December has increased to 53 per cent, while the Illinois Central is showing 72 per cent.

Quotations show lump, $5@$6; average, $6.64; mine run, $3.25@$4.50; average, $4.06; screenings, $2.45@$4; average, $3.11.

Middle Appalachian

LOW-VOLATILE FIELDS

Production Hampered With Inadequate Car Supply—Labor Conditions Are Good—Domestic Prices Weaken—Spot Demand Is Sluggish—"Hold Orders" on Contracts Are Increasing.

NEW RIVER AND GULF

New River car placement was so poor during the second week of December that operations were confined to about two days' running time. Practically all production was taken on contract requirements and there was no appreciable tonnage available for the spot market, which was extremely weak.

Some discussion of contracts covering the new coal year were heard on the basis of around $5 a ton. Spot mine run was weak at $5 and Tidewater quotations were $5.50 with little inquiry. The latter was a sharp slump from quotations of the preceding week. The domestic market was quoted at a price of $6, with a recession in the demand for even these grades, caused by the mild weather.

Mines in the Gulf region continued to experience an acute car shortage. Virginian mines worked on a half-time basis while C. & O. operations had only two days' supply. Utter lack of sufficient equipment was responsible for the C. & O. shortage. With the addi-

tion of 120-ton cars late in December, it is believed there will be a material improvement in the Virginian's car service.

Some new contract prices were heard, ranging $4.75@$5.50. With the output so curtailed little tonnage was thrown on the spot market to meet even the present light demand. Foreign business was almost entirely lacking.

Pocahontas and Tug River

Because of poor transportation facilities the N. & W. furnished not more than 60@65 per cent car supply in the Pocahontas region during the second week in December. Production was estimated at 50 per cent of capacity. Labor was very plentiful and miners from other fields were still drifting into the region.

Connections were at fault to a great extent, no cars being delivered to the N. & W. Under such conditions there was much idleness and irregularity of operation. Practically all the output was distributed to Inland points, little going to Tide even on contract.

Requests for suspension of shipments were common. Spot sales were at the very minimum, at prices of $5 for mine run and $6 for domestic. The demand was exceedingly dull.

Car shortage in the Tug River district fluctuated between 25 and 40 per cent, being somewhat more noticeable than recently. Coal produced hardly sufficed for contract shipments, so the fact that the spot market was very inactive made no appreciable difference in working time.

As in other fields suspension requests on contracts were common. A recession of prices marked the extremely light spot demand with mine run $5, domestic $6. Tidewater shipments were greatly reduced due to the entire absence of foreign demand.

HIGH-VOLATILE FIELDS

C. & O. Shortage Continues—Thacker Operations Are Gaining — All Prices Are Weaker—Export Market Very Inactive—Cancellations Are Numerous.

Kanawha

Taking the week ended Dec. 11 as a whole, mines were hardly able to work more than two days owing to poor car service conditions. This was attributed mainly to the inability of the C. & O. to secure empties from connections and to provide adequate transportation service. K. & M. car supply was better although this also dropped during the latter part of the week.

While Eastern shipments, including seaboard, were permitted for coal originating on the C. & O., shipments originating on the K. & M. could not be sent East over the C. & O., owing to embargo. Cars were so few that the inability to ship on contract resulted in some cancellations, aside from those due to the desire of customers to reduce fuel receipts at this time Most of the production was consigned to Western markets, not more than 25 per cent moving eastward.

Prices continued on the down-grade, mine run being $3.50 and even lower, while prepared sizes were firm at $5@$6. Tidewater coal was quoted $4.50 with but few takers.

Logan and Thacker

Slightly increased production in the Logan field marked the second week of December, however, the supply of cars was still poor, enabling only a 50 per cent run. Shipments to Eastern Inland markets were somewhat improved, as there was no longer any bar to such a movement, yet the bulk was going to Western centers. Eastern spot demand was entirely inactive and even the Western call was quiet, bringing prices down to $3.50 a ton. Prepared coal was in a little better demand at about $6. Slack coal was a drug on the market.

Contracts were affected by the general business conditions, customers endeavoring to limit shipments below those fixed in their contracts. No spot coal was going to Tide for export, as the foreign market was extremely quiet.

All but about six mines in the entire Williamson field were producing coal at the end of the second week in December and the output had grown to about 100,000 tons per week, with strike and labor shortage losses being reduced. In fact, strike losses were just about 25,000 tons. Many men are being brought into field and the resumption of operation is general.

Of course, most producers are back on their contracts and for this reason the weakened spot demand is having no effect. What little tonnage is moving on the open market averages $3.50 a ton for mine run and $6 for domestic.

Virginia

While production was limited by a car supply enabling a run of only 70 per cent, this was a slight improvement as compared with the preceding week. In contrast to conditions in neighboring fields, both export and inland demand was good, mine run being quoted at an average of $4.

All tipple mines are running to the limit of cars placed and only the smaller operations have been obliged to shut down because of low prices. In view of the lightening of freight traffic the continued car shortage is attributed to the general use of open tops for all shipping purposes and the fact that this equipment is not equal even to the needs of the coal mines.

Northeast Kentucky

Production increased slightly during the second week in December, the loss from car shortage being placed at 32 per cent as against 47 per cent during the preceding week. The improvement was more apparent on the L. & N. than on the C. & O.

The dull spot demand was more pronounced, mild weather cutting down the call even for prepared sizes, which had been running strong. Nut and slack was a drug on the market at $2.25@$2.50 and mine run slumped to $3@$4, while lump ranged $5@$5.50.

Many cancellations of contracts are being received and this, of course, is throwing a larger tonnage on the already weakened spot market. Domestic consumers are now buying only for immediate needs.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Rail Congestion Hampers Production—Demand for All Grades Is Dull—Prices Are Lower.

Car supply last week was poor due to heavy congestion on the L. & N. Much delay was experienced in furnishing empties and pulling loads, the first of the week finding many mines without cars.

Demand for all grades is dull, some steam mine run selling $3.75 a ton and even lower. Gas coals generally are 50c. higher. Many cancellations are being received and customers are endeavoring to cut down shipments called for on contracts or else attempting to cancel contracts outright.

With the mild weather that has prevailed, the domestic demand is easing off, although not many mines in this field are shipping domestic sizes, not being equipped to screen their coal. Labor is working smoothly and no serious shortages are apparent.

Western

UTAH

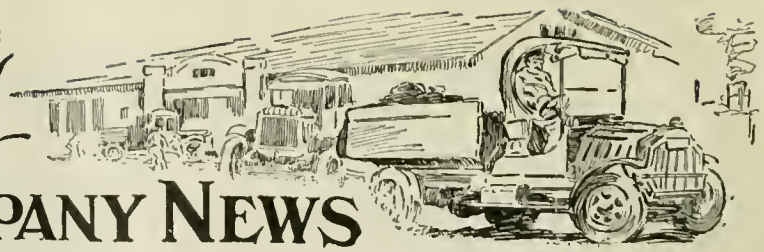
Operating Conditions Are Good—Buyers Are Not Actively in the Market—Domestic Call Suffers With Unseasonable Weather.

As a result of the better car supply and the mild weather, operators have caught up on their orders and are now finding business rather dull. The tendency to lower prices in all lines just now is partly responsible for this new condition.

Large consumers are not buying any more coal than they need for immediate use, as they feel prices may come down for coal as well as other things. The coal men point out that this commodity can hardly be reduced with the present scale of wages that are being paid. Retailers report subnormal demand. The labor situation is excellent, with no losses reported from this source.

It has been reported to the I. C. C. by carriers in the state that failure of the Utah Commission to advance passenger and freight rates in intrastate commerce to recently authorized levels of interstate traffic, allowed by the I. C. C. has already cost the Utah roads $2,000,000.

MINE And COMPANY NEWS



ILLINOIS

The rapid progress which is now being made toward the completion of mine No. 2 of the **Jewel Coal & Mining Co.**, near Du Quoin, indicates that coal will be shipped from the new mine by Jan. 1 or sooner. Machinery and equipment of all kinds is being rushed to the mine and will be installed as soon as it arrives. The company has offices in Chicago, St. Louis and other large cities.

The **Security Coal & Mining Co.** has just finished a series of test holes drilled about 3 miles west of their present operating property. The work was done by the Sullivan Machinery Co., of Chicago. The drillers moved from that place to a tract of land north of Centralia where they will drill several holes.

Plans are now being completed for the new mine to be sunk near Gillespie, Macoupin county, by the **West Virginia Coal Co.**, of St. Louis. The mine will employ over 500 men and will be one of the largest in that section of the state.

Mine No. 8 of the **Peabody Coal Co.**, located at Tovey, was idle lately resulting from a fire in the workings of the mine. The flames did not do so much damage but the smoke was very hard to fight, being in such a position that it could not be avoided, therefore the men could not enter the shaft to work. When the fire was completely extinguished the mine resumed operations.

Ten men employed by the **Mount Olive & Staunton Coal Co.**, at Staunton; Mine No. 2, recently narrowly escaped death when the cage in which they were being lowered into the mine gave way and dropped 35 feet to the bottom of the shaft. All of the men were seriously hurt but it is not expected that any of them will lose their lives.

INDIANA

Several Terre Haute attorneys are interested in a new coal mining company which was formed recently in Terre Haute. The company will be known as the **General Fuel Corporation** and its capital stock is placed at $1,000,000. The directors are W. T. Douthitt, C. A. Crawford, W. T. Tichenor, R. E. Llewellyn and J. H. Beasley.

Articles of incorporation recently were filed by the **Newport Coal Mining Co.**, of Newport, Ind. The capital stock is placed at $300,000 and the directors are Henry A. Cross, Raymond L. Wilhelm and Barton S. Aikman.

Fire in the Willow Creek coal mine south of Seelyville, recently, destroyed the barns and burned fifteen mules and two horses to death. The night watchman at the mine discovered the fire, the origin of which has not been determined. The property is owned by the **Richards & Sons Coal Co.**

The Simplex Coal Co. recently organized in Petersburg, by Earl Fields, Harry Weeks and Harry Patricks, Minneapolis capitalists, will take possession of the No. 3 Atlas Mine, now owned by the **Pike County Coal Co.**, situated one mile north of this city on the White river, as soon as the mine is ready for operation. The deal involves the expenditure of $250,000 as the No. 3 Atlas is being equipped to handle 4,000 tons daily, and will be one of the most modern in southern Indiana, electricity being used as the motive power.

Work has been started by a large force of men **on a new railroad** being built from the line of the Southern R.R., one mile east of Oakland City, Ind., to the big coal fields in that county, east of the town of Spurgeon, and which road may ultimately connect with the Southern Ry. at a point in Warrick county near the town of Selvin. The new railway will follow the survey of the South Fork ditch for a distance of five miles and then will extend into the hills east of Spurgeon, connecting with a rich stripping coal territory, which has remained undeveloped because of the lack of railroad facilities

KENTUCKY

Coal mining operations by West Virginia capitalists will be established in Kentucky by the **Elkhorn Gas Coal Co.** The company will operate in Floyd County. The capital stock is $100,000. The incorporators are: R. A. Crockett, H. W. Crockett, E. S. Crockett, I. V. Sizer of Bluefield, W. Va., and J. S. Gillespie of Graham, Va. Offices will be established at Bluefield

Organization of the **Old House Coal Co.** with capital stock of $50,000 has been announced in the Hazard field. The incorporators included A. M. Goss, V. H. Fuller and Joseph Campbell.

Nothing further is expected of the movement to call a special session of the Kentucky Legislature to place a **tonnage tax on coal**, at least not for the present. S. Thruston Ballard, Lieutenant Governor of Kentucky, who has been backing the movement, has gone to Florida for a month. He will return in January and may take up the argument after that time.

Representing business interests of Tennessee and Alabama, **Robert C. Mason** of New York was in Louisville recently to discuss with local concerns the purchase of 100,000 acres of coal land in eastern Kentucky.

MONTANA

The Bull Mountain coal field, in Musselshell County, Mont., according to an estimate made by the United States Geological Survey, contains nearly five billion tons of coal. A small part of this immense reserve of coal has already been mined, but by comparison with the total in the ground, the quantity mined is practically negligible. This coal field is described in a bulletin of the Geological Survey.

OHIO

A number of coal concerns were chartered under Ohio laws recently, many of which are producing concerns. Among the number are: **The Sahara Fuel Co.**, Nelsonville, capital, $35,000, incorporators C. W. Juniper, L. E. Juniper, G. M. Tolliver, E. S. Tolliver, D. C. Allen; **The Bidwell Coal Co.**, Steubenville, capital, $50,000, incorporators, J. D. Gardner, C. K. Welch, S. Merryman, J. K. Biddle and V. Biddle. **The McVicker Coal & Coke Co.**, Cleveland, capital, $50,000, incorporators, Mark A. Copeland, N. B. Madden, C. A. Quintrell, M. E. Getchell and O. E. Schultz. **The Vogel Coal & Supply Co.**, Columbus, capital, $25,000, incorporators, P. A. Vogel, T. S. Crockett, E. W. Overbey, S. E. Crockett and W. C. Vogel.

The announcement is made by the **Sunday Creek Coal Co.** that all of the interests in the company, formerly held by John H. Winder, the former president, has been acquired by J. S. Jones, chairman of the board of directors as a result of negotiations which have been going on for several months. At the same time the Jones interests in the F. C. Stedman Co., a store concern with headquarters at Athens, has been disposed of, being acquired by John H. Winder. Mr. Winder resigned as president of the company, being succeeded by Harry B. Arnold. The present board of the Sunday Creek Coal Co. consists of J. S. Jones, Harry B. Arnold, George K. Smith and C. C. Cook. The deal was the result of the litigation started more than a year ago by Mr. Winder for a distribution of his stock and an accounting. Mr. Winder was defeated in the action. The Sunday Creek Coal Co. will be engaged in the coal business exclusively as it will not operate any stores.

The Troll Coal Mining Co., with offices at St. Clairsville, has been authorized by the Secretary of State to increase its capital from $360,000 to $600,000.

PENNSYLVANIA

Andrew Schlossnagle of Johnstown has just closed a deal by which he purchased for eastern capitalists the **Collier Coal tract** near Addison, Somerset county, the purchase price not being given out. It is said that hundreds of acres in the same locality have been optioned and that some of the prices are said to run very close to $300 per acre.

R. W. Playford, of Uniontown, has purchased 1,000 acres of the Sewickley vein of coal in Fayette county from **Taylor N. Dawson.** Announcement of the sale contained the news that it is the intention of Mr. Playford and his associates to make this and their adjoining properties one of the greatest coal producing properties in the county.

G. Corrado, of Connellsville, has added 200 additional acres of coal land to his interests at Shinnston, W. Va. A mine will be opened immediately. The new property is located about 20 miles from Fairmont.

The East Lehigh Colliery Company, Tamaqua, anthracite operators, announce that they expect to be out of the coal business within the next month or two.

The Navy Smokeless Coal Co., has completed the erection of twenty houses at Carrolltown, Cambria County. The buildings have all been well finished throughout and will be used to house the miners.

Fire of unknown origin, starting in the engine rooms of the structure recently, totally destroyed the Raymond breaker, located at Eynon and owned by the **Scranton Coal Co.** The loss is estimated at $250,000. About 800 men and boys are thrown out of employment through the fire.

UTAH

A plan for generating energy at Utah coal mines and transmitting it to Salt Lake City, thus saving the expense of freight charges for coal, is being considered by a group of Eastern capitalists. Whether the purpose is to supply light, heat or power was not announced. It was stated that energy equivalent to that produced by a ton of coal could be supplied by the new plan at a cost comparing favorably to pre-war prices. Men behind the project have been looking for a suitable site for putting up their plant for some time and Salt Lake City has now been decided upon. If the coal to be used is that mined in Carbon county, which would seem highly probable, the energy referred to would travel a distance of 120 miles.

WEST VIRGINIA

In addition to operating on a large scale in McDowell county, W. Va., the **United States Coal & Coke Co.**, controlled by the United States Steel Corporation, will also operate mines in northern West Verginia, having acquired a few months ago a tract of about 5,000 acres in the Barbour County field upon which development work has begun. As fast as material is received preliminary development will proceed, with J. D. Jennings, construction engineer, directing construction work.

No change except in the presidency has been made in the seven producing concerns in this section of West Virginia as a result of the death of the late William Leckie, who headed the companies in question. His son, Andrew F. Leckie has been selected to head all of the companies and their work will go ferward as usual. The companies of which Colonel William Leckie was president are the **Panther Coal Co., the Lathrop Coal Co., the Leckie Fire Creek Coal Co., the Leckie Collieries Co. ,The Leckie Smokeless Coal Co., the Douglass Coal Co.**, and the **West Virginia Pocahontas Coal Co.**

One of the largest companies recently formed in northern West Virginia is the **Brady Coal Corporation**, Fairmont, which is capitalized at $2,000,000 and will undertake the development of a large tract near Monon in Monongalia County recently acquired by Mr. Brady and his associates

Increase in capitalization of the companies enumerated below has been authorized by the Secretary of State of West Virginia:

Lory Coal & Coke Co., Charleston, W. A. Markel, president, from $50,000 to $100,000.

Pigeon Creek Coal Co., Huntington, W. Va., H. H. Morris, president, from $300,000 to $500,000.

Pond Fork & Bald Knob Railroad Co., Huntington, W. Va., C. W. Campbell, president, from $50,000 to $100,000.

Miller Pocahontas Coal Co., Huntington, W. Va., W. E. Deegans, president, from $500,000 to $525,000.

Paragon Colliery Co., Huntington, W. Va., W. E. Deegans, president, from $100,000 to $500,000.

Cub Fork Coal Co., Huntington, W. Va., W. E. Deegans, president, from $25,000 to $150,000.

Knox Creek Coal Co., Williamson, W. Va., S. H. Goodloe, Jr., president, from $25,000 to $200,000

Tropf Coal Co., Morgantown, W. Va., Fred Tropf, president, from $200,000 to $300,000.

Elmo Mining Co., Charleston, Richard M. Lambert, president, from $50,000 to $300,000.

Marshall Fuel Corporation, Pittsburgh, Pa., J. E. Stewart, vice president, from $5,000 to $5,000,000.

R. & P. Coal Co., Fairmont, W. Va., John F. Phillips, president, from $500,000 to $750,000.

Stony River Coal Co., Philadelphia, Pa., William B. Ways, president, from $5,000 to $10,000.

New Pocahontas Coal Co., Huntington, W. Va., W. E. Deegans, president, from $100,000 to $500,000.

Elkhorn-Hazard Coal Co., Bluefield, W. Va., Lester G. Toncy, president, from $75,000 to $150,000.

Davenport Coal Co., Buffalo, N. Y., George J. Brendel, president, from $300,000 to $100,000.

Capitalized at $200,000, **The Commercial Fuel Co.**, Morgantown, has been organized by Morgantown people and will probably develop a tract of coal in Monongalia county and will engage generally in the business of handling coal. Closely identified with the new company are: Claude Scott, W. E. Arnett, E. D. Trumlin, G. C. Casto and Forrest O. Shriver, all of Morgantown, W. Va.

The West Virginia Department of Mines is taking a good deal of pride in the fact that the number of fatal accidents in West Virginia mines during the fiscal year ending June 30, 1920 was reduced to the extent of 57, there being just 320 casualties during the year. That means on a general average the number of fatalities during each month was less than 30. That was actually true as to the latter part of the fiscal year. The year started off with a higher rate of mortality, there being 16 deaths in July and 36 in August. During the remaining ten months the number of deaths was as follows: September, 32; October, 25; November, 15; December, 23; January, 31; February, 22; March, 24; April, 21; May, 21; June, 24.

With a view to using river transportation to a greater extent in the future than in the past, the **Richland Coal Co.**, Wheeling, has under construction both at its Warwood and its Moundsville plant river tipples which are being erected at a cost of between $500,000 and $1,000,000. Owing to the uncertainty of rail transportation the management of the company feels it can materially increase the volume of its shipments through the use of water transportation. The company already owns three tow boats and barges so that it is fully prepared to handle water shipments.

A half-million dollar coal corporation which will be known as the **Kaoa-Clay Coal Mining Corporation** will operate probably in both Clay and Kanawha counties. Charleston capitalists are behind the new concern largely, among them being F. M. Stambaugh, M. C. Edmunds, M. D. Jennings, I. S. Adams and L. S. Echols, the last named being a member of Congress from this district.

Operations on a very extensive scale will be carried on by the **Spia Coal Co.**, Welch, organized with a capitalization of $500,000. New York capitalists are financing the proposition, among those most interested in the organization of the new concern being Crittenden H. Adams, W. Arthur Howell, Percy Mulock, Winifred K. Pettigrue and Sanford D. Stockton, Jr.

The Whitaker-Glesner Co., Wheeling, one of the large steel companies of this section figured in a deal of considerable magnitude in November, becoming the purchaser of 12,000 acres of coal land in Mason county, the consideration being $400,000, it is understood. The acreage secured has a frontage of about 6 miles on the Ohio River.

Grant District of Monongalia county is to have a large coal operation. W. E. Arnett and others have consummated a deal for the coal holdings of the **American Gas Coal Company** and the **American Gas Railway Co.**, there being about 300 acres of Pittsburgh coal involved in the deal, this coal being near Flaggy Meadow. The sum involved in the deal is in the neighborhood of $500,000. Associated with Mr. Arnett in this project are: W. A. Ream, J. E. Vincent, F. O. Shriver, W. C. Miller, J. A. Blaney, G. W. Davis, William E. Glasscock, Jr. and Grover C. Casto.

The Champion Collieries Co., Clarksburg, which represents a recent consolidation of the **Thermal Coal Co.** and the **Coal Ridge Mining Co.** of Cambridge and Cleveland, Ohio, has added to its holdings to the extent of 500 acres in the Lost Creek and Rooting Creek sections of Harrison county. The additional territory was purchased from the **Eastern Utilities Co.** at a cost of $143,104.50. The Champion Collieries has a total capitalization of $1,000,000.

Employing 225 men, the plant of the **Domestic Coke Corporation**, Fairmont, installed at a cost of $4,000,000, is at last in full operation, the first manufactured coke having been removed on Dec. 2. The company was confronted with many perplexing delays before being able to operate, owing to inability to secure cars and coal.

Arrangements are being perfected by the **Chaplin Collieries Co.**, Morgantown, to increase the output of its plants on Scott's Run by at least 100 per cent. Additional openings are to be made at both the Louise No. 1 and Louise No. 2 mines. Even under present conditions the company is producing coal at the rate of 1,500 tons a day.

As the **Pennsylvania-West Virginia Coal Co.**, Gassaway, has taken over four mines on the Charleston division of the Baltimore & Ohio at Gilmer, a number of improvements are being made by the company in order to get a larger production.

Development of coal land in Washington district of Boone County will follow the organization of the **Coal River Fuel Co**, by Charleston capitalists, this company having a capitalization of $75,000. Among those actively interested in the new concern are G. A. McQueen, Ray H. Evans, A. W. Taylor, S. B. Chilton and L. H. Oakes, all of Charleston, W. Va.

Traffic News

Hearing before the **Public Utilities Commission of Ohio** was held in Columbus on December 3d, when consumers, retailers and producers expected to protest against the proposed increases in intrastate coal rates, in excess of 40 per cent, tariffs covering which had been published and filed by the carriers to become effective Nov. 18 but suspended by the commission. Traffic Commissioners of various Chambers of Commerce were present to enter their protests against these increases. However, the entire day was consumed by the railroads in stating their position in consequence of which the commission continued the hearing until Jan. 4.

The application of the **Utah Terminal Ry. Co.**, which is owned by three of the large coal companies of the state, for permission to construct a railroad up Spring Canyon to serve their mines in interstate traffic, is being heard by the Public Utilities Commission of Utah. The Utah commission has already permitted the construction of the line but only for intrastate traffic. The Interstate Commerce Commission asked the Utah commission to conduct the hearing for it.

The Interstate Commerce Commission has denied, effective March 1, next the application of the Illinois Central and other railroads for authority to continue rates on bituminous coal, bituminous coal briquettes, anthracite coal and coke from mines in Illinois, Indiana, and Kentucky to points in Illinois, Indiana, Missouri, Iowa, South Dakota, Nebraska and Minnesota without observing the long and short haul clause.

In the complaint of the **Weir Smelting Co.** vs. the Director-General, an examiner of the commission in a tentative report recommends that the rates on slack coal from Deering, Kan., to Caney, Kan., be declared unreasonable and violative of the long and short haul clause, and that reparation be awarded the complainant.

Combination rates on coal from Illinois, Indiana and eastern Kentucky mines to points in Illinois and Wisconsin, which were subject to the so-called double advances, were found not to be unreasonable or unjustly discriminatory in a report of the Attorney Examiner filed with the Interstate Commerce Commission in the case of the Wilbur company against the Director General and the Pittsburgh, Cincinnati, Chicago and St. Louis R.R.

The I. C. C. has permitted the Jonesboro Freight Bureau to intervene in the case of the West Kentucky Coal Bureau vs. the Illinois Central R.R.

The Washington Steel and Ordnance Co. has filed a petition with the Commission requesting refund of $2,771 due to overcharges on bituminous coal shipped from West Virginia to Uniontown, D. C., and also that it not be required to pay back $1,126 to the Railroad Administration which had been refunded to the steel company due to overcharge.

In the case of the **Chicago Coal Merchants Assn. vs. the Director General**, a tentative report of an I. C. C. examiner recommends that the charging of rates on coal and coke from various producing regions to the Chicago switching district, higher to some deliveries than to Chicago itself, is not unreasonable or unduly prejudicial, but that rates to points just beyond the Chicago district based on the Chicago combinations are unduly prejudicial.

In the case of the **Harlan County Coal Operators' Association**, an examiner of the Interstate Commerce Commission has submitted a tentative report recommending that the Commission find that the rate on Lake cargo coal from complainant's mines on the Louisville & Nashville R.R. in eastern Kentucky and Tennessee to Toledo, Ohio, has been since May 6, 1920, is, and will be, unjust and unreasonable and unduly prejudicial to the extent it has exceeded, exceeds or will exceed the rate contemporaneously maintained from mines on the Chesapeake & Ohio, Sandy Valley & Elkhorn and Long Fork railroads in West Virginia and eastern Kentucky, known as the Kanawha field. Reparation is recommended to be awarded the complainants.

In a complaint to the Commission the **Benton Coal Mining Co.** of Benton, Ill., alleges that the Chicago, Burlington & Quincy R.R. gives undue preference and advantage to coal mines at Logan and Royalton in Illinois in the matter of car service. An order is requested extending the car service to complainant's mines at Benton and the same rates as are accorded to other mines in the same rate group.

Nine coal companies in the Routt County fields have petitioned the **Colorado Public Utilities Commission** to continue the recently installed tri-weekly passenger service over the Moffat R.R., declaring that passenger curtailment affords greater transportation service. The tri-weekly passenger service has brought a storm of protests. The companies signing the petition are the Moffat, Hayden Brothers, International, Elk Creek, Colorado-Utah, McNeill, Bear River, Victor-American and the Routt-Pinnacle Coal companies.

The Ohio Utilities Commission has started hearings on the application of railroads on the suspended coal rate schedule, which was filed with the commission several months ago. Many of the rates are in excess of the 40 per cent advance allowed by the Interstate Commerce Commission and as a result they were suspended. In case the decision of the commission is against the railroads the question will be taken to the Interstate Commerce Commission.

Industrial News

Indianapolis, Ind. — The Automatic Reclosing Circuit Breaker Co. announces the appointment of W. D. Hamer Co., 508 Traction Terminal Bldg., as its representative in the State of Indiana and western Kentucky.

Wilkes-Barre, Pa.—Wade M. Reed, formerly chief engineer, Dodson Institute, lately assistant to R. V. Norris, announces the opening of offices in the Odd Fellows Building, South Franklin Street, to engage in a general consulting practice of mining engineering. Special attention will be given examinations and report on mining properties.

New York, N. Y.—The Eyre Fuel Co. and Andrade-Eyre Inc. have moved from their present location, 80 Broadway, to their new quarters, 300 Madison Ave., corner 41st St., where they have leased the entire fifteenth floor. Their new telephone number is Vanderbilt 9000-1, 2, 3, 4.

Pittsburgh, Pa.—Chas. T. Topping, formerly of the Chas. T. Topping Machinery Co., Pittsburgh, dealers in contractors' equipment, has re-established his organization in the House Bldg., Pittsburgh, and will act as district sales representative for the Austin Machinery Corporation, Chicago, manufacturers of concrete mixing, excavating, road building and material handling machinery and equipment.

Association Activities

Smokeless Coal Operators' Association of West Virginia

No meeting of the board of directors of the association was held in connection with the November session of the association at New York, but much business was transacted at the general meeting of the Association. While no formal action was taken, the question of bunkering vessels in the stream was one which absorbed the attention of members.

It being proposed to increase the charges on lightering at Hampton Roads, the association recorded itself as being against such proposed increases and placed in the hands of the Secretary the protest of the association to be filed.

Another subject under discussion was that relating to the imposing of a differential in connection with the rate on Pocahontas coal to Cincinnati, the differential being 45c. a ton. While for a time it had appeared that trimming charges were to be made at Hampton roads, yet the Secretary informed the members that he had succeded in securing a suspension of such charges.

A report was to have been received from the committee known as the Emergency Committee for the Panama Canal but owing to the absence of several members of the committee the report was not submitted, Mr. Caperton of the New River field reporting however that insofar as the New River field was concerned nothing had been done.

Winding Gulf Operators' Association

The association is urging on its members the importance of loading more coal per car and of loading or unloading, as the case may be, every car in 24 hours, it being pointed out that if all car users in the United States will add two tons to the load of each car and will load or unload promptly it will add 535,000 freight cars to the present supply. In its campaign to increase loadings per car of operators in its district the Winding Gulf Association has printed a list of companies loading on an average from 41 to 60 tons.

Only one company succeeded in averaging 60 tons per car during August; four companies, 59 tons per car; four companies, 58 tons per car; eight companies, 57 tons per car; 15 companies, 56 tons per car; 11 companies, 55 tons per car; 19 companies, 54 tons per car; 14 companies, 53 tons per car; eight companies, 52 tons per car; five companies, 51 tons per car; two companies, 50 tons per car; one company, 49 tons per car; one company, 41 tons per car.

At the Bellevue-Stratford, Philadelphia, at which officers were elected for the year, the executive committee met recently, the general meeting commencing shortly after. At the conclusion of the general meeting a banquet was held at 6 o'clock in the evening.

Recent Patents

Coke-Handling Apparatus.—Wm. F. Rust, Pittsburgh, Pa., assignor to The Koppers Co., Pittsburgh, Pa., 1,351,541. Aug. 31, 1920. Filed Oct. 4, 1919. Serial No. 328,571.

Coal-Handling Machine. — Edwin N. Weaver, Jersey City, N. J., 1,351,593. Aug. 31, 1920. Filed May 24, 1919. Serial No. 299,596.

Coal Crusher: Myron A. Kendall, Aurora, Ill., assignor to Stephens-Adamson Mfg. Co., Aurora, Ill., 1,352,609. Sept. 14, 1920. Filed April 19, 1920. Serial No. 375,019.

Miner's Electric Lamp. Theodore Stretton, Cardiff, Wales, and John W. Jones, Cannock, England, assignors to Haslam & Stretton Ltd., Cardiff, Wales, 1,352,636. Sept. 14, 1920. Filed Aug. 11, 1919. Serial No. 316,793.

Mine Haul. Herbert V. Brown, Cherry Tree, Pa., 1,352,653. Sept. 14, 1920. Filed Nov. 12, 1919. Serial No. 337,448.

Mining Machine. N. D. Levin, Columbus, Ohio, assignor to the Jeffrey Mfg. Co., Columbus, Ohio, 1,353,054. Sept. 14, 1920. Filed Feb. 12, 1914. Serial No. 818,314. Renewed Jan. 3, 1920. Serial No. 349,350.

Self-Loading Coal and Grain Truck. John A. Klovstad, Hope, N. D., 1,353,247. Sept. 21, 1920. Filed Jan. 10, 1920. Serial No. 350,623.

Apparatus for Supplying Powdered Fuel to Furnaces. Edmund H. Stroud, Chicago, Ill., 1,353,291. Sept. 21, 1920. Filed Feb. 26, 1917. Serial No. 150,911.

Grease Cup. Edmund Nolan, Detroit, Mich., 1,353,607. Sept. 21, 1920. Filed Mar. 11, 1920. Serial No. 364,923.

Automatic Mine Door. Charles L. Bowman, Canton, Ohio, and John J. Body, Dante, Va., assignors to the American Mine Door Co., Canton, Ohio, 1,353,715. Sept. 21, 1920. Filed July 8, 1918. Serial No. 243,931.

Latch for Doors of Mine Cars. Charles E. Kelley and Gustave D. Speicher, Larksville Borough, Pa., 1,353,760. Sept. 21, 1920. Filed Dec. 17, 1919. Serial No. 345,607.

Apparatus for Storing Coal and Other Materials. Francis Lee Stuart, Washington, D. C., assignor to International Conveyor Corp., New York City, N. Y., 1,354,226. Sept. 28, 1920. Filed Mar. 19, 1918. Serial No. 223,302.

Mining Machine. Robert H. Jeffrey, Columbus, Ohio, assignor to The Jeffrey Manufacturing Co., Columbus, Ohio, 1,354,831. Oct. 5, 1920. Filed May 1, 1914. Serial No. 835,757. Renewed Dec. 28, 1919. Serial No. 268,702.

Mining Drill. Carl Biernat, Glasford, Ill., 1,354,944. Oct. 5, 1920. Filed May 8, 1920. Serial No. 379,824.

Miner's Lamp Kit. James A. Schooling, Frankfort, Ind., 1,355,007. Oct. 5, 1920. Filed Jan. 15, 1920. Serial No. 351,658.

Spiral Separator. Frank Pardee, Hazleton, Pa., 1,356,464. Oct. 19, 1920. Filed June 10, 1915. Serial No. 33,387.

Coal Cager. E. E. Nida, Millfield, Ohio, 1,355,414. Oct. 12, 1920. Filed July 6, 1920. Serial No. 394,025.

Method and Means for Feeding Powdered Fuel. Wm. M. Baxter, Chicago, Ill., assignor to M. W. Arrowood, Chicago, Ill., 1,355,444. Oct. 12, 1920. Filed Apr. 27, 1918. Serial No. 231,070. Renewed Dec. 24, 1919. Serial No. 347,200.

Apparatus for Handling Coal. Hohson S. Shimizu, Chicago, Ill., assignor to Roberts & Schaefer Co., Chicago, Ill., 1,355,512. Oct. 12, 1920. Filed Sept. 17, 1918. Serial No. 254,405.

(U. S. patent specifications may be obtained from the Patent Office, Washington, D. C. at 10c. each.)

Personals

General James B. Coryell announces his association with the Fuel Corporation of America, located in Philadelphia, Pa.

J. R. Fleming, associate in mining research at the University of Illinois, is spending ten days in the mining fields of Southern Illinois, making a special investigation of underground mine haulage.

H. L. Smith, who was employed with the Vandalia Coal Company of Sullivan, Ind., and who recently returned from a year in Jugo-Slavia, where he was a member of the technical mission, under the direction of Herbert Hoover, has accepted a position with the United States Bureau of Mines. He will work in New Mexico and Colorado, with headquarters at Denver.

Frank Purdoe, general superintendent for the Penn-Mary Coal Co. at Hellwood, Pa., has resigned and will become general manager of the Estep Brothers' Coal Mining Co. and the Cambria and Indiana County Realty Co. with headquarters at Starford, Pa.

H. T. Booker has been appointed mining manager of the Berwind-White Coal Mining Co.'s operations at Windber. He succeeds the late J. D. Simpson, who died last February. Since the death of Mr. Simpson this office has been vacant.

Douglas Barnes Corporation, New York, announces the appointment of **S. Ross Yancey** as foreign sales manager.

George H. Bayne was recently appointed inspector-in-chief of the Tidewater Coal Exchange, Inc., with offices in the Grand Central Palace, New York City. He will have direct charge of the Inspection Department, including field inspectors and all matters pertaining to classification of mines.

Obituary

J. B. Carrington, president of the Woodstock Operating Corporation and also president of the Ajax Foundry Company, died at his home in Anniston from an acute attack of Bright's disease recently. Mr. Carrington was a widely known furnaceman and coal operator, coming to the Birmingham district from Richmond, Va. in 1886 and was associated with the Virginia and Alabama Coal Co., and was later on successively superintendent of the Walker County coal mines of the Sloss-Sheffield Steel & Iron Company and the mines of the Tennessee Coal, Iron & R. R. Company in the Blue Creek field.

Edw. V. Smith, division superintendent, Baltimore & Ohio R.R., Wheeling Division, died Dec. 7, following a surgical operation. Mr. Smith had been in the service of the B. & O. for the past twenty-five years and during the past three years was superintendent of the Wheeling Division. He had many friends among coal operators and shippers.

Thomas V. Patterson, president of the Scranton and Lehigh Coal Co. of Brooklyn, N. Y., died at his home in that city recently, after an illness of less than 24 hours. Mr. Patterson was born in 1873 and engaged in the coal business with his father, Thomas J. Patterson, who organized and was the first president of the Scranton and Lehigh Coal Co.

Coming Meetings

The **Northeast Kentucky Branch** of the **Kentucky Coal Mining Institute** will hold a meeting Jan. 7, 1921, at Pikeville, Ky.

National Retail Coal Merchants' Association. Fifth conference of executives at La Salle Hotel, Chicago, Ill., will be held on Jan. 17 and 18, 1921. Secretary-Manager, Ellery B. Gordon, Philadelphia, Pa.

American Institute of Mining and Metallurgical Engineers' annual meeting will be held in New York, Feb. 14 to 17, 1921. Secretary, Bradley Stoughton, 29 West 39th St., New York City.

The Wholesale Coal Trade Association of New York, Inc., will hold its annual meeting in New York City, Jan. 18, 1921. Secretary, Charles S. Allen, 90 West Street, New York City.

American Society of Civil Engineers will hold its annual meeting Jan. 19 and 20, 1921, at its headquarters, 33 West 39th St., New York City. Acting secretary, Herbert S. Crocker, 33 West 39th St., New York City.

Northwest Mining Congress will hold its annual convention Feb. 28 to March 5, 1921

Northern West Virginia Coal Operators' Association will hold its annual meeting Feb. 8, 1921. Secretry, H. S. Rogers, Fairmont, W. Va.

Pittsburgh Vein Operators' Association of Ohio will hold its annual meeting, Feb 14, 1921, at Cleveland, Ohio. Secretary, D. F. Hurd, 415 Marion Building, Cleveland, Ohio.

American Institute of Electrical Engineers and American Institute of Mining Engineers will hold a combined meeting of the local sections on Jan. 21, 1921, at Pittsburgh, Pa.

Canadian Institute of Mining and Metallurgy will hold its annual meeting March 2, 3 and 4, 1921, at Ottawa, Ontario, Canada. Acting secretary, R. B. Rose, Montreal, Quebec, Canada

COAL AGE

The Weekly Journal of the Coal and Coke Industries

Volume 18 NEW YORK, THURSDAY, DECEMBER 30, 1920 Number 27

"Shocking Disclosures"

WHY should F. T. Miller, the "technical adviser on building" of the Calder committee, evidence such shocked surprise over the "disclosure" that in the year ended June 30, 1920, the National Coal Association assisted the Geological Survey in its statistical work to the extent of paying the salaries of four clerks? Certainly there was nothing secret about the matter. The details were all laid before Senator Frelinghuysen's committee more than a year ago. He was told that but for this timely financial assistance of the coal operators the weekly reports would have ceased to appear, and his only regret was that the government had been so niggardly in its appropriation for this work.

The printed records of the Senate Sub-Committee on Interstate Commerce are available to Mr. Miller for the asking. Furthermore, in the printed records of the Committee on Appropriations of the House in its hearings on the Sundry Civil Bill a year ago will be found the testimony of Director Smith of the Geological Survey asking for more money from Congress in order to obviate the necessity for help from the operators. This committee saw no evil influence at work and no statutory objection in the practice and were at first inclined to save the public treasury the amount asked if the coal men would continue their support.

No doubt Senator Calder and Mr. Miller are aware of all the facts in the case—if not they are guilty of wantonly wasting public money on this part of their investigation—and we can in consequence conclude that their motive in featuring this matter is to insinuate wrongdoing and improper relations.

The public wants no star chamber proceedings and, while interested in sensations, has a contempt for palpable efforts to influence its opinion by trials before newspaper juries by telling half truths.

Storage at the Mine

IN THIS issue an article affords information as to the storage system used at the Mather colliery plant. It is quite a general assumption that the stocking of coal will be unnecessary as soon as the railroads give good service, a conclusion which overlooks some of the real facts. The author of the article in question answers a few of these assumptions, but he by no means exhausts them. The Mather plant supplying coke ovens at Cleveland, Ohio, may, it is true, not be plagued in the future as custom mine operators often are and may find less use for storage accordingly.

Pickands-Mather Co. has its own railroad cars and is likely to receive them in normal times in a steady flow. As the plant may plan eventually to work regularly, even if not every day, the railroad will know in advance what requirements are to be made upon it and will give satisfactory service. But with the custom mine the business of the operation cannot be foreseen from day to day. It orders its cars one day to supply the needs of the next, and the service is likely to be uncertain accordingly.

Then again the firm may receive orders for a certain size of coal and none for that which remains after the ordered size is removed from the run of mine. If it has storage facilities, it will be able to store the size not wanted. If it does not have such facilities it must store in railroad cars the size for which it has no sale, consigning these cars to points where a sale may seem feasible. If then it fails to sell the coal at that point at a profitable rate it must sell it at a loss to save the demurrage. Provided the railroad is friendly, it may delay delivery of the unsold coal thus consigned and thus save the shipper demurrage. But if the railroad is not friendly and is unwilling to delay the transit, it will hurry the coal to market and will demand demurrage of the shipper for every day of delay in unloading.

Storage in piles at the mine will forestall this demurrage and make it possible to sell only on orders received, thus saving much money to the operator. Even in the anthracite region, where there is steady demand for coal, the small sizes often are not in request, and the largest of companies find storage advisable either at the mines or elsewhere.

If a mine has a call for run of mine only or if it has a demand for coal of different sizes in the exact proportion in which they are produced, and if with either of these conditions the railroad service is dependable, then the mine owners will find storage unnecessary and wasteful. But this rarely occurs, and storage in any other event pays, provided the coal is not of too fiery a nature. It may not pay in quantity and it may not be advisable to store in summer for winter disposal, but it will pay to keep some storage altogether apart from the good effect it will have in maintaining the morale of the men and in avoiding the possibility that the mine will have to shut down with only a part day's run or will have to start operation in the morning without either cars or storage.

Knowledge Still the Paramount Requisite

SOUND advice to New England business men was given by Dr. H. A. Garfield in his address before the associated industries of Massachusetts in Boston on Dec. 16, 1920. Elsewhere in this issue we publish an abstract of Dr. Garfield's remarks from notes kindly furnished by him. As Fuel Administrator he had unequalled opportunity to see from the inside how the coal industry functions and from a detached viewpoint he re-states the proposition he made two years ago to the coal operators and coal miners to set up a medium to promote knowledge and better understanding between the three parties at interest, the coal mine laborer, the producer and the consumer—that is, the public.

Coal consumers in New England were told that here-

tofore New England has organized to "get coal," but that henceforth she must organize "also to help those who produce and distribute it." It is plain that Dr. Garfield takes the position that coal, as a basic commodity and the raw material of industry, must henceforth be a matter of more than curious interest on the part of the public. However, he does not even imply that coal prices must be controlled or that distribution or production should be regulated, rather that trouble with coal, whether between miner and mine owner, producer and consumer or miner and public can best be settled by preventing its start. He believes that knowledge is power, and the way to acquire knowledge, in our present complex existence, is to organize for it.

Separation of the fact-gathering bodies from those who would use the facts is emphatically urged, accompanied by a plea for Federal support for the present agencies of government that collect facts on coal. It is aptly pointed out that the Bureau of Labor Statistics, Interstate Commerce Commission, Federal Trade Commission and Geological Survey each has a well defined, mutually exclusive field in the work of bringing together data on coal. What is lacking is, first, more data from these sources—possible if they are provided with more funds—and, second, a co-ordination of the coal worries of the nation with these facts.

Consumers in New England may be "sold" on the proposal of Dr. Garfield, but are the other interested parties—the coal operators and the miners? When first proposed, two years ago, the subject was considered by the coal operators, called together for this purpose by the National Coal Association. Those in favor were outnumbered by those opposed and nothing was done. Leading those opposed were the men from Illinois and Indiana. It must have been that these westerners were feeling a new spirit of independence, for their opposition was contrary to the spirit of their famous "Statement of Facts" addressed to the President of the United States on Dec. 1, 1914.

This statement, it will be recalled, was prepared for and authorized by the associations of operators in Illinois and Indiana. Oppressed by the discouraging outlook of low prices in highly competitive markets on one hand and rising labor costs on the other, these operators combined in a plea for "first consideration" in the Federal Trade Commission, then in process of formation. They summed up their case with the statement that "It is reasonable to assume that as long as the government sustains and encourages the principle of collective action—as evidenced by the exemption of labor unions from anti-trust measures—it would also sanction a plan enabling coal operators to co-operate in a similarly legitimate way, particularly if appropriate and definite governmental control were included to the extent, at least, of permitting all of such activities to be known to the public and provided that sufficient and ample penalties be provided and imposed for the violation of all such rules, agreements or laws as may be devised to regulate such collective actions. Coal operators would not object to, but, on the contrary, would invite such publicity and supervision."

Times have changed. Six years ago, when a considerable number of their companies were in the hands of receivers and there was no profit in the business, Illinois and Indiana operators complained that "other industries enjoy a degree of encouragement and protection by the government which is denied the coal mining industry. . . . Intimately affecting, as it does, the lives and welfare of all our citizens, the coal industry deserves and should receive at the hands of our law makers, attention proportionate to its importance." They pointed out that the "publications of the U. S. Geological Survey and the Bureau of Mines, while helpful in the physical operation of properties, do not contain statistics such as are furnished by the Agricultural Department, dealing with costs, values and distribution. The appropriations are entirely too small."

Desultory Coal Loading

IF MODERN machinery is to be enabled to do its proper work radical changes must be made in mine operation. It is essential that the room-and-pillar method be discarded and longwall take its place. Cogs will have to be used to hold up the roof, and they must be strong enough that the roof may be broken on their outer edges. It may be necessary to make them of sawn timber, so that they can be readily set up and as readily withdrawn as soon as the slack placed under them is removed. The roof will have to be broken in a long line of fracture, in such a way that no arching action will remain to support it and so that the structural form of the roof will be that of a cantilever. Cars will have to pass in one direction past the face and not, as at present, reciprocate or shuttle to it and from it.

Mining men declare that the manufacturers do not try to find out what the operator wants, and they declare loudly that the manufacturer is not co-operating. As a matter of fact, the mine operator is clinging to a form of operation that has been wasteful with man power and is almost ruinous with machine power. All cutting and loading should be done by day labor, so that the profit of new methods will be enjoyed and the inevitable costs of new methods will be met. The mine operator has not co-operated with the manufacturer. He has demanded a machine that will put on its coat and wait in the heading till the trip comes, and then take off its coat and push in the car, load it and put it out on the heading and wait for an hour or so for another. That is not the machine way. Steady movement is necessary. The cutting and the loading machines should, at least for a day, work in one direction, and the cars should always travel from left to right or from right to left.

Until there arises someone who appreciates what machinery involves and will supply the machine with real co-operation, machinery will fail to do a quarter of what it is capable of effecting. Mr. Levin's remarks on this subject, published in this issue, are to the point and are true of machines in general and coal loaders in particular.

Some time ago we printed an illustration of a number of German mine workers around the foot of a plane and remarked on the loss of labor involved. Go into almost any mine and, when a gathering locomotive arrives, note the throng of men lined up along the heading, squatting on shovels and "takin' a pull at the pipe" if smoking is permitted. The waste of time in the average coal mine is appalling. The inefficiency at the working face at a German mine must be indeed great if it compares with our own, and the meager output obtained per man seems to justify the idea that the German mine is even less labor-saving.

How Mather Colliery Stores Coal at the Mine In Times of Railroad-Car Shortage

When Cars Were Not Available Some Means of Keeping the Mine Running Became Imperative—A Storage Bin, a Conveyor System and a Locomotive Crane Solved the Problem and the Mine Now Operates, Cars or No Cars

By Donald J. Baker
Wilkinsburg, Pa.

MANY methods have been adopted by coal operators throughout the country to avoid the losses incident to the car shortage prevailing throughout the last year or so. Few indeed, if any, are the coal producers who at some time or other during the last twelvemonth have not "chafed at the bit" because of decreased production resulting from transportational causes beyond their control.

At many operations, particularly those subsidiary to large steel or allied industries, the parent firm has owned an abundance of railroad cars, but has been unable to get these moved to and from the mines with any degree of regularity. In such instances, of course, it is a lack of motive power that has caused the mine tie-up, but be it lack of cars or scarcity of locomotives, the result has been invariably the same—decreased production and the unemployment of many men. At many operations neither cars nor motive power could be had, and keeping the mine in full operation continuously has been doubly difficult.

Being highly flexible as a transport medium, the motor truck suddenly assumed a prominent position. It took a car shortage to bring home a realization of the economies obtainable through the utilization of the truck. Today more coal is being moved by this means than ever before, and many firms have learned by experience that the truck is more economical as a transporting agency than was believed possible.

The extensive use of such trucks has relieved the railroads of much heavy local hauling and they are now better able to distribute their cars and motive power where most needed by the country as a whole. Whatever may be the advantages attendant upon the utilization of motor-truck transport, it of course has its economic limitations. This limit probably is fixed more closely by the distance of haul than by local operating conditions. Where the market of a producer lies at any considerable distance from the mine, delivery by truck is out of the question. When this condition prevails, some other means must be provided for assuring steady production and preventing a coal shortage.

Up in Greene County, Pa., the officials of the Mather Collieries Co., as a result of car shortage, were confronted with a situation that perhaps closely paralleled what many coal operators throughout the country have experienced. The mine in question is situated in a newly-opened field where good roads have not yet been constructed. Even if improved highways had existed, it is questionable whether the motor truck could have been employed advantageously.

The hills in this region are steep and the country itself is a comparative wilderness, all of which means that any market available would have been located at a considerable distance from the mine. All the coal produced, however, is absorbed by the parent company, to be made into coke for use in the steel mills of the Pickands-

Mather Co. Thus the Mather Collieries Co. could not throw its output upon the open market in times of car shortage.

A Good Town Helps to Make Men Contented

Simultaneously with the construction of the mine buildings the company went to much expense in erecting a mining town extraordinary—what might properly be called a model town with all due respect to this adjective, which is at present much abused by overwork. The company desired to attract and retain skilled workmen. Unfortunately, while all arrangements may be made for a large output from a mine located in an isolated region, that output may nevertheless be hard to obtain. The expected tonnage could be obtained only through the erection of such dwellings as the miners would be quick to appreciate. Thus when the houses were built, they were erected of the best materials. Amusement buildings and all other community works that go to make life something more than a mere existence also were erected. Today the town of Mather is possibly the most up-to-date mining community of its size in Pennsylvania.

Other motives, of course, influenced the officials of the company in putting a large amount of capital into the building of such a town. Chief of these was the desire to keep abreast of the times. In these days the science of psychiatry must be studied by the mine foreman and his fellow executives if the needs of discontented workmen are to be discounted. On the whole this is given a tremendous start toward successful application, if the miners go home at the end of their day's work to a cottage or bungalow that is the best, within reason, that money can erect.

Steady Work Is the Chief Desideratum

But all the expense incurred in building the town of Mather, all the care exercised in planning and devising a community and welfare program, will go for nothing if the service of the railroad is not dependable. Even the most unskilled labor cannot be retained in the finest town ever built when work becomes intermittent. It is necessary, therefore, that the mine be assured continuous operation if a desirable class of workmen is to be attracted and retained and the town buildings are to serve the purpose for which they were constructed. Men care nothing for attractive homes or for residence in a community, even if its recreational facilities rival those of a large city, if they are unable to earn a steady wage.

As a consequence, when the railroad situation became acute last winter, something had to be done and done quickly. Trucks could not be pressed into service even temporarily, for the reasons already mentioned. One alternative only remained—namely, to store the coal at the mine.

The Mather mine today operates whether cars are available or not. True, the railroad situation has much improved since last winter, although from the standpoint of efficient service much yet is to be desired. The Mather company officials do not care now whether a steady supply of cars at the mine is maintained. Arrangements have been provided whereby the mine is to a large degree independent of the intermittent service furnished by the common carriers.

For western Pennsylvania the scheme adopted to accomplish this result is a novel one; a plan was adopted, however, that might readily be put into operation by other firms confronted with approximately the same conditions. Some expense is, of course, involved, but this is insignificant when compared with the results obtained. The means and methods adopted by this firm in order to keep its mine in steady operation accordingly will be described briefly.

In the issues of *Coal Age* for Nov. 13 and 20, 1919, I described the surface plant at this operation. At the time of my visit, in the early autumn of that year, the railroads were only just beginning to show the effect of not having purchased a sufficient amount of equipment during the three preceding years. At that time some coal had already been stored on the ground near the surface works, but only such an amount as would permit underground development to keep pace with the building program on the surface. The coal had to be stored until the railroad spur from the Monongahela Division of the Pennsylvania R.R. from Millsboro, on the west bank of the river, had been completed.

No thought at that time had been given to the necessity of providing means whereby steady mine operation could be assured, for, as has been stated, the common carriers of the country were only just beginning to show the effects of their strenuous war-time operation.

Larries Used to Store Coal for Shipment

Rock and refuse from the picking tables are taken from a discharge chute on the side of the tipple and discharged upon a dump by means of a slate larry. When the service of the railroads became inadequate to the needs of the mine, little time was wasted in devising means for keeping the operation running. Additional slate larries were pressed into service, and the entire mine product, cleaned on the tipple as usual (this company does not size its coal, as all of it has to be crushed

FIG. 1. HOIST STORES AND RECLAIMS THE COAL.

The bucket of the locomotive crane, which has a 70-ft. boom and a 1½-ton bucket, is shown over the hopper at the end of the secondary conveyor. It is reclaiming the coal and is about to discharge the bucket, the contents of which will be reconveyed to the bin. The coal thus being handled is the material from the storage piles which were built up whenever the storage bin was filled. At the time of Mr. Baker's visit sufficient cars were available to warrant reclaiming from stock piles.

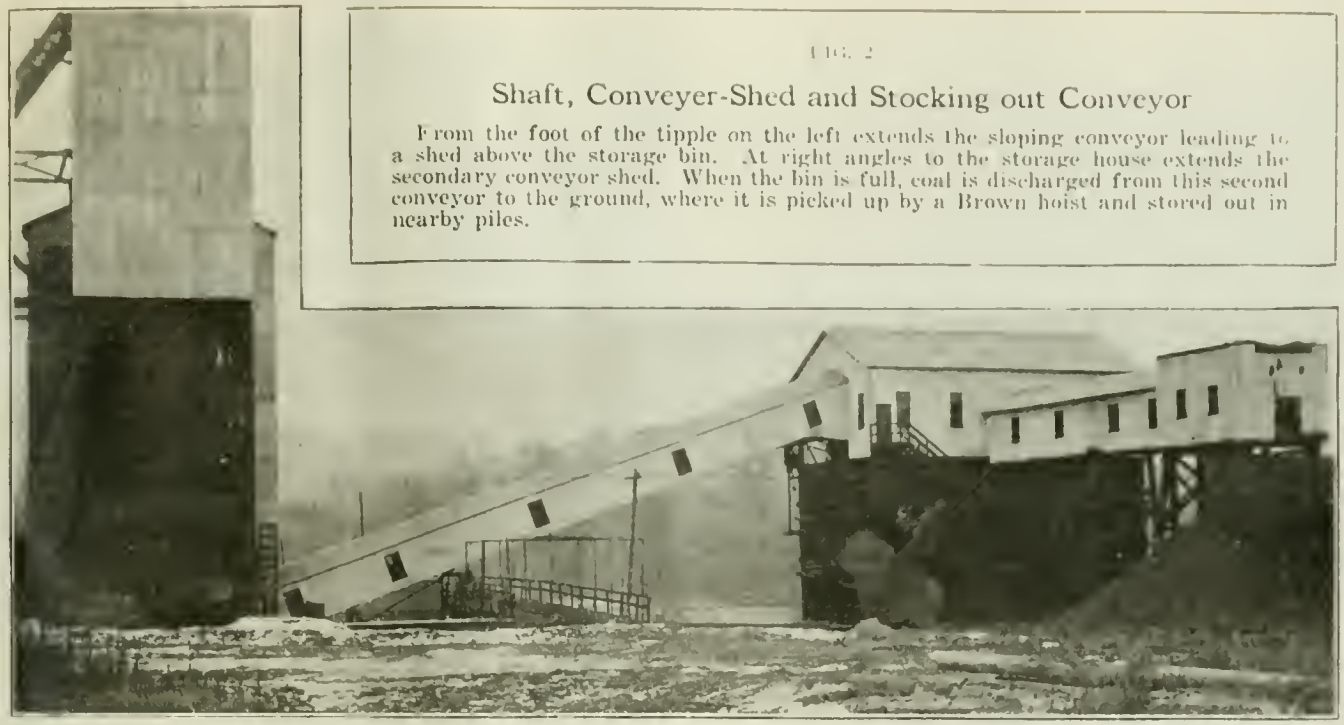


FIG. 2

Shaft, Conveyer-Shed and Stocking out Conveyor

From the foot of the tipple on the left extends the sloping conveyor leading to a shed above the storage bin. At right angles to the storage house extends the secondary conveyor shed. When the bin is full, coal is discharged from this second conveyor to the ground, where it is picked up by a Brown hoist and stored out in nearby piles.

eventually for coking), was loaded into these slate cars, hauled some distance from the tipple and dumped upon the ground in much the same manner as the slate and other extraneous material, which, however, is unloaded onto another pile near the rear of the building.

In the meantime the designers of the plant, Baton & Elliot, of Pittsburgh, set about designing and laying out a large-capacity storage bin wherein coal might be deposited so that when cars were available the product might be shipped without being rehandled by steam shovel. Before the bin could be completed and the necessary equipment installed therein, approximately 50,000 tons of coal had been dumped on the ground. As this was not piled deeply at any point it spread over a large area.

Not Subject to Spontaneous Combustion

This coal, on account of its slow-weathering qualities, is easier to store than some others, for the dangers of spontaneous combustion are less imminent. No trouble has ever been experienced in the coal piles at this plant and no fires have started, despite the fact that no arrangements have been made for placing the lump in the bottom of the pile, as is sometimes advocated, and no means had to be taken to secure artificial circulation of air through the coal. The material is simply taken from the tipple as a run-of-mine product and dumped. Practically all the large tonnage that has now been piled on the ground by the larries will be eventually removed. Fortunately, when this coal was being stored the mine was not working at the capacity which it is hoped may be reached when full development is attained. If its output then had been as large as it is today the pile might have been many times as large as it now is, for this operation is being groomed to produce eventually 6,000 tons of coal per 8-hr. day.

The storage bin was constructed below the tipple, so that any cars only partly filled could be dropped by gravity to a point beneath the bin and their loading completed. The bin itself is a single large container, no partitions being installed. It is constructed of heavy planking with sides reinforced along their lower edges with structural steel. Inside, interlaced timbers serve to keep the building rigid and free from the harmful effects of vibrations while coal is being discharged into it.

Belt 625 Ft. Long Distributes Coal in Bin

A covered conveyor shed, housing a 36-in. rubber belt, connects the bin to the tipple. This is placed on a 19-deg. slope, and the belt, including the return, is 625 ft. in total length.

Within the storage house the belt, of course, passes directly over the center line of the bin. A mechanical tripper moving on a track shortens or extends the belt length so that the coal may be discharged at any desired point. The return of the belt passes over a tension pulley installed in the conveyor shed. This permits the slack in the belt resulting from movement of the tripper to be immediately absorbed. The conveyor is thus always kept taut. It is needless to say that a belt on a 19-deg. pitch must necessarily be maintained at its most effective tension if it is to deliver coal without the excessive wear and tear arising from backslip of the lump sizes, due to the high angle of obliquity. Nowadays when cars are help up along the line the mine and tipple are as active as if long strings of empties lay on the sidings. The coal is prepared on the tipple just as if it were to be loaded immediately. It is then directed into a chute leading to a hopper, whence it is picked up by the rubber belt after passing over a short steel feeder conveyor. The coal then moves up through the conveyor shed, enters the storage house and is discharged into the bin.

This bin has a capacity of 1,200 tons. This may appear rather small, but the end of the house farthest from the tipple is built so that enlargement is possible. The structure was originally designed to accommodate twice the tonnage that may now be stored. As the mine output increases, the bin will be lengthened by adding 50 ft. increments, each such length increasing the capacity by 1,000 tons. Thus if 150 ft. is added to the bin more than 4,000 tons of coal may be stored. At present the 1,200-ton capacity is just about adequate to accommodate a single day's output of the mine, although the hoisting engine is capable of raising 3,000 tons in

FIG. 3.

Coal Bin and Storage Piles

A cloud of steam is seen at the left of the bin. This is caused by the crane, which is obscured from view. Seventy-five per cent of the coal shown on the ground to the left was placed by electric larries operating from the tipple before the bin had been completed.

eight hours. Thus operation may be carried on for a day without railroad cars.

Longer periods may, however, be expected between car deliveries, and additional facilities are afforded for storing a greater amount of coal. When the bin has been filled, the tripper is held at a point near the head of the incline; the coal is then discharged into a chute feeding a second 36-in. belt extending at right angles to the first and away from the tipple. This belt is 225 ft. long in its entirety. It is so constructed that its motion may readily be reversed.

At the end of this conveyor the coal enters a chute leading to the ground. Here an appreciable drop is encountered, but degradation of the product is a minor consideration, as the coal will eventually be crushed at the coke ovens in Ohio. A Brown hoist equipped with a 70-ft. boom and a 1½-ton clamshell bucket then picks up the coal and piles it near by. For all practical purposes the mine may thus be kept running indefinitely without railroad cars. When cars become available no more coal is directed either into the bin or onto the ground outside, the mine product then being, of course, loaded at the tipple.

It frequently occurs that when cars arrive they come in great abundance. In such case they are filled at both tipple and bin. Two tracks pass beneath the bin and ten hand-operated discharge doors, five above each track, are provided. A full complement of men operating the doors permits a car of coal to be loaded in three minutes. At this rate, the bin contents would soon become exhausted. As a matter of fact, this container is never completely emptied.

It is always desirable to maintain a small amount of coal in the bottom to serve as a cushion for the excessive hammering that results from a full direct descent of the coal. When the bin is nearly emptied, the belt in the rear of the storage house is put in operation in a reverse direction to that employed when transportating coal to the crane. Coal stored out by the Brown hoist is then rehandled by it to a hopper above the rear end of the conveyor. The coal then passes from this hopper, by way of a short steel feeder apron, to the rubber belt. By this means storage on the ground is only temporary, and the material thus treated soon reaches the bins to be loaded out.

Arrangements for storing coal at the mine and rehandling it in large quantity will perhaps be regarded askance by many coal operators of the Pittsburgh district. They are not, however, facing the labor conditions prevailing at Mather. As a matter of fact, only a small fraction of the mine output is thus rehandled at this operation. On Nov. 15 of this year approximately 25,000 tons of coal lay on the ground outside the storage bin, which had been piled there by the crane and eventually would have to be rehandled by it.

The large pile shown in part in Fig. 3, it will be remembered, was built up chiefly by the larries. This coal probably never will be loaded out through the storage bin, as it is planned to load it direct by crane as soon as the car supply becomes normal. As operating conditions now stand, the crane will return to the bin only the coal that it has stored. The larries played their part in the crisis of last winter and will not be again called upon to assure steady production.

Ovens Assured of Steady Fuel Supply

That the surface equipment now installed at Mather is highly flexible no one will doubt. When the various factors influencing its construction are considered, it may be said to be a truly economical installation. Such construction as has here been described, supplementing the tipple, may require the construction of more cars. Such arrangements, nevertheless, tend to assure the ovens of a steady fuel supply.

When the Greene County field becomes such a hive of industry as, say, the Connellsville field now is, labor will not be as scarce or difficult to retain as it is at present, for the region will then be thickly populated. When that time arrives it is safe to assume that the railroads once again will have become efficient, and car shortage being less frequent, storage at the mines will not be so vital a necessity as in the last few months.

However, few can look back and record a time when there was no car shortage. Even when side tracks are full of empty cars and orders for coal are regular, car shortages occur. The mine is scheduled to work on a certain day. The railroad is requisitioned for cars, but, as it has laid off crews, it can only just perform the work demanded of it. For this or some other reason it is late in placing its cars. A wreck may occur or a pulled-out drawbar may delay delivery or the type of car desired may be hard to reach or not on hand. Car

FIG. 4. ANOTHER VIEW OF THE STORED COAL

About 75,000 tons of coal is on the ground adjacent to the storage house, three-quarters of which was placed by larry and will be reclaimed without passing through the bin. This coal is not sized, all the product being run-of-mine. No attempt was made in its storage either to exclude the air or provide abundant ventilation. No heating has been noted.

shortages are common even in dull seasons. In fact, the strings of empties on sidings interfere with railroad operation and the retrenchments of the railroad cause poor tracks and broken-down equipment. For these reasons the service is unsatisfactory.

In good seasons there are always real car shortages, and it is likely that even with moderate business the railroads will from now on be plagued with them. Consequently day-to-day storage or storage for part of a day's run is to be commended, and anyone having a bin, even when operation is more or less regular, will find almost steady use for it.

Some operators in West Virginia districts, isolated to even a greater extent than are the Mather Collieries, might assure their mines of steady production by imitating the example here described. Food for thought at least is furnished by the accomplishment of this Greene County operation.

Nothing Lacking in Loading Machines but Co-operation of Mine Executives

By M. D. Levin
Columbus, Ohio

A LOADING machine that picks up thec oal after it has been undercut and shot down, and loads it into pit cars, is a device that most mine operators desire and have desired for the last twenty years. If the Patent Office records are examined it will be found that hundreds of attempts have been made to produce such a machine. Many of these attempts went no further than the taking out of patents, but on the other hand a number of machines have been built—and good ones, too. Several of these have been well designed, and were capable in some instances of loading a ton or more per minute. But still coal is loaded by hand.

Of course, a good reason for this fact exists, but this is not apparent to most mine operators. It took much money and several years' time for the mining-machine manufacturers to find out why loading machines were not a success. The real reason is that the mine operators will not do their part.

Manufacturers have designed and built loading machines at great expense and have worked out the various details with the utmost care. Many reliable machines are now on the market to choose from, but the average mine operator has done nothing to promote the use of such equip ent. He may permit a machine to be put in his mine on trial, but he then pays no more attention to it until the trial period is up, at which time the machine is rejected because it has not loaded enough coal. To emphasize this statement, daily reports covering a loader that is on trial while this article is being written are submitted.

The leader in question is a small, inexpensive machine that does not pick up the coal from the bottom. It is simply a loading conveyor equipped with a scoop that can be operated by means of a manila rope for pulling the coal onto the loading end. The machine weighs about one ton and requires a crew of only two men. The cars hold about two tons of coal.

The following are some of the daily reports:

Oct. 13, 1920—Waited for cars until 1 o'clock. Loaded 14 cars. Loading time 3 hr.

Oct. 14, 1920—Waited for cars until 8:30 a.m. Loaded one car. Moved to another place, and cleaned up slate. Ready to load at 20 min. to 11. Waited 40 min. on cars. Best time to load one car, 3 min. flat. Total cars loaded, 16.

Oct. 15, 1920—Loaded 16 cars today, one by 7:30 a.m. Did not receive any more cars until 10:45 a.m. Total loading time, 3 hr. 30 min. Rest of the time spent waiting for cars.

Oct. 16, 1920—Did not use the loader today, owing to labor shortage. Roof is very tender; we are working in a section that has been idle for more than a year. Have to do our own shooting and have been using inexperienced men who have never worked in a mine before.

Oct. 17, 1920—Sunday.

Oct. 18, 1920—Am sorry, but did not get to use the machine today on account of no men, as men were scarce. Will have some Mexicans tomorrow; they have promised me.

Oct. 19, 1920—Loaded 27 cars today. Received first 8 cars 8:40 a.m. Were loaded out 9:50 a.m. Received next 7 cars 10:20 a.m. Were loaded out 10:55 a.m. Received next 8 cars 12:40 p.m. Received 4 more cars 1:40 p.m. Were loaded out 3 p.m.

Oct. 20, 1920—We had to handle slate most of the day. Loaded 3 cars, 8:30 to 9:15 a.m. Waited for place to move to until 1:45 p.m. Loaded 12 cars by 3 p.m.

Oct. 21, 1920—Received 6 cars 8:30 a.m.; 10 a.m. moved to another section of mine where height is 37 in. Place ready to load 1 p.m. Loaded 8 cars by 2:30 p.m. Waited 30 min. for cars. Loaded 4 cars 3:30 p.m. Total, 18 cars.

Oct. 22, 1920—Started loading at 7:30 a.m. Power off 30 min. Loaded 4 cars by 8:15 a.m. Waited until 10 a.m. for car and timbers. Loaded 1 car. Moved and shot next room. Started loading 12 noon; thirteen cars loaded by 2:30 p.m. Moved to another place where there was no track. We have the loader in extremely low places and have to lower the track in every new place. The switches to the entries are laid on large ties and we have to lower them from 1 to 3 in. Total cars loaded, 18.

Oct. 23, 1920—No rooms cut today.

Oct. 24, 1920—Sunday.

Oct. 25, 1920—One one narrow place cut today; this gave about 11 tons. We loaded this place in about 1 hr. 19 min. There was a loader in a place directly across from us that was fully 8 hr. loading his place out, and he is an exceptionally good man.

The report of Oct. 25 was supplemented in a letter written by a party who was present while the place was loaded. He writes as follows:

The machine was in the place 1 hr. 19 min. However, the actual running time was 21 min., the rest of the time being used in waiting on cars and digging up heavy bottom left by the machine men. The demonstrator is working hard to make it go; in fact, is doing most of it himself, as they have given him a Mexican for a helper, who cannot speak a word of English. This indicates that the man who runs the loader is quite modest in his reports. It also shows that the machine can load coal rapidly.

The officials of this coal company seemed to be enthusiastic and kept on writing and telegraphing in order to get a loading machine to the mine at an early date. The manufacturers were somewhat delayed in keeping their promise because some slight changes had to be made in the truck in order to accommodate the machine to the low coal. When the machine arrived at the mine, however, it was left standing on the surface for many weeks, and probably would not have been put in the mine at all if a demonstrator had not been sent out to attend to it.

Lack of Interest Hinders Success

No doubt the officials of this mine think that they are being fair with the machine and that they are doing everything reasonable to make it a success. Any intelligent man reading the report, however, will realize that no matter what kind of a machine was used, even if it was the most ideal possible, it would be a failure. The object of this article is to bring this fact home. Many manufacturers have done their part, but most mine operators will do nothing. And as long as these conditions exist, coal will be loaded in the old-fashioned way—by shovel.

The small, inexpensive machine, requiring a crew of only two men, used in this particular mine demands little preparation as compared with a large, expensive device that picks up the coal from the floor and requires at least ten or perhaps more men to perform the various operations necessary in connection with it. It should be a simple matter to prepare a mine for the small loader in question, but if this is not done, it is out of the question to attempt to use larger and more expensive loading devices.

The following are the conclusions to be drawn from actual experience with loading machines:

It is a simple matter to build a reliable loader that will handle coal rapidly. Such machines of various types have been constructed, but have not been found profitable, for the following reasons:

(1) No means have so far been devised to provide an uninterrupted supply of pit cars to a loading machine that has to be moved from one place to another.

(2) In most mines the coal cannot be shot down so that the loading machine can handle it. The coal must be pulled down from the face by hand; this operation seriously delays the machine.

(3) A loading machine that is strong enough to be reliable and capable of picking up coal and loading it into pit cars is too heavy and cumbersome to move rapidly from one place to another.

(4) A loading machine performs only a small part of the work necessary to coal production. Such operations as undercutting, drilling, shooting, pulling down the coal from the face and breaking it up into lumps of suitable size, squaring and cleaning up rooms, setting props, handling slate, taking up bottom, and laying track, must be done by hand. It has been found that to perform this work successfully as well as that of handling cars and runing the loading machine, requires a crew of no less than ten men, and sometimes as many as twenty, depending upon conditions.

Experiments Taught Costly Lessons

Some mining-machine manufacturers learned their lesson years ago and declined to furnish loading machines that would pick up coal from the bottom. Mine operators still insisted that they needed such machines, and many of them went to work and built them themselves. They kept on for a few years, building and experimenting, until it hurt their pocketbooks too severely—then they stopped. Others are still at it.

It is highly probable that millions of dollars have been expended on coal-loading machines during the last ten years, and so far as I am aware, little has been accomplished.

Machine to Pick Up Coal Cannot Be Light

A machine that picks up coal from the bottom and delivers it into mine cars is necessarily heavy and expensive. Some picking-up mechanism must be provided that can be moved along the face to gather the coal. Conveyors must be provided that will carry the material to the car regardless of the position of the gathering device. In most machines two conveyors are employed for this purpose. It appears that such a device must remain in the same place for an appreciable length of time if it is to be financially successful. Only two ways of accomplishing this are apparent; one is to so alter the prevailing system of mining that the loading machine can work along a face of considerable length; the other is to maintain the present room-and-pillar system of mining and use a machine that mines the coal as well as loads it, thus allowing it to remain in one room until it is worked out, or in a single entry until this has been driven as far as desired.

Preparation Must Be Made for Machine

A small machine of the type mentioned above—that is, simply a plain conveyor—can be used to advantage in room-and-pillar work, as this device is light and convenient to move from one place to another. The crew is small, and delays, such as waiting for cars, are not particularly serious. At such times the men have other things to do—for instance, pulling the coal down from the face and getting it ready for loading. But even with such a machine preparations must be made for it. Places must be cut, drilled and shot; suitable arrangements made for storing cars, and the work laid out in a systematic manner. This cannot be done unless a section of the mine be set apart and enough loading machines installed to keep an undercutter busy, as well as a gathering locomotive or two. The undercutting, shooting, loading, timbering, etc., can then be arranged systematically.

New Features in Cutters Make Them Adaptable and Easy to Load and Unload

Automatic Friction-Actuated Cable-Carrying Trailer and Tilting Swiveling Guides That Facilitate Unloading and Reloading Are the Chief of Many Improvements to the Standard Machine Low-Vein Model Is a Combination Shortwall and Longwall Undercutter Possessing the Advantages of Both Types

By S. B. King
Chicago, Ill.

MORE than twenty years have elapsed since the continuous type of coal-cutting machine was developed and placed on the market. In these two decades many improvements in design and construction have been made, all tending toward safer, more rapid and less expensive coal production. Within the last year improvements have been made in "Ironclad" machines of this type to such number and extent as to justify the presentation of this article.

While the basic principles of design and construction have not been altered, numerous modifications have been made, each tending toward increased safety to the machine runner, greater convenience or a lessening of operating expense. Chief among these has been the introduction of new types of self-propelling trucks or carriages upon which the machines are mounted.

A Tilting Truck Makes Unloading Easy

To meet ordinary mining conditions a drop-front truck is now supplied. In this the forward portion tilts downward and thus acts as a skidway or inclined plane over which the machine moves upward or downward, sliding easily and without jar to or from the floor of the room. In reloading, this device saves much time. In either operation, however, the main portion of the truck and all four wheels remain upon the track.

As may be noted from the frontispiece, ample space has been provided at the rear of the truck for the operator's platform. Here also is situated the control mechanism (see Fig. 4), consisting of a friction drive and a brake of liberal dimensions giving prompt and close control of the machine when moving from place to place.

On all Sullivan mining-machine trucks except the "Tipturn" (described later) the trailing cable through which current is supplied is carried on a separate car or trailer connected to the main truck by a draw bar. In Figs. 1, 5 and 6 it will be noted that this trailer has a separate frame and four supporting wheels, thus forming practically an independent unit.

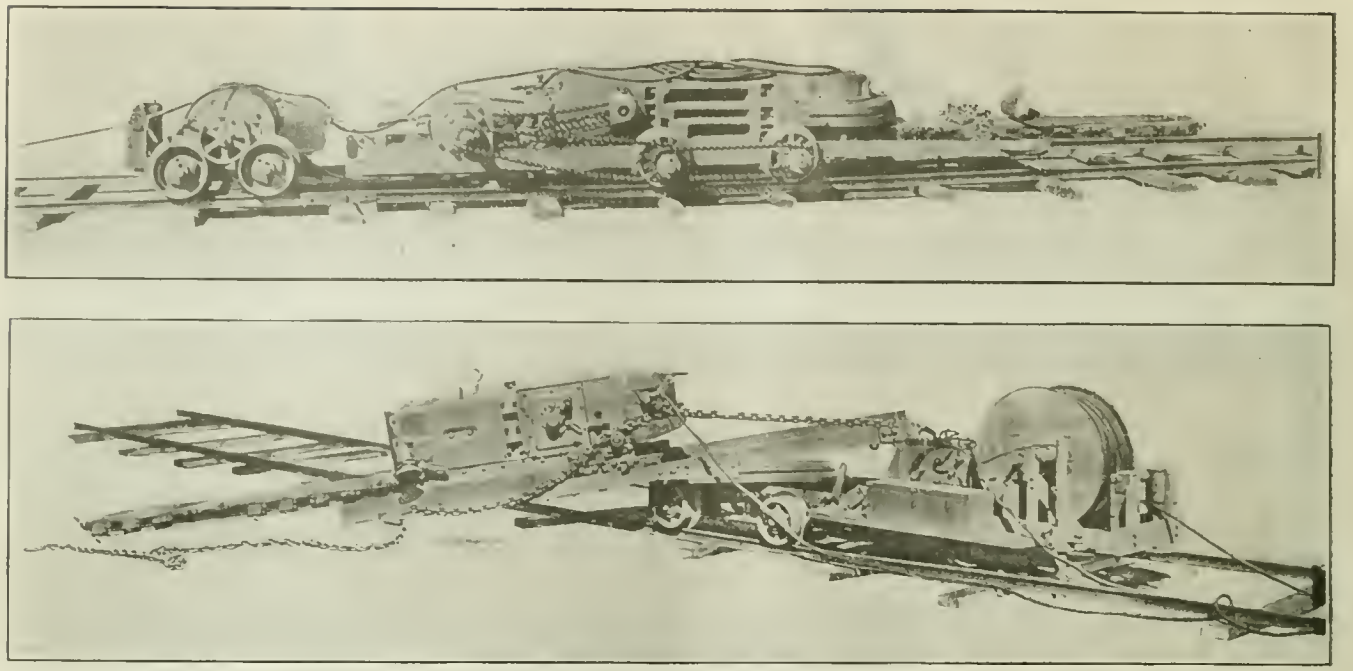
A guide consisting of horizontal and vertical rollers is placed at the rear, through which the cable is paid out or taken in. This insures even spooling. As upon earlier models, a self-winding feature is provided. The small wheels, one at either end of the spool shaft, receive their motion by friction from the wheels of the truck which support them. Current is led to the machine through revolving contacts as the cable is paid out or wound in.

Truck Swivels Placing Cutter as Desired

These trailer reels are arranged for either alternating or direct current. When they are to be used in a gaseous mine, they may be equipped with explosion-proof cable plugs. A tool box is mounted on the forward end of the trailer.

For coal 48 in. high or more, the "Class G" or Tipturn truck is available. This affords increased convenience and efficiency in handling the machine. As the name suggests, this truck is of a tilting and swiveled pattern. It is illustrated in Figs. 2 and 3. When in the traveling position the machine rests upon two superimposed circular plates constituting a swivel or turntable. As the coal cutter is fed forward upon the truck in unloading, the operator swings it by hand until it points in the desired direction. The forward portion of the truck then tilts downward, and the machine unloads as does the ordinary truck. It may, of course, be reloaded in a similar manner.

As the Tipturn will unload at any angle to the track up to 45 deg., it is evident that when the machine reaches the floor of the mine it is headed in the desired direction and will haul itself to the sumping point with the fewest possible settings of jacks or rearrangements of feed chain. The trailing cable on this truck is carried on a reel of large diameter mounted on the



FIGS. 1 AND 2. LOW-VEIN CUTTING MACHINE ON SELF-PROPELLING TRUCK AND STANDARD-SIZE MACHINE RELOADING ON TIPTURN TRUCK

The low-vein machine is less than 18-in. high when unloaded and under 2 ft. high when on the truck. Note in the lower illustration how readily the cutting machine is shifted to the truck and pulled up the incline into place. At most mines, unfortunately, all machines have to be taken from room to room and there unloaded and reloaded. Ability to travel at 275 ft. per min. and load and unload at maximum speed and minimum labor helps to overcome the drawback of room-and-pillar operation.

rear of the truck itself, equipped with guide and arranged for self-winding. The machine will thus pick up its own cable whether in motion or standing still. This is frequently a convenience when reloading.

Friction drive and brake also are provided, as in the standard truck, and the control is so accurate and close that the machine may be moved at a speed of only a few inches per minute when crossing bad switch points or traversing poorly laid sections of track. On the other hand, it may be made to move as rapidly as 275 ft. per min. over smooth roads. These trucks are substantially and sturdily built. In a mine in Utah where the coal is considered "hard cutting" and where four to five places a day have been thought excellent performance the greater speed and convenience of the Tipturn truck has enabled the machine to cut, day after day, fourteen or fifteen places per 8-hour shift.

The cutting machines themselves also have been improved in various details. All motors used upon these machines, whether equipped with direct- or alternating-current motors, or with air turbines, are now provided with roller bearings throughout. An improved type of controller has been placed in service which is more convenient and more durable than earlier models.

Clutch Prevents Chain Moving When on Truck

A new automatically locking handle is now furnished for the cutter-chain clutch. This renders it impossible for accidental engagement of the clutch and consequent starting of the cutter chain while the machine is loaded upon its truck and moving along the track to take place. This in itself greatly increases the safety of the operator.

The adjustment of the driving friction which controls and protects the feed gearing is sealed so that after proper setting has once been made in conformity with the pull necessary to cut the coal it cannot be tampered with. Damage to working parts is thus obviated.

Of secondary importance but a device of great convenience and increased safety is the clip for drawing current from the trolley wire when moving from place to place. This clip is provided with an insulated handle and a renewable fuse plug. This clip and handle comply with the mining laws of the State of Pennsylvania and are proving highly popular among mine operators and machine runners in that commonwealth and elsewhere.

Another apparently minor detail but one of great importance in the economical and effective operation of the machine is the introduction of a centrifugal drop-by-drop oiler, by means of which the main driving gears are lubricated. A hollow shaft is an essential part of this device.

Only Seventeen Inches High when Cutting

In certain sections of the country an insistent demand for coal has resulted in the opening of mines in beds much thinner than those usually worked. For coal two feet or less in thickness the ordinary mining machine stands too high, entailing delay and expense in lifting bottom or brushing top. In designing a machine for operation in such coal beds, engineers naturally looked to the longwall field for inspiration. Here thin beds are the rule rather than the exception.

The Sullivan longwall machine accordingly has been adapted to room-and-pillar work and is now known as the "CE-9 Ironclad." The direct-current low-vein machine thus developed is only 17 in. high when cutting, and 23½ in. high when loaded upon its drop-axle power truck. This is 6 in. less than the height of the standard undercutter. The alternating-current machine of the same type is ¾ in. higher when cutting and ⅜ in. higher when loaded for moving.

The low-vein Ironclad embodies the same general construction and design as the longwall machine, but the cutter bar is locked in a position parallel with the body, and moves across the face in the same manner as does the shortwall machine. A detachable swing arm may be fastened to the forward end of the cutter bar.

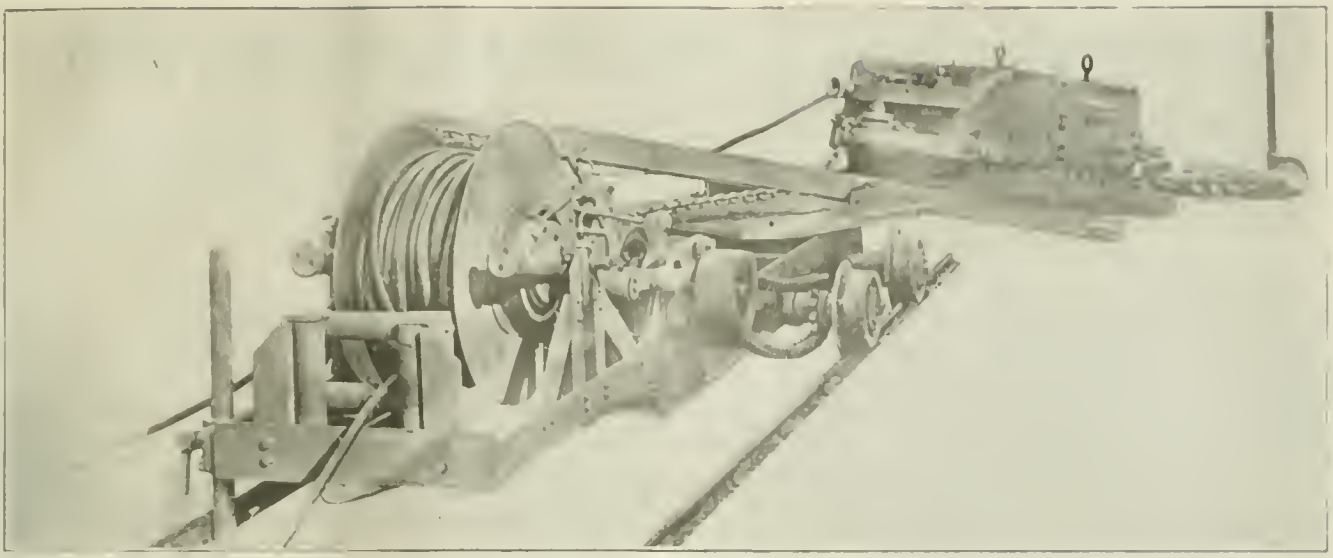


FIG. 3. UNLOADING CUTTING MACHINE FROM TRUCK; VIEW FROM REAR

In Tipturn trucks the trailing cable is carried on the rear of the truck, from which it is played out through a framework carrying four rollers, two horizontal and two vertical. The operator can swing the Tipturn at an angle of 45 deg. to the truck and for this reason it is possible to place the machine so that it will haul itself to the sumping point with a minimum of jack settings and rearrangements of chain lead. The rapid placing of the machine adds much to its capacity.

This machine is light, strong and compact, and embodies the combined advantages of the room-and-pillar and longwall cutters. It can be reversed so as to cut in a direction opposite to normal. This is done by shifting the swing arm to the opposite side of the body, resetting the cutter bits, rearranging the feed-chain and reversing the motor. Cutter bars up to 6½ ft. in length can be furnished.

This machine can be converted into a longwall type by removing the swing arm and, after sumping, locking the cutter bar at right angles to the body. This convertibility is a valuable detail, as by its use the low-vein machine may be employed as a room-and-pillar undercutter for development work, entry driving, cross cutting, etc., or as a longwall machine when faces of sufficient length have been developed.

Improvements previously mentioned as applying to the standard Ironclad are embodied in those of the low-vein type. The controller is of the dial model and is completely inclosed within the frame of the machine. The contacts are mounted upon an asbestos base. The reverse switch is interlocking, so that it cannot be thrown until the handle of the controller is in the "off" position.

A self-propelling truck is provided for the low-vein machine. This may be fitted with either straight or drop axles. The drive is by means of friction clutch, while upon heavy grades a hand brake controls the movement. The truck is operated by the driving motor of the machine through a reduction gear, and a speed along the track of 250 ft. per min. is attainable.

A drop front also is furnished upon this truck, and the cable, as will be noticed in Fig. 1, is carried upon a four-wheel trailer, thus insuring long life. Current passes through revolving contacts as the cable is paid out or drawn in. Reeling is automatic, the reel being actuated by the friction rollers which engage the four wheels of the trailer in the manner already described.

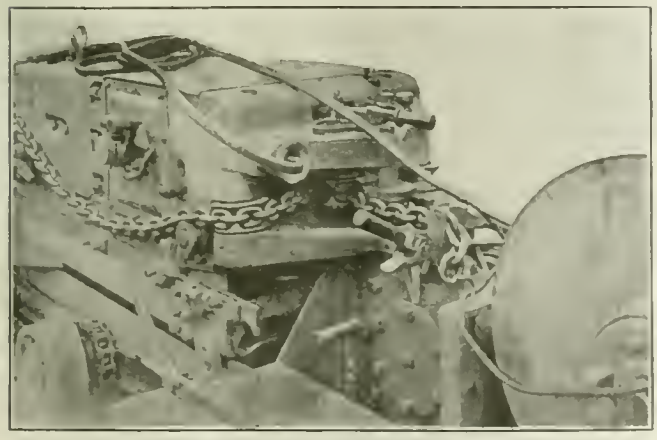
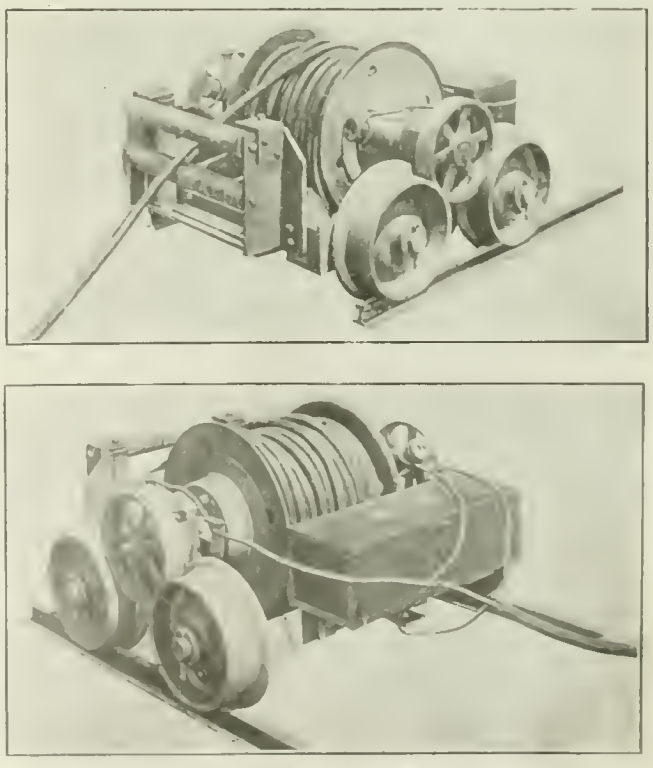


FIG. 4. DETAIL OF CONTROL LEVER ON TIPTURN TRUCK

A friction drive and an adequate brake make it possible to control the machine satisfactorily when moving from place to place over heavy grades and tracks where derailments are to be feared.



FIGS. 5 AND 6. CUTTING MACHINE TRAILER REELS

Trailer is shown in these illustrations from both front and rear. The spool is carried upon and receives motion from a roller on either end that rests upon and is actuated by the track wheels.

Fitting the Fan to the Needs of the Mine*

Disk Fan Is Suited Only to Low Water Gage—It Delivers Most Air with 100-Per Cent Ratio of Opening and Uses Most Power with Zero Opening—Centrifugal Fans Use Most Power with 100-Per Cent Opening and Least with Air Blanked Off

By Thomas Chester
Pittsburgh, Pa.

SO MANY variables affect the action of a fan that it is impossible to determine mathematically from working drawings the capacity of a fan of new design, and it is necessary to make tests either on large fans in the field or on models in a research laboratory to obtain data on which to base capacity tables.

Having obtained this basic information, empirical formulas can be developed by which the performance of any size of fan under any required conditions can be determined, providing only that no change is made in the design. Manufacturers who understand this fact make their fans geometrically similar, as this results in a close uniformity of action throughout the complete range of sizes.

Even with no change in design, however, the efficiency of a large fan is higher than that of a small one because the lower internal resistance or skin friction thus resulting leaves more energy for useful work outside the fan. This will be clearly understood when it is recalled that the rubbing surface within a fan increases directly as the diameter of the impeller, while all the areas increase as the square of the diameter.

To illustrate this, compare the throats or outlets of two fans, both of modern type, one having an impeller 1 ft. 6 in. in diameter and the other an impeller of which the diameter is 15 ft. The ratio between them will be as 1: 10. The outlets will be about one foot square and ten feet square respectively. The smaller outlet will have an area of one square foot and a perimeter of 4 ft. The area of the larger outlet will be 100 sq.ft. with a perimeter of 40 ft.

The ratio of area to perimeter or rubbing surface changes from 1 to 4 for the small fan to 100 to 40 for the large fan. The same comparison holds good for all channels through which air flows within a fan either in the housing or impeller.

Confine Disk Fans to Low-Gage Ventilation

Before submitting characteristic curves showing the performance of disk and centrifugal fans of well-known designs, from an entirely shut-off condition to wide open, let us consider the general application of fans from a practical viewpoint.

Most new operations, whether shaft or drift mines, can be satisfactorily ventilated by disk fans, providing that the water gage or mine resistance to the flow of the required volume of air does not much exceed ½ in. for the cheaper makes of fans and, say, 1 in. to 1¼ in. for disk fans of substantial and rugged construction. Such fans can be used as blowers or as exhausters and can be reversed by changing the direction of rotation.

Small operations, where the workings are at no great distance from the outcrop, rarely make gas, and the fan can be operated in the winter in such a manner as to provide warm air for the miners. This is done by operating the fan as a blower or exhauster, so that the air will have the longest leg of its travel before reaching the men.

Disk fans of an excessively large size are frequently installed. This is a mistaken policy, for such large fans are not efficient and they consume more power than is necessary. The excess power is an expense, and the undue load shortens the life of the fan.

The characteristics of disk and centrifugal fans are directly opposite. Each type is subject to the laws governing the operation of fans of that class, and this is true regardless of the particular make or design of fan that may be installed. When running at a constant speed, a disk fan delivers the most air and uses the least power when the static pressure is nothing. In fan research work this condition is termed 100-per cent ratio of opening.

The maximum power is consumed when the airway or duct is stopped off entirely, and this is the condition designated as zero opening. Under this condition all the power applied to the fan is used in churning air. It will be realized, therefore, that when a disk fan of too large a size is used, the operating condition is closer to zero ratio of opening than is desirable and power is wasted in churning.

Centrifugal Uses Most Power When Wide Open

A centrifugal fan uses the most power at 100-per cent ratio of opening and the least at zero opening, when the airway is blanked off entirely. The capacity tables of Ventura disk mine fans are made up on the basis of 50-per cent ratio of opening. A fan is attached to a straight pipe or duct of about the same diameter as the fan wheel, or impeller, while the farther end of the duct is provided with an opening having an area 50 per cent less than the cross-sectional area of the duct.

Under this condition tests are run and the relations between fan speeds, air volumes handled and power consumptions are noted and compiled in the form of capacity tables. In research work complete tests are run from zero to 100-per cent ratio of opening in order to ascertain the characteristics of the fan, so that the best type may be developed. Fig. 1 shows graphically the results of such a test on a Ventura mine fan.

It will be obvious that if tests were run at higher than 50-per cent ratio of opening the volumetric capacities would be higher because the larger opening at the end of the test pipe would permit more air to flow at any given fan speed. The effect, however, would be to lower the mechanical efficiency. On an inspection of the efficiency curve it will be noted that the efficiency falls off when the ratio of opening is either greater or less than 50 per cent.

This means that if the fan is either too large or too small the power used will be greater than necessary. It must be borne in mind that 50-per cent ratio of opening does not mean 50 per cent of the mine equiv-

*Article, entitled "Mine Fans," read before the Coal Mining Institute of America at its annual meeting, held Dec. 9, 1920, in Pittsburgh, Pa.

alent orifice. The two would be identical if fan tests were made in a large chamber, so that air could escape from the outlet in such manner that it would commence to flow near the outlet at almost no velocity.

Murgue's formula, which incidentally is like the law of gravity in that it is as true today as when it was first expounded, contemplates air commencing to flow through an orifice from a theoretically stationary condition. With relatively small ducts, such as are used in testing fans, the actual opening at the far end of the test pipe checks closely with the equivalent orifices at low ratios of opening. This is because the air velocity within the test duct is then fairly low.

As a safe rule wherewith to check the size of a Ventura disk fan it can be stated that the area of the fan impeller should be between 1.28 and 1.4 times the area of the mine equivalent orifice. Fifty-per cent ratio of opening checks closely with a fan having an impeller approximately 1.28 times the mine equivalent orifice. It must be understood this rule applies only to Ventura mine fans.

Booster Fans Cut Out Regulation Losses

Motor-driven fans are much used today for auxiliary underground ventilation, as they provide a satisfactory air movement in outlying sections without it being necessary to interpose resistances for the regulation of the air, which resistances inevitably increase the water gage of the whole mine. Either disk or centrifugal fans can be employed for this work, the use of the former being limited to places where not more than 1 in. of water gage is needed.

Present practice in the Pocahontas field is to cut out centrally-placed centrifugal fans working at medium to high water gages and make use of a number of disk fans, each serving its own territory. This is a satisfactory plan, as the water gage can be kept down to about 1 in. with consequent low power consumption.

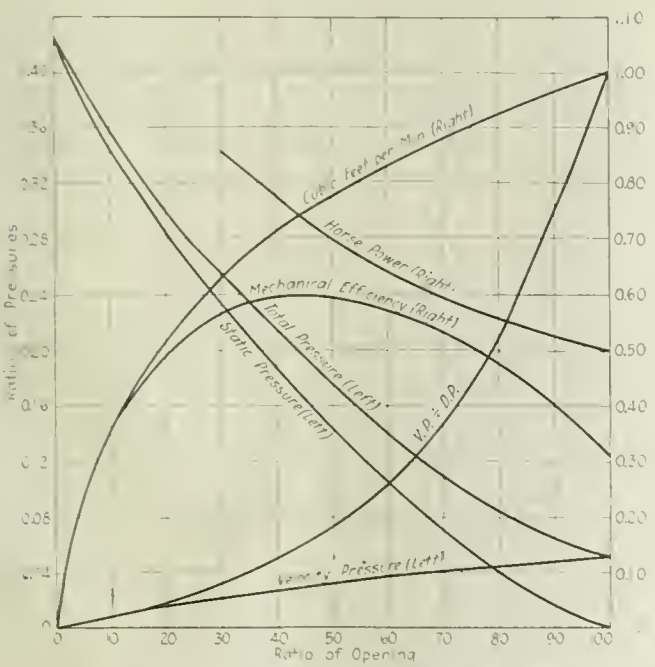


FIG. 1. CHARACTERISTICS OF THE VENTURA DISK MINE FAN—BLOWING

Mechanical efficiency is greatest when the ratio of opening lies between 40 and 50 per cent of the throat opening. The horsepower needed to drive the fan is reduced as the ratio of opening approaches 100 per cent and increases as the opening ratio is decreased. Note how the static and total pressures decline as the ratio of opening is increased.

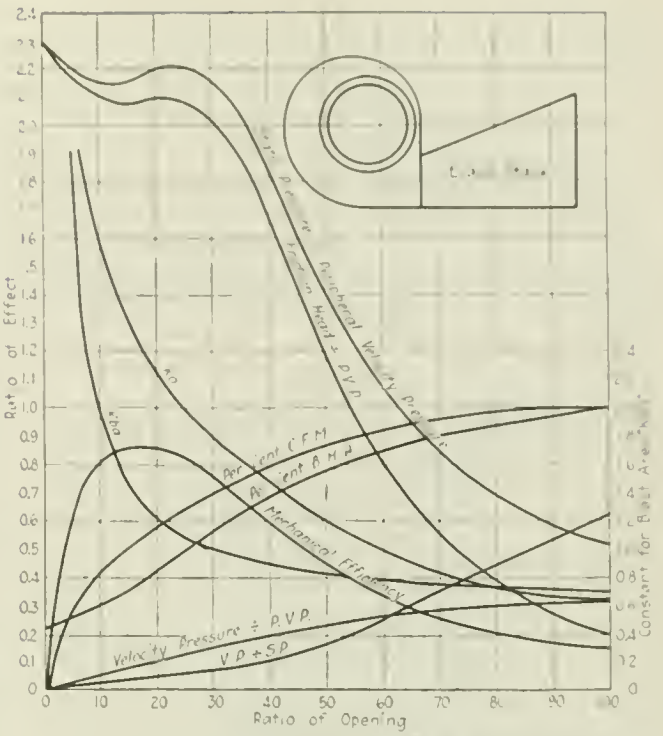


FIG. 2. CHARACTERISTICS OF NO. 8 DOUBLE-INLET SIROCCO EXHAUSTER FAN WITH EVASÉ STACK

In this graph the ratio of opening is based on full inlet area, the outlet is wide open and the inlet only restricted. It should be noted that this is a laboratory test and therefore has been extended both ways beyond the ordinary limits of application, which lie between 10 and 30 per cent where a reasonably equal mechanical efficiency is obtained.

Disk fans can be used in series, that is to say, a supply fan can be used for about 1 in. water gage and an exhauster fan for a similar amount, giving a total operating head of 2 in. of water gage. This arrangement may do well for temporary use, but is not recommended for permanent work, because, by reason of the higher efficiency of a centrifugal fan, that form of ventilator could be employed to better advantage.

Volumetric Efficiency Now Volumetric Ratio

The development of the multiblade centrifugal style of ventilator has naturally thrown into the discard most of the old theories about fan performances. The term "volumetric efficiency" formerly was used to denote the number of times a fan impeller could clear itself of air per revolution. One clearance for each complete turn of the fan was considered as being 100 per cent volumetric efficiency, and old-style fans did well if they approached this performance.

With shallow, curved blades forwardly inclined in the direction of rotation it is easily possible for a modern fan impeller to clear itself two and one-half to three times per revolution. As any expression in excess of 100 per cent is absurd when used to denote efficiency, the term should be changed to "volumetric ratio" and be given in digits and decimals instead of as a percentage. Thus the ordinary volumetric ratio would be from 2.5 to 3.0.

The acid test of any fan, however, is its mechanical efficiency, which is a comparison of the useful work done by a fan in relation to the power used to drive it. It is easily possible to obtain efficiencies from 70 per cent to 80 per cent with multiblade fans of modern design. I recently sold a fan under a mechanical-efficiency guarantee of 75 per cent with an energy con-

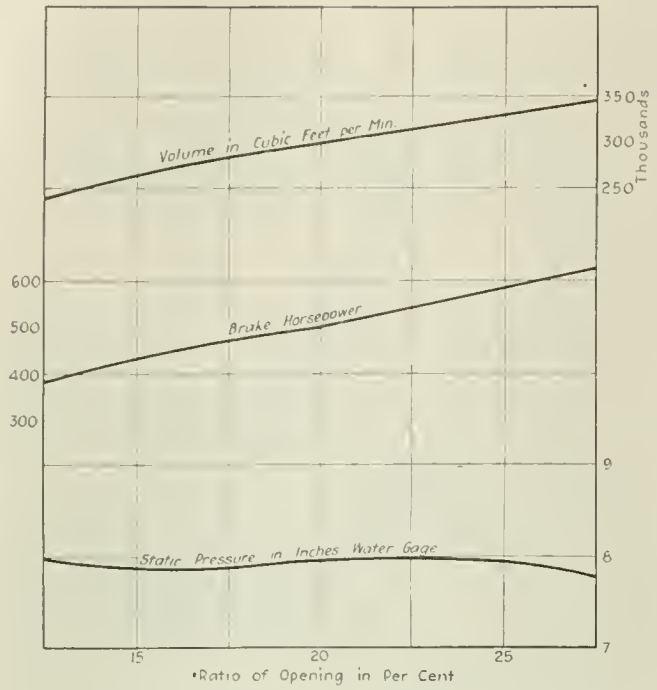


FIG. 3. CURVES SHOWING PERFORMANCE OF DOUBLE-INLET SIROCCO FAN

Impeller measures 9 feet 6 in. in diameter by 4 ft. 9 in. wide. Duty, 300,000 cu.ft. per min., 8-in. water gage.

sumption of 820 hp. A difference of 5 per cent in efficiency in this case involves 41 hp., and at, say, $150 per annum for 24 hours' service this is equivalent to $6,150 in yearly operating cost.

The matter of correct fan design is, therefore, of great importance. Moreover, the side drifts leading to the fan should be carefully designed so as to minimize friction as far as possible. For the same reason it is clearly worth while to provide an easy bend at the point where the mine airshaft connects with the fan side drifts.

Characteristic Curve for Sirocco Fan

Fig. 2 shows characteristic curves for a Sirocco mine fan. These have been developed in the same manner as those for disk fans. Although this chart gives the performance of the fan from 100 per cent open to zero opening, the actual scope is from 20 to 30 per cent ratio of opening. The majority of installations are figured so that the fans will be working at around 25-per cent opening, which makes it easy to guarantee 75-per cent mechanical efficiency, as that figure has a sufficient margin of safety.

The size of a fan is decreased if it is figured at a higher ratio of opening, and conversely the size is greater when the ratio of opening is lower. The mechanical efficiency drops off rapidly above 25 per cent ratio of opening, and this makes it inadvisable to select a fan of so small a size that a larger ratio of opening may have to be used.

On the other hand, if, by figuring a larger fan, the ratio of opening is decreased below 25 per cent, as shown by the chart, the first cost is considerably increased, and only the most progressive operators select ventilating equipment on the basis of the lowest ultimate cost.

The minimum size of Sirocco fan which can be used for any given requirement can be determined by multiplying the mine equivalent orifice by 1.5. This gives the area of a circle the diameter of which is the diameter of the fan impeller. A larger fan than denoted by this formula could be used and would have a lower power consumption, but the rule given represents average practice.

Fig. 3 shows the variation in performance of a fan between 27.5 per cent and 12.5 per cent ratio of opening, the fan under consideration being figured at approximately 20-per cent ratio of opening for a contract duty of 300,000 cu.ft. of air per min. against 8 in. of water gage with a mechanical efficiency not lower than 75 per cent.

The mine to which a fan is applied governs the static pressure by the resistance it offers to the flow of a given volume of air per minute. The above curves indicate that the fan referred to is capable of handling large changes in volume with little change in static pressure.

Over-Large or Over-Small Fans Alike Bad

It is not necessary, however, to provide much reserve power, as the ability of the fan to handle an increased volume of air against a certain water gage is safely held in check by the mine resistance, which increases as the square of the volume. This is only true, of course, providing the probable mine resistance has been carefully calculated or has been accurately ascertained from information available in regard to the performances of an existing fan.

The curves given in this article are submitted to show how the mechanical efficiency varies in accord with the size of the fan selected to perform any given duty. If the fan is made too small its internal friction is too great because of the high velocity with which the air must pass through it.

On the other hand, if the fan is too large or of incorrect proportions, its efficiency is lowered because air will regurgitate, or recirculate, through the less active portions of the fan blades.

All centrifugal fans operate in accordance with Newton's law of motion, which states that a moving body travels with uniform velocity in a straight line except in so far as it is made to change that state by external forces. Air issues from the periphery of a fan impeller because of this tendency to move in a straight line, while the fan blades are forced to follow a circular path.

Peripheral Velocity and Ratio of Opening

With the same peripheral speed a particle of air on the tip of a fan blade moves as far away from a tangent in a given time for a small impeller as for a large one. This rate of departure from travel in a straight line is responsible for air being projected with a force proportional to the peripheral velocity, but is also affected by the ratio of fan opening as shown by the characteristic curves. Also the amount of air delivered against a certain resistance per square foot of circumferential area of a fan impeller is the same for either a large or small fan, providing the peripheral velocity is constant and the ratio of opening the same.

Because of this it is an easy matter for a fan engineer to determine the size of impeller required for any specified duty, providing he is fully aware of the characteristics of the fan he handles. If he does not have this information, the fan probably will be selected in the old haphazard way. Any given mine, if maximum efficiency is to be attained, requires a certain size of

fan and no other. The mine has a definite equivalent orifice as determined by Murgue's formula: *E. O. in sq.ft.* = 0.0004 × *number of cu.ft. per min.* ÷ $\sqrt{W. G.}$

Regardless of the make or design of fan used, the size should be selected so that its internal areas bear the correct ratios to the area of the mine equivalent orifice. If two mines are to be ventilated and each requires 100,000 cu.ft. of air per min., the resistances being 1 in. in one case and 2 in. in the other, the mine having the smaller water gage should be equipped with a considerably larger fan.

For a given volume of air handled per minute the lower the water gage, the larger the fan should be. This is because the air velocity within the fan should bear a constant ratio to the square root of the mine water gage if the fan is to operate with equal mechanical efficiency.

In conclusion the recommendation is made that anyone who wishes to understand this subject as fully as possible should gain a clear comprehension of the theory of the equivalent orifice. He should also thoroughly grasp the fact that the size of a fan should bear a definite relation to the area of the equivalent orifice of the mine.

Coal Mining Institute of America Studies Present-Day Mining Problems—II*

Is the Thick Freeport the Upper Freeport and a Rider or the Upper and Lower Freeport with Interval Missing?—Institute Visits Jones & Laughlin Byproduct Plant, Which Uses Unmixed Pittsburgh-District Coal

By R. Dawson Hall
New York City

AT THE CLOSE of the discussion of the paper on the microscopic examination of coal by Reinhardt Thiessen, during the afternoon of Dec. 9, William Affelder, general manager of the Hillman Coal & Coke Co., took the chair and introduced:

Question 9. Is the so-called "Thick Freeport Coal" a combination of the Upper and Lower Freeport beds or an abnormal development of the Upper Freeport?

Mr. Affelder said that the proven area of Thick Freeport bed covered in all 75,000 acres. The main bed lay to the west of the Allegheny River, but there also were two small isolated areas, one near Wilmerding and the other near Saltsburg. The ordinary Upper Freeport bed ran from 40 to 44 in., whereas the Thick Freeport was from 5 to 9 ft. thick and even in some places was slightly thicker. He contended that the Thick Freeport was not the result of the coming together of the two Freeports but was an abnormal development of the upper measure.

He stated that along the river bank for many miles the seams of coal had been made continuously visible by a railroad cut. There was nothing to show that the Lower Freeport climbed up the 55 ft. which under ordinary conditions separated it from the Upper Freeport, and he added that as the Upper Freeport limestone was found below the Thick Freeport and was located normally between the Upper and Lower Freeports, we had to assume either that the horizon of the Lower Freeport had crossed the horizon of the Upper Freeport limestone—a physical impossibility—or else we must admit with Mr. Affelder that the Thick Freeport could not by any possibility have resulted from a close approch of the Lower Freeport bed to the Upper Freeport. (Of course there are some other possibilities, among which is that of a wrong identification of the Upper Freeport limestone.) Mr. Backert, the engineer of the Pennsylvania R. R., was quoted by Mr. Affelder as believing with him that the Thick Freeport was merely an abnormal development of the Upper Freeport and not a result of a thinning to little or nothing of the interval between the Freeports.

Mr. Affelder said that at Hamarville a drill hole located the Lower Freeport bed where it belonged, below the Upper Freeport limestone, but the coal bed found was valueless. It was the absence of this bed as a workable seam that made everybody suppose with Jesse K. Johnston that the Upper Freeport was the Lower and the rider bed on the Upper Freeport was not a rider but the Upper Freeport bed itself.

Distinguishes Thick Freeport Coals

Mr. Affelder went on to say that he had given several pieces of coal from the rider and from the Upper Freeport to Mr. Thiessen, who, without knowing whence they came, had successfully placed them from an examination of the spore-exines in their correct stratigraphic relation one to another. Unfortunately, Mr. Affelder said, Mr. Thiessen had chosen to call the base bed of the Thick Freeport the Lower Freeport, in accord with information furnished him, but he never failed to distinguish between the coals from the upper and lower half of the Thick Freeport.

Mr. Maize asked why Mr. Affelder had not supplied Mr. Thiessen, for comparison with Lower Freeport, coal from beds the identity of which was not questionable. Mr. Affelder said he had supplied coal from undoubted Upper Freeport as well as from undoubted Lower Freeport measures, but that Mr. Thiessen had said after microscopic inquiry that the spore-exines did not clearly exhibit correlation between the beds in the Thick Freeport measure and the Upper or Lower Freeport beds in other fields, and more work would have to be done.

It would seem that Mr. Affelder has made his point satisfactorily. The Allegheny measures, as Mr. Ashley pointed out, are at the minimum near the Allegheny River and at their maximum near the eastern edge of the coal fields. The acquirement of a rider to the upper Freeport along the Allegheny is a strange freak of

*Second installment describing the technical details of the meeting of the Coal Mining Institute of America, at Pittsburgh, Pa., Dec. 8, 9 and 10.

nature. Where the measures lose several of the characteristic beds of the Allegheny series, this mysterious rider appears and makes up, at least in part, for the beds which the Allegheny series at the Allegheny River appears not to possess.

Mysterious Roof Failure in Cambria County

At the telegraphed request of Alfred E. Roberts, superintendent of the Monroe Coal Mining Co., Mr. Hall read Mr. Roberts' interesting paper on "Some Peculiar Roof Conditions Found in the Central Pennsylvania Field." Mr. Roberts explained how the roof of the mines in that region occasionally broke down in narrow work without giving any warning whatsoever and yet sustained itself satisfactorily in open work. He detailed the various explanations for roof failure usually given—gas, atmospheric disintegration, the effect of air on free lime and so on—declaring that none of these gave a satisfactory solution. He believed the action to be due to the exudation of clay under pressure. He said that the clay probably squeezed out over the pillars and so brought heavy pressure over the roof of the narrow work. After the exudation had taken place the strain was relieved and no further action of that kind was to be apprehended.

Region of Excessive Paleozoic Stress

Mr. Ashley said that apparently there had been an intensification of stress in the area in question which had apparently modified the coal, reducing the volatile matter. It also had caused vertical joints in the coal and apparently had caused excessive vertical jointing in the roof. Mr. Stoek reported a similar condition in southern Illinois, where, because of the jointing, it had been necessary to change the direction of headings so as to avoid the joint planes.

Question 10, as to the "different forms of sulphur in coal and why some are less objectionable than others," was carried over to the next meeting for lack of time, and the meeting adjourned to meet on the following day at the byproduct-coke plant of the Jones & Laughlin Co.

Jones & Laughlin Use Unmixed Vesta Coal

Approximately 150 members were present on Friday morning to make the inspection trip through the Hazelwood byproduct-coke plant of the Jones & Laughlin Steel Co., which fronts on the Monongahela River above the business district of Pittsburgh. This plant does not mix high- and low-volatile coals to make the oven charge, but uses without admixture the coal as it comes from the Vesta mines of the company, which are situated further up the river at California, near Brownsville.

The product is floated down the stream in barges and unloaded from these into a large bin by means of an endless double-bucket chain having a capacity of 1,000 tons hourly. From the main receiving bin the coal is distributed by an elaborate system of rubber-belt conveyors to five storage bins, each of which serves as a central coaling station for one of five larries, each of which supplies a battery of ovens. The Hazelwood plant is composed of five batteries, each containing 60 Koppers ovens. At the time of the visit only four of the batteries were actively in service, for the mill just at present demands only about 80 per cent of the entire capacity of the plant.

The ovens are built with silica-brick sides and a fire-clay bottom. The uniformity of the oven charge is based on volume rather than on weight, but the quantity delivered to each oven is about 12¾ tons. The ovens are charged every twenty-four hours, but as the charging and drawing consume half an hour the net coking period is only about 23½ hours. Gas is not supplied to the ovens for the whole of the coking period, machinery having been installed which allows the gas to enter opposing sides of the combustion chamber every half hour, and this minimizes the amount of gas required.

At the end of the coking period an electric pusher forces the wall of coke, which is 37 ft. x 9 ft. x 17 in. in dimensions, out of the oven and into a steel railroad car for removal to a near-by quenching shed. Here from five to six thousand gallons of water are turned on the red-hot mass. The shed is equipped with a forced draft which drives away excessive moisture. When the quenched product leaves the shed it contains less than 3 per cent of water, which is the limit established by the steel company.

About 67 Per Cent Is Merchantable Coke

The coke is then dumped into storage bins, whence it is conveyed to gravity bar-screens and sized. All sizes under ¾-in. are classed as breeze and used for fuel around the plant. The large sizes are loaded directly into railroad cars as a straight furnace product for shipment to the mills of the company, which are located further up the river near Twenty-second street.

Of the 100 per cent of charge, which is represented by 12¾ tons of coal, 66 to 68 per cent by volume is furnace coke and 7 to 9 per cent is breeze. During the coking period approximately 10,500 cu.ft. of gas are driven off. This gas contains as main byproducts tar, ammonia and the lighter benzene, toluene and solvent naphtha. The fuel-gas value also must not be overlooked. From a single ton of coal may be obtained about 12 gal. of tar, 28 lb. of ammonium sulphate and 4½ gal. of the lighter oils.

So heavy are the tars that are the first to leave that much carbon is deposited on the collection pipes, and arrangements are therefore provided for the periodical "swabbing" of the pipe walls. The gases leave the coal at a temperature of about 700 deg. C., and by the time they reach the cooling tanks their temperature has been reduced to 350 deg., due to the radiation of the heat from the collecting pipes. The gases are finally cooled to 30 deg. C. by contact with sprays. Ammonia leaves after the tar has been driven off. After separation from other gases it is passed through a sulphuric-acid solution, whence it is precipitated as an ammonium salt —ammonium sulphate.

Both Breeze and Gas Go in Part to Mill

The lighter oils remaining in the gas are removed by passing them through oil scrubbers and are separated by subsequent distillation. Of the 4½ gal. of oil which are realized from each ton of coal 50 per cent is composed of benzene, 25 per cent of toluene and there is an equal amount of solvent naphtha. These oils after separation are directed into stills and vaporized. By this process it is possible at varying degrees of temperature to take off an almost innumerable number of oils from the same base. About 90,000 gal. of water are turned into steam hourly for use in the distillation process.

The fuel gas itself is collected and forced to the company mills by huge centrifugal compressors which are

Relation of the Government to Basic Industries as Applied to New England's Coal Supply*

It Was Once Customary to Order Coal Like Groceries, Depending Implicitly Upon the Middleman—Now It Is Necessary to Co-operate with the Source of Supply, Helping Those Who Produce and Distribute It—Benefits of Government Data Cited

By Dr. H. A. Garfield

IT IS remarkable how ignorant even intelligent people can be of conditions lying outside the range of their interest. We are like the pathetic French queen who, when the mob gathered before the palace at Versailles demanding bread, asked in her innocence why they didn't eat cake if they had no bread. I suspect that before the war very few of our fellow countrymen would have been able to pass an examination upon the coal deposits of the United States. Even those who knew where the coal mines were located could not give an intelligent answer to the question: Why can't we get coal? Some said it was shortage of labor; some suspected the middleman of holding back the supply to boost prices; the more intelligent perceived that coal at the pit mouth was no better than coal in the ground, that coal cannot be said in an economic sense to be produced until it is in the bin of the consumer—in other words, that coal production is essentially a transportation problem.

The Middle Westerner, living within easy reach of raw materials, has little conception of the economic problems of the New Englander or the dweller on the plains beyond the Great Lakes. In the Middle West the supply of raw materials is hardly a problem. The coal jobber usually is a nuisance. In New England he is deemed a necessity. The reason is obvious. Where no middle function exists the middleman is not wanted, but coal mines are so far away from New England that some one is needed to bring the producer and consumer together. Whether we have become too dependent and rely too implicitly upon the wholesaler is another question.

New England consumes annually about twenty-five millions of tons of bituminous coal and about ten and a half millions of tons of anthracite. Prior to the Great War New England had to shift for herself, and because the supply of coal was usually greater than the demand those who understood the matter found the least difficulty in procuring the needed tonnage. But the moment the pinch came—when demand outran supply—no matter now for what reason, New England and the near Northwest suffered.

Fuel Vital to the Nation's Basic Industries

The industrial system of the United States is like a giant, his trunk and vital organs—supplying the life blood—lying as it were in the Middle West, his two arms stretched aloft, one into New England and the other into the near Northwest. The life blood must flow strong and pure from the center to these industrious arms. They are the arms of our industrial and agricultural life; they must be supplied and abundantly supplied with life-giving supplies. We dare not permit them to be atrophied. The basic industries of the United States are those engaged in the fundamental processes necessary to the supply of food, fuel, clothing, shelter and transportation.

But what now are we to do about the situation that confronts us? Since the beginning of the Great War New England and the Northwest have been joint sufferers. For the sake of clarity I confine my remarks to coal, that most basic of all commodities. The manufacturers of New England and the farmers of the near Northwest have put forth Herculean efforts to procure the necessary supply. So long as there existed a central authority at Washington clothed with power, supplies were sent forward. But now, when, so to speak, the giant hands must shift for themselves, there may be grudging response from the central station of the giant body. The blood may not begin to flow when the arms put forth effort. When, therefore, it is asked how New England is to meet the situation, I say to you that it cannot be satisfactorily met at this end. There must be a central organ responding to the call for supplies. Coal must flow to our industries as the blood flows from the pumping heart to the working arm. In other words, we must reverse the present process. Heretofore New England has organized to get coal. Henceforth she must organize also to help those who produce and distribute it.

Generally speaking, the New England practice has been to order supplies in much the same way that we order groceries for the household. It is necessary not only that we send in our order but that we co-operate with the source of supply. In other words, we must cease to depend implicitly upon the middleman and must understand for ourselves the problems of coal production and make as direct connection as possible with the producers. To revert to the household illustration, personal and friendly contact with your grocer and an understanding of some of his difficulties, viewed simply as a selfish proposition, is the best insurance against failure of adequate supplies and will bring results that can never be obtained by telephone.

Light Shed on Principles by the War

There are certain things necessary to everybody and which may, therefore, be said to be essential to our national well-being. These things have from time immemorial been grouped under the heads of food, shelter and clothing, and in recent times we have added fuel and transportation. Without adequate and regular supplies of these basic necessities the Republic would soon go to pieces. Therefore, the Federal government, speaking for all the people, must take whatever responsibility is involved. By suitable legislation and executive act it must give the people the freest access to the raw materials required for the production and distribution of these basic necessities. The war made this principle plain to everybody. If, then, the duty rests upon the Federal government, representing all the people, to protect them against any attempt to deprive them of these basic necessities, it is clear that occasion may arise when the interests of the public run counter to those of special groups or sections. In that event it should be obvious that the government, speaking for all the people, must override those speaking for part of the people.

What are the things that threaten a shortage of supply of coal? They may be grouped under three heads: car shortage, labor shortage and high prices. The Federal government is at present sufficiently organized to protect the interests of the public in each of these fields, but it is not sufficient to protect the interests of the public alone. For every consumer is likewise a producer and belongs to one or more of the special groups whose interests may be adversely affected by government action.

It is the duty of the Federal government to determine the policy and to enact and enforce laws necessary to regulate the production and distribution of coal. There is substantial unanimity in favor of regulation. Twenty years ago this was not true. We all remember with what indignation the first attempts to regulate business were greeted. Yet Presi-

*Abstract of an address before the Manufacturers Association, Boston, Dec. 16, 1920.

dent Roosevelt dared to give vitality to the Sherman Anti-Trust Law, and when the anthracite strike of 1902 threatened the supply of domestic coal he called a halt that angered operators and shocked the public. In the same way government must say to labor when, acting in its own interests, it deprives the public of its coal supply, "Thou shalt not."

But this is only negative and in a sense the least important part of the program. Government must stay the hand that would deprive the people of a basic supply. But if it stops there, it stops, so to speak, at the point of irritation. Our attention has been fixed upon the machinery of arbitration and the settlement of industrial conflicts after they have arisen. This, of course, must be provided for. But there is something vastly more important—namely, the prevention of conditions out of which conflicts arise. The members of the U. S. Fuel Administration discovered a way by which this might be accomplished.

Chief Problem Was Increased Production

The first problem that presented itself was the production of more coal and the settlement of industrial conflicts interfering with it. I took the position that the question of union or non-union should not be permitted to interfere with the production of coal during the period of the war, and this judgment was loyally accepted by both operators and mine workers. Nevertheless sources of irritation remained and threatened to develop in such manner as to seriously interfere with the production of coal. The first two advisers I called in were John P. White and Rembrandt Peale—the former the president of the United Mine Workers and the latter a leading operator. They became part of the Fuel Administration—a very vital part of it.

We were forestalling strikes by removing conditions which if left alone would have resulted in curtailing production. This is the principal thing to which I wish to direct attention. It is so simple in itself that it needs the very least of exposition. It is so simple that it escaped our notice until almost the end of the Fuel Administration.

Seldom Resort to Advisory Methods

We Americans are apt at making laws—at clothing somebody with power to do something. Only recently have we here and there resorted to advisory methods. When we have set up an official we have regarded somewhat jealously his right to exercise power undisturbed. We seem to have been actuated by the idea that we, the people of the United States, could appoint our representatives and then go about our business, leaving them to make and enforce laws. Now we are waking up to the fact that eternal vigilance is really the price of liberty and that we must keep ourselves thoroughly informed concerning the acts and proposals of our representatives in government.

It is necessary, however, to go a step further and avail ourselves of the advisory method, if we mean to prevent conditions leading to trouble. The reason is, of course, this: no man is able to know all about even one of these basic industries. I found, for example, that no operator pretended to understand conditions in all the bituminous coal fields. On the other hand, the labor conditions in one field differ so considerably from those in another, due to the different character of the veins of coal and the methods of mining, that from the beginning the mine-workers' union wisely set up district organizations headed by men experienced in each of twenty-nine different districts.

In setting up governmental machinery thus far we have required our representatives to cover so wide a field that they are in no real sense representatives. Certainly they do not know, nor therefore represent, the diverse interests involved. The commissions appointed a year ago to make recommendations looking to our industrial betterment were given too large an undertaking. Each basic industry must be considered by itself. Those who represent capital and labor interests must be in each case men experienced in that particular industry. No commission dealing with the coal industry commands the confidence of operators and mine-workers unless it is composed of experienced operators and mine-workers. If the question concerns anthracite, then operators and mine-workers engaged in the anthracite, not in the bituminous, industry must speak for anthracite interests.

But how, and with what power? They must speak as advisers and not with power to determine policies. As I said a moment ago, Americans are prone to set up officials and commissions and clothe them with power. What our officials need is not more power but more understanding, and because one man cannot know, and hence understand all about everything, he must be advised by those who do know and hence understand.

Government has been so suspicious of industry that men best qualified to speak have feared to approach government officials lest perchance they do more harm than good. The war taught us the folly of this suspicion, as well as the value of co-operation and resort to the advisory method. Let me illustrate from my own experience. John White and Rembrandt Peale, each with his little group of picked and experienced men, sat in offices down the corridor from my office in the Fuel Administration building. We were in daily communication. The power of making regulations governing the production and distribution of coal was in my hands. But I never made a regulation touching the interests of mine-workers or operators without first calling in these advisers for a conference.

Conferences Develop Spirit of Good Will

When the matter affected wages or conditions at the mines I did not call in John White alone, but both John White and Rembrandt Peale, because I realized that, while I was looking at the question from the standpoint of the consumer and the ultimate effect of any regulation upon coal deliveries and prices, Mr. Peale's experience enabled him to judge of the effect of the proposal upon the operators, while Mr. White knew from experience the effect it would have upon the mine-workers. Therefore, when I took action or advised the President, I spoke not of my own wisdom but with the invaluable backing of fact and experience of the two groups directly interested in the production of coal. Later I called in representatives of the Railroad Administration, and of the jobbers, and of the retail merchants. These conferences developed a spirit of good-will, which was the greatest result of all our endeavors.

The value of this kind of co-operation, this resort to the advisory method on the part of an official charged with a grave responsibility, so impressed itself upon us that in February, 1919, a formal conference was called. For four days officials and members of the United Mine Workers and of the National Coal Association discussed the question with the Fuel Administration officials. We felt that our experience ought not to be lost and that it behooved us to present to the President a suggestion that other basic industries might benefit by our experience. It is a remarkable fact that our proposal was unanimously adopted. Neither the members of the United Mine Workers nor those of the National Coal Association spoke in their official capacity but as individuals, for they had not been clothed with authority to commit their organizations. But they spoke with an earnestness that was unmistakable, and when we separated there was more than one expression of belief that we had made a real and valuable discovery.

The discovery consisted in this, that advisers chosen from the groups interested in the production of a basic commodity, coal for example, sitting continuously at Washington under the chairmanship of a permanent officer of government representing the public, would in ninety-nine cases out of one hundred reconcile differences between operators and mine-workers, between the industry and the government, and in the public interest.

One important feature of our recommendation was that the policy-determining function should be kept separate and apart from the fact-finding function. The four things necessary to know before any important step is taken affecting the coal industry are these: the cost of living of the mine worker; this determines the wage basis; the cost of producing and selling coal; the cost of distributing it, and the supplies on hand. The Labor Statistics Bureau of the Department of Labor can determine the first, the Federal Trade Commission the second, the Interstate Commerce Commis-

sion the third, and the Geological Survey of the Interior Department the fourth. These four departments of government ought at all times to have ready at hand information for the use of all the parties in interest. The present disposition of Congress is so to limit appropriations for these departments and bureaus as greatly to cripple a service without which the Fuel Administration would have been powerless and which if continued will prove of inestimable value to the public.

The importance, for example, of a continuous survey of stocks of coal on hand was brought home to us at the beginning of the coal strike in November a year ago. One of the most important departments of the Fuel Administration was the statistical bureau. The Secretary of the Interior had generously allowed Mr. Lesher and six others to be temporarily transferred to us. I was able to expand this little group to more than six hundred. By organizing this force and by installing proper machinery Mr. Lesher was able to tell me every week before the White House meetings the amount of coal on hand. Every week on the average he handled reports from nearly 32,000 of the 90,000 manufacturers reporting. Within five minutes Mr. Lesher could tell me the supplies on hand the previous week, the amounts added to the supply during the week, the amount consumed and the balance left on hand at the end of the week. He was able to give me the information by groups of states, by individual states, by individual manufacturers.

During the first months we did not know the facts and distributed to the most importunate, often robbing Peter to pay Paul. But after this machinery was set up it was quite otherwise. Many a time after this system was in working order, a manufacturer coming to complain of his short supply went away satisfied at least that he was being fairly treated. To send for his card required but a moment, to ask him if the results were correct and to receive his verification was a first step to convince him that we knew the facts—whether his supplies were above or below those of his neighbors and competitors.

Variations in Coal Stocks Shown

In October, 1917, there were 28,000,000 tons of bituminous coal in stock throughout the country. Whether this was normal or not we did not know—the data was not at hand—but we began piling up stocks as soon as the winter was over. By the middle of July, 1918, we had increased the stocks on hand to over 43,000,000 tons. By Oct. 1 we had brought them up to 59,000,000 tons, and we were able to assure the country that even though a winter as severe as the previous one were before us we could pull through without difficulty. On armistice day we had 63,000,000 tons on hand. Then began the drop. Congress cut off appropriations for this work after June 30, 1919. Therefore when I returned to Washington on the eve of the coal strike last year I did not know what stocks were on hand and could only guess. When the coal commission was appointed early this year a small sum was made available and estimates based on about 2,500 selected instances led the Geological Survey to the conclusion that on July 1 this year we had in stock about 20,000,000 tons. Knowledge of the facts is a necessary prerequisite to wise public policies.

I could bring you illustrations with reference to cost of living, cost of production, selling and transportation. But time does not permit, and this one illustration must serve. Let me, however, call your attention to this fact—significant for New England—that although there had been a great falling off in stocks of coal throughout the country, the manufacturing states, including New England, were the greatest sufferers. On Oct. 1, 1918, there was an average of ten weeks' supply of bituminous coal on hand at industrial plants other than iron and steel and byproducts throughout the country. On June 1, 1920, there was an average of only slightly over three weeks' supply on hand. However, the New England states on Oct. 1, 1918, had on hand substantially a six months' supply, enough to carry them safely through the winter. It ranged from nineteen weeks for Connecticut to thirty weeks for New Hampshire, whereas on June 1 this year the New England states had on hand only a little over one month's supply.

These fact-finding bureaus should be freed from the responsibility of determining policies. The attention of the Federal Trade Commission, for example, should be fixed upon one thing only, namely, the cost of producing and selling coal in each of the districts of the country during every month of the year. It should know the number of operations in each coal-producing district of the country. It should know, month by month, the amount produced by each operator, the cost of mining machinery and equipment, the cost month by month to every operator of every item that enters into the production and sale of coal. What should be done with these facts is not for the Federal Trade Commission to determine but for the executive head of the government acting through his chosen representatives.

Secretary of Interior Would Act for President

The plan submitted to the President in February, 1919, as a result of our conferences comprehended each of the basic industries. But it is sufficient to explain the workings of one only. We recommended that the Secretary of the Interior be designated to act as chairman of three commissions, each having to do with fuel—an anthracite commission, a bituminous commission and an oil commission. Please note that these are separate commissions because each is a separate industry, but the public, being interested in each alike, is represented by the Secretary of the Interior acting for the President.

We will consider one, the bituminous coal advisory commission. Let us assume that, in addition to the chairman, it is composed of three mine-workers chosen by the mine-workers' union, and three operators chosen by the operators' association. It is essential that there should be the same number of mine workers and operators on each such commission and that they should be chosen in each case by their own group. This commission should not be given power to determine policies or to make regulations of any sort. It should be purely advisory—advisory to the President of the United States, speaking of course through the Secretary of the Interior as chairman. Upon the President or his Secretary rests the power to make such regulations as may be authorized by the Congress. If legislation is necessary, the Secretary of the Interior conferring with this advisory commission will secure first-hand information as to the need of the proposed legislation and the effect of it upon the public, the mine-workers and the operators. When, therefore, the President recommends legislation to the Congress, his recommendation will be based upon the advice of his Secretary of the Interior speaking with understanding as a result of his conference with the advisory commission.

Urges Advantages of Advisory Commission

If an advisory commission of this sort were in existence, if its offices were located in the Interior building, within easy reach of the Secretary of the Interior, and if the needs of the people of New England could at all times be brought to the attention of the Secretary of the Interior as chairman of that commission, is it not obvious that this simple piece of machinery would enable us to do ten times over that which we are able to accomplish by mere pulling at this end, or even through the persistent and able advocacy at Washington of citizens of the commonwealth whose representations too often fall upon deaf ears—deaf because no one is specifically charged with the responsibility to protect the public in any specific way? The same is true concerning the needs of any other group. If wages are too low or too high or conditions in the mines oppressive, labor will be best served with such a commission. Fair wages and reasonable profits will be more surely obtained with such a commission in existence than at present, and, above all, the rights of the public will be guarded and preserved.

In conclusion, let me urge upon you two things: First, the importance of persuading Congress to appropriate funds sufficient to enable the Interior Department, the Department of Labor, the Interstate Commerce Commission and the Federal Trade Commission to continue to furnish the facts necessary to the determination of our policies. And, second, the value of permanent advisory commissions of the kind I have described and the advisability of advocating their establishment by the President and, if necessary, by act of the Congress.

Problems of Operating Men

Edited by James T. Beard

Anthracite Practice in Working Folded Seams

Anthracite practice points the way to the best method of working highly contorted coal seams.

ANSWERING the query of P. C. Craven that appeared in *Coal Age*, Nov. 4, p. 954, regarding the best method of working badly contorted coal, allow me to offer the following suggestions, as the subject is one in which I was formerly deeply interested.

While engaged as a mining engineer, in the anthracite region of Pennsylvania, I came in contact with problems involving the extraction of coal from seams that were so folded and contorted that the pitch was at times almost perpendicular. These conditions are probably quite similar to those described in the inquiry just mentioned, except in respect to the character of the coal, which is said to be a soft coking coal.

No Fixed Rule Can Be Given To Suit All Conditions

My experience compels me to say that no fixed rule can be given and no systematic plan of development can be outlined for the working of badly folded seams, whatever the nature or character of the coal. Experience and judgment must dictate the methods to pursue in order to obtain the best results, and these methods will vary with the changing character of the seam, as the workings are advanced.

Prior to starting the development of the mine, however, an accurate survey should be made and the results platted on a map, showing not only the extent of the property but the location of the prospect holes sunk at various points and giving the elevation of the coal found in each hole. A careful study of this map will enable an intelligent opinion to be formed regarding the general plan of development to be employed.

Follow the Synclines

As far as practicable, the aim should be to drive the main entries in a direction that will enable the gangways to be turned to the right and left at the low points or in the syncline of each fold. Such gangways serve as local feeders taking the coal from more or less extended sections of the field, each depending on the distance the fold continues. An air-course must be driven paralleling each gangway and may extend along the side of the fold, at a somewhat higher elevation than the gangway.

The practice in the anthracite region is to allow the gangway and its air-course to follow the syncline to the boundary or the end of the fold. It will frequently happen that the fold will run out before the boundary is reached, in which case the gangway and its air-course are turned across the end of the fold and, perhaps, made to follow back on the other side.

Rooms or chutes are driven off the gangway to the rise and connecting with the air-course, after the customary manner of working inclined seams. Assuming that both sides of a fold are traversed by a gangway and its air-course, it will generally be practicable to drive a counter-road along the crest of the fold or on the anticline. In that case, as the chutes hole into the counter-road the pillars are drawn back in the usual manner. If the fold is sufficiently great it may be practicable to drive the first counter-road half-way between the syncline and anticline and another at the top of the pitch.

Where the inclination is considerable it will often prove of advantage to drive the rooms across the pitch on a grade that will enable a mule to haul a car from the gangway to the face of the room. The limit of grade for mule haulage will depend on the size of the car, the style of its equipment and the weight of the mule. A mule weighing say, 1,200 lb. will ordinarily be able to haul a load of a ton up a grade of 8 or 10 per cent.

Conditions To Be Observed If Trouble Is Avoided

The thickness of the room pillars must be governed by the roof pressure, the pitch and thickness of the coal and the nature of the roof and floor. It is important to insist on the miners driving their rooms on sights to avoid trouble from leaving pillars that are too thin. In order to prevent a possible creep or squeeze, every fifth or tenth room should be left solid and that coal taken out when the pillars are drawn back. The track should always be kept on the high side of a room and about 3 ft. from the rib. Where the coal attains a greater height than 10 ft., it will generally be necessary to take it out in benches, working the top bench first and the lower bench last.

Instances will occur when it is not practicable to drive around the end of a fold. In that case, if it is known that there is good coal on the other side, a rock tunnel should be driven through the fold and a gangway and air-course opened on the other side and the coal worked out in the usual manner. Allow me to say in closing, that a good anthracite man would doubtless render valuable service and save thousands of tons of coal that would otherwise be lost in this undertaking. The problem can only be intelligently solved by an examination that would reveal the conditions as they exist.

H. B. Miller,
Pittsburgh, Pa. Mining Engineer.

Points in Working Low Coal

Like a three-legged stool, the proposition of working low coal successfully has three legs to stand on. If one is missing, the proposition like the stool is sure to fall.

AT ONE time, I remember making an application for a position that involved the development of ten-thousand acres underlaid with a seam of low coal. I believe the conditions in that case were much the same as those that confronted "L.E.R." and led him to make the inquiry found in *Coal Age*, Aug. 19, p. 403. The fact that the man was anxious to make good in a place where others had failed shows that he was ambitious and determined to develop the property to the best advantage.

Unfortunately, the inquirer has not stated many important points, such as the extent of the property, inclination of the seam, nature of the roof and floor, depth of cover, etc., all of which have an important bearing on the success of the undertaking. It would seem almost like a waste of time for a friend to give counsel without being informed on these matters. My interest in the working of low coal, however, is so strong that I desire to lend a little help, if possible, by suggesting a few essentials that concern the economy of working.

Many Details Essential To Economy

Judging from the sketch that accompanied the inquiry, it may be assumed that the main haulage road is going on a practically water-level course, since rooms are turned off the butt headings both to the right and the left. Also, it is stated the rooms are driven on 60-ft. centers and, assuming about one-half the coal is taken out in the first working, it is probable that the seam is overlaid with a hard sandrock or a good slate roof. Under these con-

ditions, lifting bottom instead of brushing the roof is, in my opinion, a good plan as it leaves the roof undisturbed. One often finds much annoyance results from sharp projections of the roof being formed when that is once broken.

Without knowing the law in Kentucky, I will venture to say that the main haulage roads should be driven at least ten feet wide and all rock and slate removed. Stowing this material at the side of a main road is more or less of a nuisance. I believe in having plenty of headroom and clearance space at the side of the road. The tracks should be well ballasted and drained, and the rails of sufficient size to carry the heaviest burden without yielding.

Stowing Refuse on Butt Entries Is Economy

In driving the butt entries the bottom taken up to give the required headroom can be stowed at the side of the road. These entries should be driven wide enough to give room for building this waste and leave ample clearance at the side of the track. The life of the butt entries being shorter than that of the main roads, this plan can be followed and will insure a more rapid development and greater economy. The waste should be stowed on the side of the entry opposite to that from which the rooms are turned. It is true, of course, that this refuse will have to be moved again when drawing back the entry pillars; but this can be easily accomplished at that time.

Allow me to suggest that if the coal is to be cut with machines it will be better to drive double rooms, say on 75-ft. centers, leaving 25-ft. pillars between them. This will provide a 50-ft. breast of coal that can be cut with much greater ease than a 30-ft. face. In driving the double rooms a track is laid along each straight rib, thus giving a 25-ft. face of coal for loading on each track. This plan also presents the advantage that the breakthroughs in the pillars can be cut from both sides, which expedites the work and gives an equal amount of coal to each room.

Use of Steel Track Ties Gives Greater Headroom

In working low coal the height of the mine car should not exceed 26 or 27 in. above the rails. A great advantage will be found in the use of flat steel track ties, which enable the easy shifting of the track at the faces of the rooms, in order to reduce the distance the miner has to shovel his coal. There is a steel track tie now on the market that is easily adjusted, all that is required for that purpose being the driving of a wooden plug.

In my opinion, there are three great essentials in the working of low coal, which make this undertaking analogous to a three-legged stool. These three essentials are the following: 1. Safety in every branch of the work. 2. Good ventilation, pure air and plenty of it. 3. Good haulage roads, well timbered and drained and the track kept in good condition. If any one of these three essentials is lacking the successful working of low coal is in danger. Like the three-legged stool, the proposition cannot stand. Failure is certain, sooner or later.

S. D. Hainley

Osceola Mills, Pa.

Give the Fireboss a Chance

On the fireboss, primarily, depends the safety of the mine. The fireboss not merely a certificated necessity to be lightly regarded but a factor whose authority should be unquestioned.

FEW papers have impressed me as deeply as that of D. Harrington, pleading for giving the fireboss a fair chance and greater authority in order to secure a safer mine, *Coal Age*, Nov. 4, p. 943. To my mind, a worthy competent fireboss is "the man of the hour" in any mine and should be held in the highest esteem.

In the wee small hours of the morning when the rest of us mine workers are still comfortably sleeping in our beds, it is the fireboss who steals noiselessly away from his home to take up his daily task. Entering the mine, he inspects alone the workings that will soon be filled with men whose safety is in his keeping. Loyal to the responsibilities of his position, he seeks for danger in every place and on every road and travelingway in his district. How many of us give a thought to the faithful work thus performed and offer a word of encouragement to these guardians of the mine?

More Consideration Is Due the Faithful Fireboss

In the past far too little consideration has been given to the faithful work of firebosses. With little thought for the man whose work, time and again, has saved us from permanent injury, perhaps death; and with but a casual consideration of the nerve-trying hours spent by the fireboss as he hastens over his route always conscious that one little mistake or lack of precision on his part may cost a life, we have been too prone to selfishly make light of one who should receive the greatest credit when his work is well performed.

Today, the fireboss is not to be blamed for the light regard in which he is commonly held. He has manfully done his best. He has followed out the instructions of his superiors in office. On his own behalf, he has spent many tedious hours when he should have been at rest, studying to prepare for the examination required to get his certificate. In this attempt, he should receive all the help that it is possible for mine officials to give him. He should be trained and taught in respect to those principles, rules and regulations that are to govern his work.

It is my belief that, as has been suggested by others, every fireboss should be virtually an assistant foreman and clothed with the same authority. In other words, every assistant foreman should be a competent, trustworthy fireboss. The mistake has been made of employing too few of these officials and giving to each, a territory too large for his careful inspection. As a result, the fireboss begins his work too long before the time when men must enter the mine for work; and portions of the mine examined may have developed danger before the men reach their working places.

My opinion is that, as assistant foremen, firebosses should begin their examination of the mine within two hours of the time for the men to enter the mine. Having completed their several inspections, these men should meet at the shaft bottom or mine entrance, make out their reports in the book kept for that purpose and then report verbally to the foreman.

Firebosses Act as Assistant Foremen During the Dayshift

After breakfasting, each assistant foreman should return to his section of the mine where he should have full charge and inspect the work of each man in the section. His authority should be equal to that of the mine foreman in every question regarding the safety of the men in his section.

It is my earnest belief that an organization of this kind would mean a successful operation in every department of the mining game. Such a plan would give the fireboss every chance he could desire. Each assistant foreman (fireboss) would then be in a position to know the exact condition of every place in his district and he could rightly be held responsible to the foreman for the safety of his men as well as keeping the coal moving and maintaining his share of the daily output of the mine. It is true that too often the fireboss is regarded as a mere gasman and, after making his morning examination of the mine is given other work to perform. No greater mistake could be made in reference to mine safety by officials in charge.

Thomas, W. Va. Ben.

Qualifying Mine Officials

What is not specified in the Mining Laws of the State of West Virginia has been recognized, in the laws of most of the coal-producing states, as a requirement that is needed to qualify mine inspectors for service.

READING the excellent letter of Richard Bowen, *Coal Age*, Dec. 2, p. 1139, regarding the training of mine officials, particularly the training of assistant foremen by their superiors in office, I have been more than ever impressed with the necessity of our mining laws being more specific in their treatment of the qualifications required of all mine officials, from inspector and superintendent to fireboss.

In regard to the qualifications required to make a man eligible to the position of mine foreman, or assistant foreman, these are too well known and have been stated too frequently in *Coal Age* to make their repetition necessary here, and the same is true of the position of fireboss.

Most mining laws require that candidates for the position of foreman, assistant foreman or fireboss shall pass an examination before a State Examining Board appointed by the governor, in order to prove their competency to fill these positions. But few, if any, of the mining laws of the different states require the examination of candidates for the position of mine superintendent. In my opinion, this is fully as important as the examination of the other officials just mentioned.

Mining Laws Should Be Revised

It is my belief that the mining laws of all the leading coal-mining states should require the examination of candidates for the position of mine superintendent, which should be of a higher grade than that given to mine-foreman candidates. The questions asked should be of a nature designed to show whether or not a candidate for the position of superintendent has a knowledge and experience that make him a competent man to place in charge of a gaseous or a non-gaseous mine.

At the present time, we find many unqualified men filling this posiiton of trust and responsibility. There are numerous instances where the mine superintendent does not understand the simple rudiments of mining and is unable to advise his foreman in matters pertaining to the future development of the mine. The attempt of an incompetent superintendent to do this has often proved a great handicap to a good foreman, who is unable to adopt the unpractical ideas presented by his superintendent.

On the other hand, we are glad to say there are many mine superintendents who are competent and qualified in every way for the position they hold. Their counsel and advice have proved of great value and assistance to foremen who have been called to face difficult problems in the development and operation of the mine. Many of these problems involve conditions that must be carefully considered and thrashed out by men of experience in a mutual conference. But, where the superintendent has little or no practical experience underground, it is impossible for a foreman to receive help in this way.

The West Virginia Mine Law

Strange as it may seem, the West Virginia Mining Laws do not require the examination of its state mine inspectors, neither the chief of the Department of Mines nor the district inspectors who are appointed by him. Regarding the chief of the Department of Mines, the West Virginia law (Sec. 4) does require that he shall be a male citizen of the state, a competent person having at least eight years' experience in the working, ventilation and drainage of coal mines in the state, and a practical and scientific knowledge of all dangerous gases.

Regarding the district mine inspectors, the law requires (Sec. 9) that the district inspector shall be a citizen of the state, of good moral character and temperate habits, have a practical knowledge of mining and the proper ventilation and drainage of mines, also a knowledge of the gases met with in coal mines, besides having at least six years experience as a miner or otherwise employed underground.

Neither in reference to the chief inspector nor a district inspector does the West Virginia law state that the inspector must pass an examination to prove his competency and practical knowledge of mining. My suggestion is that this law should be revised or amended in such a manner as to require the examination and certification of all mine inspectors employed by the state.

Although the West Virginia law does require (Sec. 63) that a mine foreman shall hold a certificate of competency granted him by the Department of Mines after he has passed a satisfactory examination, no such requirement is mentioned regarding an assistant foreman. The law also requires (Sec. 58) that the fireboss shall hold a certificate of competency granted him by the Department of Mines after examination.

Instead of the examination of mine foremen and firebosses being given by the Department of Mines, may I suggest that the law should require the appointment of a Board of Examiners comprised of the chief of the department of mines and two miners, to be appointed by the governor of the state. The law should state that the two miners shall be of good character and have an ability that will enable them to judge correctly the merits of all applicants as to their fitness and competency to fill the positions they desire.

Allow me to suggest, further, the appointment of a similar Board of Examiners for state mine inspectors, such board to be composed of a mining engineer not connected with any mining corporation, one operator and one miner, all of whom shall be thoroughly practical men, of good character and sound judgment.

These suggestions are submitted in a spirit and with a desire for the general benefit of mining conditions in the state. This is a progressive age and our ideas should be correspondingly progressive. Tact and ability are required to compete successfully with the growing complications in coal mining.

John E. Ambrose,
Fairmont, W. Va. Mining Engineer.

Inquiries Of General Interest

Observed Breathing of a Sealed Section of a Mine

What is aptly termed the "breathing" of a mine or sealed section of the workings the result of numerous causes and conditions some of which may be obscure to the casual observer.

IN the mine where I am employed it has been the custom to seal off abandoned sections. One of these located on the third and fourth north off the main west entry contained some twenty rooms that had been driven up and finished. The roof had fallen and the section was sealed, except one end of the panel left to be sealed later.

According to our custom, tests have been made each day to discover whether the air is being drawn in or blown out through the seal. I have been greatly interested, recently, in watching the results of these tests. For nine consecutive days they showed that air was being drawn into the enclosure behind the seal. Then, for five consecutive days following, the tests showed that air and gas were being forced out of the enclosure. All the tests were made at practically the same time each day; and there appears to be no reason for the observed change of condition within the sealed section. I want to ask, What might have been the cause?

Bruceville, Ind. Fireboss.

This correspondent should have submitted a sketch of the section of the mine to which he refers, showing the general circulation of air in the mine and stating whether the ventilation is by the blowing or the exhaust system. The sketch should also show the position of the stoppings sealing off the abandoned section and the end of the panel, which it is said, is yet to be sealed.

Without this information and a knowledge of other possible conditions no accurate conception can be had that would suggest the true cause of the observed change that took place in the breathing of this section. It is necessary to know to what extent the mine is generating gas and whether this comes from the coal, the roof or the floor, the nature of the roof and floor and the condition of the overlying strata, which may or may not be broken to the surface.

In case the roof-breaks extend to the surface, the question of the system of ventilation employed, whether blowing or exhaust, is of the utmost importance. If the breaks reach the surface, barometric changes will have their effect to alter the breathing of the sealed section in the mine.

The fact that one end of the panel is yet to be sealed raises the question of the possible effect of temperature changes on the breathing of the enclosed space. Again, it is quite possible that roof falls or a general subsidence of the roof over this area may explain the blowing out of the air and gas

during the last five days in which the observations were taken.

When a section is first closed off by sealed stoppings it is possible, in the exhaust system of ventilation, for the air and gas within the enclosure to be drawn out by the depression existing in the mine, which is then ventilated under a pressure below that of the atmosphere. Particularly is this the case if the roof is broken to the surface; but the reverse of this would take place where the blowing system of ventilation is employed, which we assume is probably the fact in this case.

It may be remarked that changes made in the circulation of the air by splitting the current, or otherwise, whereby the mine pressure in the neighborhood of the sealed section would be reduced would explain the change in the breathing of the section from drawing in to blowing out. With the meager information at hand, however, it is only possible to offer suggestions any one of which may be applicable to the case in hand. *Coal Age* will be glad to have this matter further discussed, and hopes that more explicit details will be given to aid in the discussion.

Examination Questions Answered

Examination for Mine Foremen, Eleventh Anthracite District

(Selected Questions)

QUESTION — *What is the area, perimeter and rubbing surface of an airway 14 ft. 6 in. by 6 ft. 9 in. and 3,500 ft. long? What quantity of air would be passing if the anemometer registers 542 ft per min.?*

ANSWER—The sectional area of this airway is 14.5 × 6.75 = 97.875 sq.ft. The perimeter of the airway is 2(14.5 + 6.75) = 42.5 ft. The rubbing surface is 3,500 × 42.5 = 149,000 sq.ft.

Assuming the reading of the anemometer is an average reading for the entire cross-section of the airway, the quantity of air in circulation is 97.875 × 542 = 53,049, say 53,000 cu.ft. per min.

QUESTION — *Describe the various methods of propping and timbering slopes, gangways and chambers in anthracite mines.*

ANSWER—Slopes having little or no inclination are timbered in the usual manner by setting posts or double timbers consisting of a crossbeam or collar supported by one or more posts, or resting in hitches cut in the rib of the entry. The method used and the style of timbering will vary with the nature of the roof, floor and coal and the inclination of the seam. Where the roof is particularly frail or tender, it will be necessary to use lagging above the collars and to set the timber frames closer together. Post timbering is commonly used at the faces of chambers or rooms, and good cap-pieces or booms are placed over the posts and against the roof in such a manner as to provide the greatest support for the roof slate. With a soft bottom, the posts are often stood on foot-pieces to prevent their sinking into the floor when they take the weight.

All posts and timber frames set on inclines should be given a slight inclination up the pitch from a normal position in the seam. This is termed "undersetting." The amount a post is underset will vary with the inclination of the seam and its purpose is to overcome the tendency of the roof to slip down the dip, which would loosen the posts if they are set perpendicular to the roof and floor. On the other hand, the slip of the roof downward will tighten a post that is underset.

The timbering of a steep slope includes giving the track proper support to prevent its sliding down the slope. This is accomplished by the use of occasional long ties that are hitched into the rib on each side of the track. At other times, short braces or struts are inserted between the track ties and the ribs, at short intervals, which has the same effect. When the inclination of a slope approaches the vertical the slope is timbered with square sets in the same manner as a shaft.

QUESTION — *If a water-gage reading is 1.95 in. what pressure per square foot does it indicate, and what would be the horsepower if the quantity of air produced is 150,000 cu.ft. per min.?*

ANSWER — A water-gage reading of 1.95 in. corresponds to a pressure of 1.95 × 5.2 = 10.14 lb. per sq.ft. For a circulation of 150,000 cu.ft. per min., against a pressure of 10.14 lb. per sq.ft., the horsepower on the air is

$$H = \frac{Qp}{33{,}000} = \frac{150{,}000 \times 10.14}{33{,}000} = 46 + hp.$$

QUESTION—*At what point in the mine would you expect firedamp to be standing and how does firedamp appear in a safety lamp?*

ANSWER — Firedamp is any inflammable or explosive mixture of mine gas with air. Ordinarily, the mixture is lighter than air and accumulates at the faces of pitches and in rise workings in mines generating gas, provided the air current is not of sufficient volume and velocity to dilute the gas and sweep it away thereby preventing the formation of a firedamp mixture.

When a safety lamp is exposed to firedamp and the latter enters the combustion chamber of the lamp, the first effect is to produce a slightly luminous flame cap surmounting the wick flame, which is somewhat lengthened owing to the presence of the gas. The length of the flame and the height of the cap will vary with the percentage of gas present. As this increases, the volume of the flame is enlarged, causing it to completely fill the lamp. In other words, the lamp "flames." With a still higher percentage, or when the gas is "sharp," little air being present, a crackling sound is often heard and light explosions occur within the lamp.

Tenth Anthracite District

QUESTION—*Of what elements is air chiefly composed?*

ANSWER—Pure atmospheric air at the surface of the earth is found to contain 20.9 per cent of oxygen and 79.1 per cent of nitrogen. Normally, pure air contains a trace (0.03 per cent) of carbon dioxide.

QUESTION—*Express the chemical composition of the following gases by means of the usual symbols: carbon dioxide, carbon monoxide, methane and ethane.*

ANSWER—The chemical symbol of carbon dioxide is CO_2, indicating the chemical union of 1 atom of carbon with 2 atoms of oxygen. The chemical symbol of carbon monoxide is CO, indicating the chemical union of 1 atom of carbon with 1 atom of oxygen. The chemical symbol of methane is CH_4, indicating the chemical union of 1 atom of carbon with 4 atoms of hydrogen. The chemical symbol of ethane is C_2H_6, indicating the chemical union of 2 atoms of carbon with 6 atoms of hydrogen.

QUESTION—*A ventilating fan is producing a water gage of 2 in., at a speed of 60 r.p.m.; what should be the water gage when this fan is running at a speed of 40 r.p.m.?*

ANSWER—Assuming that there is no change in the circulation of the air in the mine, the quantity of air produced by the action of a centrifugal fan is generally taken as varying directly as the speed or number of revolutions per minute of the fan, and the pressure or water gage as the square of the speed. On this basis, the volume ratio is equal to the speed ratio, and the water-gage ratio is then equal to the square of the speed ratio. Since the speed ratio in this case is 40/60 = 2/3 and its square 4/9, the required water gage, at a speed of 40 r.p.m., is 4/9 × 2 = 8/9 in.

In actual practice, however, the quantity of air in fan ventilation falls short of this estimate, and likewise the water gage. The fourth power of the speed, in practice, has been found to vary about as the fifth power of the quantity, which makes the eighth power of the speed vary as the fifth power of the water gage. In other words, the water gage does not fall as rapidly as the speed decreases. A decrease in speed from 60 to 40 r.p.m. will show a fall in water gage from 2 in. to 1.04 in., or say 1 in.

Anthracite Operators Refuse to Grant Concessions Demanded by United Mine Workers

Operators Declare That While Wages Are Falling and Work Is Irregular the Anthracite Mine Workers Have High Wages and Steady Work and Should Feel Abundantly Well Satisfied with Their Contract

At a meeting of the joint committee of anthracite operators and representatives of the United Mine Workers in the anthracite field held in Philadelphia Dec. 23 the representatives of the operators presented their formal answer declining the proposal of the mine workers to adjust the alleged "inequalities" in the contract of Sept. 2, 1920, so as to give the mine workers an additional increase of approximately 13 per cent in wages, with a minimum of $6 a day for labor.

The reply of the operators is as follows:

"After a series of conferences, held at the request of the President of the United States, for the purpose of discussing certain 'inequalities' which you claim exist in the award of the U. S. Anthracite Coal Commission, you asked at our last meeting that your request for the adjustment of these 'inequalities' be construed as a demand for a general increase of approximately 13 per cent to contract miners, with the establishment of a minimum day wage of not less than $6 for an eight-hour day for day workers, and that a definite reply be made by the operators to your demand for a reopening of the award of the U. S. Anthracite Coal Commission.

"We have carefully considered your proposition and herewith make reply. If in the application of a general wage award such as that made by the U. S. Anthracite Coal Commission there be individual cases of inequality, so far as such may be found to exist we stand ready to agree with you on a constructive remedy. So far, however, as the question of reopening the award is concerned, we must definitely decline your proposition, for the following reasons:

Award of Commission Intended To Be Final Till 1922

"(1) The award of the U. S. Anthracite Coal Commission was a final disposition of wage matters in the anthracite region for the period of two years from April 1, 1920, and under the terms of submission its findings were written into an agreement, effective as of that date, which constitutes a binding contract upon both parties subscribing thereto.

"The commission represented the three parties at interest, viz., the mine workers, the operators, and the public. The repudiation of this award by the operators and miners alone would be a breach of faith with the public, which was a party to the submission. The operators decline to be a party to an agreement which would, in effect, be a compliance with demands which, after full consideration, were denied by the commission.

"For almost twenty years wages and working conditions in the anthracite industry have been governed by agreements. At the termination of the contract ending March 31, 1920, there was a failure to reach an agreement. After eight weeks of negotiation the Secretary of Labor invited the negotiating committee to meet with him in Washington. His offer of mediation was accepted by the operators, but declined by the miners. Thereupon by common consent the matters at issue were submitted to arbitration by a commission appointed at the instance of and by the President of the United States, with the condition that the findings of such commission should be written into an agreement which would be retroactive to April 1, 1920.

"This commission sat for five weeks and did not adjourn the hearings until each side had completed its testimony and argument. There can be no contention that full consideration of the merits of the matters at issue was denied, and both parties, in accordance with their previous agreement, are in honor bound to adhere to the terms of the award. If results obtained by an arbitration undertaken under such circumstances, prosecuted with so much effort, and finally and formally accepted by both sides in accordance with the terms of the submission, are to be so lightly regarded, it is plain that there can be no reliance on arbitration.

"After years of unsuccessful efforts on the part of your organization to obtain through an agreement a formal recognition of the United Mine Workers of America by the anthracite operators, the award of the commission granted this demand. Recognition was granted in the face of former denials largely because of your representation as to the distinct autonomy of the anthracite districts; and yet one of your first acts after the agreement was signed has been to demand, with insistence, its abrogation, on the plea that it is not in accord with the wage rates in the bituminous field.

"Collective bargaining is founded on the principle that both parties shall in good faith observe the terms of their agreements, and in the anthracite field it must, in order to be successful, take cognizance of the conditions in that industry as they affect the earning capacity of its employees, and their health and welfare, as compared with conditions in other industries similarly located and constituted. It cannot be made to depend upon rates paid in the bituminous industry, where conditions are vitally different.

Cost of Living Has Steadily Lowered Since Award

"(2) In the judgment of the operators no condition has arisen since the award of the commission, either in the general wage structure of the country or in the cost of living, which has produced a burden upon the anthracite workers. On the contrary, many classes of workers in other industries have voluntarily accepted a reduction in wages and the cost of living has steadily declined.

"The wage rates established by the U. S. Anthracite Coal Commission were substantially equal to and in many respects higher than the wages paid for similar conditions of employment in surrounding industries. The hourly rates of earnings established by the commission provided increases for inside employees averaging 132.8 per cent over 1912 (contract miners' earnings increasing from 42.5c. per hour to 99.2c.); for outside employees an increase of 167.5 per cent (common laborers' earnings advancing from 18c. per hour to 52.5c.), and for all employees an average increase of 138.6 per cent (average hourly earnings for all employees advancing from 30.3c. per hour to 72.3c.).

Award Now More Favorable Than When Made

"Since the date of the award there has been a marked and continuing decline in business activity, which has decreased the opportunity for employment in other industries. The anthracite industry has not as yet been affected by those adverse conditions and the terms of the award are more favorable to the employees at the present time than they were at the time the award was made. It is highly important that the stability of the industry should be maintained in order that the opportunity for steady employment may continue uninterrupted.

"It is therefore a time for constructive effort on the part of employers and employees in the industry, a time for harmony and co-operation rather than of discord and of insistent demand for concessions which cannot be granted, for the reasons above outlined."

The document is signed by F. H. Hemelright, C. F. Huber, W. J. Richards and S. D. Warriner.

Calder Committee Raid Fails to Yield Evidence of Wrongdoing by National Coal Association

Straightforward Evidence of J. D. A. Morrow Establishes Propriety of Association's Activities — Investigators Not Satisfied with Explanations of High Prices — Calder Still Seeks Graft to Justify Nationalization Scheme

WASHINGTON CORRESPONDENCE

IF THE unexpected visit of representatives of the Calder Committee on Reconstruction and Production to the offices of the National Coal Association resulted in the discovery of any evidence of wrongdoing on the part of the association, it was not disclosed during the hearings which followed. David Wing, a consulting economist retained by the committee; Walter Y. Durand, detailed to the committee by the Federal Trade Commission, and other assistants are continuing a search of certain of the association's records of which the committee took temporary possession.

J. D. A. Morrow, vice-president of the association, who is in charge of the Washington office, was subjected to a grilling examination by members of the committee and by its counsel. His straightforward replies and explanations evidently satisfied the committee that in many respects, at least, their suspicions had not been well founded. At least one member of the committee referred to him as having been an excellent witness, while many in attendance regarded his explanation as having established the entire propriety and legality of the National Coal Association's activities.

FAIL TO PROVE IMPROPER INFLUENCE

The effort of the committee to develop that the weekly coal reports of the U. S. Geological Survey had been influenced by the fact that the National Coal Association contributed $500 per month for their maintenance during the interim between the termination of the Fuel Administration and the beginning of the next fiscal year was anything but convincing. The determined effort to make something of the fact that the National Coal Association has contributed this $500 monthly apparently has fallen flat.

Among the papers found in the National Coal Association's file was the correspondence with one of the local coal-trade bureaus of Illinois in regard to the reporting to the Survey of production figures by districts in that state. This bureau had declined to give any returns whatsoever unless the figures for Illinois were given as a whole, rather than by districts. It was brought out that the Geological Survey could do nothing but accede to the demand. As the furnishing of the returns is entirely voluntary, the Survey preferred taking what the local bureau would give rather than get no returns from it whatsoever. It also was made clear that there had been no secret made of the contribution by the National Coal Association. The fact was published generally at the time and the entire transaction is explained in detail in the annual report of the director of the Geological Survey, submitted at the opening of the present session of Congress.

The discovery on Mr. Morrow's desk of a copy of a letter written to Senator Edge by the director of the Geological Survey led to insinuating questions as to whether the National Coal Association is furnished with copies of the Geological Survey's correspondence with members of Congress. Instead of anything improper being shown, it has been developed that the release of the letter was obtained in a perfectly ethical manner from Senator Edge's secretary. A number of other bubbles were pricked in the same manner.

The committee evidently expects to use the fact of the refusal of the Illinois bureau to furnish figures except those of its own liking as its main argument in contending that the returns should be compulsory, rather than voluntary. Incidentally, in that connection the action of the local bureau was not upheld by the National Coal Association. The correspondence showed clearly that the position of the National Association was all that the committee could ask.

Numerous attempts were made by Mr. Morrow, George H. Cushing and by Colonel D. B. Wentz to explain the high prices which prevailed until recently. The committee quite evidently is not satisfied with any explanation that has been made and it will not be surprising if it goes further into the matter. The suggestion has been made that the committee would have developed more interesting information had it seized the books of some of those who stand between the producer and the ultimate consumer.

In connection with the hearing a number of rumors are afloat. It is not clear to many why the Calder committee is delving into the investigation already begun by Senator Frelinghuysen's committee. There is a rumor that Senator Calder's statement with regard to the nationalization of coal mines had proven displeasing to President-elect Harding. Should Senator Calder be able to develop that the coal trade is honeycombed with graft and that the public is being systematically mulcted in a wholesale manner, it would furnish some basis for his nationalization statement. The rumor is afloat that this is his endeavor.

It also is alleged that some inspiration came from within the Federal Trade Commission and from another semi-public interest which is unfriendly to the National Coal Association.

CONTRACTS UNFILLED BECAUSE OF PRIORITY ORDERS

George H. Cushing, general manager of the Wholesale Coal Association, with offices in Washington, the first witness called by the Calder committee on Tuesday, Dec. 21, was questioned by Chairman Calder as to the membership of the association, its revenues and its work. Mr. Cushing said it had about six hundred members, the dues were from $25 to $100 a year and the yearly receipts were about $45,000. It was organized at the instance of the Fuel Administration in 1917 to assist the administration in fuel matters. It had been reorganized in 1918 for the purpose of studying the merchandising of coal and to get a constructive coal program. Asked about the breaking of contracts, Mr. Cushing said he believed in the fulfillment of contracts, but that

priority orders of the Interstate Commerce Commission diverting coal to New England and to the Lakes, had prevented the fulfillment of contracts. Mr. Cushing said the price of coal has been gradually coming down, and consumers could now name their price.

"That is interesting to us," said Senator Kenyon, of Iowa, who said all the evidence before the committee tended to show that prices were high. Senator Edge, of New Jersey, said he had been informed by a consumer that he was paying $21 for coal from Pennsylvania and wanted to know the reason for the difference as compared with the mine price of $4 and $4.50.

Mr. Cushing said high prices were not unusual in October, as there was a panicky market and there might have been isolated cases of small quantities selling at high prices. Senator Calder remarked that the War Department had paid $11 a ton for coal in November.

As early as April, Mr. Cushing said, wholesalers sought to prevent inordinate prices, but their efforts were fruitless, as public officials had continually harangued the people about an impending coal famine, which spread panic among buyers, who thereupon purchased regardless of their needs and regardless of prices. Large consumers gave commissions to buy coal and sent agents to compete with them. Contracts were set aside and priorities increased alarm among buyers. Those who opposed exports overstated the situation and placed undue emphasis on labor conditions in England. The situation disorganized the wholesalers, who were played upon by temptations caused by alarming statements of fuel shortage by federal and state officials.

"Did you state during this time that there was plenty of coal and that prices would go down?" asked Senator Edge.

"I did" replied Mr. Cushing. "Beginning in April and throughout the summer I issued statements and made public addresses all over the country to the effect that there was plenty of coal and no shortage." He added that the Executive Committee of the association issued statements that the alleged shortage of coal was without foundation and advising the members to avoid high prices.

Denies Combine Controlled Bituminous Output

In reply to Senator Edge he said that some wholesalers did sell at high prices, that the association could not control individual actions, as the members could not get their coal under contract and had to compete with purchasing agents of the government and of consumers in obtaining coal. He said that no large combinations controlled the output, as there was no dominant influence in the bituminous field.

Asked as to what government agencies alarmed the people over a coal shortage Mr. Cushing named the Railroad Administration, the Interstate Commerce Commission, the Council of National Defense, the Geological Survey and the Frelinghuysen coal committee of the Senate. If the country had been free from these alarming influences, Mr. Cushing declared, there would have been an equitable distribution of coal and at fair prices. But instead the people were thrown into a panic and bought coal regardless of their immediate need and of price. He said a public utility in central New York had an assigned-car order for two cars a day and also bought 30,000 tons spot.

"Do you approve of priority orders?" asked Senator Edge.

"I do not," was the reply. "They did not add a pound of coal to the production. The Interstate Commerce Commission was panic stricken in issuing these orders."

"Can we announce as coming from your association that if firms purchase coal under contracts in the old way, covering their needs, and there is no competition in the field, that coal will not be beyond the normal price, considering additional cost of labor?" asked Senator Edge.

"Until we have another war and another explosion and disorganization of business, the people of the country may forget that there is a coal problem and disregard the possible danger of a fuel famine or runaway prices, provisioned on the statement that the government does not kill the transportation system," said Mr. Cushing. He said he had more doubt about the 1920 Transportation Act than about the ability of the coal supply to meet the country's needs. He declared that the Transportation Act did not offer an incentive to build new railroad mileage. He declared that a criminal law was needed rather than diseretionary powers of the Interstate Commerce Commission, as the railroads were told by the commission what they could or could not do. The country needed protection against the immorality of railroad men. He would exclude railroad mechanics from such a law, and let anybody build a railroad, provided it was not against the public interest.

Mr. Cushing referred to a questionnaire which had been sent out by the Council of National Defense as to coal requirements, but said that it was not published because a great many who answered were not telling the truth.

F. T. Miller, counsel of the committee, asking about coal exports, said that during July, August and September coal was exported at Tidewater at the rate of forty million tons a year, but Mr. Cushing said exports were only about twenty million tons.

Senator Kenyon asked if the wholesalers could not make contracts with operators and do away with competitive buying. Mr. Cushing said it could be done, but that during the last few months people were wildly buying coal. He instanced the fact that Henry Ford employed ten agents to buy coal for his Detroit plant. Three of these agents did not know the identity of each other in Kentucky and bid against one another and raised the price of coal one day from $9 to $11 a ton. Manufacturers of central New York had placed orders with five agents who also competed against each other.

Senator Edge suggested a government regulation prohibiting the purchase of more than the requirements of an individual or firm. Mr. Cushing said this would go against the theory of Senator Frelinghuysen, who advocated a five months' supply. He estimated there was in storage now between forty-five and fifty-five million tons—a thirty days' supply—which would average the year around sufficient to meet every possible need. He was not opposed to putting the price down to a low figure.

Senator Calder asked Mr. Cushing if he had advised his members not to answer a Department of Justice questionnaire, producing the following telegram sent by Mr. Cushing July 30 last:

"Am advised by competent counsel you need not answer Department of Justice questionnaire. Important you do not disclose name of operator or his price, as it will prove detrimental to your business. Give your own business only, if you can do so. Please disseminate."

Uncertainty Concerning a Reasonable Price

Mr. Cushing said he had sent this telegram to the Board of Directors after consulting counsel—Messrs. Stansfield and Levy—and after consultation with Judge Ames of the Department of Justice and Attorney General Palmer, in defense of the legal rights of members of the association on a legal point that was not definitely clear. He had asked Judge Ames what was meant by a reasonable price and also the definition of a crime under the Lever law, but the Department of Justice could not tell what was a reasonable price so as to avoid incrimination of the members. He said the coal men had been charging a margin which they thought was within the law, but there were legal questions about it, and as the price a grand jury might fix might be below this figure he advised the members not to become informers against the operators. He said the Department of Justice had stated that it had exceeded its rights in the case.

Senator Edge thought the telegram was an invitation to keep up prices, but Mr. Cushing said the tendency was the other way, the members merely standing on their legal rights. Mr. Cushing said he told Attorney General Palmer he was sending the telegram and that Mr. Palmer said it was entirely proper. As there was uncertainty about the law he did not think the members should be disgraced by criminal proceedings. In reply to Senator Calder Mr. Cushing said he had requested the members of the association to submit reports on prices, which he said he would submit to the committee.

Mr. Cushing favored an anti trust law for railroads instead of the Interstate Commerce Commission and said the commission should be abolished or its functions divided so that there would not be the present situation, the com-

mission acting as an executive, legislative and judicial body. "When railroads charged rates as they pleased, we had reasonable rates and transportation; when we stopped that we had unreasonable rates and no transportation," declared Mr. Cushing. He said that in the 113 years' history of the coal trade there never was a threat of a shortage.

Mr. Calder asked about unsold American coal on the French market and if it would be sent back to this country. Mr. Cushing said he had heard that there were 250,000 tons unsold in Europe, which has been sent on speculation during the English strike.

A sensational turn was developed when, in reply to Senator Edge as to where the coal profits went, Mr. Cushing said, "Everywhere; operators, wholesalers, and in some cases it went to officials of the U. S. Government who went into the coal business; in other cases it went to railroad men who confiscated coal and resold it to themselves and divided the profits."

"Is that in violation of the Lever law?" asked Senator Edge.

"I don't know," was the reply.

"Who are the government officials?" asked Senator Kenyon.

Mr. Cushing asked that that be considered a privileged communication, as he would not like to reveal it.

"What part of the government are they in—legislative, executive, or what; army or navy?" pressed Kenyon.

Mr. Cushing said he did not care to reveal names publicly, as the matter had been passed, and no good would come of it; but Senators Kenyon, Edge and Calder insisted that the public was entitled to know if public officials had profited. Mr. Cushing tried to withdraw the statement but the committee was insistent that he reveal the names, either publicly or in private, and Mr. Cushing promised to inform the committee confidentially, saying, "There is no chance for it to return; it is no use to dig into the grave."

Eagerly Seek Names of Government Profiteers

"If government officials have made profits in handling coal, the people ought to know it," demanded Senator Kenyon. Mr. Cushing explained that the panic over coal unloosened human nature. After Mr. Cushing conferred privately with the committee it was stated that he had told the members that a group of government employees headed by a dollar-a-year man who has since left the government had organized a pool to profiteer in coal and had made as much as $600,000 on a single deal by sharing a profit of $1.50 per ton on 450,000 tons. Railroad men and an army officer were named and cases cited where coal was diverted from its route for private gain or where advance government information was translated into dollars by the exploitation of panic-stricken consumers. In some cases, Mr. Cushing was told, there could be a fifty-fifty split with him if he would make the proper move, and in one particular case he was offered 25c. a ton for himself if he would get 400,000 tons for the persons interested, which would have meant a profit of $100,000, which he spurned.

At Wednesday's session Mr. Cushing told the committee that the coal men had not planned the series of government statements and actions which had caused a shortage panic.

J. D. A. Morrow, vice president of the National Coal Association, was subjected to a severe examination as to its operations and activities before the departments and in legislation.

Fortified by the minute books, financial transactions and correspondence of the association, seized by the committee earlier in the week, Senator Kenyon, of Iowa, quizzed Mr. Morrow unmercifully as to the motives of the association. Preceding this, however, Mr. Morrow explained why he differed from Mr. Cushing as to the coal situation, Mr. Morrow insisting that there had been a shortage and that the Geological Survey figures disproved Mr. Cushing's statement that there was no shortage. Mr. Morrow explained that the association was organized at the instance of the Council of National Defense and co-operated with the Fuel Administration. Mr. Morrow was a dollar-a-year man with the Fuel Administration, in charge of distribution of coal. The price had been fixed by the Fuel Administration men who had nothing to do with coal. Mr. Morrow had had an understanding with Dr. Garfield that he was not to have anything to do with price-fixing.

Senator Kenyon asked as to the membership of the association and its purposes and Mr. Morrow said it comprised about 2,200 of the 7,000 bituminous coal producers. Mr. Morrow ascribed the recent coal situation to lack of cars at the mines and the switchmen's strike, which dislocated coal movement in the principal coal regions of the East for six weeks. Mr. Morrow was questioned also as to the finances of the association and Mr. Miller produced a balance sheet of the association showing its receipts and expenditures for the last three years, commenting on an item of $100,000 for counsel fees.

"Do you attempt to influence legislation?" asked Senator Kenyon.

"No," was the answer. "When there is legislation before Congress which affects the coal industry we endeavor to have the views of the association presented to the proper committee or Senators, so that they may be advised of the situation. We have never lobbied. We only make such representations as can be done in a proper way."

Unwilling to Favor Any One Locality

"Why have the office in Washington? It is not the coal center," commented Senator Kenyon.

Mr. Morrow replied that there had been some discussion of moving the office away, but it might be construed as favoring a special locality, and there also was the need of maintaining quarters in Washington because the association had to handle matters before the Interstate Commerce Commission and the American Railroad Association.

"Do you secure information from operators as to cost of production?" asked Senator Kenyon.

Mr. Morrow said the association in November began to obtain information for 1919 and 1920 with the intention of presenting it to the Calder or any other committee, and expected to present it, showing reports of production and profits of operators.

Senator Calder asked if the association sent its members reports of production and price of other operators. Mr. Morrow said the association did not, although in April, 1919, it had endeavored to obtain from various local associations information as to prices which had been obtained on closed transactions and to give that information to the public for the benefit of the consumer and producer. This information was presented to the Frelinghuysen committee up to November, 1919, and then the government fixed prices and there was no need for the figures.

When government prices were removed in April, 1920, the Department of Justice announced that it would consider the collection and dissemination of such information illegal. The Board of Directors was advised by counsel that it was proper for coal men to obtain this information the same as was done with wheat on the Chicago Board of Trade and cotton on the New York market but that the association decided to discontinue the reports until the courts decided the question.

Senator Edge wanted an explanation of the variation in the price of coal, from $21 and $23 a ton. Mr. Morrow said there was only a small quantity of coal, which was bid for wildly by excited buyers.

"Why do you say a small portion, when in August and September no consumer could get coal for less than $16 to $22?"

Mr. Morrow said the committee had not heard from people who had received coal on contracts at lower prices.

No General Breaking of Contracts by Operators

Senator Edge insisted that contracts were abrogated, and Mr. Morrow admitted that some contracts might have been but that there was no general breaking of contracts by coal producers during the last nine months. He said coal contracts were scrupulously observed, while consumers frequently canceled their contracts when prices declined.

Senator Kenyon asked how it was that the Shipping Board had to pay $16 a ton for bunker coal at Norfolk. Mr. Morrow said the board did not make contracts. He declared the failure of the board to contract for coal was an inexcusable example of mismanagement. Mr. Morrow said the

members of the association were not charging high prices, and if they did he was not responsible for their sales. The highest prices were paid by manufacturing plants.

Senator Calder said that public utilities with contracts could not get a third of their coal yet they could get coal at spot prices. Senator Edge also insisted that it was common knowledge that people could get all the coal they wanted at high prices. Mr. Morrow said the cars were taken away from operators who had contracts and some operators who operated a large number of mines paid bonuses to miners to produce coal for spot sale.

Senator Calder read a letter to the association from a man in Pittsburgh, saying that if public utilities wanted to pay the price they could get coal. Mr. Morrow said public utilities abused the priority order, which was later abolished and there is and was no reason for utilities to stock coal in the Pittsburgh district. The association had nothing to do with prices, blacklisting or contracts.

Senator Calder asked if the members told Mr. Morrow of prices. Mr. Morrow said that they did not.

Quotes Cleveland Speech of Colonel Wentz

Senator Kenyon read several extracts from the speech of Colonel D. B. Wentz, president of the National Coal Association, at the Cleveland meeting last autumn in regard to the work of the association. Mr. Morrow said the association officers had informed Secretary Tumulty in a proper manner of the coal situation and of what the association was doing to correct the situation. He said the association did not favor the creation this year of a Fuel Administrator not from a selfish interest but because such an organization would not remedy the situation.

Quoting Colonel Wentz as saying the association would fight the Lever law and Fuel Administration, Senator Kenyon asked "Your association was against legislation by Congress regulating the coal industry?" Mr. Morrow said such legislation was not necessary. "Your theory is that coal is a private matter?" asked Kenyon. Mr. Morrow said the association opposed coal regulation openly and with legitimate means, as coal in this country would last seven thousand years and control by the government was not necessary.

"So you want to control your own industry, so that abnormal prices may continue?" asked Senator Edge.

"The association does not control the industry; competition will keep prices down," replied Mr. Morrow.

"We are looking for a solution so that past conditions will not recur," said Senator Edge. "Would it be a violation of the Anti-Trust Act if your association controlled 50 per cent of the coal and if you sold with the understanding that dealers to whom you sold could not quote prices beyond a certain maximum?" Mr. Morrow said this would have a strong effect on the situation.

Senator Kenyon, referring to Colonel Wentz's statement of what the association was doing in Washington, asked "was the purpose to influence legislation?" "No," said Mr. Morrow.

Objected to Stipulation on Keeping of Books

Senator Kenyon asked why the association enjoined the Federal Trade Commission from requiring cost reports and Mr. Morrow explained that it was because the commission sought to stipulate the manner in which the coal companies kept books, which was essential to the management of their business. They could not keep two sets of books, as they have been required under the commission's order. The commission also sought to require a different system of book accounts than those required under the revenue laws, although the Treasury and commission could not agree on one form. Many of the coal companies said the matter should be taken up by the association on behalf of the industry, and the association advised the commission the suit would be filed questioning their authority to obtain the reports, and the District of Columbia Supreme Court sustained the injunction. The question of disclosing profits did not enter into the suit.

In reply to various questions as to actions taken by the association, as read by Senator Kenyon from the minute book of the association, Mr. Morrow said the committee acted on current matters, rendering its opinion, but made no concerted effort to put statements in the hands of members of Congress. Its comments in letters to members on various phases of legislation also was a matter of deduction from current events.

Secretary Reed of the National Coal Association was examined as to the finances of the association and was asked about an item for salaries of clerks of the Geological Survey in compiling coal statistics. Mr. Reed explained that the association had contributed to the employment of clerks in the Survey in the publication of coal statistics. For this $400 a month was given but no allotments for this purpose had been made since June 30. The payments were made by arrangement with the Survey, which had no funds to continue these statistics, which were considered of value to the public. He admitted in reply to Senator Kenyon that it probably was not good policy for a government to accept outside contributions, and Senator Kenyon remarked that Congress had stopped the Rockefeller Foundation from paying clerks in the Agricultural Department.

Mr. Morrow, asked as to the opposition of the association to an embargo on coal, said it was based on the ground that a single industry should not be singled out for an embargo. Senator Edge, however, said that coal entered into the daily life of the people, and said that while there was a shortage of coal the association had opposed an embargo. Mr. Morrow said it was important to continue the export of coal to foreign countries who relied on America for coal. Senator Edge was inclined to agree that an embargo against a single industry was unfair, but added that there might be some situation justifying unusual remedies.

New England Consumers in Competition

Senator Calder said that Tidewater coal for domestic use could not be obtained because the facilities were all used for export, and Mr. Miller said that New England bought its coal in competition with export coal. Mr. Morrow said this was not true, as the New Englanders competed among themselves.

Senator Kenyon asked as to the association paying the clerks of the Geological Survey to obtain coal figures and Mr. Morrow explained that the offer of the association to the Survey to do this was accepted when there were no funds of the Survey for this purpose and it was considered important to the public that the figures be continued. The association made no request as to how the work was to be done. "Do you think that is a good principle?" asked Senator Kenyon. "No," said Mr. Morrow, "but if the figures are of vital concern to the people they should be continued even by private subscription."

Senator Kenyon produced a letter from an Illinois operator objecting to the giving of the working time by Illinois districts, and said that the Survey had changed the report so as to include the working time for the state only and not by districts. "The change was not made at our request" said Mr. Morrow. He said the relations of the association with the Survey were such as to permit cordial co-operation but were not improper.

"Did you try to secure the passage or defeat of bills?" asked Senator Kenyon, referring to action taken by the association on various measures. "A great many of those resolutions are perfunctory in the form of registering our position. We have not engineered propaganda in behalf or against bills. We do not send letters or interview Congressmen. Our work is done in a proper way."

Colonel D. B. Wentz, president of the association, was called to explain why the War Department bought coal at $11 a ton. Colonel Wentz explained that Secretary of War Baker had ordered coal purchased at that price. None of the coal was bought from mines in which Colonel Wentz was directly or indirectly interested. He said the War Department insisted, against his advice, on buying large quantities of coal in September at high prices, when if the order had been spread over a longer period the coal could have been obtained more cheaply.

On Sept. 16 last, Colonel Wentz said, he was one of a number of coal men who had been asked by the department to purchase a million tons of coal, the government fixing its maximum price at $11 a ton and allowing a fixed com-

mission of 5c. a ton. Colonel Wentz said he advised the War Department representative to buy only a little coal and then buy a little more later, to benefit by receding prices. Immediate purchase was insisted on, however, and the coal was obtained in the open market at the then prevailing prices. Colonel Wentz said the coal of his mines had sold during the last few months at an average price of $3.50 a ton.

Colonel Wentz was asked if he had heard of government officials profiteering in coal. He replied that he had heard of instances but had no personal knowledge on the subject.

Efficiency of Railroads Greatly Increased Under Private Operation

IN the nine full months since the Government turned back the railroads to their owners on March 1, according to Thomas DeWitt Cuyler, chairman of the Association of Railway Executives, the railroad companies under private operation have:

(1) Increased the average movement per freight car per day 6.3 miles—from 22.3 to 28.6 miles.

(2) Increased the average load per car 1.7 tons—from 28.3 to 30 tons.

(3) Made substantial reduction in the number of unserviceable locomotives.

(4) Reduced the accumulation of loaded but unmoved freight cars from 103,237 on March 1 to 21,991 on Dec. 3, of which only 6,386 were detained because of the inability of the railroads to move them.

(5) Relocated approximately 180,000 box cars from the East to the West for the movement of farm produce.

(6) Relocated approximately 180,000 open-top cars from the West to the East to keep up the production of coal.

(7) Moved the third highest coal production in the history of the country.

(8) Spent over $500,000,000 extra on improving the maintenance of tracks, bridges, cars and locomotives.

(9) Contracted to spend about $250,000,000, largely out of earnings, for additions and betterments to promote the movement of cars.

(10) Made arrangements to purchase approximately 50,000 new freight cars, 1,500 new locomotives, and 1,000 new passenger cars.

(11) Begun the reconstruction of thousands of old cars.

(12) Moved—with a deteriorated plant, under disturbed labor and business conditions—the largest volume of traffic ever known in a single year, with the highest efficiency yet achieved, and with a minimum addition to the value of the property on which the public has to pay a return through rates.

THERE WAS A decrease of 5,053 cars, or approximately 252,650 tons, in coal handled by the Chesapeake & Ohio Ry. during the month of November as compared with the month of October, 1920. While the decrease was partly attributable to several holidays, a serious congestion also was a factor in lowered loading. Cars loaded in the various districts for the two months were as follows:

District	November	October
New River	10,502 6	11,455 0
Kanawha	10,462.7	11,205.7
Coal River	4,581 4	5,194 0
Logan	16,245 8	18,892 4
Kentucky	5,413.2	551 4
Totals	47,205.7	52,258 5

DURING THE LAST fiscal year the Bureau of Mines turned into the Treasury the following miscellaneous receipts:

On Account of—	Amount
Royalties from coal mined on leased Government lands	$25,584 93
Fees fur tests of explosives	5,687 00
Fees for tests of mine lamps	78 50
Fees for tests of explosion proof motors	200 00
Fees for assays of ore	459 75
Fees for coal analyses	2,154 00
Sales of publications	14,645 70
Sales of old worn out material	1,350 79
Fees for copies of records	24 55
	$50,185.22

Quotations on Bunker Coal in Foreign Ports as of December 1

WILLARD, SUTHERLAND & CO., INC., bunkering contractors for coal and oil, issue the following quotations on bunker coal in foreign ports as of Dec. 1. They announce that these quotations are simply an indication of prices current at the time the lists were made up and are subject to change or withdrawal without notice.

Adelaide	44s. to 49s., according to point of delivery
Aden	155s., Indian or South African. 210s., Welsh coal.
Albany, Australia	54s
Algiers	150s.
Alicante	210 pesetas.
Amsterdam	80 50 guilders.
Almeria	Upon application
Antwerp	100s. to 135s., according to quality.
Azores	165
Bahia	242s., 6d
Bahia Blanca	200s.
Barbados	155s.
Barcelona	210 pesetas.
Batavia	35 50 to 66 fl., according to quality and point of delivery
Bermuda	$22
Bilbao	160 to 175 pesetas, according to quality.
Bombay	37 4 rupees.
Bordeaux	No coal available
Brisbane, Australia	17s. 11d. to 24s. 1d., according to quality and point of delivery
Brixham	Upon application.
Buenos Aires	195s.
Cairns, Australia	64s.
Cape Town	72s. 6d. to 77s. 6d. according to quality
Cadiz	200 pesetas
Cardiff	75s. to 82s., according to quality.
Cartagena	205 pesetas.
Colombo	90s. 3d.
Constantinople	210s., New River.
Copenhagen	215s., British or American coal.
Corcubian	170 to 185 pesetas, according to quality
Corunna	170 to 185 pesetas, according to quality
Curacao, D.W.I	$26.
Dakar	162s. 6d.
Dartmouth-Portland	110s.
Delagoa Bay	58s. 3d
Drontheim	197 kr.
Fowey	110s.
Fremantle	50s.
Gibraltar	140s. plus 1s. export duty; 130s. plus 1s. from Dec 16
Glasgow	77s. 6d. to 78s. 6d.
Gothenburg	153 kr.
Grimsby	70s. to 75s.
Hamburg	203s. 9d., German coal.
Havre	No coal available.
Hook of Holland	77 50 guilders.
Huelva	200 pesetas.
Hull	70s. to 75s.
Karachi	24 rupees.
La Plata	195s.
Las Palmas	161 s.; 146 s. from Dec. 16.
Leith	76s.
Liverpool	Upon application.
London-Gravesend	103s. 9d. North Country. 111s. 6d. Welsh.
Madeira	168s. 6d.
Malaga	205 pesetas.
Malta	150s.
Mauritius	140s.
Melbourne	39s. to 42s., according to point of delivery.
Montevideo	195s.
Newcastle, Australia	26s.
Newcastle, U. K	75s. to 80s.
North of Scotland	No coal available.
Oran	145s.
Padang	40.64 fl.
Pasages	160 to 175 pesetas, according to quality.
Pernambuco	242s. 6d.
Plymouth	110s.
Port Kembla	30s.
Port Natal	71s. to 72s. 6d., according to quality
Port Pirie	39s. 6d. to 41s.
Port Said	170 s. plus 5s. emergency tax, British or American coal.
Port Said	161s. 6d., + 5s. emergency tax, Indian coal.
Pulo Laut, S E. Borneo	35.56 fl.
Rio de Janeiro	225s.
Rosario	200s.
Rotterdam	75 guilders.
St. Lucia	155s.
St. Thomas, W I	154s.
St Vincent, C V I	152s. 6d.; 147s. 6d. from Dec. 16.
Sandnessjoen	197 kr.
Santander	160 to 175 pesetas, according to quality.
Santos	227s. 6d
Singapore	95s. to 130s., according to quality.
Seville	Upon application.
Sourabaya	35.56 to 66 fl., according to quality and point of delivery.
Southampton	112s.
Swansea	75s to 82s.
Sydney, Australia	32s.
Sydney Harbor, Australia	25s. 3d
Tarragona	Upon application.
Teneriffe	161s.
Townsville, Australia	54s. to 64s., according to point of delivery.
Trinidad	154s.
Trondjhem	165s.
Valencia	210 pesetas.
Vigo	170 to 185 pesetas, according to quality.
Villagarcia	Upon application.

Smokeless Association Appoints McVann Executive Vice-President

HAVING found it necessary to maintain a permanent Washington office, the Smokeless Coal Operators' Association of West Virginia, at its annual meeting in Philadelphia, Dec. 13, amended its constitution and by-laws so as to permit the creation of an additional vice-president and conferred that title on E. J. McVann in addition to his present title of secretary. It was believed advisable to have the Washington office in charge of an executive officer instead of a ministerial officer.

The place of the annual meeting was changed from Philadelphia to New York. The officers elected to serve during 1921 are as follows:

President, G. H. Caperton (president, New River Coal Co., Charleston, W. Va.); first vice-president, E. E. White (president E. E. White Coal Co., Glenwhite, W. Va.); second vice-president, O. M. Deyerle (president Flat Top Fuel Co., Bluefield, W. Va.); third (executive) vice-president, E. J. McVann, Washington, D. C.; treasurer, George R. Collins (vice-president Smokeless Fuel Co., Charleston, W. Va.); secretary, E. J. McVann (re-elected).

There was a record attendance of operators from all four districts composing the field—Pocahontas, Tug River, New River and Winding Gulf—and also of their sales representatives, nearly one hundred members being present. John J. Tierney, of the Crozer Pocahontas Co., Philadelphia, the president, presided at the meeting.

For membership on the Board of Governors the Pocahontas district renominated T. E. Houston and O. M. Deyerle, the Tug River district renominated George Wolfe and John T. Wilson, and the New River district renominated Charles C. Beury and Robert H. Gross. The retiring Governors from the Winding Gulf district, P. M. Snyder and E. E. White, requested to be relieved from the duty of serving in 1921, and in their stead were nominated John Laing and A. J. King. G. H. Caperton was nominated by the C. & O. operators as their representative on the membership committee; William C. Stephenson by the N. & W. as theirs and W. B. Beale by the Virginian operators to represent that territory. All of the nominees were then unanimously elected by the meeting of members.

Tidewater Coal Exchange's Existence in Peril, Complaint Committee Says

SOME drastic reforms must be inaugurated if the present Tidewater Coal Exchange is to survive, according to the report of the Committee on Complaints of the Exchange. This report is now in the hands of the Executive Committee of the Tidewater Coal Exchange, and although it has not yet been made public it is known to contain some far-reaching suggestions and recommendations.

The committee, which was appointed following the adoption of a resolution at a meeting of the Exchange held early in October, does not hesitate to state that in its opinion this is a critical period and that unless certain changes are made at once there may be withdrawals of numerous shippers which might result in the ending of the pooling of bituminous coal at New York, Philadelphia and Baltimore.

The present system of accounting is condemned as being entirely unsuited and the Executive Committee is advised to study the system in use at the Sewells Point Coal Exchange with a view of installing it or a similar method. The committee believes that every member should have a statement showing the exact condition of his account at midnight preceding the date of the receipt of the report by the member. In addition to furnishing the above report, the Sewells Point Exchange, the committee says, also furnishes to every member of that Exchange a report as to his standing in every pool at every pier within twenty-four hours from the time of arrival and dumping.

As a sort of auxiliary to the present committee on classification of coals it is suggested that a classification board of at least three engineers, with an adequate force of assistants, be created. The report, it has been learned, does not advise the abolition of the present board on classification but says that it can perform valuable service in its application of practical knowledge to the technical knowledge of the experts.

The work of inspecting coal also is in need of change, in the opinion of the committee. The force of inspectors should be increased and it is believed that there would be greater satisfaction if the coal was inspected at the scales. This would give the shipper better opportunity to reconsign his coal, thereby saving him the necessity of either sacrificing his coal or paying extra freight charges, as would result if the coal were reshipped to another destination.

The Executive Committee is urged to take prompt action regarding the recommendations and suggestions. The Committee on Complaints consists of E. D. Enney, of New York, chairman; Noah H. Swayne 2d, Philadelphia, and Benjamin H. Reed, Baltimore. Charles S. Allen, secretary of the Wholesale Coal Trade Association of New York, is its secretary.

Upper Potomac and Georges Creek Sign Up

DURING the third week of December the new working agreement for District 16, in which are included the Upper Potomac and Georges Creek regions, was ratified by both operators and mine workers, there being, as far as could be learned, little or no opposition by either party to the contract which had been worked out at Baltimore, Md., in a conference lasting from Tuesday, Dec. 7, until early Sunday morning, Dec. 12. The action of the representatives of the miners was approved by representatives of the various locals in District 16 at a convention held at Cumberland on Dec. 16.

Operators of regions affected gathered at Cumberland in joint session on Friday, Dec. 17, and gave their assent to the provisions of the agreement reached earlier in the week at Baltimore, that agreement providing among other things for a joint board for the settlement of disputes. The operators named as their representatives on that board William H. Gibson and William Diamond, of the Upper Potomac field, and John S. Brophy and E. Marshall Gillette, of the Georges Creek region. Late last week the mine workers had not yet designated the men to represent them.

For a time, it will be recalled, a strike appeared to be imminent, but finally on Nov. 30 operators and miners met in conference at Baltimore, at which time the demands of the miners were presented. A week was taken by the operators in which to consider such demands, another conference being held on Dec. 7—a week later. No change was made by the conferees as to working hours or wages, the miners still enjoying a high wage rate. A marked change was made, however, in the method of arbitrating disputes. Instead of retaining that feature of the Maryland plan which provides for the appointment of an arbitrator by the Judge of the U. S. Circuit Court, the new agreement creates a joint board, composed equally of miners and operators. If the board so constituted is unable to agree upon questions referred to it for adjudication, then an umpire is to pass finally upon such disputes. Aside from the feature just mentioned the District 16 agreement is quite similar to that known as the Maryland plan.

Mines in the Upper Potomac and Georges Creek regions will continue to be operated as "open-shop" mines, that being one point upon which the operators declined to yield, although from all that can be learned the representatives of the miners strongly pressed that feature of their demands.

While there were twenty-two conferees in all—eleven representing miners and eleven representing the operators—the demands of the miners and the drafting of an agreement were placed in the hands of a sub-committee of operators and miners, the members of that committee being E. Marshall Gillette, of the Consolidation Coal Co.; John S. Brophy, of the Piedmont & Georges Creek Coal Co.; R. P. Maloney, of the Davis Coal & Coke Co.; T. M. Dodson, of Weston Dodson & Co.; the committee representing the miners consisting of John P. White, former president of the United Mine Workers; Francis J. Drum, acting president of District 16; A. D. Ware and Aleck Brady.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

THAT the bottom of the present business depression will be reached in the next thirty days is the opinion of Archer Wall Douglas, chairman of the Committee on Statistics and Standards of the Chamber of Commerce of the United States.

"Advances of any moment in the prices of agricultural products," says Mr. Douglas, "will materially change the situation for the better, and reductions in the prices of commodities are likely to cause increased business in all industrial sections. Acute phases of the present depression will wear away steadily as the public adjusts itself to changed conditions brought about by a return to normal.

"From the unfounded fears of last spring of bread lines in the cities and shortage of food everywhere, we are awakened to the startling realization of a harvest so great that we cannot at once find an adequate market for our surplus products. So there ensues that inexorable law of supply and demand which decrees that overproduction is always accompanied by falling prices. This phase of the situation is peculiarly accentuated in the Southern States, where the second largest crop of cotton grown is met by a much reduced demand both at home and abroad.

"In the South there is developing a strong sentiment toward largely restricting the acreage of cotton this coming spring. This plan is always brought forth in the days of low cotton prices, but has never been carried out in anything like the measure proposed by its advocates. In many ways a cotton production restricted to somewhere near the probable demand would be a wise proceeding if it were possible to forecast what the demand would be.

"Meanwhile the bankers are well loaned up and are chary about extending any further credits to either merchants or farmers under present conditions. Merchants, like farmers, are buying only enough stock with which to do business. This means a much lessened volume of business, rigid economy on all hands, close collections and a general return to a strictly cash basis by an increasing number of merchants.

"The answer, of course, is that the natural laws of supply and demand will ultimately work out the situation and no remedies or plans to bridge over the emergency can obscure this fact."

Steel Plants to Curtail 50 Per Cent

Announcement of wage reductions, which promise to spread, and the closing of many plants for an indefinite period mark a new and advanced stage in the liquidation process in iron and steel, according to the *Iron Trade Review*. It is estimated that fully 50 per cent. of the steel-making and mill capacity of the country will be shut down until some time after Jan. 1. Steel Corporation plants will not reduce at this time, in view of its favorable operating position. All indications, however, point to the beginning of a general readjustment of labor costs in the steel and iron industry which eventually will extend from the ore mines through the finishing mills. Eastern plate mills as a group are idle for the first time since 1915. In decided contrast to this situation, the Steel Corporation plants will be operating with slight interruption, as they are working against a heavy order book. At Pittsburgh they closed last week on Christmas Day only. The Carnegie Steel Co. operated last week at 95 per cent. of ingot capacity, with full output engaged for some months ahead. The Illinois Steel Co. is on an 85 per cent basis, while the American Sheet & Tin Plate Co. last week ran at 96 per cent., the highest point in two years.

P. R. R. Orders $9,100,000 Rails

The Pennsylvania R.R. has ordered 200,000 tons of rails at $47 a ton, deliveries to begin early next spring. This order, calling for $9,400,000, is much larger than normal rail purchases of the company, the 1919 tonnage being 106,000. The order was distributed among these companies: Illinois Steel Co., 50,000 tons; Carnegie Steel Co., 50,000 tons; Bethlehem Steel and Midvale Steel & Ordnance Co., 45,000 tons each, and Lackawanna Steel, 10,000 tons. An order for 5,000 tons of 130-pound section steel rails, which has been placed with the Carnegie Steel Co. by the Philadelphia & Reading Ry. completes the Reading's 25,000-ton allotment for 1921. Of the rails previously ordered 5,000 tons will come from the Carnegie Steel Company and 15,000 from the Bethlehem Steel Company. The Santa Fe R.R. is inquiring for another block of steel rails in addition to those recently ordered.

Knitting Mills Idle a Week

Mills of the William Carter Co., which operates knitting goods factories in Needham and Springfield, Mass., are closed this week. When the plants resume a 20-per cent cut in wages will become operative. A 5-per cent bonus was given this year as usual.

Boston & Albany Shops Dull

The Boston & Albany R.R. car shops at West Springfield and in the Allston district of Boston, employing about 100 and 200 men, respectively, shut down Dec. 27 until further notice because of "decreased business."

Willys-Overland Subsidiary Closes

The two Toledo factories of the Electric Auto-Lite Co., a subsidiary of the Willys-Overland Co., closed Dec. 24, throwing 400 men and women out of work. C. O. Miniger, president of the company, who announced the closing, did not state when operations would be resumed.

Plate Glass Plant Suspends

More than 1,500 men were thrown out of work until Feb. 1, when the Edward Ford Plate Glass Co. plant at Rossford, Ohio, closed down Dec. 23. Officials of the company declared that there is no contemplated reduction in wages when operations are resumed. The reason given for the shut-down was for a "readjustment of financial affairs."

Coats' Thread Shops Shut Down

J. & P. Coats, thread manufacturers, announced Dec. 23 that their mills in Pawtucket, R. I., would be closed from Dec. 24 until Jan. 3. About 3,500 are employed in the plant.

Foreign Markets and Export News

Five Months' Exports of Coal to Canada Average Nearly 2,000,000 Net Tons Per Month

Exports of United States coal into Canada during the first eleven months of 1920 are shown in the following table, furnished by the Geological Survey. Of marked interest are the bituminous receipts during the last five months, which have totalled 9,558,000 net tons, or more than twice the tonnage of the first six months. November imports—2,048,00 net tons—establish a new maximum for the period under review.

Month	1917	1918	1919	1920
Total six months, January-June	6,393,000	7,739,000	5,703,000	4,662,000
July	1,581,000	1,671,000	1,283,000	1,722,000
August	1,891,000	1,671,000	1,291,000	2,033,000
September	1,568,000	1,605,000	1,204,000	1,787,000
October	1,583,000	1,545,000	1,356,000	1,968,000
November	1,273,000	1,440,000	892,000	2,048,000
Total (net tons)	14,289,000	15,671,000	11,729,000	14,160,000

British Weekly Coal Output Exceeds 5,000,000 Tons

Provisional figures of the British weekly production of coal during the four weeks ended Nov. 27 are given in the current issue of *The Board of Trade Journal*, which gives the output for the week ended Nov. 27 as 5,176,500 gross tons, against 5,210,700 gross tons in the previous week. For the corresponding week in 1919 the output was 4,762,729 gross tons. The statistics are as follows:

Week ending Nov. 6..... 756,300 gross tons.
Week ending Nov. 13.....4,775,600 gross tons.
Week ending Nov. 20.....5,210,700 gross tons.
Week ending Nov. 27.....5,176,500 gross tons.

Late advices indicate that production in the week of Dec. 4 exceeded that of Nov. 20.

Swiss Importations of Coal in October Came Mostly from America

Importations of coal into Switzerland during October, American Trade Commissioner Groves, of Zurich, states, amounted to 174,716 metric tons. Of this amount 75,107 tons came from America, 52,712 from England, and only smaller amounts from Belgium and France. It is noted that about 28,000 metric tons came from the Saar and Ruhr basins. It is stated that coal imports into that country for the first eight months of 1920 were practically double those for the similar period of 1919 and 10 per cent in advance of the corresponding period of 1913. Sufficient stocks to supply the Federal railways and larger industries for the coming winter are reported to be on hand. Reduction of about 10 per cent in the price of coal has resulted from the government importing monopoly.

Rapidly Reconstruct Devastated French Mines

In an inventory of progress two years after the Armistice the French Commission in the United States says that two years ago France had lost in destruction of coal mines more than half of the country's total coal producing capacity. Twenty-two mines with pre-war output of 20,000,000 tons annually, or half of France's coal production, were destroyed in the Departments of Nord and Pas de Calais.

One half of these mines are now operating, those in the Nord Department being expected to produce 50 per cent of their normal output by the end of the year and to reach normal production next year. These mines produced in January last only 85,483 tons. In September their output was 299,819 tons. In October, 18,653 miners, out of 44,418 normally employed, were working in the mines.

Including Alsace-Lorraine, French coal mines averaged 2,000,000 tons per month during the first nine months of the present year. The production for September was 2,419,015 tons.

Austria Unable to Obtain Fuel Requirements

Austria's monthly fuel requirements are figured at 1,156,000 tons of coal and 11,040 tons of coke. With nearly every country having to curtail to some extent its use of coal Austria does not expect to obtain its full requirement. The Coal Controller states that the industries could be maintained if 70 per cent of this requirement —800 000 tons of coal and 80,000 tons of coke monthly—were forthcoming.

In 1913 the mines of Austria produced an average of 228,925 tons of coal monthly; in 1919 the average was 172-925 tons monthly. It may be said, therefore, that 15 per cent of the full requirement can be produced within the boundaries of Austria, leaving 85 per cent to be obtained through import.

Passenger traffic on the Hungarian railways on Dec. 18 was ordered suspended from Dec. 23 to Jan. 4, owing to lack of coal. Private houses throughout the country are without coal.

Prussian Coal Output Increases

The output in metric tons of the collieries in Prussia, the most important of all German coal districts, covering the period January-September, was as follows, the figures including the Saar Basin:

	1920 Tons	1919 Tons
Pit coal	92,400,000	81,100,000
Lignite	66,600,000	55,600,000
Coke	18,000,000	15,600,000
Briquets:		
Pit coal	3,000,000	2,400,000
Lignite	14,600,000	11,800,000

The total figures on record of the output of the Ruhr collieries, including the works in the occupied territory, during October show an increase of approximately 300,000 tons as compared with the preceding month (the number of working days being the same), the figures being 8,100,000 tons in October and 7,801,086 tons in September.

WHILE HOPE OF obtaining any important benefit during the present season from the lifting of the prepayment requirement on Canadian coal has been abandoned, the matter is to be pushed actively with the idea of having the question settled and out of the way at the earliest possible date. Since the beginning of the coal year negotiations have been in progress between the American Wholesale Coal Association, the railroads and the Interstate Commerce Commission looking to the relief of shippers and consignees who suffer much inconvenience in having to prepay all freight charges on coal for Canadian points. The matter is to be the subject of a conference in Washington in the near future in which all concerned will participate. It is regarded as probable that final action will be taken following that conference.

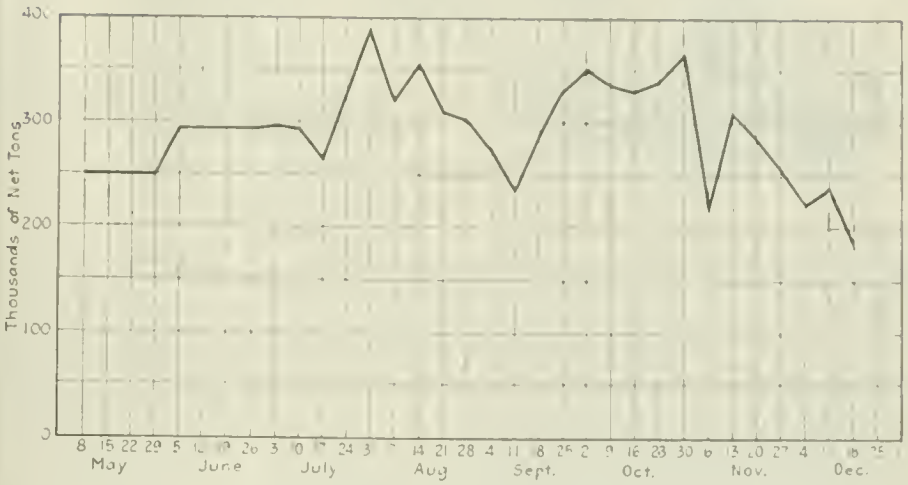
LACK OF COALING FACILITIES in northern Chilean ports is advised from Antofagasta, Chile, according to *Commerce Reports*. All vessels are requested to carry sufficient coal to return to the Panama Canal. Because of labor troubles northern ports are refusing to coal steamers that are arriving from Valparaiso and southern ports.

Export Dumpings

(NET TONS)

Week ended	
Nov. 21	528,000
Nov. 28	399,000
Dec. 5	387,000
Dec. 12	374,000
Dec. 19	393,000

Export Coal Dumped at Hampton Roads



Shipping Board Rejects All Coal Bids

ALL bids received for furnishing next year's supply of bunker coal for American merchant ships at Atlantic and Gulf ports have been rejected, the Shipping Board announced in Washington Dec. 22, as the prices, which ranged from $7 to $11.50 a ton (*Coal Age*, Dec. 16, pp. 1249 and 1250), were regarded as excessive.

New bids for approximately 2,000,000 tons of bunker coal for delivery at Atlantic coast ports for a period of one year will be received and opened Jan. 14.

Bituminous Coal Produced in Eleven Months in Central Pennsylvania*

(In Net Tons)†

Period	1917	1918	1919	1920
January	5,103,621	4,637,131	5,114,716	4,390,827
February	4,351,331	4,666,093	3,148,078	3,635,195
March	5,260,725	5,318,134	3,482,408	5,002,902
April	4,497,326	5,084,292	3,404,602	4,254,075
May	4,840,767	5,214,803	3,649,957	4,105,668
June	5,044,325	5,393,048	3,831,680	4,404,480
July	4,851,237	5,590,414	4,386,820	4,705,956
August	5,139,502	5,702,102	4,832,219	4,947,492
September	4,716,933	5,104,013	4,865,074	5,162,333
October	5,311,568	5,265,562	5,580,692	5,112,382
November	5,174,841	4,137,915	1,205,294	4,960,312
Totals 11 months	54,292,176	56,113,507	43,501,540	50,681,712
Average monthly	4,935,652	5,101,227	3,954,685	4,607,428
December	4,366,641	4,401,611	3,044,841	.....
Totals for year	58,658,817	60,515,118	46,546,381	.....
Average monthly	4,888,235	5,042,927	3,878,865	.....

*Includes boiler fuel, coal coked and local sales.
†Figures supplied by Central Pennsylvania Coal Producers' Association.

New Tidewater Exchange Pool Separates Pittsburgh and Sewickley Coal

AN ANNOUNCEMENT issued Dec. 16 by the Tidewater Coal Exchange, Inc., Grand Central Palace, New York City, states that the Executive Committee has authorized the creation of a new pool to be known as 63, 64 and 35, for the three sizes of coal, ¾-in., run of mine and slack, in which will be placed all mines working exclusively the Pittsburgh and Redstone seams of hard-structure gas-producing coal, as it is recognized that mines shipping this coal should be separated from mines working the Sewickley, Kittanning and Freeport veins, on account of the difference in character of the two coals and the purposes for which they are used.

J. W. Howe, commissioner, advises that the exchange will receive applications on Forms 24 and 25, for the reclassification of mines into the new pool.

New pools 53, 54 and 35 have been authorized, into which all mines now in pools 34 and 44 that are working the Sewickley, Kittanning or Freeport veins and shipping well-prepared coal will be promoted on application and qualification therefor.

Anthracite Shipments Receded in November Because of Holidays

SHIPMENTS of anthracite in November, as reported to the Anthracite Bureau of Information, amounted to 5,765,347 gross tons, against 6,240,901 tons in October, a decrease of 475,554 tons. The decrease was due entirely to the fewer number of working days in November, as, because of election day and holidays last month the collieries were operated only twenty-one days, whereas in October there were twenty-four days of active operation. For each working day in November the average shipments were 274,540 tons, as compared with 260,033 tons in October.

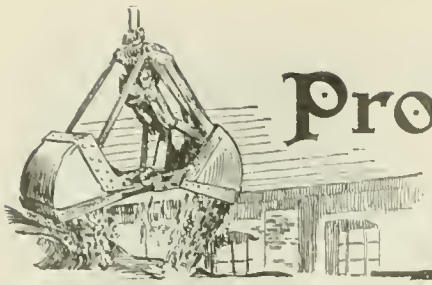
Shipments by originating carriers were as follows, in gross tons:

Railroads.	November, 1920	October, 1920
Philadelphia & Reading	1,238,994	1,317,070
Lehigh Valley	1,002,329	1,180,270
New Jersey Central	453,139	486,609
Lackawanna	792,157	846,054
Delaware & Hudson	814,167	893,058
Pennsylvania	424,745	484,940
Erie	603,766	531,598
New York, Ontario & Western	175,074	190,958
Lehigh & New England	260,976	310,344
Totals	5,765,347	6,240,901

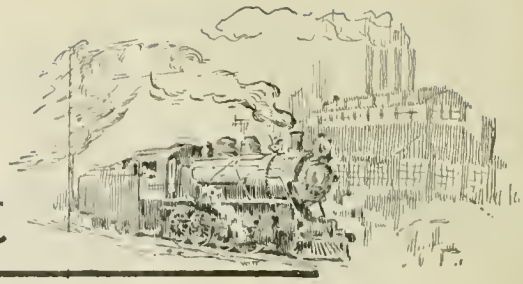
Average Daily Coal Receipts at Italian Ports in Vessels Controlled by Italian Government

(In Metric Tons)

	September, 1920	October, 1920	November, 1920
Savona	1,429	1,021	1 033
Spezia	1,408	...	1,090
Messina	1,378	...	1 004
Leghorn	1,272	955	892
Civitavecchia	1,244	1,010	921
Genoa	1,189	1,066	1 129
Trieste	1,110	1,255	1,389
Ancona	942	868	889
Venice	779	789	...
Brindisi	773	...	...
Palermo	731	932	876
Catania	717	818	...
Bari	680	...	...
Torre Annunziata	...	1,254	1 036
Naples	...	1,067	1 096
Barletta	...	689	...



Production and the Market



Weekly Review

WITH full coal bins the country is biding its time over the holiday period and the coal market is nearly stationary. Bottom prices having been reached in most markets, prices are holding firm in the Middle West, with some slight gains on best grades in New England. Everyone appears to be waiting for an expected "pick up" after the holidays are over.

There is little to indicate that industry will be back in the market for more than ordinary day-to-day requirements, which with the retailer demand during cold weather will sustain the market at approximately the level it holds today.

Promised Slump Is Likely To Be Severe

The apparently universal desire on the part of shippers to move coal at any price is held to account for the unusual rate of output in the face of falling prices. Coal is being forced on contracts to such an extent that the slump, when it comes, will inevitably be severe. The stage is being set by the operators and shippers for a contract season in which every phase will be against them.

Small high-cost mines have largely ceased operation, but this fact is having no effect on the total production as the cars and labor go to the larger lower-cost mines. This accounts in part for the volume of output at lower price levels, for the larger companies all through the period of shortage have said that they were being deprived of an opportunity to meet their obligations by the spreading of car supply among so many small producers.

Because of the inactive market many producers have seized upon the opportunity presented by the holidays and have closed their operations until the first of the year. This may have some effect upon the demand immediately after New Year's, which, however, will be only temporary.

Exports show a slight recovery, due, it is said, to more inquiry from abroad. The movement offshore is as yet largely confined to contract coal, however.

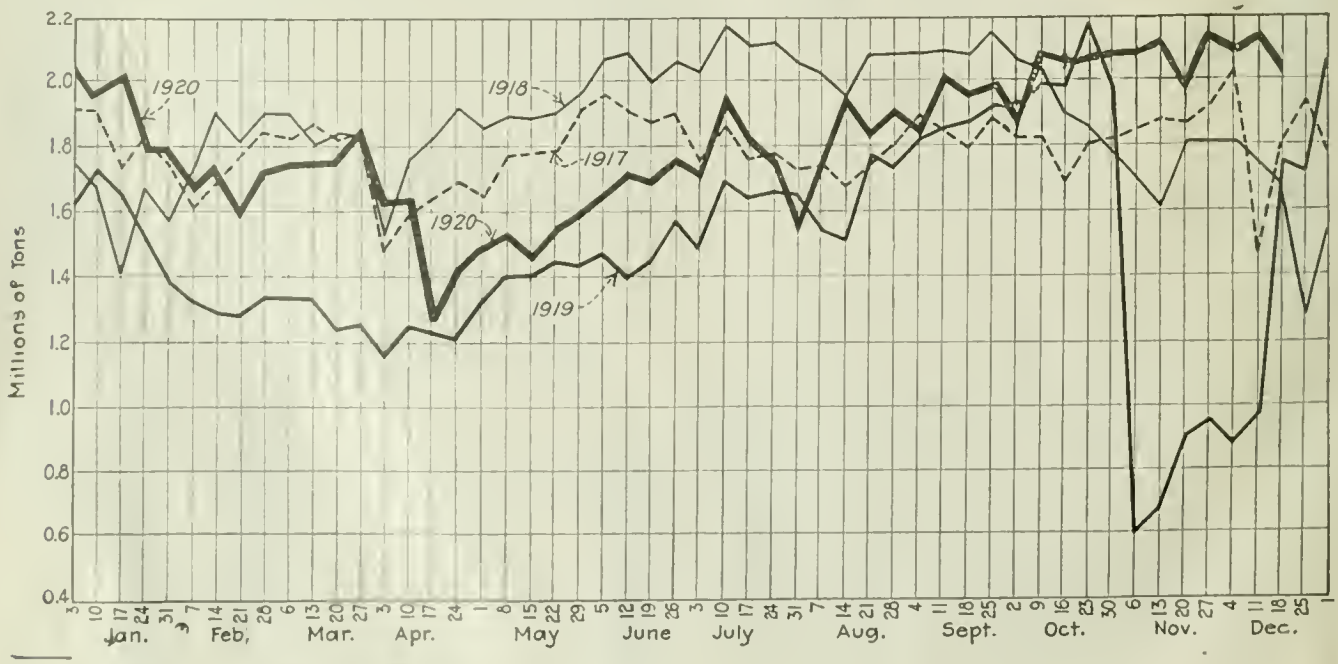
The country is eagerly watching developments at Washington, where Senator Calder is probing into the coal situation. It is inferred that some buyers are holding off waiting for the outcome of this investigation.

New England deliveries were well maintained, from which it may be assumed that not much difficulty is being experienced in moving the better grades, as the poorer coals show a continued tendency to decline while good fuels, as stated above, are firm or in some cases even show a slight advance in price.

Danger of Anthracite Shortage Averted

Anthracite production continues to be fairly well maintained. Movement is good and some retail stocks are being accumulated. Distribution is being carefully watched and preference given to districts where the supply is low. Eastern centers are well taken care of and all dangers of a hard-coal shortage have been

Daily Average Production of Bituminous Coal*



*From weekly report of Geological Survey.

averted. Domestic sizes of independent producers are softening, as low as $10.25 being quoted during the week ended Dec. 25, or a decline of almost $2 from the preceding week. Company schedules are being maintained. Steam sizes are easy as to price and while the companies are finding a ready market the independent product is hard to move and the latters' prices have declined accordingly.

Coke Market Dull; Output Curtailed

The coke market is especially restricted. In lieu of any demand operators are doing the natural thing—either suspending operations entirely or curtailing their output to the point of contract requirements not yet suspended. There are many cars of unconsigned coke on track in the Connellsville region due to suspension of contract shipments. Operators are simply playing a waiting game until the steel trade completes its readjustment in the hope that coke will again assume its important position.

BITUMINOUS

Production for the week ended Dec. 18 amounted to 12,184,000 net tons, according to the Geological Survey, a decline of 681,000 tons as compared with the preceding week. However, the production rate is still ahead of that for the same period in any of the last three years. Loadings on the opening days of the week of Dec. 19-25 were well maintained, but production was much curtailed during the latter part of the week, owing to the beginning of the holiday season. These holidays and the fact that many operators are closing their mines until after New Year's will doubtless reduce the week's output below the 10,000,000-ton mark.

It may be said that car-shortage losses are now less than those from no-market sources. Production is still suffering from poor placements in the Middle Appalachian section but elsewhere the car supply is generally reported as fairly satisfactory, in fact, a good many fields are unable to use all the empties placed at their disposal.

Mining labor is plentiful and the influx of new men from other industries continues. The situation in the troubled areas is becoming more settled; Alabama produeers are finding that the strike is no bar to production in their district, while the presenee of Federal troops in the Williamson fields continues to exert a peaceful influence there.

Spot Prices Seem To Have Touched Bottom

Quotations for spot coal show a still lower range for the week ended Dec. 18, having apparently touched bottom. Consumption of steam coal is still eurtailed by the industrial contraction, buyers being on the market on a daily requirement basis only. Cancellations are numerous, in many instances being received while the coal is en route, which with efforts to move coal by consignment have resulted in sales being foreed, to the detriment of operators. Export business was extremely sluggish although considerable tonnage is moving on contract. Coal is accumulating at Tide and whatever new overseas business is being transacted goes at very little premium over inland quotations, a range of $13.75@$15 c.i.f. being reported.

The following table shows the trend in the spot steam market (mine run basis, net tons, f.o.b. mines):

	Nov., 1919*	May, 1920	Aug. 5, 1920	Dec. 16 1920	Dec. 23, 1920	Dec. 30 1920†
Pittsburgh steam	$2 35	$4.00	$10 00	$3 75	$3 25	$3.75
Pittsburgh screened gas	2 35	4.50	12.00	4 50	3 75	*3 25*
Hocking	2.50	4 75	9.00	3 75	3 00	*2 50*
Franklin, Ill	2 35	3.75	6.50	4 00	3 40	3 40
Indiana 4th vein	2 35	3.40	7.50	3 25	3 25	3 25
Eastern Ohio, No. 8	2 35	4 50	10 50	4 00	3 40	*3 00*
Fairmont	2.50	6.75	13.50	3 75	3 00	*2.75*
Kanawha	2 60	6.75	14.00	4 50	3 50	*3 00*
S. E. Kentucky	3 00	6.00	10 50	4 75	4 00	*3 50*
Western Kentucky	2 35	3.50	5 25	4 00	3 75	*3 75*
Clearfield	2 95	6.25	12 00	4 75	3 75	3.75
Cambria and Somerset	2 95	6.75	13 50	6 00	4 75	*4 65*
New River	2 70	6 50	14.00	5.00	5.00	*4.75*
Pocahontas	2 35					

* Government prices.
† Advance over the previous week shown in **heavy type**, declines in *italics*.

Estimates of Production

(NET TONS)

BITUMINOUS COAL

Total bituminous, including coal coked

	1920 Week	1920 Calendar Year to Date	1919 a Week	1919 a Calendar Year to Date
Dec. 4b	12,832,000	512,538,000	5,245,000	425,291,000
Daily average	2,139,000	1,789,000	874,000	1,480,000
Dec. 11d	12,865,000	525,403,000	5,800,000	431,091,000
Daily average	2,144,000	1,799,000	967,000	1,469,000
Dec. 18d	12,184,000	537,582,000	10,431,000	441,522,000
Daily average	2,030,667	1,800,000	1,738,000	1,470,000

(a) Less one day's production during New Year's week to equalize number of days covered for the two years. (b) Revised from last report. (d) Subject to revision.

ANTHRACITE

	1920 Week	1920 Coal Year to Date	1919 a Week	1919 a Coal Year to Date
Dec. 4	2,051,000	61,024,000b	2,014,000	63,474,000
Dec. 11	1,915,000	62,939,000	2,120,000	65,594,000
Dec. 18	1,979,000	64,918,000	1,727,000b	67,321,000b

(a) Less 2 days' production during first week of April, to equalize number of working days covered for the 2 years. ( ) Revised to agree with Weekly Report No. 178, pages 2 and 7.

BEEHIVE COKE

United States Total

Week Ended Dec. 18c 1920	Dec. 11 1920	Dec. 20 1919	1920 to Date	1919a to Date
333,000	374,000	386,000	20,274,000	19,026,000

(a) Less one day's production during New Year's week to equalize number of days covered for the two years. (c) Subject to revision.

Tidewater movement for the week ended Dec. 19 is estimated by the Geological Survey at 947,000 net tons, a decline of almost 100,000 tons from the preceding week. However, exports showed a slight gain, 393,000 tons being moved. Coastwise movement to New England totaled 198,000 tons as compared with 226,000 tons during the preceding week.

All-rail shipments to New England via the five rail gateways amounted to 5,222 cars during the week ended Dec. 18, or practically the same as the movement for the week ended Dec. 11.

ANTHRACITE

Production increased 64,000 tons during the week ended Dec. 18. According to the Geological Survey 1,979,000 net tons were produced during that period. Domestic sizes are still eagerly sought at company figures, but some effort is required to move the higher-priced independent product. As a result these prices have declined about $2 during the week, being now generally quoted around the $10-mark. Independent steam quotations are practically down to the level maintained by the larger companies and these grades are becoming increasingly difficult to move.

The Middle West still complains over the hard-coal shortage, although no suffering has resulted from the meager Western shipments. Coal is being carefully distributed to points where the need is greatest and there is no longer any difficulty in obtaining supplies in such centers as New York, Philadelphia, Baltimore, etc.

COKE

Production of beehive coke during the week ended Dec. 18 is estimated at 333,000 net tons by the Geological Survey. The decline of 41,000 tons as compared with production for the preceding week reflects the extremely sluggish market which has resulted in many producers ceasing operations, temporarily at least. Production also has been curtailed to offset the lower call. More first-half contracts for furnace coke have been made on a five to one ratio basis. Spot quotations range $5.25@$5.75 for furnace, a decline of 25c., while foundry coke is firm, $7@$7.50.

Cumulative production for the year has reached a total of 20,274,000 net tons, over a million and one-quarter tons in excess of that of 1919.

Reports From the Market Centers

New England

BOSTON

Market Extremely Dull — Movement Slackens — Railroads Cease Buying — Only Light Business at Tide — Anthracite Shipments Increase — Retail Demand Light.

Bituminous—In all directions receipts have dropped notably. Railroads have still further curtailed service. At Tidewater re-handlers find themselves put to it to store coal they are under contract obligation to receive. It might be supposed that with all the surplus available at various distributing points there would be a pronounced weakening in prices of Pocahontas and New River, but factors are realizing that low prices today are not of themselves any inducement.

Contracts naturally are being filled up to the mark and there is little chance of railroad purchases in any volume until prices are made for next season. As in the case of other consumers the railroads have larger stocks than anticipated and beyond that they are committed to take more coal the next three months than present traffic conditions would warrant.

At the New York and Philadelphia piers there is still in evidence a lot of distress coal. Forced sales made on this account for many of the very lowest figures rumored. At Hampton Roads the supply is so much greater than can be readily absorbed that drastic embargoes probably will soon be put into effect. Only those shippers who made contracts for a large proportion of estimated tonnage are now able to lift coal with reasonable promptness. In New England there are at most only two or three buyers who are interested in smokeless coals by cargo and these have the spot market almost at their command. Figures much less than $8 per gross ton f.o.b. Norfolk have been verified and when it is realized that this means less than $4.50 net at the mines it will be seen that the smokeless coals are going into the same decline that prevails on Pool 1 from Pennsylvania and Maryland.

Current quotations on bituminous at wholesale range about as follows:

	Clearfield	Cambria and Somersets
F.o.b. mines, per net ton	$2 85@4 60	$4 10 5 25
F.o.b Philadelphia, per gross ton	5 85@7 80	7 20@8 45
F.o.b New York, per gross ton	6 35@8 30	7 75@9 00

Pocahontas and New River are quoted at $7.75@$8.25 per gross ton f.o.b. Norfolk or Newport News, Va.

Anthracite — While stocks are still very low in most parts of this territory it is now clear the corner has at last been turned. Producing companies who have had less regular connections with this market are offering coal and the independents themselves have marked off the asking price from $15 to around $12. Naturally credit is being taken by fair price committees and other quasi-public agencies, but the fact remains that the supply is at last catching up with the demand.

A number of dealers report very little new business and it is now being stated that the continued mild weather has probably made up for the mine-workers vacation in September. In any case, we shall soon see an easy market on domestic sizes. The steam sizes are literally going begging.

Tidewater—East

PHILADELPHIA

Despite Moderate Demand Dealers Seek More Anthracite—Prices Seem Fixed—Steam Coals Move Slowly—Bituminous in Light Demand—Prices Close to Bottom—Coke Quiet.

Anthracite — With production continuing close to normal it is becoming a source of wonderment as to just where the coal is all going. There is still a feeling that a break will come in the market at a time least expected, yet there is no evidence of such an event at this moment. A fair volume of coal has rolled into the city recently, although somewhat reduced over the previous two weeks. Coal merchants in the outlying section of the state are now moving the biggest tonnage they have had since the strike diverted heavy shipments to them last spring.

Despite the various adjustments by both company and individual shippers increasing prices, the retail trade has in no way advanced its schedule. Most retail figures are covered in the scale from $14.75@$15.25 for egg, stove and nut, per gross ton, with an extra charge of 50c. where chuted into cellars. Pea averages about $12 a ton.

Steam continues in a rather uncertain state, especially as to the independents. Some of the latter shippers barely have enough orders for a week ahead and at times they are on the market with shaded prices. Buckwheat is as low as $3.50. The companies are able to move buckwheat fairly well and so far the entire production is going into the market.

It is not believed that there will be any change in the company prices for the first of the year and the figures therefore should be as follows per gross ton for line trade and f.o.b. Port Richmond for Tide:

	Line.	Tide.
Broken	$7.75	$10.45
Egg	7.75	10.45
Stove	7.95	10.60
Nut	7.95	10.60
Pea	6.40	8.80
Buckwheat	4.25	6.75
Rice	3.15	5.60
Boiler	2.50	4.90
Barley	2.25	4.65
Culm	1.50	3.50

Bituminous—It is difficult to see how prices for good fuels could really go any lower, yet the buying is of an extraordinarily light nature. Industry shows no sign whatever of picking up. In many instances prices of good fuels are close to the bottom, yet buyers have such heavy stocks that it only increases their burden to add to them. The only buyer is the small consumer, usually without contract protection and who buys a car as he needs it.

Spot prices net at mines are about as follows: Pool 1, $5.25; Pool 9, $4.75; Pool 10, $4@$4.25; Pool 11, $3.50@$3.75. There are actually lower prices than these, all depending on how anxious a shipper is to market his coal. Others it would appear prefer to curtail production rather than go much lower. On the Fairmont gas coals of the Pool 34 classification the average price is about $2.75 and Pool 44, as one shipper put it, "can be had for almost any price," which means that it has about lost its market.

Some contracting is taking place and it would seem that the pressure is now coming from the producer, although the consumer continues to show interest at least to the extent of making inquiries. A price of $4.50 for the good steam coals seems to about fit the producer idea of a contract basis, but we believe there is some business actually closed on fair coals around $4.

BALTIMORE

Immediate Market Is Flat — Holiday Rest Period Likely To Lighten the Market—Export Outlook Improving—Hard Coal Run Continues Good.

Bituminous—The old year is dying with business more or less demoralized, reflected in the low demand for all classes of commercial fuels. For the time being, demand has dropped off for both immediate and future delivery, and prices have sagged heavily.

The holiday rest period at the mines is likely to cause some little tightening. On the other hand, the car supply has greatly improved, until it is running between 70 and 80 per cent in western Maryland and West Virginia fields that ship this way. The over-holiday accumulation of cars will probably mean an almost one hundred per cent run the early part of January. At this writing, production on the B. & O. is averaging close to 4,000 cars per day, the best in some weeks.

The reserve at Tide has increased, running at both B. & O. and Pennsylvania piers about 2,000 cars daily in the pool, and is likely to run higher as the daily run to Tide now is considerably

in excess of the dumpings over the piers each day of about 400 cars only. Prices at Tide and the mines remain about as last quoted on gas coals, around $7.50@$7.75 for best coals net ton f.o.b. piers, and as low as $6 for Pool 34. Steam coals are still being quoted f.o.b. mines net ton at about $5 for selects, $4@$4.50 for intermediate grades and as low as $3.25@$3.50 for such fuels as run to Pool 18.

The export outlook continues to improve. A growing number of charters is reported. In addition there are strong intimations here that Europe has been holding back for lower prices on this side and as soon as it becomes evident to them that the bottom has been reached there will be a rush of orders again. Meanwhile the export movement is likely to run around 230,000 tons on cargo coal for December.

Anthracite—The run of hard coal continues good, the first three weeks of December seeing a shipment of around 50,000 tons. No very severe weather has come to this section so far, and the supply of urgent cases has been made. The balance of the winter, unless unusually hard conditions come in January and February, is likely to be more or less uneventful.

NEW YORK

Anthracite Moves Quickly and Demand Is Less Urgent—Steam Coals Plentiful and Hard To Move—Bituminous Demand Slow—Lower Grades Show Further Slump.

Anthracite—With the danger of further shortage practically over the trade at last breathes easier. Production is not expected to be up to the past few weeks' performance because of the holiday season but should be sufficient to take care of immediate requirements. Nearly every dealer has some coal in his bins and his customers' orders are pretty well cleared up.

There is a ready market for all domestic coals. Some independent operators who have no ready market for pea are asking buyers of the larger sizes to absorb some of the smaller coal. The market for the domestic sizes has practically developed into one of supply and demand so far as the product of the smaller operators is concerned.

Not much is heard of high-priced coal. Buyers are more conservative and are ready to wait rather than pay quotations now asked by some of the small operators. The average independent sale was thought to be below $11.

Market for the steam is slow. Independent buckwheat is not much in demand and better grades were quoted $3.50@$3.75. Rice was $2@$2.75, and barley around $1, some sales being reported at lower figures.

Bituminous—The industry was practically at a standstill last week. Movement was slow and demand practically nil. Tonnage available at local piers increased considerably, the Tidewater Coal Exchange reporting 2,000 cars on hand on Dec. 23 as compared with about 1,800 on Dec. 16.

A reduced production was naturally to be expected during the holiday period which might result in a slight stiffening of market conditions. However, with most bins filled to at least 90 per cent of capacity no great increase in demand was expected.

There is no demand along the line, conditions being similar to those prevailing at seaboard. Some shippers are offering coal loaded in cars along the mine sidings. The lower grades took another slide during the week, but notwithstanding this buyers were willing to take the better coals at slightly higher prices. Railroads were active and took a good tonnage. Exporters report no demand, but the bunker trade is fairly strong.

Local boat-owners are facing trouble with their employees, demand having been made for an increase in wages. Loaded boats are plentiful, and are being offered at concession.

Quotations for the different pools were varied, changing within the 24 hours in some instances. Pool 10 was $3.50@$4; Pool 11 around $3 and Pools 18 and 34 around $2.50. Good grades of unclassified coal were quoted $4@$4.50.

BUFFALO

Bituminous Prices Close to Bottom—Demand Not Improving—Consignments Heavy—Anthracite Improves Slowly.

Bituminous—The situation does not improve. Shippers have made that impossible by sending out cars that were not sold, only to see them stand on track and pay demurrage. Then some contracts have been over-shipped and that coal has been rejected.

Quite a good many small mines are already idle. The consumers are as indifferent to the market as ever, few of them buying unless solicited in person and not much then. Jobbers say that it is quite useless to send out circulars, so they have put their men on the road.

Prices are unsteady, but may be summarized at $5@$5.50 for Youghiogheny gas, $4@$4.50 for Pittsburgh lump, $3.75@$4 for all mine run and $3.25@$3.50 for slack, to which add $2.36 for Allegheny Valley and $2.51 for Pittsburgh to cover freight.

Anthracite—The supply is better than it was although not up to expectations. This would naturally be the time for filling the city up with coal that is shut off from the Lakes. No doubt that is done to a considerable extent, but the output is not what it was expected to be. On that account the supply will have to be handled with more caution than is usually the case.

Besides that the Buffalo natural gas supply has dropped off so that at every sign of winter a swarm of coal consumers appears at the retail offices. The rule is to supply a load at a time now to keep everybody going.

Shippers and retailers do not forget that there was a time early in the summer when orders were scarce and they claim that they could have delivered more coal if it had been asked for, but it remains for all that a fact that some consumers had unfilled orders from June to fall. Canadian retailers are still after coal.

Coke—The trade is light and will remain so for the present, as the ovens are now amply able to fill all their contracts. Jobbers quote 72-hour Connellsville foundry at $7, 48-hour furnace at $6 and off-grades and stock at $5; domestic sizes are $7.50 for beehive lump, $10.50 for local by-product and 75c. for breeze, all taking a $3.64 freight rate to Buffalo, except the local product, which is paying 52½c.

Northwest

MINNEAPOLIS

Seasonable Weather Checks Price Decline—All-Rail Coal in Good Supply—Dock Stocks Freely Offered.

The market has been balancing on the edge of a slump for some time. The all-rail market has been slipping fast, especially on the lower grades. Even the arrival of some zero weather was not sufficient to more than check it. A continuation of really seasonable weather will undoubtedly cause prices to stabilize. Estimates by various coal companies are that there has been a reduction of sales during the past four months of from 20 to 30 per cent.

So regardless of what the coming days may have as to weather, to date there has been a sharp cutting down of consumption which will count against the season's total. All fear of any real shortage this winter has passed. The service from Illinois mines has been too good, and cars are too plentiful to make the trade dependent wholly upon the dock stocks.

As a result, the higher dock prices have begun to yield, and there is a reduction of $1@$2 on the higher grades of Eastern soft coal. It is hard to give a market when there has been a range from $8.90@$14 on the same grades of dock coal. All dock companies are more ready to sell, for the expected shortage has practically been overcome, and it is not necessary to conserve all the coal held to protect the established trade.

It does not yet seem likely that there will be any real surplus of dock coal at the end of the season. Should the next three months be as unseasonably mild as were the last three, there will doubtless be a surplus which can only be averted by making inducements in lower prices. Even that is a very uncertain method. The only effect of a cut price is to take business away from another source, which naturally results in the losing party returning the favor as soon as possible.

The market continues to be wholly a weather one, and will rest upon the character of weather as to whether it is firm or weak. Members in the trade hold that they are being unjustly assailed in the reckless charges of profiteering which are being disseminated.

But that cannot be helped, for the coal business has been in disrepute with the public for a long time. So far as public sentiment can influence it, and that goes quite a ways, prices will be under a depressing influence. The weight of the limited consumption during the past three months, will add to it. Unless there be strong support from winter weather during the next five or six weeks, the best that can be hoped for is an uncertain market. This applies particularly to soft coal. Hard coal is more dependent upon domestic needs, and from this time on, consumption will be fairly stable, even though there be no severe weather.

MILWAUKEE

Market Is Very Dull — Hard and Soft Coal Easily Obtainable—All-Rail Coals Much Weaker.

Dealers are doing practically nothing and do not look for anything different until cold weather sets in and forces a more rapid consumption of stocks on hand. Anthracite is now in liberal supply and can be obtained in any quantity, as can also all grades of Pocahontas. There is a steady supply of the latter coming by rail. Pea and buckwheat, which were very scarce a short time ago, are now being delivered in satisfactory volume.

Prices on all coals are firmly held, but it becomes more evident every day that soft coal cannot be held much longer at the schedule now in force. The cut in Illinois coal is bound to undermine this market before spring. Coal at Illinois mines is now being offered $3.75@$4. After paying railroad freight rates there is a worth-while margin under Eastern coal at interior points. The City of Milwaukee is selling coal at cost to the needy at a number of stations in various parts of the city. Most of it is going out in 50-pound lots.

Inland West

CLEVELAND

Pronounced Weakness Develops—Cancellations Increase — Mines Closed for Holidays — Anthracite and Pocahontas Continue Scarce.

Bituminous — Pronounced weakness, which has been developing in the coal trade, has during the past ten days taken a disturbing turn. Operators are now face to face with an epidemic of cancellations. Coal which a short time ago was under contract at $7@$8, is now in little demand at $3.50@$4.50.

Steam coal can now be obtained at eastern Ohio mines under $3.75 for 3-in. lump and under $3 for minue run and slack. Prices are unsettled and further declines would not be surprising.

Retail dealers, however, are still adhering to established price schedules. The demand was apparently stimulated but little by a few days of cold weather, followed immediately by warmer temperatures and rain.

Some of the Ohio mines are now down for the holidays and will not reopen until after the first of the year. Operators are asserting that present prices are below the cost of production, and they prefer to close down rather than operate. Car supply, under present conditions, is more than adequate.

Retail prices, delivered in Cleveland are:

Anthracite — Egg, chestnut and stove, $15.45.

Pocahontas—Shoveled lump, $12.35; mine run, $11.30.

Domestic Bituminous — West Virginia splint, $11.75; No. 8, $9.30; cannel lump, $15.

Steam Coal—No. 6 and No. 8 slack, $8@$9; No. 6 and No. 8 mine run, $9; No. 8, 3-in. lump, $9.30.

Anthracite and Pocahontas—The supply of anthracite continues to be far short of requirements. Retail dealers apportion it out in small quantities with corresponding quantities of coke. Pocahontas, although arriving in slightly increased volume, is still scarce.

Receipts of industrial and retail coal for the week ended Dec. 18 were: Industrial 1,800 cars, retail 630 cars, the former being 200 cars under, while the latter is 100 cars above the preceding week.

MID WEST REVIEW

Seasonable Weather Strengthens Market—Prices Steady—Cancellation Evil Growing — Cars Are Plentiful — Mines Closing for Holidays.

While there have been but few sales of any consequence made during the last week, the market is in a little better shape than it was two weeks ago. Weather conditions are more favorable, which doubtless reminds people that coal must be purchased if they are to be kept warm.

The trade realizes pretty well by now that selling coal is not a matter of price, but of finding a person who is in the market. Wise operators have given up their endeavors to sell steam on an open market. They have come to the conclusion that it is a far wiser plan to store the coal adjacent to their mines and to wait until conditions become more settled before they try to find a market for it. Operators, who through local conditions are unable to store their coal, have either closed their mines for the holidays or are forced to sell at a very low figure. Salesmen all through the territory have been recalled until after the first of the year.

There are so many cancellations and the practice is now so widespread that it is only a question of time before something will have to be done to put an end to this evil. Some operators are refusing point blank to accept cancellations.

A number of Chicago wholesalers are finding themselves in serious difficulties. During the summer months they signed contracts for the output of various mines, running anywhere from a year to eighteen months. The coal of course, had to be purchased at prices prevailing last summer and these were very much higher than those of today. One wholesaler who, in this manner, took the output of a southern Illinois mine is now faced with a loss of practically $1.25 a ton on a thousand tons a day.

Mines both in Indiana and Illinois have received as many cars as they have need for, and in a great many cases more than they can use. Railroads are now in a position to give very satisfactory service to the mines because they have very little else to do since freight traffic is practically at a standstill.

Current prices are as follows:

Southern Illinois (Franklin, Saline and Williamson Counties):	
Prepared sizes	$3.50@$5.00
Mine run	3.00@ 3.75
Screenings	2.25@ 3.00
Central Illinois (Springfield District):	
Prepared sizes	$3.25@$4.25
Mine run	2.00@ 3.00
Screenings	1.50@ 2.25
Northern Illinois:	
Prepared sizes	$4 00@$5.00
Mine run	3.25@ 3.75
Screenings (washed)	3.00@ 3.50

Indiana (Clinton and Linton, Fourth Vein):	Outside State	Inside State
Prepared sizes	$4 00@$4.75	$3.45
Mine run	3.00@ 3 50	3.20
Screenings	2.25@ 2.75	3.00

Indiana (Knox County, Fifth Vein):	Outside State	Inside State
Prepared sizes	$3.50@$5.00	$3.25
Mine run	2.00@ 3.00	3.00
Screenings	1.50@ 2.75	2.80

Pocahontas and New River:	
Prepared sizes	$6 00@$7.25
Mine run	4 50@ 5.00
Hazard and Harlan (Southeastern Kentucky):	
Block	$6 25@$7.00

COLUMBUS

Trade Shows Considerable Softness, Especially in Steam — Production Continues Good—Cancellations Are Heavy.

Weakness characterizes the Ohio coal trade in all fields. Since the closing of the Lakes a large domestic tonnage has been moving to the retailers with the result that this demand is satisfied and a number of cancellations have been received.

Retail prices are still slumping. Hocking lump retails $7.75@$8.50 and in some cases lower. Mine run from all Ohio fields is $5.40@$6.25. West Virginia prices show splints selling $8@$8.75 and Pocahontas around $10. Kentucky grades are $8.50@$9.25.

Steam trade is slow in every particular. Reserve stocks are now large and purchasers are not inclined to buy for the future. The tendency on steam grades is still downward, although some producers profess to believe that the bottom has been reached.

Production has been rather good in all districts although a large number of small mines have been closed. In some instances a few of the larger mines have been closed for lack of orders. There is still a considerable amount of coal on track, caused by wholesale cancellations and this is being offered at extremely low prices.

Prices at the mines for the principal coals used in central Ohio are:

Hocking lump	$1.00@ $5.00
Hocking mine run	2.25@ 2.75
Hocking screenings	2.00@ 2.50
Pomeroy lump	4.50@ 5.00
Pomeroy mine run	2.50@ 3.00
Pomeroy screenings	2.25@ 2.75
West Virginia splints lump	4.50@ 5.25
West Virginia Splints mine run	2.50@ 3.25
West Virginia splints screenings	2.25@ 3.00
Kentucky lump	4.25@ 5.00
Pocahontas lump	5.50@ 6.25

DETROIT

Greatly Reduced Demand for Steam—Cold Weather Stabilizes Domestic Trade—Anthracite Shipments Still Irregular.

Bituminous—Buyers are not coming into the local market very actively. It is becoming rather difficult to make sales of either steam or domestic. Quite a number of large consumers of steam coal are practically out of the market and are receiving only contract shipments, while others are either depending on their reserves or are buying only in quantities sufficient to satisfy current requirements.

Domestic demand has been rendered sluggish by the long period of warm weather. Colder weather now here, has not continued long enough for its effect to be noted. As few retailers are carrying stocks of much size, the jobbers feel certain a larger volume of business will develop in the near future.

For West Virginia lump the mine price is $5.75; mine run is $3.75 and slack $3@$3.50. Hocking domestic lump is $5.75 while either mine run or slack is available at about $3.25. Pocahontas lump is not plentiful and is bringing about $8, mine run is $6.

Anthracite — Shipments are still irregular and of small size. Retailers have no stocks adequate for their needs in meeting an active demand and frequently are obliged to supply coke or bituminous in filling orders.

CHICAGO

Cold Weather Stimulates Domestic—Trade To Fight Proposed License Ordinance — Signs of Industrial Resumption.

A spell of cold weather has stimulated to some small extent, the domestic market but this stimulation has not been strong enough to make very much difference in the situation. Domestic sizes are holding fairly firm but steam continues extremely weak. There are some stories going the rounds that central Illinois screenings, as well as Standard screenings, have been selling 50c.@75c. per ton, but these figures are misleading as they are not the prices prevailing on the bulk of the tonnage from the two fields.

The Chicago coal trade is up in arms over a proposed city ordinance. The city finds itself in financial straits and to relieve the situation, an ordinance has been proposed licensing wholesalers, jobbers and brokers. The coal industry in Chicago does not have the highest confidence in the present city administration.

ST. LOUIS

No Demand for Either Steam or Domestic—All Fields Running Short Time—"No Market" Losses Heavy.

With mild weather prevailing the price still continues to drop. Steam plants have let up buying, and this has seriously affected the steam market from all fields. As a result, many mines have been idle on account of their failure to move production. Even the country demand has almost disappeared.

Railroads are taking a good tonnage, which is the only thing that is saving the Standard and Mt. Olive fields. This also affects the tonnage from the Carterville field. Domestic business is nearly at a standstill. Everybody is waiting for an expected decrease in retail prices after the first of the year. Prices in St. Louis, however, are based on old contract figures made last spring, and while the open market at the present time is low, it does not begin to compare with contract prices, and as a result there can be no immediate reduction in retail prices.

Mines in Standard field are running two to two and a half days a week on domestic coal, having little market for the tonnage. In the Mt. Olive fields somewhat similar conditions exist. The car supply is good and there are no labor troubles.

In the Carterville field a few reports have come through of mines having no market for steam sizes. Other than that, everything has been reported as unusually good. Larger operators are maintaining their circular prices, while the independents are down to $4@$4.50 on domestic sizes, and screenings, $2.25, with mine run $2.75@$3. Working time is averaging four to five days per week.

CINCINNATI

Market at Standstill — Mine Operating Conditions Are Good — Prices Weaken.

Virtual standstill in the market is reported at the present time. The shut down of many plants has made the steam demand very easy and only enough coal is being received to meet contract demands. Lack of severe weather has caused a decided slump in the demand for domestic.

Car supply as a whole has improved, although continued trouble is being experienced on the C. & O., due to lack of motive power. Conditions on the N. & W. and the B. & O. roads are better, the supply of cars having reached 85 per cent of normal.

Many of the mines have shut down during the holiday season, owing to the light demand. Belief is expressed that with the coming of spring conditions will improve to a certain degree, with the re-opening of plants whose operations are now suspended.

Bituminous lump f.o.b. mines ranged $5.15@$6, with mine run $4. Smokeless coals, for which the demand in the East has reduced considerably, was quoted $4.80@$5.25 for lump while mine run was anywhere from $4.50 up. No change was noted in the retail prices.

South

LOUISVILLE

Light Demand for All Grades — Prices Dropping—Rail Congestion in Eastern Kentucky—Production Slumps.

The decline in the past two weeks has continued until selling coal is a job which requires brains and knowledge of the business. It has been so long since it has been a buyers market that many coal men have almost forgotten how to sell.

Right now there is a little coal moving to the southern and southeastern railroads. There is some little movement to gas and byproduct plants, and gas coal is selling more easily than other grades. Retailers are taking very little fuel.

Several large corporation mines are now selling a good deal of their production on open markets, being unable to consume it themselves. The Ford mines in southeastern Kentucky have been selling coal on the open market for some weeks. Retailers are failing to meet reductions in mine prices in their quotations to consumers, which is making for slow retail sales.

Eastern Kentucky mine quotations show: Lump, $5@$5.50; mine run, $3.25@$3.50; screenings, $2.50@$2.75. Eastern Kentucky railroads are so choked with cars that distribution is poor, it being a hard matter to handle loaded cars out with the big supply of empties on hand.

Retailers are asking $8.50@$8.75 for Western Kentucky lump, and $10@$12 for eastern Kentucky. Western Kentucky mine run is $7.50; nut, $8.25; screenings, $6.75.

BIRMINGHAM

Demand Is Mild — Prices Remain Unchanged — Surplus in Low Grades — Labor Supply Good, but Working Irregularly.

There continues a very heavy movement of commercial coal, furnaces and railroads also accumulating good stocks. Low grade coals are not finding a ready disposition and there is a surplus of Big Seam and other coals of similar quality. The output of Black Creek, Cahaba, Pratt, etc., is being taken care of without much difficulty, though there is no insistent demand from any quarter. Quotations remain in line with those of the past several weeks.

Car supply has been good for the past week with the exception of the L. & N., which has been furnishing from 40 to 50 per cent for the past three weeks. There is plenty of labor at this time and the output is greater than trade requirements. However, there is a shortage of strictly domestic grades, a condition which has existed throughout the year. The output for the week ended Dec. 18 was 323,406 tons, 300,000 tons being considered a normal weekly production.

Southwest

KANSAS CITY

Arkansas Operations Curtailed—Prices Are Firm—Three Indictments Returned.

There was very little change in market conditions during the past week. Kansas nut coal is moving slowly, but the first touch of winter will clean up all surplus production. In Arkansas

Conditions remain bad. The mines are working less than half time and as a result steam grades are short with some companies and long with others, and lump is almost to zero. About the only mine run that is moving is to the railroads. In Oklahoma the situation is about the same. Missouri production just about equals the demand. Prices rule about the same as last week.

The Federal Grand Jury investigation reveals sales listing at figures yielding unfair returns and three companies were indicted on charges of profiteering. These are the National Fuel Co., Laning-Harris Coal & Grain Co. and the Sheridan Coal Co. Some eighteen other companies were investigated, but no grounds for indictments were found. It would seem from the reports that the three companies mentioned were indicted for coal and petroleum coke which they purchased and resold.

West

SAN FRANCISCO

Cold Weather Increases Domestic Demand—Bunker Trade Active — Prices Are Steady.

A spell of cold weather has materially increased the demand for domestic coal. Dealers met the calls readily enough as stocks are especially good. Shipments from Utah and Wyoming continue strong with promise of ultimate relief from high freight rates. Mine prices are unchanged.

Although the number of vessels coming here for merchandise is somewhat below normal the bunkering business is in a healthy state. Almost as many large steamships call in at the Golden Gate for replenishing their coal supply while plying between Atlantic and Oriental ports, as carriers coming here for freight. The Golden Gate attracts the ships as the Utah coal supplied here is preferred as a superior bunker coal.

DENVER

Many Cancellations — Market Is Uncertain, but Price Well Maintained—Boycott Curtails Production.

The so-called buyers' boycott is running its course. Operators are taking fresh hope this week that the crisis in the boycott has about passed, and that the middle of January will find business on a much firmer basis.

Cancellation of orders is one of the things that the big companies have had to contend with, domestic users holding their coal bins to the lowest level, and retailers and jobbers in turn refusing to accept orders placed three months ago.

While unseasonable weather has been against the operators, the inroads of the buyers' boycott is seen in the output for the week ended Dec. 11, when 231,956 tons were mined of a possible 273,189 tons, compared with the previous week, when 234,358 tons of a possible output of 262,940 tons were mined. Actual production for the week ended Dec. 11 was 84.9 per cent against 89.2 per cent for the preceding week.

The market is still uncertain, some of the smaller operators trying to force down the price. Routt County and southern Colorado bituminous lump at the mine is $6@$6.50. Louisville first-grade lignite is steady at $6; Louisville second, $4.75; steam, $2.40 and bituminous steam $2.50@$3. Bituminous coking coal is $3.50. There is no indication of price revision Jan. 1.

News From the Coal Fields

EASTERN OHIO

Production Declines Slightly — Demand Very Weak—Prices Sag Further.

Production for the week ended Dec. 18 is estimated at 410,000 tons. Potential capacity of the mines included in these figures is now approximately 662,000 tons by reason of increased mine ratings effective Dec. 10.

Car supply for the week was around 65 to 70 per cent of requirements, 50 per cent supply for commercial. On Tuesday, Jan. 14, many of the mines were idle a half day on account of miners holding their election for international, district and sub-district officers.

Labor situation was somewhat better, the week being one of the quietest for some time. Some new labor is arriving, a few from Europe but most of them are drifting back to the mines from other industries.

The market continues very soft, with industrial and domestic requirements amply met. Prices for mine run and slack: $2.75@$3.25 and lump, $3.50@$4.25 f.o.b. mines.

PITTSBURGH

Demand Light and Spot Prices Still Lower — Narrow Market in Point of Tonnage—Domestic Demand Moderates.

Demand has been very light in the past week and prices have suffered a further and severe decline. Conservative coal operators hold that prices done in the open market in the past few days do not reflect real values, or suggest what the market is going to be during the remainder of the winter, for some operators refuse to meet present competitive prices and the business done really represents a very narrow market.

Demand for domestic is now only moderate, reflecting the tendency of householders for months past to lay in all or a large part of their prospective requirements. Many householders find they need to use coal only occasionally instead of regularly, because of weather conditions and good gas supply.

Demand for byproduct has fallen off rather sharply, reflecting the blowing out of many blast furnaces. While byproduct coal still brings a premium over steam this is greatly reduced. We quote the market at $2.50@$3 for steam, $3@$3.25 for screened gas and $3@$3.50 for byproduct, depending on grade and tonnage.

CENTRAL PENNSYLVANIA

Car Supply Adequate — Mines Closing Down — Prices Touch New Low Levels.

With little or no demand for coal, the situation is not helped by an adequate car supply. Many of the smaller mines in the Philipsburg and Houtzdale region have closed.

"All shot to pieces," is the way one operator in the Cambria field expresses the mining situation at the present time. The closing of many plants is given as the cause of little demand and many operations are being closed. A number of mines in Pools 11 and 18 district have closed, the price going as low as $2.50. All the mines are curtailing their product as much as possible. Pool 10 coal is selling at $3.50@$3.75 with all indications that the price will go lower. Operators say that it will be necessary to close the mines or operate at a loss.

CONNELLSVILLE

Spot Market Somewhat Easier — More Furnace Coke Contracting Done.

The spot market has become still softer. Operators who were holding out for the extreme prices have revised their views and the range of quotations is materially reduced.

In furnace coke there has arisen quite a tonnage that has been loaded so long that it is not salable to blast furnaces. A few months ago this coke would have been taken gladly. There has been considerable sale of this for heating purposes, lime burning, etc., but at only slight price concessions, generally $5@$5.25. On regular furnace coke there is little effort made to obtain more than $5.50. Spot foundry coke is not quotably changed, but there are more and better brands to be obtained at prices regarded a week ago as the general market. Some operators still have not revised their quotations to a practical basis.

Furnace coke reported a week ago as having been put under contract on a five to one ratio basis, amounted to between 40,000 and 45,000 tons a month. Additional business has been closed on this general basis, bringing the total up to about 75,000 tons. Some contract business closed some time ago

on terms more favorable to the coke operator has not been revised, but will have to be, as furnaces cannot operate on the contract basis prescribed. Of the latest contracts, a favorite form is that in general the invoice price of the coke in a month is to be one-fifth the market price of basic pig iron, f.o.b. valley furnaces, in that month, but that if pig iron goes below $28.75 coke shall not go below the $5.75-price, while on the other hand if pig iron should go above $35, which would call for a $7 coke price, 35c. shall be added to the $7 for each $1 that pig iron advances.

We quote spot furnace coke $5.25@$5.75 and foundry at $7@$7.50, per net ton at ovens.

UNIONTOWN

Coke Market at Standstill—Operations Being Suspended—Coal Goes Begging—Many Unconsigned Loads — Contract Suspensions Heavy.

The Christmas season finds demand for coal and coke at the lowest point reached at any time since the war. The price at this time last year was at about the present level although demand was more brisk.

The coke market is at a standstill, virtually no sales being made at any price. In lieu of any demand coke operators are doing the natural thing, either suspending operations entirely or restricting output to the point of contract requirements not yet suspended. It is estimated that there are nearly 400 cars of unconsigned coke in the region, due to a suspension of contract shipments and an equal number of unconsigned coal loads.

There is a feeble demand for coal if the operator or jobber is sufficiently aggressive to find the market. Steam coal is quoted $2.75@$3; gas $3.75@$4; lump $4.25, and slack $3. Any of these quotations are subject to change downward when there is a possibility of losing a sale.

The optimistic attitude of coke operators continues although the general situation is not only showing no improvement but the opposite prevails. They are simply playing a "waiting game" until the steel trade completes its readjustment, when they say that coke will again assume its old status of importance. It has been demonstrated that the region's output is barely sufficient to meet the normal needs of blast furnaces and they are therefore showing no concern.

FAIRMONT AND PANHANDLE

Car Supply Improves — Production Moved with Difficulty—Price Bottom Reached—Cancellations and Rejections Are Numerous.

Fairmont

An improvement in the B. & O. car supply marked the week ended Dec. 18. Mines on the Monongahela had a well sustained supply during the greater part of the week, although empties on branches of the Western Maryland were not quite so plentiful.

It was believed that the price bottom had been reached before the end of the week, when Pittsburgh coal, after declining to $2.75, remained steady at that figure. A limited amount was shipped to Tidewater at $3. Operators said that a further reduction could not be made without going below production cost. Western markets were extremely flat while Eastern centers continued to absorb the majority of the output. Poor market conditions have already caused the suspension of numerous operations.

Operators charge the Erie, the B. & M. and the Maine Central railroads with rejecting shipments unfairly and trying to secure a price concession on the coal which was purchased a short time ago at $3.50.

Northern Panhandle

Transportation conditions were practically unchanged, Pennsylvania mines securing a perfect car supply, while B. & O. operations were limited by a 50 per cent placement. Producers were greatly limited in their distribution by poor trade conditions, much of the product, as heretofore, going to Northern and Western centers.

Spot demand was extremely light, causing further price concessions. Mine run was quoted at $3, screened grades $3.25@$3.50. Majority of the output was going on contracts, but even this volume was being rapidly reduced by numerous suspensions and cancellations. Any further price recession is believed to be impossible, owing to production costs.

Middle Appalachian

LOW-VOLATILE FIELDS

Inadequate Car Supply Continues — Contract Movement Heavy — Prices Shade Off — Market Inactive and Cancellations Are Numerous.

New River and the Gulf

Production was entirely upset in the Gulf region as had been the case since late in November by a dearth of cars on both the Virginian and the Chesapeake & Ohio. On the former the placement of empties during the week ended Dec. 18 was not over 50 per cent of mine rating. On the C. & O. it was not over 40 per cent. Much disorganization prevailed on the Virginian as the result of internal troubles, the management and working forces being at sixes and sevens so that despite new equipment being received there was no improvement in the car supply.

Tonnage produced was not large enough to meet expectations of contract customers, for whatever may have been the case in other fields, there was no general effort on the part of buyers to cancel contracts or suspend shipments. Still, there was no general spot demand. The small volume of coal sold on the open market was quoted $5 @$5.25 a ton.

Car supply in the New River region was also unimproved. Mines were hardly able to work more than two days during the entire week. Conditions were so bad that between Dec. 1 and 18 some N. R. mines had not had more than four days full supply.

The market for the West was extremely flat. There was a somewhat better demand from Eastern points. What little spot coal was moving brought a price of $5. Market conditions in general failed to affect mining in the New River region because the output was not equal to the aggregate of contract orders.

Pocahontas and Tug River

Heavier inroads were made on production in the Pocahontas region during the week ended Dec. 18, because of the inability to secure cars. Mines were not able to produce more than 60 per cent of capacity as the car shortage alone cost a production of 40 per cent. Heavily stocked Western markets were responsible for the failure to return cars, though at the same time it was felt that in using cars for general transportation purposes, the number available for coal handling had been materially reduced.

With the supply so curtailed loadings were not sufficiently heavy to fill all regular orders. While there were many suspensions of orders, there was no cancellation of contracts. The market was extremely poor and because of the light demand mine run was not averaging more than $4.50@$5 with prepared sizes quoted, $5.50@$6.

Pronounced shortage of cars in the Tug River field greatly reduced the output. For a time the placement on the N. & W. held up fairly well, but mines were unable to work more than half the week in the aggregate. Little or no coal moved to Western markets except on contracts, and there were reported as being at the Lakes many cars unsold or rejected, such coal having been forwarded when prices were higher than is at present the case.

Extreme sluggishness featured spot market conditions. With the demand so light mine run sold off as compared with the preceding week, being quoted $4.50. Even prepared sizes were not more than $5.50@$6.

HIGH-VOLATILE FIELDS

Car Shortage Continues — Inclement Weather and Poor Motive Power Bar Production—No Spot Demand—Labor Is Entirely Adequate—Many Cancellations.

Kanawha

Production during the week ended Dec. 18 was the worst observed in some time. Car supply ranged from 38 to 45 per cent, being just as poor on the K. & M. as it was on the C. & O. Not enough coal was produced to fill contract re-

quirements notwithstanding the many cancellations that were being received, some resulting from a plain attempt to avoid paying prices higher than those prevailing on the open market.

Demand simply did not exist and prices were depressed to an even greater extent. Spot steam went for $3 a ton on the average. Tidewater coal was quoted $3.50@$3.75. Prepared sizes held firm at $5, colder weather bolstering the market a trifle.

Logan and Thacker

At the very outset of the period there was a dearth of cars in the Logan field and conditions grew steadily worse during the week. In addition to the shortage of cars, inclement weather and inadequate motor power reduced the weeks output to less than half of normal. Producers were falling behind on contract deliveries even though many buyers had cancelled their regular bookings and were apparently bent on further cancellations. Operators showed no interest in seeking new contracts, as it was believed the bottom had been reached and future quotations would show some gains.

Prices on the spot market continued to decline, mine run being quoted at $3, with slack $2.50. Prepared sizes were in better demand at $5, although the demand was becoming weaker. Tidewater quotations reflected the weakened market with a price range of $3.25@$3.50.

While strike leaders would not of course concede it, nevertheless there was no longer any strike loss apparent in the Williamson field during the week ended Dec. 18. Not more than 100 miners were in the tent colonies and only a few hundred of those who originally struck were still out of the mine. Production was almost normal, being in excess of 100,000 tons. Forces at the various mines were being enlarged from day to day; labor was plentiful and men were even being turned away.

Much coal was going forward on belated contracts. Only the smaller mines were prevented from operating because of "No Market." Little free coal was sought, at lowered quotations of $3 for steam and $2.50 for slack.

Northeastern Kentucky

A scarcity of cars was still seriously hampering operations in the week ended Dec. 18. Total losses were placed at 45 per cent, with a car shortage of 33 per cent. Production was not sufficient to even care for contract requirements and few sales were negotiated in the open market.

Mine run prices were practically unchanged, $3@$4 with prepared sizes considerably weaker, $4@$4.50. Nut and slack also declined slightly to $2.25. A general absence of demand was beginning to have its effect on the smaller mines, and those without contracts or sales affiliations were beginning to suspend operations. About 35 of these were in idleness during the week. Some operations closed down until after the holidays in view of the extremely sluggish market prevailing at the present time.

Virginia

Production was materially hampered in the week ended Dec. 18 by a shortage of cars, entailing a loss of about 40 per cent. Notwithstanding the general market condition the number of cars furnished was not large enough to enable mines to get out the tonnage they were under contract to deliver.

There has been little change in the operation of tipple mines as compared with the preceding week, most of such still having orders enough on hand to keep them going for several weeks to come.

While spot business was far less in volume than usual, some coal was being sold $3.50@$4, there being a fair spot demand both as to Inland and export markets. Cancellation of contracts was the exception rather than the rule during the past week.

Middle West

WESTERN KENTUCKY

Demand Slow for All Grades—Mines Running on Reduced Schedule—Cancellations Are Heavy.

Prices as a whole have been fairly well maintained. There has been a good deal of weakness since heavy cancellations left some operators with practically no orders on their books. Some operations are facing a shutdown, as the larger mines do not feel like selling under present conditions, and the smaller ones cannot produce cheaply enough to show much profit.

The spot market, established on actual offerings shows lump, $4; mine run, $2.50; screenings, $2. However, cancellations, over-production, etc., have made for more cheap spot coal than usual during the past few days. Buying should improve with the colder weather, or anything like a normal industrial demand.

Public utilities are buying lightly, there is not much railroad demand, nor anything of importance to take present production. Lump continues the best item, with mine run dull, and screenings very hard to sell.

DUQUOIN

Production Is Good—Movement Largely Confined to Contracts—Prices Touching Bottom.

Conditions during the week were practically unchanged, production being usually good, car supply excellent and demand very poor. Many mines are almost dependent upon their contracts. However, no additional "no bills" were reported. Some few mines have closed down indefinitely around Belleville and several in the Springfield district.

The demand seemed to have fallen off entirely in and around the Chicago district, but on the other hand the Northwestern states are taking a good tonnage. This trade is very unstable, however, and some of the mines are operating with very few orders for their coal. Prices have continued their downward trend and orders are difficult to secure.

INDIANA

Indiana Domestic in Better Supply—Steam Market Sluggish — Prices Reduced.

During the last week the domestic situation has been rapidly relieved and dealers are able to get all the fuel they want. This is particularly true in Indiana where the injunction granted by the U. S. District Court in favor of the Vandalia Coal Co. and the Vigo Products Co., and enjoining the State Food and Fuel Commission from interfering with their business, has resulted in the diversion of a tremendous amount of coal into the bins of Indiana retailers.

Figures compiled by the Indiana Coal Trade Bureau show that for the week ended Dec. 11, there were shipped intrastate for domestic use 1,737 cars of coal, as against 1,102 cars for the week ended Nov. 13.

Total shipments into Indiana for the week ended Dec. 11, exclusive of the Chicago switching district, were 6.390 cars, while for the week ended Nov. 13 the same district received 4,935 cars. The biggest increase, of course, was in domestic coal. Total shipments for the week ended were 12,474 cars.

The demand for steam has been much less urgent than it was a month ago, but lump is finding a ready market in some instances at much lower prices than recently prevailed.

West

UTAH

Cold Weather Livens Demand—Stocks Are Ample—Operating Conditions Are Satisfactory.

Utah is experiencing the first cold weather this winter, following a few inches of snow which fell some days ago. The demand for coal has increased accordingly, but retailers are well able to take care of the situation.

Ogden dealers claim their city is in especially good position in this respect. The Lion Coal Co. has 3,000 tons of coal which is sufficient, it is said, to supply the entire population for nearly seven weeks should there be a shortage and other firms prove unable to supply their customers.

With the present good operating conditions, producers are able to fill all demands made upon them and this district enters the new year with no possibility of any serious shortage.

MINE And COMPANY NEWS

ALABAMA

Blakely Island, the site selected for the **Mobile coal terminals** of the Government, has been purchased with funds provided by the business interests of that city, supplemented by subscriptions from coal operators in Alabama, and the deed conveying the property to the Government has been passed. It is understood that no unnecessary delay will occur in the commencement of work on these terminals, for which an appropriation of $400,000 is now available.

The report of the War Finance Corporation shows that a loan was made to the **Empire Coal Co.**, of Birmingham, in the sum of $277,174, of which $154,881 is outstanding.

ILLINOIS

A new corporation, to be known as the **Scranton Mining Co.** of Marion, has been formed for the purpose of purchasing the Scranton mine. Incorporation papers were granted to D. S. Gent, Robert Payne and W. L. Walton of Chicago for a company with a capital stock of $600,000.

The Marion County Coal Co. of Centralia has contracted with the Roberts and Schaefer Co. for the boiler coal and conveying equipment in connection with their tipple at Centralia.

INDIANA

A new source of coal supply has been found in Parke County, according to an announcement made recently, following the classification by the Department of Conservation of a few samples of coal found there. The coal is said to be excellent for domestic use.

The machine shop and wash house at the **Speedwell mine**, west of Terre Haute, were destroyed by fire recently. The loss is estimated at $15,000.

A new coal mine is soon to be opened on the Dunlap farm, near Newport, north of Clinton. The machinery for opening the new mine is now on the ground. Another big surface mine is being developed near Newport, and the **Northwestern Coal Co.** is said to have 550 acres of land leased for this undertaking.

KENTUCKY

The Bennett-Calloway Coal Co., Hulen, capital $15,000, has been incorporated by W. S. Bennett, G. S. Calloway and R. M. Calloway.

Suits were filed recently in circuit court at Louisville, Ky., by the **Manchester Coal Co.**, vs. **the Sun Coal Co.**, and **Allied Coal Co.**, Louisville, allied concerns, for sums alleged to be due for royalties, coal shipped, etc.

OHIO

The Caladonia Coal Co., New Lexington, of which James Williamson of Columbus is chief owner and active manager has opened a new mine near this place on the T. & O. C. R.R.

The Fairview Coal Co., headquarters Cleveland, who operate the Fairview mine at Crescent, has recently acquired 800 acres of coal land at Lafferty, Belmont County, in No. 8-A vein, where a new mine will be opened. The officers are U. C. Hatch, president; A. W. Dean, secretary-treasurer; and D. N. Snetsinger, purchasing agent.

The Fair Practice Committee of the Northeastern Ohio Coal Producers, which was organized late in October, has been discontinued, the purposes for which it was organized having been accomplished. The personnel of this Committee was: S. H. Robbins, chairman; C. E. Maurer, Whitney Warner, Thos. K. Maher, Michael Gallagher, and D. F. Hurd, secretary.

Announcement was made on Dec. 10 by officials of the **Marcel Coal Co.** that that company just organized by the Mahers and associates of Cleveland would undertake at an early date the development of 16,000 acres of coal land in the Powhatan district about four miles below Powhatan, the coal lands owned by this company being worth approximately $2,000,000. The Marcel Coal Co. was organized by J. A. Maher, of Cleveland, Ohio, president; J. C. Heinlein, of Bridgeport, Ohio, vice president and general counsel; J. V. Maher of Cleveland, treasurer; K. G. Perry, Cleveland, secretary; W. J. Maher, D. V. Maher and Thomas K. Maher, all of Cleveland. In connection with the plan to develop the 16,000 acre tract it is learned that the American Gas & Electric Co. which has a large power plant at Beech Bottom, W. Va. has been asked to install a large power plant.

According to information in circulation the **Hillman interests of Pittsburgh** have consummated a deal for the purchase of 500 acres of coal land near Waynesburg, in Franklin township, 400 acres being purchased from T. J. Wiscarvers, the other 100 acres being in the Buckhannon tract. It is understood that the price paid was $300 per acre.

OKLAHOMA

One of the biggest industrial sales recorded in Oklahoma took place recently when the coal mining properties of the **Creek Coal & Mining Co.** and the **Victoria Coal Co.** were acquired by the **Crowe Coal Co.** of Kansas City. The new owners have already taken over the new properties and are following the policies of the former owners in producing and selling coal. The Creek Coal & Mining Co., and the Vietoria Coal Co., have long been one of the largest coal operators in Oklahoma and their coal production has done much to give Henryetta a foremost place in the coal producing region.

PENNSYLVANIA

The J. S. Wentz Coal Co. will finish its new breaker about February 1. According to officials, production will jump from 800 to 1,500 cars a day when the plant is put into operation. The increased tonnage will come from the Porter Swamp strippings near to Hazle Brook.

There has been a tremendous slump in the coal and coke business, especially the latter, in the past two weeks. **The Hillman Coal & Coke Co.** has shut down all its ovens except one plant and is shipping coal. **The American Coke Corporation** has done likewise at the Sunshine plant near Brownsville and is curtailing operations at the Orient plant. **The Lincoln Coal & Coke Co.** and the **Snowden Coke Co.** have closed down entirely. The **W. A. Stone** interests of Uniontown are doing the same. **The Pittsburgh Steel Co.** are operating their coal and coke plants at less than 50 per cent of normal. **The Republic Iron & Steel Co.** and the **Century Coke Co.** are also curtailing operations.

The Grazier Coal Co. of Johnstown declared a dividend of 8 per cent, payable on Dec. 15. A. W. Hildebrand of New York is president and H. F. Grazier of Johnstown, secretary-treasurer.

The Harco Coal Co. with offices in Johnstown, declared the regular quarterly dividend of 1¾ per cent on preferred stock and an initial dividend on the common stock of the company of $1,000 per share, payable Jan. 1. H. J. Meehan is president and John C. Cosgrove is secretary-treasurer.

Deals were closed this week whereby the **Cambria Steel Co.** takes over valuable unmined coal lands in Cambria County. The deals include three tracts purchased from the Morrellville Coal and Coke Co., wherein the consideration was $86,000; fifty acres from F. H. Seely of Altoona and more than 600 acres from the Piney Run Mining Co. The consideration in the Seely transfer was $9,120. This coal can all be reached by the Cambria Steel Co. by cutting through from the Rolling Mill Mine.

UTAH

When Governor Bamberger of Utah who is about to retire was elected four years ago he promised that if the state legislature would appropriate $25,000 for the purpose of a special audit it should bring the state exchequer handsome returns. The legislature made the appropriation and the audit was commenced but it was not till a day or two ago that the source from which "the handsome returns" were to come was known. The report of the auditors in question deals principally with the sale of coal lands by the state to dummy entrymen, who are declared to have secured the lands ostensibly for grazing purposes and thereby obtained valuable property for practically nothing, the land afterwards being used for coal land. It is expected that immediate steps to recover for the state all lands obtained in this way which are found to contain valuable coal deposits will be taken.

WASHINGTON

The first coal from the new mine of the **Tilton River Bituminous Coal Co.**, at Lindberg, in eastern Lewis County, was shipped the middle of December, according to George A. Brooks, manager of the company. The company expects to turn out 500 to 1,000 tons daily.

WEST VIRGINIA

Operations of the **Wilsondale Coal Co.** will be at Wilsondale in the Wayne County field, this corporation having just been organized with a capital stock of $10,000. Engaged in promoting the company were: A. W. Wilson, of Saltsburg, Pa.; William Elswick of Wilsondale, W. Va.; J. H. Meek, and Nellie Sands of Huntington, W. Va.; and Anna Bush of Ceredo, W. Va.

Ohio people have organized the **Glenora Coal Co.**, Wheeling, for the purpose of operating in Richland district of Ohio County, the company having a capital stock of $50,000. Conspicuous in the organization of this company were: C. H. Eberts, E. J. Eberts, G. S. Eberts, H. W. Eberts of Warwood, W. Va., and T. H. Johnson of Bellaire, Ohio.

Having secured a lease on 361 acres of coal land four miles from Elkhorn City, Ky., (postoffice Praese, Ky.,) the **Dominion Smokeless Coal Co.**, Huntington, which was formed a short time ago, is now installing its plant and expects to begin shipping coal in 60 days. The general offices of the company at Huntington will be in charge of Charles H. Bronson, secretary-treasurer of the company.

Having perfected its organization by the election of officers, the **Two-Seam Coal Co.**, Winding Gulf, formed a short time ago, has initiated work on its new plant on the Kanawha & Michigan R.R., near Boomer. The new officers are: H. B. Turner, president, Winding Gulf, W. Va.; Dr. A. N. Tieche, vice-president, Winding Gulf, W. Va.; S. W. Shumate, secretary-treasurer, Winding Gulf, W. Va.; I. B. Perkins, manager, Boomer, W. Va.

The Robinson Coal & Coke Co., Sutton, recently organized, has elected the following officers: I. H. Humbert, president; W. J. Robinson, vice president; J. M. Thomas, secretary-treasurer; W. J. Robinson, general manager. This company has 180 acres available for development in Holly district of Braxton County. The company's mine will be at Holly Junction with postoffice at Palmer.

ALASKA

In Alaska a part of the **Cook Inlet coal field** has been surveyed and divided into nineteen leasing blocks containing 9,500 acres which was offered for lease, one lease being granted. A block of 565 acres was surveyed in the Nenana field and a lease awarded. The Department is still considering applications to lease 2,040 acres in the Bering River field and 1,080 acres in the Matanuska field. Coal lands under lease cover 4,500 acres in the Bering River field, 2,840 in the Matanuska region; 1,400 in the Cook Inlet field and 563 in the Nenana district. Coal land entries covering 6,256 acres were approved for patent. A total of 2,797 acres of coal land were withdrawn for classification, while 1,293,207 acres previously withdrawn had been restored.

The **Howard Collieries Co.** mine at Chattoroy, was fired upon by unidentified persons, according to information received from the superintendent of the mine. No casualties were reported. The fire was returned by Federal soldiers on duty there.

Traffic News

The Ohio Utilities Commission has issued an order suspending the advanced freight rates asked by Ohio railroads on intrastate traffic. The suspension is made until Jan. 18. In the meantime, hearings on the question will be had. A loss of approximately five million dollars to Ohio railroads annually will result if the new schedule of rates is not allowed.

Suit to quiet the government's title to a large parcel of **Routt County coal land,** involving a $100,000 bond issue underwritten by the Central Savings Bank, has been instituted in the United States District court in Denver, in which the bank is made co-defendant with the **Rugby Fuel Co.** The government alleges that while equity proceedings were pending the Rugby Fuel co. obtained from the **Routt County Coal Co.,** a warranty deed to the land.

As the railroads have cancelled the schedules, the Interstate Commerce Commission has set aside its recent order **suspending until March 1 regulations covering dumping, skidding, trimming and leveling coal and coke at Virginia ports.**

The Chicago, Rock Island and Pacific R.R. recently made a claim for loss or shortage in delivery of coal which has been passed on by the comptroller of the treasury. The railroad said that where carriers comply with the Oklahoma law in sealing cars they are not obliged to accept wagon weights, and that the cars in question were sealed at Lawton, Okla. It appears that one car was not sealed. In two cars the weights determined by the consignor were correct. No evidence having been furnished that the weights shown on the bills of lading were incorrect, the previous decision, declining allowance, is affirmed.

W. L. Mapother, of the Louisville & Nashville R.R., stated at a recent meeting of the Transportation Club of Louisville that the road had arranged to spend $33,000,000, on improvements, including cars, engines, road improvements, etc., a considerable portion of which would be in the coal regions, or for handling coal.

In the case of the **Gallatin Lumber Co.** an examiner recommends that the rates on coal from Kirby, Wyo. to Greenwood, Mont. and Bozeman Hot Springs, Mont., are not unreasonable, and that the complaint be dismissed.

A tentative report of an examiner of the Interstate Commerce Commission recommends that the rate on bituminous coal from southern Illinois mines to Tallulah, La., be declared to be reasonable, and that the complaint of the **Tallulah Cotton Oil Co.** be dismissed.

In the complaint of the **Potlach Lumber Co.** an examiner recommends that the commission decide that the rate on coal from points in Washington to points in Idaho are not unreasonable.

The Dewey Fuel Co. recently filed with the I. C. C. a complaint requesting reparation from the Chicago Northern R.R. in connection with coal shipments from Kona and other points in Kentucky to Jackson, Mich. An examiner has recommended that the commission dismiss the complaint, as the rate is not unreasonable, and the damage to the fuel company resulting from the adjustment complained of was not established.

The Supreme Court has dismissed the case of **Truman A. Ketchum vs. the Pleasant Valley Coal Co.** for want of jurisdiction, the lower court having decided in favor of the coal company. The case was an equity suit involving title to a quarter section of coal land in Carbon County, Utah, known as the Marks entry, the land having originally been entered by Stephen R. Marks, and passed through several hands and eventually into the hands of the defendant company.

Action by the Interior Department in Coal matters on public lands is reviewed by the Commissioner of the Land Office in his annual report, who says that in Utah a compromise was reached in a suit against the Denver and Rio Grande Fuel Co. by payment to the government of $44,244. An indictment for coal trespassing was obtained in North Dakota.

Association Activities

Team Track Operators Association of West Virginia

The fact that prices are at low ebb, that it is almost impossible for team track operators to continue work at their mines, did not stand in the way of a large attendance at a meeting of the association, held in Clarksburg recently, for the purpose of considering future plans.

Confident of the future, the association fomulated plans not only to continue activities and maintain its organization but also to make still greater effort to secure open top cars to which the association feels it is entitled inasmuch as open tops are being used for transporting all classes of commodities. To deny the wagon-mine operators open tops under present conditions is a species of discrimination.

J. T. Michael is retained as executive secretary. He was also chosen as treasurer of the association to fill the place made vacant by the resignation of T. L. Ferguson of Shinnston.

Impetus was given at the meeting to the movement for the organization of a state association of team-track operators, it being reported that team-track mine owners over the state were taking kindly to the proposal to form a state organization even though wagon-mine operations are largely at a standstill.

Winding Gulf Operators Association of West Virginia

It was brought out during the annual meeting of the Association held at the Bellevue Stratford Hotel in Philadelphia, that since the organization of the association the pay of men employed in the mines of the Winding Gulf District had been increased as follows: Miners, 24 per cent; Day men, 173 per cent; Yardage and dead work, 40 per cent. That fact was developed in the annual report of E. E. White, the president of the association, who was elected President of the association for another year. Members of the new executive committee are: E. E. White, of Glen White; C. H. Mead, of Beckley, W. Va.; W. Gaston Caperton, of Slab Fork, W. Va.; J. C. Sullivan, of Tralee, W. Va.; P. M. Synder, of Mount Hope, W. Va.; W. B. Beale, of Fireco, W. Va. and George R. Collins, of Charleston, W. Va.

In order to secure a closer co-operation between the operators of the Winding Gulf region and to secure better facilities, the association formed a special standing committee of four members to be known as the Committee on Railroad Relations, the members named for such committee being George Wolfe, secretary of the association, W. P. Tams, C. H. Mead and John Laing. It will be the province and duty of that committee to secure general improvement in transportation facilities, and an enlargement of railroad facilities to care for additional development and the consequent increase in tonnage to be moved.

The president in his report reviewed the accomplishments of the association during the year, speaking of the growth of the association, of wage increases, of information furnished members, of the effort to secure larger loading of freight cars, of the efforts to advertise the region through post cards, of the prosecution of law breakers, of the establishment of the Sewell's Point exchange, of the labor situation in general, at the same time outlining questions for future consideration.

Smokeless Coal Operators Association Of West Virginia

Election of a Board of Governors and of new officers for 1921 were the most important features of the annual meeting of the association held in Philadelphia recently. The association sanctioned a change in its by-laws increasing the number of vice presidents from two to three. After that had been done the members voted upon the question of membership on the Board of Governors, the result of such election being as follows:

New River field—C. C. Boury of Charleston and Robert E. Grose, of Boston. Winding Gulf District—A. J. King of Huntington and John Laing of Charleston. Tug River District — George Wolfe of Beckley and John T. Wilson of Bluefield. Pocahontas District—Col. T. E. Houston of Cincinnati and O. M. Deyerle of Bluefield.

The Board of Governors, in turn, elected the following officers for 1921: G. H. Caperton, of Charleston, W. Va., president; E. E. White, of Glen White, W. Va., first vice president; O. M. Deyerle of Bluefield, second vice president; E. J. McVann of Washington, D. C., third vice president; E. J. McVann, secretary; George R. Collins of Charleston, W. Va., treasurer.

Panhandle Coal Mining Institute

Under the direction of M. B. Coulter, inspector for the District of West Virginia this institute was organized in the circuit court room at Wheeling by officials and others connected with the mines of the Northern Panhandle, a number of mine owners as well as officials attending the organization meeting. Representatives of the various companies pledged their wholehearted support believing that many benefits were to be derived from the new organization. An address of welcome was delivered by Thomas F. Thoner, Mayor of Wheeling. One of the principal addresses was delivered by R. M. Lambie, chief of the Department of Mines.

Morgantown Consolidated Coal Operators Association

The association is still endeavoring to get the B. & O. R.R. to serve its members with open-top cars and in connection with that effort and the failure of the B. & O. to furnish open tops, George A. Viewig, president of the Association makes the following comment:

"The B. & O. has resorted to the very clever practice of forcing the smaller operators to go to the heavy expense of loading box cars at a time when profits are near the vanishing point and when the small margin of profit makes it impossible for the small operator to load box cars at a price which will compete with open-tops and still allow a sufficient margin to cover the additional cost of unloading these cars.

"If the B. & O. is willing to play the game as does the Pennsylvania system it would supply open-top cars to all mines regardless of class or size in compliance with Order 17 of the Interstate Commerce Commission which rules to allow any operator the use of open-top cars who can load same within twenty-four hours after placement.

"Putting team and truck operators out of business means a loss of one-half million dollars a year in pay rolls to this community, an amount worthy of serious consideration."

Coming Meetings

The Northeast Kentucky Branch of the **Kentucky Coal Mining Institute** will hold a meeting, Jan. 7, 1921, at Pikeville, Ky.

National Retail Coal Merchants' Association. Fifth conference of executives at La Salle Hotel, Chicago, Ill., will be held on Jan. 17 and 18, 1921. Secretary-Manager, Ellery B. Gordon, Philadelphia, Pa.

American Institute of Mining and Metallurgical Engineers' annual meeting will be held in New York, Feb. 14 to 17, 1921. Secretary, Bradley Stoughton, 29 West 39th St., New York City.

The Wholesale Coal Trade Association of New York, Inc., will hold its annual meeting in New York City, Jan. 18, 1921. Secretary, Charles S. Allen, 90 West Street, New York City.

American Society of Civil Engineers will hold its annual meeting Jan. 19 and 20, 1921, at its headquarters, 33 West 39th St., New York City. Acting secretary, Herbert S. Crocker, 33 West 39th St., New York City.

Northwest Mining Congress will hold its annual convention Feb. 28 to March 5, 1921.

Northern West Virginia Coal Operators' Association will hold its annual meeting Feb. 8, 1921. Secretary, H. S. Rogers, Fairmont, W. Va.

Pittsburgh Vein Operators' Association of Ohio will hold its annual meeting, Feb. 14, 1921, at Cleveland, Ohio. Secretary D. F. Hurd, 415 Marion Building, Cleveland, Ohio.

American Institute of Electrical Engineers and American Institute of Mining Engineers will hold a combined meeting of the local sections on Jan. 21, 1921, at Pittsburgh, Pa.

Canadian Institute of Mining and Metallurgy will hold its annual meeting March 2, 3 and 4, 1921, at Ottawa, Ontario (Canada). Acting secretary, R. R. Rose, Montreal, Quebec, Canada.

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